THE RELATIVE EFFECTS OF HYPNOSIS, TRANSCENDENTAL MEDITATION, AND A WESTERN MEDITATION ON ANXIETY AND SELF ACTUALIZATION IN HIGH AND LOW SUSCEPTIBILITY SUBJECTS

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ABSTRACT

This study investigated the relationship between hypnosis and varying forms of meditation in order to determine their effects upon psychological measures of anxiety and self-actualization. Furthermore, an attempt was made to determine whether the subject variable of hypnotic susceptibility interacted with hypnosis and meditation in a similar manner to elicit significant decreases in anxiety and increases in self-actualization. The postulated antecedent variables to hypnotic susceptibility

1 positive attitudes, expectancies and motivation together with

2 a shift in cognitive orientation from an objective perspective to one of involvement in suggestion-related imagining

were also investigated to assess their predictability of hypnotic susceptibility and their independent effects on anxiety and self-actualization. Finally, a placebo control condition was included for the purpose of assessing any placebo effects evident in the outcome achieved using hypnosis and meditation as well as to compare the efficacy of this technique with that of hypnosis and meditation.

In recent years, a number of studies have focused upon the psychological and psychotherapeutic effects of the regular practice of self regulation strategies including hypnosis and meditation. While many of these studies have drawbacks in terms of poor methodology, there are a significant number of tightly controlled investigations into the effects of hypnosis and meditation which have indicated similar subjective and behavioural outcomes. These studies have shown similar effects upon psychological and psychotherapeutic measures using hypnosis and meditation treatment modalities. In addition, some recent investigations have suggested that common subject variables, including hypnotic susceptibility, may interact with these conditions to produce beneficial psychological effects. Furthermore, in studies where a placebo technique was utilized, the results showed similar beneficial effects by those practicing this "technique" compared with those practicing meditation. Therefore, further clarification of the relationship between the practice of hypnosis, meditation and a placebo technique was indicated.

The 57 subjects who volunteered for the study were randomly assigned to one of the five treatment or control conditions following their assessment of hypnotic susceptibility using the Harvard Group Scale of Hypnotic Susceptibility: Form A, and pre tests on the State-Trait Anxiety Inventory (STAI) and the Personal Orientation Inventory (POI) along with an attitudes questionaire. These conditions were:

1 hypnosis

2 Transcendental Meditation

3 A Western Meditation

4 placebo control

5 non-meditating control.

Subjects were given a tape-cassette recording of the technique and instructions to practice over the six-week treatment period. At the conclusion of the treatment period, subjects were post tested on the STAI, the POI, and those in groups one to four were given an Imagining Questionaire.

The data was collected and analyzed using a 2-way and 3-way analysis of variance (groups by pre and post test/groups by susceptibility by pre and post test/groups by attitudes by pre and post test/groups by imagining by pre and post test). A priori comparisons were drawn to assess significant within group and between group changes using 2-tailed F tests of significance. In addition, correlational data was obtained through a multiple regression correlation to assess the relationships of the antecedent variables (Attitudes and Imagining) to the mediating variable (Hypnotic Susceptibility).

The results suggest that the regular practice of hypnosis and meditation elicit beneficial psychotherapeutic effects in terms of anxiety reduction and increased self-actualization. This tendency was shown to be very similar for the hypnosis and the TM groups with some differences noted in the major scales on which the Western Meditation and placebo control groups recorded significant improvements. There was some indication of a placebo effect operating in both the hypnosis and meditation treatment conditions. However,

this effect alone was insufficient to explain the significance of results obtained by the hypnosis and TM groups and indicates the importance of a hypnotic or meditative state and/or cognitive-behavioural factors in addition to expectancies.

For the subject variable of hypnotic susceptibility, the results are complex and somewhat contradictory. They indicate that hypnotic susceptibility interacts with the practice of hypnosis and meditation to reduce anxiety; perhaps due to the common effects of relaxation. Whereas, for the dependent variable of self-actualization, hypnotic susceptibility was unrelated to significant change in the hypnosis and TM groups on the major scales, while showing some relationship to the degree of improvement on the subscales. However, in the Western Meditation group, high susceptibility subjects showed a greater number of significant increases in self-actualization than low susceptibility subjects across all scales. This confounding of overall results when assessing the relevance of hypnotic susceptibility as a subject variable suggests important differences between current methods of assessing hypnotizability (task hypnosis) and the clinical use of hypnosis to facilitate anxiety reduction and self-actualizing values and behaviour (relaxation hypnosis).

The findings suggest a relationship between hypnosis and meditation in terms of common subject variables and consequent effects. The nature of this relationship bears further investigation. A clarification of the role of hypnotic susceptibility in the practice of hypnosis and meditation may be fruitfully explored by examining the relationship between task hypnosis as measured by standardized scales and relaxation hypnosis with suggestions for self improvement as used in a variety of clinical settings. In addition, the various modes of accessing information presented in hypnosis and meditation (e.g. visual, auditory, kinesthetic) bears further exploration. Finally, the results of this study underscore the importance of using a placebo condition in further research into hypnosis and meditation and suggest the need to investigate the similarities and differences between hypnosis and meditation compared with varying placebo techniques.

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The factors investigated in this thesis have developed from a growing interest by the author in the therapeutic application of meditation and hypnosis in clinical practice. This interest began 10 years ago, and the present study is the culmination of an attempt to clarify some of the issues related to the wide-ranging field of meditation and hypnosis as adjuncts to psychotherapy.

The number of people who have provided both practical assistance and personal encouragement during the course of this study are too numerous to mention. To adequately acknowledge the contribution toward this finished work would require mention of the valuable interaction the author has had with people approaching this topic from many and varied perspectives. By necessity, therefore, many of these contributions will be unrecorded here. However, the appreciation felt is personally recognized nonetheless.

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CHAPTER ONE

INTRODUCTION AND HYPNOTIC SUSCEPTIBILITY

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INTRODUCTION

In recent years a great deal of research has concentrated upon the effects of meditation, progressive relaxation, autogenic training, and hypnosis on various aspects of psychological as well as physiological health and performance (Barmark & Gaunitz, 1980; Bartels, 1977; Gellhorn & Kiely, 1972; Glueck & Stroebel, 1975; Goleman, 1971; London & McKewett, 1970; Morse, et.al., 1977; Paul & Trimble, 1970; Research on the Transcendental Meditation Program; Collected papers, Vol. 1, 1977; Sacerdote, 1977; Shapiro & Zefferblatt, 1976; Spanos, et.al., 1979; Van Nuys, 1973; Walrath & Hamilton, 1975; Weiner, 1977). Similarities between techniques and the effects elicited have often been cited, particularly in terms of a "hypometabolic response", a "relaxation response", a "meditative mood", the process of "deautomization", and the process of "non-analytic attending".

In the earlier research on Transcendental Meditation, it was often claimed that the technique itself was responsible for producing a unique state of consciousness separate from waking, sleeping, or dreaming (Wallace, et.al., 1970) which led to improved psychophysiological functioning. However, more recently some common variables have been suggested for a number of the abovementioned techniques which may lead to the common effects elicited. The common variables suggested have been:

1. sitting quietly with eyes closed for twenty minutes twice a day
2. an expectancy effect by those looking for self improvement
3. positive motivation and attitude towards benefit from the technique
4. characteristics of the personality of those who choose to be involved
5. hypnotic susceptibility
6. non-analytic attending (Heide et.al., 1980; Otis, 1974; Smith, 1978; Spanos, et.al., 1979).

Although these areas have been delineated to some extent, there is relatively little existing research comparing different forms of meditation with hypnosis which indicates both common mediating variables

and common effects upon measures of psychological health and reduction in anxiety. Some studies have investigated the common effects among different forms of meditation or between meditation and other self-regulatory techniques. Others have investigated the common variables between meditation and other self regulatory techniques or between meditation and hypnosis (Benson, et.al., 1974; Benson et.al., 1978; Davidson & Goleman, 1977; Davidson & Schwartz, 1976; Glueck & Stroebel, 1975; Heide, 1980; Morse, et.al., 1977; Schecter, 1977; Smith, 1978; Spanos, et.al., 1978 & 1979; Van Nuys, 1973; Walrath & Hamilton, 1975; Zuroff & Schwarz, 1978).

It is clear that further evidence is needed to determine the relationship between hypnosis and other self-regulatory techniques such as Transcendental Meditation. There is also a need for further evidence to determine the relationship between Transcendental Meditation and other forms of meditation using differing techniques but positing similar beneficial effects, such as improved psychological functioning and reduction in anxiety. Finally, there is a need for further investigation into the relationship between hypnosis and different forms of meditation, to determine commonalities and differences in both meditating variables and consequent effects.

The purpose of this study will be to investigate the relationship between hypnosis, Transcendental Meditation (TM) and a Western Meditation in terms of their effect upon measures of Self Actualization and State-Trait Anxiety, utilizing high and low susceptibility subjects. To this end, hypnosis, TM, and the Western Meditation will each be examined for their psychological and psychotherapeutic effects. But first the role of the subject variable of hypnotic susceptibility will be analyzed in terms of its postulated interaction effects with the above treatment conditions. This is important for the critical analysis of the various techniques mentioned in terms of identifying and testing possible common subject variables which may facilitate the effectiveness of hypnosis and meditative techniques.

HYPNOTIC SUSCEPTIBILITY

Susceptibility to hypnosis has been shown to be a relatively stable characteristic of the personality, subject to only minor modification through training (and even then relatively stable with respect to comparative groups), highly correlated with independent assessments of depth of hypnotic response, and reliably determined with the use of standardized scales (Bowers, 1976; Finke & McDonald, 1978; London, et.al., 1968; Hilgard, 1965; Moore, 1964). While this "trait" viewpoint seems to be widely accepted among hypnosis researchers, it should be noted that those holding the viewpoint of hypnosis as a "skill" which is capable of modification through training, point to evidence to the contrary (Diamond, 1977).

In addition to the commonly held "trait" viewpoint mentioned above, it has been suggested that research into hypnosis should separate subjects into high and low susceptibility groups to account for an important subject variable. London, et.al., (1968) criticize hypnosis research which has not accounted for these subject differences. They state that these studies

> have concentrated entirely on the identification of state differences, and have failed to take adequate account of subject differences which might be critically important to the experimental phenomena. The most important subject variable in this connection is susceptibility to hypnosis (p71).

In terms of the clinical implications, the importance of the subject variable of hypnotic susceptibility and its role in the psychotherapeutic effects of hypnosis (both in direct suggestion and in psychodynamic therapy) has also been emphasized (Bowers & Kelly, 1979; Kihlstrom, 1979). This position has been argued by some researchers (Perry, et.al., 1979), who contend that while susceptibility as a subject variable appears to be important in the medical use of hypnosis to treat somatic symptoms, it has not been shown to be related to therapeutic outcome according to clinicians treating other behaviour

problems. While this injects a note of caution, it is interesting to note that they suggest subject variables other than susceptibility as responsible for the positive clinical results which have been reported with low susceptibility subjects. One of these is the motivational attitude towards the use of hypnosis in therapy, which they suggest may interact with the hypnotic potential possessed by most people. This motivational variable will be treated in the present study as a possible antecedent to responsivity to hypnosis and meditation.

If there is a relationship between hypnosis, TM, and a Western Meditation in terms of mediating variables and/or consequent effects, then accounting for the subject variable of susceptibility may be of great importance. Since susceptibility appears to be an important mediating variable in hypnosis, and since there seems to be some commonalities between hypnosis and meditation, then susceptibility should be taken into account in studies of meditation.

The credibility of this argument is given support by the findings of Walrath & Hamilton (1975), in which evidence of the importance of susceptibility in meditation is strongly demonstrated. In the study, 44% of the non-TM subjects were rated as highly susceptible to hypnosis, whereas 100% of the TM practitioners were rated highly susceptible. They conclude that

> either the practice of TM increases susceptibility to hypnosis, or alternatively, only highly susceptible subjects find sufficient reinforcement in the technique to continue its practice for long periods of time
>
> (pp195-196)

Even though the need to account for this subject variable has been generally recognized by investigators in the field of hypnosis, it has not been generally recognized as having importance in the field of meditation research. Perhaps this is because a number of researchers have considered hypnosis and meditation to be distinctly different, both in terms of mediating variables and consequent effects (Bloomfield & Kory, 1976; Davidson & Goleman, 1977; Gellhorn & Kiely, 1972). However, this opinion is not without exception.

Recent research into self-regulation techniques and their elicited phenomena have suggested common subjective experiences, consequent effects, and in some cases common mediating variables (Barmark & Gaunitz, 1980; Benson et.al., 1974; Benson et.al., 1978; Heide et.al., 1980; Morse et.al., 1977; Smith, 1978; Sacerdote, 1977; Van Nuys, 1973).

Four studies deserve particular mention in this regard. Firstly, Benson et.al., (1978) investigated the importance of hypnotic susceptibility as a mediating variable in producing a psychotherapeutic outcome. In this study, he treated 16 subjects using relaxation training (comprised of a simple word meditation) and 16 subjects using self hypnosis. The assessment of pre-to post test changes on an anxiety measure showed five of the subjects in the relaxation group and six of the subjects in the self hypnosis group achieving significant reductions. There was no difference in results between the techniques themselves. However, when subjects were recast according to hypnotic susceptibility levels, and reassessed, it was then found that 10 out of 21 moderate to high susceptibility subjects achieved significant reductions, whereas one out of 11 low susceptibility subjects achieved significant reductions. Therefore, high hypnotic susceptibility was strongly suggested as a mediating variable interacting with the treatment to produce a therapeutic effect.

Secondly, following a study on the subjective experiences of subjects utilizing meditation (TM), Sacerdote, (1977) comments

> if we compare subjective experiences of people trained in Transcendental Meditation with the experiences spontaneously reported by good hypnotic Ss, we find similarities if not identity; only individual idiosyncracies or different atmospheres and expectations within which the experiences occur seem to differentiate one from the other. This is hardly surprising, as the methodologies often used for eliciting states of Transcendental Meditation differ little from the progressive relaxation and eye fixation techniques used for hypnotic induction
>
> (p311).

Therefore, considering these identified common areas between hypnosis and meditation, as well as the lack of sufficient information on hypnotic susceptibility in meditation, further research is indicated.

Thirdly, the need for further research into common subject variables which may mediate responsivity to both hypnosis and meditation was also recognized recently by Spanos, et. al. (1980). In a study of the effect of short-term meditation practice on responsivity to hypnosis, several interesting results were found. While short-term practice of both a non-analytic attending (meditation) treatment and an analytic attending (listening to lectures) treatment failed to significantly increase hypnotic susceptibility, there was a distinct trend for high susceptibility subjects to report fewer intrusion rates over the duration of the treatment than low susceptibility subjects. They conclude that cognitive (subject) variables which may mediate responsiveness to both hypnosis and meditation should be more carefully explored.

Finally, in a recent study, Heide, et. al. (1980) investigated the subject variable of hypnotic susceptibility as a predictor of outcome in meditation practice. Following pretests on the State-Trait Anxiety Inventory (STAI), the Harvard Group Scale of Hypnotic Susceptibility, and a Self-Report Subjective Scale, subjects were divided into high, medium, and low susceptibility cells. They were then randomly assigned to either a meditation or a no-treatment control group, following which the Mantra Meditation group was instructed in a TM-like meditation with an introductory lecture extolling the benefits of the technique. Following seven days of practice, subjects were post tested on each of the abovementioned scales.

The findings showed that high susceptibility subjects elicited reduction in trait anxiety significantly greater than either medium or low susceptibility subjects, while medium and low susceptibility subjects did not differ significantly from each other on this measure.

These results strongly suggest that hypnotic susceptibility acts as a subject variable interacting with the practice of meditation to produce psychotherapeutic benefits. Moreover, since the practice of meditation was not shown to significantly increase hypnotic susceptibility scores, this supports the conclusion drawn earlier that

hypnotizability is a fairly stable personality trait.

The present study is an attempt to more fully explore the subject variable of hypnotic susceptibility as a mediator of responsivity to hypnosis and differing forms of meditation. The prior evidence presented suggesting commonalities in mediating variables and consequent effects between these practices is supportive of this direction.

If susceptibility is shown to be associated with the effects of improved psychological health and reduction in anxiety using hypnosis, TM, and a Western Meditation, then a further step towards understanding the reason for the common effects elicited would be to identify the antecedent variables responsible for high and low susceptibility. If antecedent variables can be identified and investigated, then a greater understanding of factors which affect susceptibility, and consequently the beneficial effects from the three techniques studied, can be achieved. A brief elaboration of each of the treatment conditions in relation to possible mediating variables will be presented next.

Susceptibility and Transcendental Meditation (TM)

In terms of TM, the improved psychophysiological effects reported have been attributed to a unique state of consciousness leading to a "wakeful, hypometabolic, physiologic state" (Wallace, et. al., 1971). This evidence suggests that the variable responsible for producing these effects has been the practice of the TM technique rather than any of the abovementioned subject variables. However, there is some discrepancy in the more recent findings which suggest that other variables such as sitting quietly, having positive expectancies, and hypnotic responsivity have been in operation (Benson, et. al., 1974 & 1978; Heide, et. al., 1980; Morse, et. al., 1977; Smith, 1978). In any case, very limited research has been conducted with high and low susceptibility subjects practicing TM, and only two studies could be found which utilized this subject variable in comparing the effects of hypnosis with meditation (Benson, et. al., 1978; Heide, et. al., 1980).

Susceptibility and Hypnosis

There is a great deal of research indicating that the hypnotherapeutic experience leads to improvement in psychological health and

reduction in anxiety. This is reported by investigators and clinicians in both the field of psychotherapy and human potentialities, where response to suggestions have led to improved mental health and reduction in anxiety (Berwick & Douglas, 1977; Bowers & Kelly, 1979; Brenman & Gill, 1947; Deyoub & Epstein, 1977; Kihlstrom, 1977; Paul, 1969; Robinson, 1977; Wolberg, 1960). Unlike the area of Transcendental Meditation research, however, in which few theories outside of the unique state of consciousness and hypometabolic state have been postulated for explaining its effects, hypnosis has experienced an historical progression of theories to explain its effects. The hypnotic experience - leading to suggested and/or intended improvement in psychophysiological performance, has been postulated as:

1 a state of suggestibility

2 a somatic state

3 a state of hypersuggestibility

4 a neurophysiological state of cortical inhibition

5 dissociation

6 goal directed strivings or fantasy

7 transference state and re-enactment of the oedipus complex

8 conditioned reflex

9 role-enactment and demand characteristics of the situation (contextualist framework)

10 a cognitive behavioural paradigm

These are the major theories for which evidence has been presented or described (Barber, 1972; Bernheim, 1947; Brenman & Gill, 1947; Hull, 1933; Salter, 1952; Sarbin, 1965). Basically, however, these many and seemingly varied explanations for the hypnotic response can be divided into two broad categories:

1 the hypnotic trance viewpoint and

2 a cognitive-behavioural explanation for the response to suggestions

It seems unwise to deal with this controversy here, and in fact for the purpose of this study a common ground among these two views

would be helpful. Spanos & Barber (1974) have made this possible by delineating two basic areas in common, held by followers of both paradigms.

They contend that regardless of adequate evidence for or against a "special state", nearly all hypnotists agree that subjects of high susceptibility respond well to suggestions because of two basic antecedent variables. The first being a willingness to cooperate with the suggestions offered by the experimenter. The second is a shift in cognitive orientation from an objective perspective to one of involvement in suggestion-related imagining. This second variable has two subparts:

1 sustaining or elaborating the imaginings consistent with the suggestion

2 disregarding information that is inconsistent with the aims of the suggestion

Therefore, subjects of high susceptibility purportedly respond to suggestions, including those promoting improved psychological functioning and reduced anxiety, because of these two antecedent variables. It should be noted here that Spanos and Barber give evidence to strongly suggest that only one of these variables is insufficient for high responsiveness to suggestions. They state that

> a willingness to cooperate constitutes an important but not sufficient condition for hypnotic performance
>
> (p441).

Both variables, therefore, need to be in operation.

Susceptibility as a Mediating Variable along with Postulated Antecedent Variables

For the purpose of this study, comparing the effectiveness of hypnosis, TM and a Western Meditation to promote positive changes in psychological health, two possibilities are postulated for such results.

1 Either there are different mediating variables involved, which cause similar results, or

2 the mediating variable of hypnotic susceptibility is the same and therefore contributes to the similar results achieved

In addition, the antecedent variables offered by Spanos and Barber, namely a willingness to cooperate with the experimenter and an ability to become involved in suggestion-related imagining, will also be investigated for their commonalities in the techniques used.

The evidence for the importance of these mediating and antecedent variables in eliciting high responsiveness to suggestion appears to be soundly based (see Spanos and Barber, 1974). Coupling this with the previously presented possibility of the similarity of effects in hypnosis and meditation as occuring due to the same variables in operation, it is therefore arguable that these variables suggested by Spanos and Barber may produce potentially similar results using these varying techniques. To a lesser extent, in terms of the length of the study, Benson, et. al., (1974) propose the same hypothesis with respect to the variables involved in eliciting the "relaxation response", which they conclude is responsible for improved psychophysiological functioning. They claim that hypnosis, autogenic training, mantra meditation and Jacobson's progressive relaxation all involve the same four variables which elicit the relaxation response. These four variables are:

1 a mental device, which is a word, object or phrase used to shift the perspective away from logical externally-oriented thought

2 a passive attitude, which involves disregarding distracting thoughts by returning to the technique

3 decreased muscle tonus, which involves a relaxed posture

4 a quiet environment

Comparing this again with the findings of Spanos and Barber, it can be seen that the two antecedent variables delineated as responsible for a high level of susceptibility (and consequent responsiveness to suggestions of improved psychological health) are remarkably similar to those proposed independently by Benson, et. al. The first, a willingness to cooperate, is assumed as a necessary prerequisite. The second, a shift in cognitive orientation from an objective perspective to one of

involvement in suggestion-related imagining can be equated with Benson's first variable (especially where a phrase or sound is sustained). Part two, as proposed by Spanos and Barber - disregarding information that is inconsistent with the aims of the suggestion - can be equated with Benson's second variable. Benson's third and fourth variable are assumed by Spanos and Barber to be necessary prerequisites to the hypnotic process.

If, in fact, it can be demonstrated that the same two antecedent variables proposed by Spanos and Barber (and given further credibility by Benson, et. al.) are involved in producing positive changes in psychological health and reduced anxiety using the three techniques outlined here, then a clarification can be achieved in understanding some of the same underlying causes to three seemingly different approaches. Furthermore, if as Spanos and Barber conclude, those who are high susceptibility subjects (in terms of response to suggestion) incorporate these two antecedent variables in their behaviour, whereas those who are low susceptibility subjects do not incorporate one or both, then a further clarification of the study would be to determine the similarity of the three techniques by seeing if high susceptibility subjects perform the same using all techniques and if low susceptibility subjects perform the same using all techniques. In essence, if the same variables are responsible for positive changes in performance using all three techniques, and since high susceptibility subjects have been shown to achieve these positive changes in hypnosis, then those showing positive changes in performance using Transcendental Meditation and a Western Meditation should also be high susceptibility subjects. Conversely, since low susceptibility subjects have been shown not to achieve these positive results in performance using hypnosis, then those not achieving positive results in performance using Transcendental Meditation and a Western Meditation should also be low susceptibility subjects.

Susceptibility and the Western Meditation

In terms of the Western Meditation chosen for this study, a further elaboration of the purpose for choosing it for comparison with hypnosis and Transcendental Meditation is in order. While the scientific literature is becoming extensive with respect to investigating the effects of Eastern modes of meditation, there is a lack of

research on the effects of western modes of meditation. Claims have been made in both theology and philosophy for the benefits of prayer, contemplation or Judeo-Christian forms of meditation, designed to bring the ego into a proper relationship with God (or the higher self) and thus produce changes in personality in the direction of improved psychophysiological functioning. However, no experimental investigation of these claims has been attempted, utilizing both the technique of a Western Meditation and the concurrent presentation of the underlying religious or non-religious philosophy. In addition, there has been no attempt to compare the effectiveness of a Western Meditation with Transcendental Meditation and hypnosis. Considering the aforementioned possibility of common mediating variables involved in meditation and hypnosis leading to common benefits from both, it seems important in investigating the effects of a western meditation to also test for the same variables being involved. This was apparently lacking in one study attempting to investigate the effect of a Western Meditation (an imagery type) on self actualization (Bartels, 1976).

Since a mantra meditation has been postulated as involving the same subject variables as hypnosis, it was decided to choose a Western form of meditation which also incorporates the first antecedent variable posited as being held in common (a willingness to cooperate with the suggestions given by the experimenter). This variable can be further elaborated as involving positive attitudes, expectancies and motivation (Barber & DeMoor, 1972). This may be reinforced in hypnosis through induction and/or suggestion, in TM through the presentation of scientific findings on the benefits of TM in the introductory lectures, and in the Western Meditation through suggestion of benefits to be derived which are given during the meditation exercise. In other words, each technique, in its own manner appears to facilitate an expectancy variable.

However, this Western Meditation was also chosen since there is a possibility that, unlike TM and Hypnosis, it may not incorporate the second antecedent variable previously said to be involved (a shift in cognitive orientation from an objective perspective to one of involvement in suggestion-related imagining). Since this form of meditation does not use a mantra (a mental device) but instead uses the right hand as a focus of attention, it has been claimed by

its originator to prevent involvement in imagination (Masters, 1975). This claim may also be investigated in the present study to determine whether there is a relationship between hypnosis and various forms of meditation, or between hypnosis and only one type of meditation, or whether hypnosis is unrelated to meditation in terms of the subject variables in operation and their consequent effects.

CHAPTER TWO

REVIEW OF THE LITERATURE

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REVIEW OF THE LITERATURE

Hypnosis

For the purpose of this study, two broad areas will be considered in relation to hypnosis. Firstly, consideration of a definition of hypnosis as it has historically evolved, with particular emphasis on the issues which have led to this study. Secondly, a review of the literature relating to the psychotherapeutic effects of hypnosis will be undertaken. In this case an emphasis will be made on improvements in psychological functioning which resemble those posited as indicating a higher degree of self actualization and anxiety reduction.

A Definition of Hypnosis and Delineation of Variables

Since the present study deals with the common effects and mediating variables evident in hypnosis and meditation, an extensive review of the literature concerned with the definition of hypnosis will not be undertaken. Instead an overview of the major schools of thought and their evidence will be presented, leading to the variables involved in the convergence of paradigm's position chosen as a basis for this study (Spanos & Barber, 1974).

The history of the practice and investigation of hypnosis has consisted of a continuing controversy over its effects and the manner in which psychophysiological changes were brought about (Brenman & Gill, 1947). From the earliest days of Mesmer, fantastic claims of spontaneous cures and paranormal feats experienced in the hypnotic state have been reported. Mesmer and his early followers attributed these miraculous remissions of both psychological and physiological dysfunctions to the exchange of magnetic power with healing properties. While the attribution of the healing properties of hypnosis shifted somewhat away from the transfer of a magnetic force throughout much of the 19th century, there still existed a strong school of belief in the somatic properties of hypnosis as responsible for the changes in the individual. The Salpetriere school exemplified this position and explained the changes manifested in hypnosis as due to physical manipulation of the subject. Charcot (Bernheim,1947) maintained that this manipulation led to three distinct phases of experience; (1) lethargy, (2) catalepsy, and (3) somnambulism and the outcome was termed "grand

hypnose". A contrary point of view, with respect to the phenomena of hypnosis, began to be expressed in the mid 19th century by Braid and later supported by Liebault of the Nancy School, Bernheim, Breur, Janet, and Freud (Brenman & Gill, 1947). This view posited that the hypnotic state was a product of suggestion and that the three phases of experience reported by Charcot were due to imitation after having seen it done. Bernheim claimed that Liebault had hypnotized more than 6,000 people and could not verify the contention by the Salpetriere school that suggestion is not a part of hypnosis (Bernheim, 1947). This controversy eventually gave way to the victory of the psychological interpretation of suggestion over the somatic interpretation of physical manipulation as responsible for hypnotic phenomena.

By the 1930's more serious controlled experimental work on the effects of hypnosis had begun. Hull's classic work entitled Hypnosis and Suggestibility reviewed previous claims and available research into the effects of hypnosis in order to determine what constituted hypnotic phenomena (Hull, 1933). He investigated the degree of susceptibility in both the trance and the waking state. Together with Huse in 1929 they devised an experiment with the same subjects being used in both experimental conditions. Each of the eight subjects were given direct suggestion of postural sway and fall in both the waking and trance state. The length of time to achieve maximal postural reaction was measured and compared. The results obtained were a mean suggestion time of 23.67 seconds to achieve maximal postural reaction in the waking state and a mean suggestion time of 10.55 seconds to achieve maximal postural reaction in the trance state. Hull concluded that the preliminary indication is that

> people tend to be about twice as suggestible in the hypnotic as in the waking state
>
> (p292)

In addition to providing preliminary empirical evidence of an enhancement of susceptibility in hypnosis, he also presented evidence which indicated that hypnosis was unlike ordinary sleep. This supported the previous findings of Bass. In an ingenious experiment conducted by Bass in 1932, he recorded the knee jerk reflex of seven subjects in the waking state, in the hypnotic trance state, and during sleep. Since the knee jerk reflex had been shown to significantly diminish

during sleep, Bass hypothesized that if the hypnotic state were the same as sleep, then the knee jerk would significantly diminish in the hypnotic state as well. The results showed that the knee jerk reflex for the hypnotic state and for the waking state were nearly identical, but that the knee jerk reflex for the sleep state was significantly less than both. A response to auditory stimuli was also measured and the results obtained showed that the response to auditory stimuli was only slightly weaker in the hypnotic state than in the waking state, but was significantly less in the sleep state. Bass concluded that sleep and hypnosis were distinctly different states (Bass, 1932). Hull also reported on investigations into the control of autonomic functioning in the hypnotic state and concluded that

> while it cannot be denied that claims of the transcendence of physiological normality smack strongly of the miraculous, it is to be observed that as a rule they are not just put forward as magic, but soberly, the cause being attributed to some hypothetical but as yet unrecognized physiological principle
>
> (Hull, 1933, p225)

Hull himself reports evidence for a significant change in Galvanic Skin Resistance (GSR) through the use of hypnotic suggestion. In summary, Hull had undertaken to empirically investigate the claims made for the use of hypnosis to affect psychophysiological performance as well as to investigate the nature of the state itself. He presented evidence that hypnosis could be differentiated from sleep, but that its relationship to the waking state was confused. He found some effect upon the control of involuntary physiological functioning, but did not attribute this to the state of trance. The conclusion he reached was that hypnosis is or creates a state of heightened suggestibility.

The split between those supporting a separate state viewpoint to explain hypnotic phenomena and those challenging this assumption was therefore already evident. Contrary to the earlier work of Janet, Breur, and Freud in promoting a theory of dissociation to explain hypnosis, and the work of Pavlov and his followers who posited a neuophysiological explanation revolving around partial cortical inhibition to explain hypnosis, Hull often referred to a state of heightened

suggestibility which resembled waking more than sleeping and which could not be reliably shown to create supernormal powers in terms of psychophysiological functioning. While he utilized the concept of a "state" of heightened suggestibility, he did not necessarily associate this state with trance.

The development of a viewpoint which attempted to explain hypnotic phenomena as the result of other factors than a trance state continued to evolve with another classic paper presented by R.W. White in 1941. In this paper he proposed that hypnosis may involve both goal-directed striving and an alteration in the organism to the extent that there is a change in the contact of things sensed and not just a change in attitude toward stimulation sensed. He defines goal-directed striving as

> a state in which certain kinds of striving, normally associated with volition, take place without the usual volitional experiences and achieve effects outside the usual realm of volition
>
> (p206).

The concept of non-volitional striving is important in terms of the relationship between hypnosis and meditation and will be further elaborated upon in this study. It is interesting to note that the effects of meditation have also been explained in terms of an effortless focusing of attention which allows for a transcendence of normal ego control and therefore appears to be non-volitional (Ornstein, 1971). The goals may not be as expressly stated in meditation as with other uses of hypnotic suggestion. However, in the forms of meditation utilized in this study a strong expectancy effect may be reinforced either in introductory lectures or through suggestion during the meditation session itself and may therefore operate in much the same manner as non-volitional goal-directed striving.

This concept of expectancy, in terms of behaving like a hypnotized person as defined by the hypnotist and understood by the subject, was elaborated by both Orne and Sarbin. Orne gave convincing evidence for this expectancy effect in 1959 in an experiment in which he gave a demonstration to two under-graduate classes. In one demonstration he

suggested catalepsy of the dominant hand to the subject being hypnotized. In the second demonstration this suggestion was omitted. In addition, during the first demonstration he casually remarked that catalepsy of the dominant hand usually occurs in hypnosis. Volunteers were subsequently called for in each class to participate in an experiment on hypnosis. They were individually hypnotized in a double blind design by an associate of Orne's who did not know the antecedent conditions. The results showed that students who had seen the first demonstration and were hypnotizable, experienced catalepsy of the dominant hand, while students who had seen the second demonstration and who were hypnotizable showed an absence of catalepsy of the dominant hand (Orne, 1965).

Sarbin (1965) incorporated both the concept of susceptibility and that of role expectancy alluded to by Orne to develop a behavioural viewpoint within the context of social psychology in explaining the phenomena of hypnosis. With this development the split between those positing a trance state viewpoint and those positing a behavioural paradigm was nearly complete. Sarbin argued that the difference between high and low susceptibility subjects was in their ability to enact the hypnotic role. The variables he outlined, which lead to psychophysiological changes in performance or behaviour, were as follows:

1 role expectations

2 role perception

3 specific skills

4 congruence of role requirements with characteristics of the self

5 sensitivity to role demands

6 social reinforcement

He presented evidence for the importance of the ability to enact the hypnotic role as a mediating variable in an experiment conducted by Sarbin and Lim (1963). In this experiment, a number of volunteers were hypnotized in a group using a standard method resembling the Harvard Group Scale of Hypnotic Susceptibility. Within two weeks, each of the volunteers appeared at the Department of Dramatic Arts

where members of the staff rated them on their acting ability during a pantomime improvisation. The experiment was conducted blind with the staff members not knowing the subject's scores on the hypnotic scale. The results showed that there was a moderate correlation between those who scored high on the hypnotic scale and those who were rated high on the convincingness of their pantomime (Sarbin & Lim, 1963). Sarbin expanded this argument further in indicating that the ability to enact the hypnotic role was at least in part determined by the ability of the subject to become absorbed in the role to the exclusion of other distracting stimuli. Questionaires involving hypnotic-like, imaginative, absorption items were used which showed a high correlation between those who answered yes to these measures and those who scored high on hypnotic susceptibility scales (Sarbin, 1965). In summary therefore, Sarbin and his followers were able to show that non-volitional goal directed striving (in terms of expectancy to behave as a hypnotized person) may be associated with the enactment of the hypnotic role through absorption in the role and in imagination. The addition of absorption in the role and involvement with imagination are significant in terms of the present study, since the other antecedent variables of positive attitudes, expectancies and motivation as well as a shift in cognitive orientation to an involvement in suggestion-related imagining are all involved to some extent in Sarbin's explanation of hypnosis.

A refinement of the antecedent variables common to both paradigms was accomplished in recent years by Spanos and Barber. The majority of Spanos' earlier work had been in clarifying the relationship of experienced involuntary effects when responding to suggestions of Goal-Directed Fantasy. Spanos et. al., defines Goal-Directed Fantasies (GDF) as

> imagined situations which, if they were to actually occur, would be expected to lead to the involuntary occurrence of the motor response called for by the suggestion. For instance, subjects administered the suggestion that their arm is unable to bend are scored as showing GDF (i.e. reported goal-directed fantasy) if they report such events

> as imagining a cast on their arm, or imagining that their arm has been transformed into a piece of steel
>
> (Spanos et.al.,1977,p211).

As stated earlier, involuntary psychophysiological effects are commonly reported with the use of Transcendental Meditation as well as other forms of meditation. Therefore the role of Goal-Directed Fantasies may have relevance to the present study insofar as the use of a Mantra or "mental device" coupled with positive attitude, expectancies, and motivation may resemble a Goal-Directed Fantasy even though the precise situation may remain undefined. This hypothesis is given some support by the report of Sheehan on a study of Richardson in which a more positive relationship was found between susceptibility and uncontrolled imaginative activity than for susceptibility and controlled imagery (Sheehan, 1972). Uncontrolled imagery may be used interchangeably with daydream activity, for which there are indications that meditation encourages this activity. Spanos, et. al. present strong evidence for the relationship between Goal-Directed Fantasy, experienced involuntariness and absorption in imagination. They performed a complex experiment involving 24 males and 48 female volunteers who were administered a taped hypnotic induction involving suggestions of drowsiness, sleepiness, entering hypnosis and ability to respond to suggestion. Subsequently the subjects were administered an arm catalepsy suggestion and challenged to bend their arm. The subjects were then instructed to open their eyes and to complete a questionaire asking them to rank this experience of involuntariness on a five point scale. Then the subjects were administered three standardized questions ranging from low cue to high cue in terms of asking them about their imaginings. Finally the subjects were administered a five point scale assessing absorption in the suggestion. The results showed that the cue level at which subjects first reported Goal-Directed Fantasies, the experience of involuntariness, and the extent to which they felt absorbed in the suggestion were correlated with one another in a range from $r = .23$ to $r = .52$ (Spanos et. al., 1977).

Barber (1969) has both challenged the traditional trance state viewpoint of hypnosis and attempted to identify common mediating and antecedent variables in both paradigms. In challenging the

assumptions regarding hypnosis as a trance state, he comments that investigations infer a hypnotic state is present by observing four dimensions of behaviour:

1 the Ss respond to test suggestions
2 the Ss look hypnotized
3 the Ss testify that they entered hypnosis
4 the Ss report unusual experiences.

In challenging the assumption that a special state is responsible for the four areas of behaviour associated with hypnosis, Barber has constructed several experiments designed to test the validity of these factors operating solely within a trance state. One study of significance in questioning the validity of a special state as eliciting results with hypnosis will be presented here.

Barber and Calverly (1969) conducted a study using 110 nursing students in two equal size experimental groups and 50 nursing students in a control group. One experimental group received a standard hypnotic induction procedure from the Stanford Hypnotic Susceptibility Scale, Form A after answering a questionaire to assess pre-experimental expectations. The second experimental group was asked to close their eyes for five minutes and place themselves in hypnosis; again after having completed the questionaire to assess pre-experimental expectations. The control group were only told to close their eyes for five minutes and previously were only told that this was a psychological experiment. This was done in order to avoid mentioning hypnosis. Subjects in each group were then rated on four indices of hypnotic appearance, on ten standardized test suggestions from the Stanford Hypnotic Susceptibility Scale, and following the formal experiment were given a postexperimental questionaire to assess reports of unusual experiences and testimony of having been hypnotized. The results achieved were as follows: On "hypnotic experience", the experimental group differed significantly from the control group on three of the four indices. On "Reports of unusual experiences" the control group did not differ significantly on three of six unusual experience items, however they did demonstrate a significant difference on the remaining three items. On "testimony of having been hypnotized", the controls generally rated themselves as not having been hypnotized whereas subjects in both experimental groups rated themselves as having been hypnotized. In terms of the

two experimental groups, on the "response to test suggestion" there was a small but significant difference between the two groups with the hypnotic induction group passing one more test suggestion. On the other three measures there was no significant difference between the two groups. An additional result which is considered of importance for the purpose of this study is that the correlations achieved between pre-experimental expectations and (1) "response to test suggestion", (2) "hypnotic experience", (3) "reports of unusual experiences", and (4)"testimony of having been hypnotized" show that expectations played a role in determining whether the subjects would testify post-experimentally that they had been hypnotized. Furthermore, even though there were small to moderate correlation coefficients between the four dimensions, there were a significant number of subjects who responded well on one of the dimensions, but who responded poorly on the other dimensions. According to Barber & Calverly this outcome indicates

> that responses on the four dimensions can vary independently of each other...
>
> (Barber & Calverly, 1969 p117).

This suggests that a separate state, incorporating these four dimensions, is unlikely and that other more complex variables are operating on each of these four dependent measures. This evidence cannot empirically prove or disprove the existence of a separate state, however it indicates the importance of testing this assumption by delineating other variables associated with hypnosis (and for the purpose of this study, those which may be associated with meditation) and investigating their possible importance in achieving the results previously attributed to the particular state.

Returning to the experiment by Barber and Calverly, for the purpose of this study certain results achieved are noteworthy. Firstly, a traditional hypnotic induction was generally not more effective than an instruction to put oneself into hypnosis, in achieving results on the four dependent measures. Therefore variables other than inducing a hypnotic state, appear to be in operation. Secondly, pre-experimental expectations were shown to play a role in the results achieved on the dependent measures. This expectancy effect will be mentioned

later in terms of its possible role in achieving the results attributed to the meditative state. Thirdly, the control group which only sat quietly with eyes closed for five minutes reported unusual experiences on three of the six items mentioned. These items were:

1 alterations in the size of the body or body parts

2 changes in equilibrium

3 changes in experienced temperature.

Unusual experiences of this type have also been reported with the use of meditation and can be extended to the area of improved psychological functioning when an expectancy effect is encouraged (Smith, 1975). Results such as that previously mentioned, having been replicated by Barber and his followers, led to an attempt at identifying factors other than the hypnotic or trance state to explain the phenomena observed with hypnosis. The results of Barber's investigation into this area have yielded the following possible independent variables involved in eliciting the four dimensions of hypnosis previously mentioned (see p24).

1 aspects of the hypnotic induction procedure such as defining the state to be achieved, suggesting motivation, suggesting drowsiness, and deepening suggestions

2 The wording of suggestions and tone of voice

3 subject variables such as personality characteristics and attitudes and expectancies toward the test situation

4 experimenter variables such as his prestige, personality characteristics and expectancies

5 subject-experimenter interaction variables such as rapport

(Barber, 1969)

For the purpose of the present study aspects of the subject variables proposed by Spanos and Barber as common to adherents of both the trance state paradigm and the cognitive behavioural paradigm will be explored.

In terms of the three treatment conditions used (hypnosis,

Transcendental Meditation and a Western meditation) all of these independent variables except for the subject variables of hypnotic susceptibility (mediating) and a willingness to cooperate with the experimenter as manifested in positive attitudes, expectancies and motivation towards the test situation as well as a shift in cognitive orientation to an involvement in suggestion-related imagining (antecedent), will be controlled. The subject variables will be manipulated according to high and low susceptibility in each condition as well as high and low attitudes and high and low imagining in order to compare their effect upon the dependent measures of self actualization and State-Trait anxiety.

It should be noted here that while the common variables delineated by proponents of the cognitive behavioural paradigm have been chosen as a means of comparing the three treatment conditions, it is recognized that the results cannot prove nor disprove the existence of a special state elicited by one or more of the techniques used. It may be possible, for instance, that those who incorporate the mediating and antecedent variables under investigation (i.e. high susceptibility subjects) are in fact eliciting a special state through the incorporation of these variables. It may also be possible that there are varying special states which affect the dependent measures in the same manner and yet are determined by qualities within each of the techniques which are not being adequately controlled for. Recent research has indicated that different relaxation procedures, including hypnosis, may operate along different neurophysiologic pathways depending on the technique used. They may also have mode-specific effects; some reducing "cognitive anxiety" and some reducing "somatic anxiety" (Davidson & Schwartz, 1976). This effect on anxiety may be undifferentiated by the measurements in existence and yet separate states may be in operation. It should also be noted as part of the literature review on hypnosis,(its definition and variables involved in eliciting the phenomena) that while considerable attention has been paid to the development of an explanation for hypnosis which challenges the trance state viewpoint, and while the variables chosen as common in each paradigm have arisen from a behavioural model, the importance of the contribution made by followers of various hypnotic state paradigms is also recognized.

The history of those positing a hypnotic state or altered state of consciousness is also impressive (Gill & Brenman, 1959). While it is not indicated for the purpose of the study to examine as fully the development of the trance viewpoint, the contribution of Braid (in the middle of the 19th century) in recognizing the element of suggestibility in a sleeplike state deserves recognition. The further elaboration of the importance of suggestibility by Bernheim and the concept of dissociation by Janet and expanded upon by Freud in recognizing the element of transference and re-enactment of the Oedipus complex have also been shown to have relevance to the phenomena of hypnosis. In addition, the concept of loss of generalized reality orientation (GRO) by Shor and further elaborated upon by Bowers, along with empirical evidence for a differentiation of the hypnotic state from the waking or sleeping state must also be taken into consideration. Finally, the work of Weitzenhoffer in carefully constructing a definition of the hypnotic state as one of heteroactive hyper-suggestibility and the work of clinicians such as Erickson, Gill & Brenman, and Rosen have relevance for the present study insofar as the clinical reports of the use of hypnosis to produce changes in the direction of improved psychological health and reduction in anxiety have a bearing on the comparison of effects reported with meditation.

In conclusion, the common variables delineated by the followers of the cognitive behavioural paradigm as represented in all theories of hypnosis provide a useful ground from which to compare the effects of hypnosis and different forms of meditation. They have been carefully developed out of theories ranging from the early work of Bernheim through the later work of Hull, White, and Sarbin as has been previously noted. The followers of this paradigm have limited themselves, however, to considering the effects of hypnosis on a more narrow range of psychophysiological performance and human potentialities (Barber, Spanos, & Chaves, 1974). In comparison, the trance state theorists, and in particular, the hypnotherapists, have contributed valuable theories and evidence for the effects of hypnosis which widen the range to include personality factors resembling those held by more self actualizing individuals as well as dealing with the effects upon anxiety.

The literature relevant to the present study, emanating from

followers of both the cognitive behavioural viewpoint and the trance viewpoint, will be considered next. This will focus on evidence from experimental studies involving psychophysiological performance and human potentialities as well as clinical reports of the use of hypnosis to effect changes in self actualizing behaviour and to effect reductions in anxiety. The convergence of paradigms theory will be the point of view from which these are evaluated, since the line of argument developed here arises from the subject variables purportedly involved in hypnotic susceptibility as defined in this study.

Psychological and Psychotherapeutic Effects

Much of the literature in hypnosis has focused upon the physiological effects of hypnosis. While no fine line of distinction can be drawn between the psychological and the somatic aspects of the human organism, the research has often maintained this distinction in order to achieve a reliability with measurements. It is not the purpose of this study to deal with the physiological effects of the treatment conditions utilized. However, it should be noted that with the use of hypnosis, as with various forms of meditation, significant effects upon respiration, circulation, metabolic rate, skin conductance, heart rate, evoked EEG potentials, allergic responses, and other physiological alterations have been reported (Barber, 1961; Beck & Barolin, 1965; Black, 1968; Dudley, et. al., 1964; Hull, 1933; Sarbin & Slagle, 1972). There is a general consensus that these alterations are the result of indirect suggestions such as relaxation or mood manipulation rather than direct suggestion, since these changes are not amenable to conscious volitional control.

In terms of the focus for the present study, consideration needs to be given to the psychologically and psychotherapeutically oriented effects reported with the use of hypnosis which relate to those reported with the use of meditation.

A. Psychological Effects - The literature in the field of hypnosis reporting psychological effects covers an extensive range. It has been decided to eliminate the areas of visual hallucinations, age regression, colourblindness, deafness, and aspects of trance logic, since their relationship to the present study is too remote. Instead, psychological effects of hypnosis in the areas of

1 perceptual, cognitive
2 emotional
3 altered states of consciousness and transcendent experiences and
4 creativity

will be presented. These are strongly indicated, since changes in perception and cognition, emotional control, and peak experiences of a unitary or transcendental nature are reported in the literature on meditation and relate closely to aspects of self actualization and anxiety reduction.

1 Perceptual/Cognitive Effects

The perceptual/cognitive effects of hypnosis have been recognized and empirically validated for some time. White (1941), reviewed recent experiments along the lines of improved learning and recall capabilities of subjects in hypnosis and concluded that these experiments showed that recall was substantially improved through the use of hypnotic suggestions. Later Weitzenhoffer (1953) proposed that hypnosis can aid in the process of learning and recall and cited several studies supporting this contention. In particular, he cited a study by Rosenthal which demonstrated that without affective factors playing a role, hypnosis only improves recall of meaningful material. He goes on to say that relaxation appears to improve recall and that this might account for a large proportion of the results reported for hypnotic facilitation. He elaborates further that

> besides relaxation, greater attending resulting from the constriction of awareness associated with hypnosis, the possibility that hypnosis can act as a source of motivation, the removal of interfering conscious ideation through constriction of awareness are all additional factors that would be expected to favor learning and recall
>
> (p302).

More recently Bowers (1977) has advanced the position that hypnosis reflects a change in the cognitive processing of information by the subject. He suggests that high susceptibility subjects process

information more passively, automatically and efficiently than low susceptibility subjects and that

> information is simply more direct and immediate in its impact where a person's critical faculties are suspended
>
> (p232).

He discusses the impact of this information processing on psychosomatic factors, however it is implied that the entire range of hypnotic effects may be the result of the ability to cognitively process information in this manner.

Taking the perceptual/cognitive alterations further in terms of their subsequent effects on mood, Sacerdote (1977) conducted an experiment in which three different post-hypnotic suggestions were given to the same group of subjects acting as their own controls. These suggestions were:

1 time alteration of restricted present

2 time alteration of a total absence of the present

3 expanded time, including expanded present and future.

Guided imagery facilitating both restriction and expansion of space were used in conjunction with time alterations. The results were:

1 a general experience of depression in the restricted time and space

2 a schizophrenic-like catatonic state in a total absence of the present, and

3 expanded space as well as present and future "...led his subjects to experiences of supreme serenity, during which the strictures and anxieties connected with the passage of time disappeared"
(p312).

The importance of Sacerdote's findings for the present study, aside from response to suggestions in general, is that his subjects report subjective experiences closely resembling those reported in

meditation in terms of feelings of serenity and a reduction in anxiety. These alterations in experience appear to have some relationship to a focus on sensory awareness. However, positive attitudes, expectations, and motivations as well as involvement in imagining are also indicated.

2. Emotional Effects

Hypnosis has also been employed to bring about certain emotional states as well as changes in mood. This has reportedly been accomplished through either the use of direct suggestions of the emotion involved or an indirect suggestion such as experiencing a past event. An example of the former in creating feelings of anxiety and fear is presented by Levitt and Chapman, (1972). They report being able to elicit a range of fearful emotions, from tension and anxiety to dread on the verge of panic, in subjects given direct suggestions. Earlier, Weitzenhoffer had also reported success in the use of suggestion to effect changes in emotion. In reviewing the studies claiming to effect emotional changes through suggestion he concluded that

> On the whole then the evidence shows that emotion-like and mood-like phenomena can be brought about by hypnotic suggestions and that these have a reality which manifests itself in the overt behaviour of the individual, in his responses to projective tests, and in his physiological responses
>
> (Weitzenhoffer, 1953, p181).

Black (1968) concurs with the findings of both Levitt & Chapman and Weitzenhoffer that suggestion can effect emotional states, particularly in eliciting feelings of fear, anxiety or tension. Conversely, there is some evidence that suggestion of more positive emotional states may have some effect upon improvement in psychological functioning. Black reports on the flicker-fusion frequency threshhold, which has reliably distinguished subjects with a schizophrenic disorder from those without. In general, a higher threshhold indicates more stable psychological functioning. In an experiment conducted by Black, he presented subjects with direct suggestions of happiness and measured their flicker-fusion frequency threshhold before and

after. The threshhold of those receiving these suggestions increased in the direction of improved psychological functioning. This indicates that hypnosis may be used to bring about changes in emotional responses leading either to greater psychopathology or to improved psychological health. More evidence to support the latter hypothesis will be presented later.

3. Altered States of Consciousness and Transcendent Effects

An experience often reported by hypnotized subjects and supported by those positing a trance viewpoint of hypnosis may be termed an altered state of consciousness or transcendent experience. This has been characterized by physiological experiences of alterations in body size and disequilibrium, and by cognitive and emotional experiences of a regression to primary process thought, an alteration in the processing of information leading to creative insights, and to feelings of serenity, awe and an oceanic experience. Some of these subjective experiences of consciousness alteration and/or transcendence have been alluded to earlier (Barber, 1969; Bowers, 1977; Sacerdote, 1977).

This aspect is more closely related to the reported experiences of meditators than the previous two areas and is often associated with transpersonal dynamics, adaptive states promoting self actualization, and experiences of creativity. Orne, (1965) discussed "altered states of consciousness" as one of the three main elements of hypnosis. He also recognized the many problems this aspect presents to investigation. However, despite the existence of these problems he felt it important to take into consideration in explaining the phenomenon. Altered states of Consciousness (ASC) can be measured in a number of ways, although the attempt to empirically treat this area is fraught with problems, not the least of which is the highly subjective and individualized nature of the experience. However, some factors appear to be associated fairly reliably with ASCs. Ludwig and Levine (1965) attempted to investigate whether or not the hypnotic state could be distinguished from a baseline condition on a measure evaluating experiences associated with ASCs. The Linton-Langs Questionaire was administered to 70 subjects in both the baseline condition and in the hypnotic condition. The seven scales reflect attention in thinking, disturbed time sense, loss of control, meaning

change, affect change, body image, and somatic change. The results showed that the hypnotic condition could be distinguished from the baseline condition on both item and scale scores. Returning to a point made earlier, evidence has been presented which indicates that hypnosis involves an altered state of consciousness resembling, in a number of aspects, those reported by subjects during meditation. The controversy over the existence of a separate state in hypnosis will not be directly dealt with in this study. However, the possibility that the treatment methods used could produce this effect simultaneously with changes in psychological health must be retained.

Another area of experience which follows from that of altered states of consciousness has been the transcendent, transpersonal and creative effects associated with the use of hypnosis. In relation to the transcendence of ordinary waking consciousness, Shor (1965) has proposed that in hypnosis as in other conditions under which there is a loss of the usual environmental frame of reference, the distinction between reality and imagination ceases to exist. He coined the term "Generalized Reality Orientation" (GRO) and has written on the subsequent effects noted under conditions in which this is lost. According to Shor, when the loss of GRO takes place through hypnosis or other altered states, a person becomes totally involved in the subject of their imagination to the oblivion of the true reality about him. This fading of GRO through absorption in an object of attention also appears evident in some meditative experiences. Deikman (1966) studied the effects of meditation/concentration, where the object was a blue vase. He used four subjects who concentrated on the vase for 15 minutes per session and attempted to exclude or disregard competing thoughts or distraction. During their twelve sessions remarkable changes in perception and emotion were reported. In addition oceanic feelings of "onesss" and other peak experiences were reported. This relationship between "involvement in imagination and absorption" is important for the present study in terms of the similarity of effects reported with two seemingly different techniques.

Other transcendental experiences have also been reported with the use of hypnosis. Tart (1972) reports that in working with the same subject for over one year, he has been able to communicate with the subject regarding transpersonal experiences he is having at profound

depths of hypnosis. He comments that in comparison with most people at that level:

> When you get down to about 50, that's really been called extremely profound hypnosis, and by and large, you don't get any reports from people of what goes on there, which I think is largely a function of the fact that Westerners don't have the vocabulary to talk about what's going on
>
> (p347).

This reference to Westerners not having the vocabulary to speak about this level of experience appears to allude to the attempt in Eastern meditative writings to communicate something of the ineffable experiences achieved.

4. Effects on Creativity

Further to the transcendent experiences reported with the use of hypnosis as well as with meditative techniques is that of facilitating creativity. Onda (1974) compared the factors involved in the use of Zen meditation with both heterohypnosis (hypnosis induced by an external agent) and autohypnosis to bring about creative ideas and images. One area given considerable attention by Onda was "concentration upon the images of the mind". His comments regarding the process of facilitating creative ideas through concentration on mental images in both hypnosis and meditation provides another possible link between involvement in imagining and the resultant effects achieved in both hypnosis and meditation:

> When it comes to concentration upon images of the mind, either hetero-hypnosis or auto-hypnosis will serve to bring it about. The image to be concentrated upon may be 'supplied' from the outside, or it may come to one's mind originally, whether it be an image of persons, of scenes or whatever ... Under the hypnotic state induced by these several ways of concentration, many images or ideas are born
>
> (p157).

Bowers and Bowers (1972) have presented a more extensive treatment of the association between hypnosis and creativity. In their review of the literature (which they felt to be not very cohesive), they pointed to evidence for creativity being associated with loss of GRO and the escalation of primary process mentation; along with the ability to tolerate and control this experience so that it is integrated with reality. These factors theoretically, should relate closely to those present in hypnosis. Subsequent investigations into this relationship have yielded results which are contradictory. They report that in one study, Bowers presented defense-reducing suggestions to susceptible subjects under two conditions;

1 hypnosis, and
2 hypnosis simulation.

Defensiveness was conceptualized as preventing the mode of thinking necessary to achieve unconventional experiences and the resultant ability to use these experiences creatively. Therefore reducing defensiveness was hypothesized as leading to increases in creativity. The Consequent Test was the dependent measure of creativity. The results indicated that there were no significant differences between subjects in the two conditions on either Remote or Obvious Consequences. Bowers interpreted this to mean that the hypnotic state was not shown to be a variable associated with creativity since both the hypnotized group and those simulating hypnosis achieved similar results. In terms of the cognitive-behavioural paradigm, however, a quite different interpretation could be reached (e.g. that a trance state does not need to exist in order to elicit increases in creativity, and therefore the hypnosis simulation condition may have incorporated the previously mentioned antecedent variables, resulting in similar effects).

A somewhat contrary finding was reported by Bowers & Bowers (1972) on a study by Bowers & Van Der Meulin. In this study, tests of creativity were administered to subjects scoring both high and low in hypnotic susceptibility to see if there was a relationship between hypnotic susceptibility levels and creativity. On eight out of the nine subtests, the high susceptibility group scored significantly higher than the low susceptibility group. These results indicate a strong relationship between hypnotic susceptibility and creativity.

These results were given further support in a more recent study by Patricia Bowers (1979) in which she investigated the relationship between hypnotic susceptibility, absorption in imaginative experiences, effortless fantasy activities, and creativity. In this study, subjects were tested on an imaginative task for absorption and effortless experiencing and were also administered a standard hypnotic susceptibility scale. Results of the correlation analysis to determine predictors of creativity showed that effortless experiencing correlated with hypnotic susceptibility ($r = .61$) and susceptibility correlated significantly with creativity ($r = .39$). Study two of the same experiment replicated these results. However in study three the relationships were less significant and more complex. In terms of the focus of the present study, it is interesting to note that in Bowers' investigation, hypnotic susceptibility was shown to be associated with effortless experiencing (a passive attitude - see p11), and with absorption in imaginative activities (involvement in imagining). She hypothesizes that absorption in suggestions influences effortless fantasy processes related to right hemisphere, primary process thought; thereby facilitating creative solutions involuntarily. In addition she mentions the importance of the subject variable of positive motivation, which can be equated with the proposed antecedent variable - positive attitudes, expectancies and motivations - to be investigated in the present study. The findings of Bowers are therefore important in linking hypnosis to creativity and furthermore in suggesting the influence of the subject variables to be investigated here in facilitating a creative problem solving response.

Overall, therefore there appears to be a relationship between hypnosis and creativity which is at least correlational if not causal, and some of the factors advanced as responsible for the facilitation of creativity in hypnosis are also likely to be in operation in meditation.

Summary

In summary, hypnosis has been shown to be effective in producing effects on psychological measures of perception/cognition and emotion. In addition altered states of consciousness, transcendent experiences, transpersonal experiences, and creativity have been reported as enhanced by or associated with hypnosis. These factors have also been

related to the meditative experience and can be seen as part of a process of change which may lead to increases in self actualization and reduction in anxiety.

B. Psychotherapeutic Effects

The psychotherapeutic use of hypnosis adds a new dimension beyond that of its psychological effects. However there is considerable overlap in the two areas, particularly in terms of its effects upon emotion and on reported transcendent experiences. This new dimension is the effect of hypnosis upon emotional and psychological disorders and the subsequent or concurrent enhancement of the individual's self control and self concept. In terms of the use of hypnosis with clients manifesting varying degrees of pathology, this dimension applies to a facilitation of personal growth towards more self actualizing values and behaviour with concomitant reduction in anxiety level. The literature referred to in this section is drawn from both the clinical and experimental area and pertains to two categories:

1 the effect of hypnosis upon reductions in psychopathology

2 the use of hypnosis to facilitate ego strength and self control as well as self actualizing values and behaviour.

Psychotherapeutic effects in each of these areas have also been attributed to meditation (Bloomfield & Kory, 1976; Carrington, 1977; Goleman, 1971; Shafi, 1973) and often due to the same hypothesized psychodynamics. The purpose of this study is not to treat these psychodynamic variables, (e.g. alteration in self concept, confidence, strengthened ego functioning, reduction in unconscious conflicts) however attractive they may be in attempting to explain the individual's change in values and behaviour with respect to altered ego functioning. Psychodynamic interpretations of the therapeutic effects of hypnosis will be mentioned. However, the emphasis here will be to consider the effects of hypnosis in terms of its posited antecedent and mediating variables focusing on susceptibility levels, to determine whether these can provide an adequate explanation of the reported phenomena. Along these lines, the study can be further developed to investigate the effects of these variables in each of the treatment conditions.

1. Reductions in Psychopathology

The use of hypnosis, employing both direct and indirect suggestions, in order to reduce or eliminate various kinds of pathology is not a recent phenomenon. Bernheim wrote in 1880 that suggestive therapeutics have effected a cure in cases of hysterical epilepsy, depression and hallucination, and hysteria with suicidal ideation (Bernheim, 1947).

Many other clinicians before and since have also reported alleviation and elimination of physical and psychological symptoms with the use of hypnosis. In a recent introduction to a series of articles on hypnosis and psychopathology, Kihlstrom (1979) briefly reviews the historical links between the two fields and finds a relationship between the reported phenomena. However he sees a critical difference of non-impairment of functioning by high susceptibility subjects in experimental work contrasted to the experience of psychopathological behaviour. He further comments on the use of hypnosis and suggestive therapeutics for the removal of symptoms and suggests that this is due to

1 the manner in which hypnosis is used

2 the susceptibility of the subject, and

3 attitudes and motivational factors.

In psychodynamic therapy, Kihlstrom comments that hypnosis can facilitate the therapeutic process by bringing important affect, ideas and memories to life. Overall, he concludes that

> hypnosis and psychopathology are linked by a number of elements ... Experimentalists in both fields are attempting to understand the processes underlying unusual behavior and anomalous experiences, disorders of perception and memory, and related personality processes.
>
> (p470).

Rather than attempt to focus on this extensive range of clinical and experimental reports, several recent findings reporting the effects of hypnosis on depression, phobias, anxiety and stress

reactions, and paranoid delusions will be presented. This would be parsimonious at this time, since the extensive range of reported findings and observations dating back to the previous century does not significantly expand the scope of effects beyond those mentioned above. Nor is the strength of the evidence sufficient to warrant the amount of space necessary to adequately cover it.

a. Effects on Depression and More Severe Psychological Disorders

Robinson (1977) in a dissertation study, evaluated the effects of hypnosis on depression. His subjects were 10 female volunteers who were manifesting continuing symptoms of depression over a prolonged period. Each subject was treated individually in ten one-hour sessions using hypnosis. Suggestions designed to elicit uplifting feelings were presented to each subject during hypnosis and were related to re-experiencing of events prior to the onset of depression which the subjects felt were particularly positive and which generated good feelings. Subsequently, a systematic desensitization hierarchy approach was used with hypnosis as the intervention utilized to shape the response. In other words, hypnosis acted as a reciprocal inhibitor to offset a depressive reaction. The effects achieved were nine out of ten subjects reporting feeling less depressed after the treatment, eight subjects reported their ability to receive positive reinforcement from the environment had increased, and seven subjects indicated a lessening of depression on the MMPI, Subtest number two.

These results indicate that a form of hypnotic resensitization is an effective treatment for depression and may achieve results in a shorter period of time than conventional therapy. In Robinson's study, the use of volunteer subjects looking for an effective treatment for current depressive symptoms also indicates that the first variable of positive attitudes, expectancies and motivation may have been in operation. In addition, the use of imagery exercises related to a re-experiencing of past events of a positive nature indicates that the second variable of a shift in cognitive orientation to an involvement in suggestion-related imagining is likely to have also been in operation. Therefore, a reduction in depression and enhanced ability to receive positive reinforcement from the environment appear capable of being elicited through hypnosis. In addition, the antecedent and mediating variables responsible for these changes may have

been those to be examined in the present study.

Returning to Robinson's use of hypnosis with subjects experiencing states of depression, there is not complete agreement by clinicians as to the appropriateness of the use of hypnosis for treating depressive conditions, especially by those who are untrained in psychoanalysis. Hartland, for instance, recommends the general practioner to use hypnosis in cases of anxiety, lack of self confidence, or mild tension. He reports significant success with patients manifesting these symptoms. However, he recommends only a very cautious use of hypnosis to treat more severe psychological problems, and then only by skilled psychotherapists. He discourages the use of hypnosis by the G.P. in cases of hysteria, obsessional states and depression where suicidal impulses are present (Hartland, 1971).

The treatment of more severe psychological disorders with the assistance of hypnosis has been considered at length in the literature of hypnotherapy, however. Gill & Brenman (1959), in a survey of the literature, suggest that hypnosis allows repressed material to be uncovered so that it may be dealt with psychotherapeutically. They discuss the psychotherapeutic use of hypnotic suggestion to remove the attitudes or reactions underlying the symptoms presented. They comment that,

> insofar as such a technique provides the patient with some understanding of his problem, it is a more reliable and substantial method of hypnotherapy (p66).

Wolberg (1960) also reviewed the use of hypnosis as an adjunct to psychoanalysis in order to treat more severe psychological disorders. From his clinical experience, he reports the effectiveness of hypnoanalysis in fostering change in a more brief period of time. He suggests that hypnosis hastens the process of uncovering repressed material in order to bring unconscious impulses to consciousness and hastens the re-education of new interpersonal attitudes by lessening resistances and resolving ego defenses that prevent unconscious material from surfacing. The psychoanalytic aspect of the therapeutic use of hypnosis is too extensive to consider further. However,

in relation to the present study, the reports of uncovering repressed material through the use of hypnosis resemble closely the reports of primary process thought facilitation and release of stress by practitioners of meditation (Bloomfield & Kory, 1976; Tart, 1971).

b. Effects on Phobia, Anxiety and Stress Reactions

Deyoub & Epstein (1977) report on the use of hypnosis to treat flight phobia. The patient was a 39 year old female with a history of severe phobic reaction to flying. They utilized Erickson's induction technique followed by a phobic reduction technique comprised of vividly imagining a successful flight experience. In addition, a posthypnotic technique was employed in order to elicit relaxation if anxiety arose during an actual flight. In the third session they also suggested a dream in which the subject would resolve the phobia (which revolved around fear of letting others have control). The patient was successfully treated in three sessions and reportedly was able to fly extensively three weeks later with little or no anxiety.

The effect of hypnosis on anxiety reactions was investigated in a controlled study by Paul (1969) several years prior to the case report just reviewed. However, it merits attention since results supportive of positive effects upon anxiety reduction using hypnosis were achieved. Paul conducted a comparative investigation of hypnosis and progressive relaxation training on both physiological measures and on an anxiety self report scale. His subjects were 60 females between the ages of 17 and 23 years. They were randomly assigned to three groups;

1 Relaxation Training

2 Hypnosis

3 Treatment Control - sitting quietly with eyes closed and attempting to relax.

Two treatment sessions were conducted for all groups, during which the dependent physiological measures of heart rate, forearm muscle tension, respiratory rate, and skin conductance were taken. The Anxiety Differential was also administered to all three groups in each session. The Progressive Relaxation Training was adapted from the Jacobson method. Prior to the sessions, emphasis was strongly

placed on positive attitudes, expectancies and motivation to achieve a more relaxed state. In addition, subjects were encouraged to vividly imagine themselves relaxing during the session. Following this preparation period, the subjects received instructions to tense and then relax muscles in groups starting with the forearm and hand. Also included were suggestions of warmth, heaviness and pleasant sensations. Each subject reported on her state of relaxation during each stage of the exercise and was allowed to progress to the next set of muscles after reporting being as relaxed as possible. Suggestion was administered following the first session that the subject would obtain even better results in session number two.

The next session was conducted in a similar manner with the exception of the final suggestion. The hypnosis group was administered a hypnotic induction adapted from Kline's hypnotic induction method. Prior to this administration, similar motivational instructions and encouragement to become involved in imaginings were given to the hypnosis group as were given to the progressive relaxation group. However, in addition, the hypnosis group was told they were being given hypnotic suggestion and were asked to comply with these and go along with the hypnotic process. Following these instructions and suggestions, the eye fixation induction was administered, emphasizing heaviness, drowsiness, sleep and relaxation. The subjects were asked to vividly imagine themselves experiencing these sensations. Direct suggestions of heaviness, warmth and relaxation were then focused upon the subject's specific muscle groups and deepening instructions were given. Post hypnotic suggestions of being more skilled with practice were presented prior to the end of session one. For session number two, the same preliminary motivational instructions and encouragement toward imagining were given, followed by the hypnotic procedure. The control group were instructed to sit quietly with eyes closed and try to become completely relaxed. The motivational instructions were presented with less emphasis than for the two experimental groups.

The results achieved were as follows:

1 the progressive relaxation group was significantly more effective than the control group on all measures

2 the progressive relaxation group demonstrated significantly greater reductions on measures of heart rate and forearm muscle tension than the hypnosis group

3 the hypnosis group demonstrated significantly greater reductions on measures of respiratory rate and anxiety than the control group

4 in the second session, both the progressive relaxation group and the hypnosis group demonstrated significantly greater reductions on all measures than the control group.

These results suggest that both progressive relaxation training and hypnosis significantly reduce anxiety and that this effect is elicited more strongly with practice. Furthermore, it appears that progressive relaxation training, when administered with motivational instructions and encouragement to vividly imagine, elicits effects upon anxiety which are greater than those which can be attributed to hypnosis. This study appears to have been well controlled and offers impressive evidence that relaxation techniques such as progressive relaxation and hypnosis can elicit reductions in anxiety. However, the phenomena of anxiety may be more complex than is readily apparent. Davidson & Schwartz (1976) have presented recent evidence suggesting a distinction between "cognitive anxiety" and "somatic anxiety" and suggest that there are mode-specific effects with different relaxation procedures. If this is the case, then the results presented by Paul need to be reinterpreted. In this regard, Davidson & Schwartz state that in the study by Paul the evidence presented indicates that progressive relaxation had greater effects than hypnosis on somatic measures of anxiety, but that there were no significant differences in effects upon cognitive measures (e.g. anxiety differential and skin conductance). They suggest that these results help confirm their contention of mode-specific effects. In terms of the techniques used by Paul and the possible antecedent and mediating variables leading to mode-specific effects, it is interesting to note, on close inspection, that both progressive relaxation and hypnosis, as utilized by Paul, appear to have incorporated susceptibility variables to be investigated in the present study (e.g. positive attitudes, expectancies and motivation toward the situation and involvement in suggestion-related imagining). The only difference appears to be that in

progressive relaxation training, emphasis was placed on the somatic process of tensing and relaxing. In hypnosis it was not. This may account for the more beneficial effects noted with progressive relaxation on somatic measures. It also indicates that the variables to be investigated in the present study may mainly effect cognitive processes in terms of a reduction in cognitive anxiety. This explanation is compatable with both the results achieved by Paul and the interpretation offered by Davidson and Schwartz.

c. Effect on Paranoid Delusions

The psychotherapeutic effects of hypnosis are perhaps more dramatic in a clinical study related to the treatment of serious pathological symptoms. In this study, Berwick & Douglas (1977) report on the use of hypnosis to treat two cases of paranoid schizophrenic delusions. In both cases the women felt possessed or influenced by evil forces. The authors report the use of the subject's beliefs in this area to assist in their cure by hypnotically suggesting a lessening of influence by these forces and replacement by strength of mind or reliance on a religious prayer. Both subjects showed significant improvement and a remission of symptoms.

In both of these case reports, as in the study by Robinson and Paul, there is a likelihood that the variables of positive attitudes, expectancies and motivation along with involvement in suggestion-related imagining were in operation. Unfortunately, the case reports do not control for variables, but instead look at consequent effects. With regard to the experimental studies reviewed, they are also lacking in manipulation of antecedent and/or mediating variables involved and only investigated the effects of the treatment condition on dependent measures. Therefore no conclusions can be drawn with respect to the other possible independent variables involved. Furthermore, the effects of hypnosis on the conditions reported by Robinson are inconclusive since no control group comparison was made. It is possible that these subjects would have improved with or without treatment. It is also possible that other factors such as the relationship with the hypnotist or expectation of relief played a greater role than hypnosis in the outcome. However, this possibility was controlled for in the study by Paul.

2. Effect on Ego Strength, Self Control, and Self Actualizing Values and Behaviour

The final literature to be reviewed under the category "Hypnosis" may be classified as the use of hypnosis to facilitate ego strength and self control as well as self actualizing values and behaviour. Obviously the lines of distinction between reduction or remission of pathology, ego strengthening, and the manifestation of self actualizing behaviour cannot be clearly drawn. Individuals who find hypnosis useful in reducing or eliminating psychological disorders may, by inference, be seen to have strengthened their ego and have therefore become more self reliant and inner directed. In terms of the concept of self actualization posited by Maslow (1968), this may take the individual from a less fulfilling state of deficiency motivation to growth motivation. Maslow sees this as a progression in psychological health from a point of gratifying basic needs for safety, belongingness, love, respect and self esteem to a trend toward motivation to actualize potentials, capacities and talents; to fulfill a mission; to gain a fuller knowledge of and acceptance of one's own intrinsic nature; to move toward unity, integration or synergy within oneself.

As Maslow points out, there is a paradox evident in this growth from deficiency to growth motivation in terms of the attitude towards the self or ego. This paradox has relevance for this section of the review, since ego strengthening aspects as well as self actualizing/ self transcendent aspects of the use of hypnosis are grouped together. This needs to be understood in terms of the paradox of self actualization. Stated by Maslow (1968) it is as follows:

> We are confronted with a difficult paradox when we attempt to describe the complex attitude toward the self or ego of the growth-oriented, self actualized person. It is just this person, in whom ego strength is at its height, who most easily forgets or transcends the ego, who can be most problem-centered, most self forgetful
>
> (p37).

For the purpose of this study, therefore, literature reporting

on the use of hypnosis to strengthen the ego in order to face repressed material as well as the literature reporting on the use of hypnosis to alter self concept and facilitate self actualization will be considered as similar. This may be problematic since ego strengthening could be seen as either the type referred to by Maslow (1968) (which fits well with growth motivation and self actualization) or as a more static defence of the ego against the onslaught of repressed conflicts. If this does create a problem, it may be able to be overcome, however. The dependent measures of self actualization, Personal Orientation Inventory (POI), chosen for this study appears valid in discriminating between ego defensiveness and ego strength, even though superficially they may appear similar. The use of this measure represents a solution to the problem.

a. Factors Associated with Ego Strengthening and Self Actualization

Before turning to the clinical and experimental reports of the use of hypnosis to improve ego strength and facilitate self actualization, two works discussing the relaxing, awareness enhancing, and access to the unconscious aspects of hypnosis will be briefly mentioned. This is relevant since these aspects of experience are also reported extensively in the literature on meditation by both investigators and practitioners, and may be factors in developing ego strength, self control and self actualizing values and behaviour.

Conn (1949), in an earlier work dealing with the therapeutic aspects of hypnosis entitled "Hypnosynthesis: hypnosis as a unifying interpersonal experience", details the induction procedures used with his subjects. Following the induction, Conn comments, he then uses hypnosis to help the subject relax and become more aware of true feelings which were previously defended against. He gives a number of case examples to emphasize his position that the subject is becoming more self aware by psychotherapeutically looking at his behaviour through hypnosis.

More recently, Harman (1969) referred to hypnosis as one means of contacting the unconscious, which he viewed as containing not only repressed material of a threatening nature, but also as an intuitive creative factor which could facilitate human potentialities. Although using different terms, the relationship to self actualization

is strikingly similar. Harman expressed his position in the following manner:

> A far great portion of significant human experience than we ordinarily feel or assume to be so is comprised of unconscious processes. This includes not only the sort of repressed memories and messages familiar to us through psychotherapy. It includes also 'the wisdom of the body' and those mysterious realms of experience we refer to with such words as 'intuition' and 'creativity'. Access to these unconscious processes is apparently facilitated by a wide variety of factors, including attention to feelings and emotions, inner attention, 'free association', hypnosis, sensory deprivation, hallucinogenic and psychedelic drugs and others
>
> (p130).

These two works link hypnosis with self actualization in terms of facilitating personal growth through relaxation and awareness of repressed feelings on the one hand and access to growth facilitating aspects of the unconscious on the other. These are limited in their use, however, since the specific steps in eliciting these changes were not throughly drawn out, and no experimentation was carried out to investigate the independent variables and/or consequent effects.

b. Ego Strengthening, Self Concept Change, and Increased Self Actualizing Behaviour

Turning now to clinical and experimental reports, one clinician has very specifically delineated his ego strengthening techniques. In addition, there are two studies dealing with the effects of hypnosis on self concept and self actualization respectively. The literature review of hypnosis will be concluded with these three reports.

Hartland (1971) carefully outlines the procedure he uses for facilitating self improvement with hypnosis. He thoroughly explains

the induction and deepening techniques used as well as ways of overcoming resistances and other difficulties. He believes these procedures prepare the subject's attitude to accept the suggestions for self improvement. The next step is the imparting of initial ego strengthening suggestions. The word-for-word suggestions given (including pauses) are as follows:

> Every day... your nerves will become stronger and steadier your mind calmer and cleaner ... more composed ... more placid ... more tranquil. You will become much less easily worried ... much less easily agitated ... much less easily fearful and apprehensive ... much less easily upset
>
> (p201).

The subsequent step, after initial ego strengthening is to expand upon these suggestions with those of greater wellbeing, greater security, greater optimism, and self reliance for problem solving. These are reinforced in each session and repeatedly have been shown to be effective in clinical practice. Hartland then normally proceeds with either direct symptom removal or psychoanalysis. Unfortunately, as stated previously, he presents no evidence from any controlled studies using these techniques. However, his case reports of results in the direction of greater self reliance need to be recognized.

For the purpose of the present study, it is important to note any experimental or clinical evidence which indicates either that the use of hypnosis can effect measures of self actualization or that, compared with a control group, no significant differences on measures of self actualization were found. Two studies, in particular, fulfill this requirement to some extent.

DeVoge (1977) investigated the use of hypnotherapeutic techniques and their effect upon self concept change and assertiveness in women. This investigation took the form of a case study involving a treatment group of 10 female clients who were currently under treatment. The dependent measure was a subjective self report and assessment by the clinician. The techniques used to influence self concept and assertiveness were:

1 mastery-oriented induction techniques and imagery

2 guided dreaming for self concept change

3 visual rehearsal of assertive behaviour

4 insight through time regression

5 implosion in trance, and

6 visualizing catastrophic fears.

While these techniques were used with ten clients in treatment for varying degrees of personality disorder, the common feelings of the clients revolved around powerlessness, low self concept, passivity, and the use of a "sick role" in relationships.

The author presents the treatment technique through one illustrative case of the ten treated in this manner. In this case, a 20 year old student was treated with the aforementioned hypnotherapeutic techniques in addition to insight therapy. The sessions were held once weekly for 90 minutes and the duration of treatment lasted for one year. Significant improvement in self concept and assertiveness were reported at the conclusion of the treatment period, which is representative of the reported high degree of success using this technique with the other subjects. This study has drawbacks in terms of the subjective nature of the dependent measure, the lack of controlled conditions, and the loose protocol for investigative purposes. However, since therapeutic results were achieved using hypnotic techniques which in the opinion of the clinician were significantly greater than those achieved through traditional insight therapy alone, this indicates that hypnotic techniques may have led to these consequent effects. If this is the case, then these results suggest that the therapeutic use of hypnosis may be capable of improving self concept, ego strength, and (as previously described) indicates the possibility of improved self actualization. Another important consideration for the present study is the antecedent and mediating variables to be investigated. From DeVoge's description of the treatment techniques and the motivation of the clients to continue in therapy using these techniques, the variables suggested in the present study appear likely to have been in operation.

A more carefully controlled and tightly designed study investigating the effects of hypnotic ego strengthening and assertiveness training on levels of assertiveness and personal growth was conducted by Cummings (1977). In a dissertation study, Cummings acquired 43 volunteer subjects from Georgia State University. All of the subjects were undergraduates. The subjects were randomly assigned to four groups;

1 ego-strengthening alone

2 assertiveness training alone

3 combined ego-strengthening and assertiveness training

4 no treatment controls.

The subjects were assessed on the dependent measures of the Personal Orientation Inventory (self actualization) and the Gambill and Rickey Assertiveness Inventory (assertiveness) before and after the seven week treatment period. The results achieved showed:

1 that ego-strengthening and assertiveness groups made significant improvement in assertiveness

2 that the great improvement in assertiveness was observed in the combined group

3 that all three treatment groups had significantly greater improvement on the Inner Directedness scale of the POI than controls, and that the combined group increased their scores on eight of the 12 scales of the POI significantly greater than the control group.

This study gives perhaps the best indication of the ability of hypnotic techniques to positively effect measures of self actualization. Since a control group was utilized, it suggests that the therapeutic use of hypnosis designed to promote ego strengthening was the causal factor leading to the observed effects. However, this interpretation may need to be treated with caution. Since the control group received no treatment and the other three groups all received treatment and showed improvement, there is no way of determining whether or not the effects were due to expectancies rather than the treatments applied. This has relevance to the present

study, since one of the antecedent variables to be investigated involves attitudes, expectancies and motivation toward the situation. However, this variable is hypothesized as being insufficient on its own to bring about changes in self actualization and reduction in anxiety. A shift in cognitive orientation to involvement in imagining is hypothesized as also being necessary in order to achieve these effects. Since these were not investigated in the previous study, there is no way to determine whether both of these variables, one of these variables, or an entirely different set of independent variables was responsible for the reported effects. The close resemblance of suggestion and role playing involved in assertiveness training to the techniques of hypnotic ego strengthening also present problems for interpretation with respect to causal factors. However, the results do indicate that aspects of hypnotic ego-strengthening and assertiveness training increase self actualization and assertion beyond that achieved with no treatment. Therefore, despite the drawbacks, the previous study offers important empirical evidence suggesting that hypnosis can be utilized effectively to facilitate self actualizing values and behaviour.

Hypnosis - A Summary

In summary, the literature on hypnosis reveals that there is merit in both the trance state viewpoint and the cognitive behavioural viewpoint in defining the phenomena of hypnosis. In addition, the measurements in existence are not sufficiently sensitive to determine conclusively whether or not an altered state of consciousness is necessarily linked with the experience of hypnosis, although evidence for and against this position has been reported. However, there is sufficient information regarding the phenomena of hypnosis from both paradigms to delineate two common variables which appear to be in existence as well as being more easily facilitated by high susceptibility subjects, and for which there appears to be common agreement.

In terms of the psychological effects of hypnosis, the evidence suggests that the use of hypnosis can enhance perceptual/cognitive functioning, effect both positive and negative changes in emotion and facilitate transcendent subjective experiences associated with expansion of consciousness and peak experiences. In addition, the techniques reported as bringing about these psychological effects

appear to incorporate the antecedent and mediating variables to be investigated in this study. Finally, the evidence in terms of the psychotherapeutic effects of hypnosis indicates that hypnosis is an effective tool for reducing or eliminating psychological disorders. In addition, there is some tentative evidence that the use of hypnosis may facilitate ego strength and a concomitant increase in self actualizing values and behaviour. As with its psychological effects, the hypnotic techniques used pschotherapeutically appear to incorporate the subject variables to be investigated in this study. Overall, although there are limitations to the studies reviewed, especially in terms of direct comparison with results reported in the literature of meditation, there are sufficient similarities in terms of effects reported to warrant a consideration of the same underlying variables in operation.

MEDITATION

Transcendental Meditation (TM) and a Western Meditation

While the literature in hypnosis has focused primarily on physiological and psychological effects in order to clarify the phenomenon itself, or upon the therapeutic use of hypnosis to treat psychological disorders (with few studies directed at the specific effects upon personal growth), the literature on Transcendental Meditation (TM) has been more balanced. Therefore, less space will be devoted to the evolution of the technique and underlying philosophy and more to a consideration of the psychological effects and the effects upon personal growth and reduction in anxiety. Where subject variables have been mentioned or investigated, a comparison with those to be investigated in the present study will be undertaken.

The literature review will be divided into three parts;

1 a description of the TM technique and comparison with a Western meditation technique

2 the psychological effects reported with the use of TM, with particular reference to those also reviewed in hypnosis

3 the psychotherapeutic effects upon self actualization and reduction in anxiety.

Since the Western form of meditation chosen for the present study has been standardized on tape and theoretically outlined by its originator, but has not been empirically investigated, it has been decided to treat the literature review of the two forms of meditation together and to review the Western meditative technique by description and by comparison with various aspects of TM. Reference may be made to the technique, philosophy, possible antecedent and mediating variables and purported consequent effects. However no studies exploring this technique have been reported in the literature, and therefore this reference will be either to the theoretical position posited by the originator or to possible causes or effects which seem reasonable to anticipate.

Description of the TM Technique and a Western Meditation Technique

A. TM

Transcendental Meditation has received considerable popular and scientific attention over the last decade, particularly in Western society. The number of people practicing the technique in the Western world continues to increase and the organizational structure of TM continues to develop at an accelerated rate. This may seem surprising, since the TM technique evolved from an ancient Hindu technique and maintains some of the ritual and much of the underlying philosophy involved therein. The reason for the appeal of this "Eastern" discipline in the West can only be surmised. However, its concise initiation, ease of mastering the technique, and promise of quick results have been alluded to as responsible for its popularity outside of the East, where it originated (White, 1976).

The credit for Westernizing the approach to the extent necessary for acceptance in the West, while maintaining the philosophy and esoteric nature of a Hindu technique, belongs to the originator of TM, Maharishi Mahesh Yogi. He has remained the ultimate authority on the technique and on the underlying philosophy, termed "The Science of Creative Intelligence". All of the instructors of the TM technique have been trained in accordance with the standardized procedures developed by the Maharishi and therefore all of the centres of the International Meditation Society instruct each initiate in the same manner. The International Meditation Society (IMS) and its student counterpart Students International Meditation Society (SIMS) are well organized and easily located in most Western countries. They are part of the education service of the parent body - The U.S. World Plan Organization.

Learning the technique involves attending two introductory lectures, followed by four lessons taught over a period of four days. During this time, the student is assigned a Mantra (a Sanskrit word) by his instructor, which is to be repeated silently to himself during the meditation period. Meditation involves sitting quietly in a chair with eyes closed for 20 minutes twice daily and the Mantra is the focal point of attention. The meditator repeats the Mantra silently and returns to this focal point if attention wanders or if

he is caught up in disturbing thoughts. The way in which the Mantra is assigned has been kept secret by the TM organization and each meditator must agree not to divulge his Mantra to anyone else. The importance of the Mantra is emphasized in most of the literature relating to TM (Bloomfield & Kory, 1976). The Mantra can be viewed religiously as promoting a soothing, peaceful, silent state leading to a transcendence of ordinary thinking and reaching the source of thought or "pure consciousness". It has also reportedly been viewed, physiologically, as possessing a certain modulating frequency which may lead to a hypometabolic state through reducing limbic system activity (Wooley, 1975), or as leading to a generalized hypothalmic response and decreased sympathetic nervous system activity (Benson et. al., 1974). The three areas just presented

1 introductory lectures

2 involvement with an instructor, and

3 use of the Mantra

are important factors in the practice of TM and may play a role in the consequent effects of the technique. The consideration of these as well as other possible subject variables will be considered later.

Returning to the practice of TM, the meditator is not required to adopt any particular life style or set of beliefs, and in fact this amoral stance by TM in stressing the perfection of the technique as the sole determiner of psychophysiological change leading to greater happiness has often been criticized by adherents of other Hindu meditation techniques as well as followers of Western religious disciplines (White, 1976). For those who are interested, however, there is an educational course on the Science of Creative Intelligence which presents the philosophy as expounded by the Maharishi. This is not required of beginning meditators, but is recommended as complementing the discipline of meditation.

Since the technique of TM is standardized and practiced in the same manner worldwide and since the underlying philosophy emanates from the Guru and originator, the Maharishi, the description of what constitutes TM as a phenomenon is simplified in comparison with the description of hypnosis (which has reached a more sophisticated,

complex stage, having been explored by theoreticians, clinicians, and investigators of various persuasions). However, this may change as research into the mediating variables, consequent effects, and the state itself progresses from this relatively early stage.

Even at this point there has been considerable sophistication from the earlier research of Wallace, et. al., (1971) which showed large reductions in oxygen consumption, carbon dioxide elimination, respiratory rate, blood lactate, among other physiological changes indicating that the practice of the TM technique led to a wakeful hypometabolic state. For instance, the later work of Davidson & Goleman (1977) differentiates between "concentrative" and "mindfulness" forms of meditation in terms of their consequent psychophysiological effects. This has relevance for the present study in terms of a comparison between TM and a Western Meditation technique. Davidson and Goleman present evidence to suggest that concentrative meditation (in which they classify TM) appears to alter the subject's stimulus set (i.e. reduced reactivity to the external environment) and that this may be activated through the effects of the technique in modifying afferent input which may take place below the cortical level. Conversely, evidence suggests that mindfulness meditation (to which the Western Meditation chosen bears resemblance) leads to greater cortical specificity and sustained responsiveness (i.e. lack of habituation) to external stimuli.

Summary of TM

To summarize, TM is a Westernized form of Hindu meditation originated by the Maharishi Mahesh Yogi and taught in a standardized manner by authorized instructors of the International Meditation Society (IMS). Learning the technique involves attendance at two introductory lectures which promote the benefits of TM and present scientific evidence supporting it. In addition, it involves four lessons of instruction including assignment of a Mantra and initiation through a Hindu devotional ceremony. Practicing the technique involves sitting quietly in a chair with eyes closed for 20 minutes twice daily while silently repeating or focusing on the Mantra. No particular life style nor set of beliefs is required, although the philosophy may be learned through courses in the Science of Creative Intelligence. While categorization of meditation forms, in terms of

variables involved in specific techniques, is still tentative, there is some evidence which suggests that TM is a concentrative type of meditation (Brown, 1977; Davidson & Goleman, 1977).

For the purpose of the present study, it was important to both standardize the method of presentation for hypnosis and meditation forms as well as to control for subject-experimenter interaction effects through the use of taped instruction in each of the techniques. The International Meditation Society (IMS) was approached to give consent for the teaching of their TM technique by way of standardized taped instruction. However, their representative stated that it was the policy of the IMS to maintain their strict method of instruction by personal teachers which precluded the taping of any of the introductory lectures or lessons. In addition, the check-up sessions were a required part of the course and the secrecy of the Mantra as well as the secrecy of the manner in which it is chosen must be maintained.

After considering the terms on which the IMS would allow TM to be used in the present study, it was decided to approach another organization presently teaching the TM technique. This decision was made, since accepting the terms laid down by the IMS would have meant a possible contamination of the study due to the loss of control of an important subject-experimenter interaction variable as well as a lack of standardization in presenting the hypnosis and Western Meditation forms solely by taped instruction while the TM technique was instructed and followed-up in one-to-one and small group sessions. In addition, the choice of a mental device in hypnosis and the Western Meditation would also have been standardized for all subjects in these groups, while the assignment of a mental device in the TM group would have been in an esoteric manner to each individual separately, and incapable of standardization.

The organization subsequently approached to teach the TM technique by taped instruction as part of the present study was the Meditative Relaxation Research Foundation, Inc., with headquarters in Auckland, New Zealand. The Meditative Relaxation Research Foundation offers the TM course both in "live" instruction and through a series of written lessons (Meditative Relaxation Research

Foundation, Inc., 1978). In contrast to the IMS, the lessons are offered without charge, although donations are accepted. In comparing the technique offered by the Meditative Relaxation Foundation with that offered by the IMS, no significant differences could be found in the introductory remarks. These covered the evidence for the beneficial effects reported as well as the hypothesized psychophysiological causes. Nor could any significant difference be found in the instruction in the use of the Mantra in terms of the method of use and its importance in producing the hypothesized decrease in sympathetic nervous system activity as a result. The only differences observed between the Meditative Relaxation Foundation Inc., and the IMS were as follows:

1 the Foundation offered the TM technique free of charge

2 the Foundation offered the TM technique on a psychophysiological basis for relaxation and improved behavioural responses generally and did not emphasize Hindu ritual nor philosophy

3 The Foundation presented a standardized Mantra to all students and did not emphasize the importance of its secrecy nor spiritual significance.

For the purpose of the present study, it was felt that the above mentioned differences noted for the Foundation would not detract from an adequate comparison of hypnosis and a Western Meditation with that of Transcendental Meditation. In addition, the research with other standardized meditation forms even less closely aligned with TM have shown no difference in their effects upon anxiety reduction and improved ego strength when compared with TM (Benson, et. al., 1974; Carrington, 1977; Morse, et al., 1977).

Finally, the differences noted above for the Meditative Relaxation Foundation Inc. technique will allow for adequate standardization and minimize possible confounding variables such as the effect of the religious ceremony on the overall effects, or the importance of secrecy of the individual Mantra. Therefore, taped instruction of the TM technique as adapted for use by the Meditative Relaxation Foundation will be utilized in the present study and referred to as Transcendental Meditation (TM). This instruction was produced by a

teacher of TM from that organization (Michael Tyne-Corbold) and is presented in three lessons, including an introductory lecture, instructions in the practice of the technique, and follow-up instructions for its use over the six-week treatment period. Future reference to the psychological and psychotherapeutic effects of TM are based on studies using TM as taught by the IMS. However, in light of the strong similarities between this form of TM and that of the Foundation and in view of the research evidence using meditation forms similar to TM showing similar results, the results noted and subsequent comments will be considered to also apply to TM as utilized in the present study.

With regard to the variables to be investigated in the present study, the description of the teaching and practice of the TM technique indicates that both antecedent and mediating variables may be in operation. The suggestive nature of the introductory lectures in promoting positive expectancies coupled with the positive attitudes and motivation to benefit from the technique manifested by those willing to take the course, indicates that this may equate with those same factors in hypnosis under "a willingness to cooperate". In addition, the use of a mental device (a Mantra) which helps to disregard distracting thoughts (or thoughts inconsistent with the aims of the practice) and which becomes associated with an elaboration upon the aims of the practice may equate with the other antecedent variable presented in hypnosis under "a shift in cognitive orientation to an involvement in suggestion - related imagining". This latter point is underscored by the relationship proposed by DiGusto & Bond (1979) between the use of a repeated sound (Mantra) and its effects on autonomic nervous system (ANS) arousal reduction. They suggest that the TM procedure (e.g. use of a repeated sound) may elicit arousal reduction by

> escaping or avoiding mental content capable of arousing the ANS
>
> (p436).

B. Western Meditation

Turning now, there will be a description of the Western Meditation technique chosen for the study and a comparison with

aspects of TM. The Western form of meditation chosen for this study was originated by a former hypnotherapist, Roy Masters (1975) who developed the technique as an alternative to the use of hypnosis to promote personal growth and reduce pathological behaviour. From its inception in the early 1960's it was called psychocatalysis, however this term seems to have been abandoned over the years in favour of meditation. The technique is standardized on a set of tapes (or records) which present 12 lessons entitled "How to Control Your Emotions Through Meditation". This is produced by the organization promoting this particular technique, along with its underlying Judeo-Christian philosphy. The organization is entitled The Foundation of Human Understanding. The home base is located in Los Angeles, California, U.S.A., and all of its publications originate from there. However, radio broadcasts discussing the meditation and underlying philosophy are syndicated throughout the U.S.A.

In contrast to TM, the originator of this meditation adapted the technique from a combination of hypnotic induction methods for focusing attention, and what he believes is the essence of the techniques used by ancient Jewish and Christian mystics to promote an "observer consciousness" and transcend ego dominance in order to locate the "real self". The difference in underlying philosophy between this Western Meditation and TM is apparent in the process through which observer consciousness, pure consciousness, psychophysiological integration, and happiness are said to be achieved in each. While the goal in many respects seem similar - to transcend ego dominance, become more self actualized and inner directed, have greater self control emotionally and physically, and to be free from inner conflicts preventing satisfaction and happiness - the underlying philosophy relating to how these goals are achieved is quite different. The technique of TM, and in particular the use of the Mantra, is said to quiet the organism, normalize its psychophysiological functioning and unite the "Atman" and "Brahman" through unity with the universal creative intelligence and energy. This re-establishment of the "natural order" is said to produce fulfillment of potential and happiness (Bloomfield & Kory, 1976). In the Western form of meditation, the stress is upon the moral intent of the practitioner coupled with the technique of focusing attention on the hand while continuing to observe ongoing thoughts, feelings, and

physical sensations. The Judeo-Christian philosophy is apparent in the stress upon the "fall" of the individual from the true self to an ego identity. The pain of this realization is stressed on tape during the practice of the technique for the purpose of relieving conflict and guilt through acceptance of mistakes and compulsive behaviour revealed to consciousness. This uncovering of repressed conflicts is said to have therapeutic value if the meditator accepts these "errors" and maintains the observer consciousness necessary to become objective to (not involved with) these faults. Thereby, he is relieved of the burden of these compulsions (Masters, 1975).

Rather than achieving a unity with universal intelligence as proposed by TM, the philosophy of the Western Meditation advocates a proper distance from God. However, a relationship exists through responding to the "real self", which is claimed to be free from cultural conditioning and to exist in an objective state of awareness above ordinary thinking. In terms of the two forms of meditation, therefore, the main differences seem to be in

1 an emphasis on a moral intent of wanting to do what is shown to be right

2 an emphasis on a degree of pain and conflict in awareness before relaxation and happiness are achieved

3 the focus of attention on a part of the body and increased responsiveness (or awareness) to internal and external stimuli

4 the presentation of suggestions regarding the underlying philosophy during the meditation exercise (although this is abandoned as the meditator practices the technique on his own).

On the other hand, some areas of similarity seem to be held in common:

1 the technique having been originated by an individual who is the prime exponent of the philosophy

2 a belief in a natural order of things and in human conflict being the result of operating in dissonance with this order

3 in stressing the importance of a higher state of pure or objective consciousness

4 in some attentional aspects of the techniques

5 in some of the benefits to be derived from regular practice of the techniques

6 regular practice of sitting quietly with eyes closed for a standard time twice daily.

To clarify the technique of the Western Meditation itself, beyond the philosophic considerations, it involves sitting quietly in a chair or lying quietly with eyes closed for 15 to 20 minutes at least twice per day. The meditator focuses attention on the right hand and effortlessly maintains this awareness, gently returning to the hand if awareness is distracted by daydreaming or if there is other evidence of a loss of awareness or contact with present reality. At the same time, the meditator is asked to become aware of the centre of the forehead "as though he/she were gazing through the centre of the forehead" and to extend this awareness to the right hand. This is posited as integrating mind and body. While this is being done the meditator is instructed to observe ongoing stimuli - thoughts, feelings, physical sensations - and to separate the observer from what is being observed. This is posited as establishing an objective or observer consciousness which allows for uncovering of repressed material and a change in response patterns. The regular practice reportedly leads to increased self actualization and inner directedness, as well as to increased self confidence and to reductions in anxiety reactions (Masters, 1975).

In terms of the Western Meditation's relationship to concentrative or mindfulness modes of meditating as proposed by Davidson & Goleman (1977), it appears to incorporate elements of both, with emphasis on the mindfulness process. Focus on the right hand seems to involve a concentrative technique, however, the emphasis on awareness of the centre of the forehead in order to be responsive to internal and external stimuli through observation, implies a lack of habituation which is associated with mindfulness types of meditation. Aspects of mindfulness and concentrative meditation which have been proposed, such as increased voluntary control of attention and continued responsivity on the one hand, and alterations of stimulus set

resembling those achieved with pharmacological agents on the other, will not be dealt with in the present study. However, it is important to note the areas of similarity as well as difference and the way in which this may be categorized. This will be particularly relevant if differences are achieved on measures of self actualization and trait anxiety with the two forms of meditation being investigated. Investigation would then need to move away from subject variables, perhaps to elements inherent in the techniques themselves such as attentional properties of mindfulness attending compared with concentration.

Finally, in terms of the variables to be investigated in the present study, the description of the Western Meditation has indicated that the suggestions for improvement given in the taped instructions may operationalize positive attitudes, expectancies and motivation which may be equated with the first variable posited for hypnotic susceptibility - a willingness to cooperate. The second variable - a shift in cognitive orientation from an objective perspective to one of involvement in suggestion-related imagining - posited for hypnotic susceptibility - is less clear in terms of its involvement in the Western Meditation technique. On the side favouring this, is the possibility that the suggestions offered may promote a kind of goal-directed striving (or fantasy) of a non-volitional nature. In addition, focus on the hand and "gazing through the centre of the forehead" may act as a mental device which shifts the cognitive orientation. This is given further credibility by the emphasis on changes in consciousness and on a quality of awareness apart from ordinary thinking (secondary process thought) which occurs throughout the taped instruction. Finally, the previous familiarity and expertise of the instructor with the use of hypnotherapeutic techniques and the resemblance of some attention fixating and imagery aspects of the Western Meditation technique indicate a possible shift to involvement in imagining.

On the side challenging this is the emphasis on mindfulness aspects of the focus of attention, including continued responsiveness to internal and external stimuli. The suggestions to return to the hand as a physiological process and the emphasis on observing positive and negative reactions without "escaping" into imagination or

daydreaming also question the existence of the second antecedent variable. The results on the dependent measures of self actualization and trait anxiety as well as the questionaire information on attitudes, expectancies and motivation and involvement in imagination may help resolve this question.

Summary of the Western Meditation

In summary, the Western Meditation has been described as incorporating different elements in terms of its underlying philosophy as well as aspects of the technique, when compared with TM. It involves a Judeo-Christian philosophic base and has been adapted from hypnotic induction techniques as well as purported ancient Jewish and Christian meditative techniques. It seems to incorporate elements of concentrative meditative techniques, but the emphasis appears to be on mindfulness aspects of meditation. The antecedent variables proposed for hypnotic susceptibility, which also may be involved in TM, appear less clear. The first seems to be in operation, as it does for the other two treatment conditions. The second may or may not be in operation, but hopefully will be clarified with the findings of the study.

Psychological Effects

Since the dependent measures chosen for the present study relate to effects upon self actualization and anxiety, which are more closely associated with psychotherapeutic effects, less space will be devoted to reports of psychological effects per se and more to specific psychotherapeutic effects of TM on self actualization and anxiety. However, to provide an adequate comparison with the treatment condition of hypnosis, a sample of the literature relating to the psychological effects on TM will be reviewed. The areas covered will be

1 the effect upon perceptual/cognitive functioning

2 the effect upon emotional states

3 the effect upon creativity.

A. Effect upon Perceptual/Cognitive Functioning

Whereas the majority of research in the field of hypnosis

relating to psychological effects has focused on the indirect effects upon state changes, or on redefining hypnosis within a behavioural or contextualist framework (Barber, 1972; Sarbin & Coe, 1979), the majority of research into TM has related to the effect upon performance outcomes. In terms of performance, a number of studies have been carried out relating to the effects of TM on various aspects of cognitive and perceptual-motor functioning. The five studies reviewed here relate specifically to perceptual-motor functioning, field independence, attention deployment and cognitive flexibility, and organization of thinking and recall.

1. Perceptual-Motor Functioning

Blasdell (1977) performed an experiment to investigate the effect of the TM technique on the performance of a perceptual-motor task. The dependent measure was the Mirror-Star Tracing Task (MSTT), which requires the subject to trace the outline of a star while watching its reflection in a mirror. Her design comprised two groups of 15 university students in each. The experimental group consisted of experienced Transcendental Meditation practitioners. The control group consisted of non-meditators. The experimental group meditated for 20 minutes and following this period completed the MSTT. A comparison of raw scores on speed and accuracy showed the experimental group performed significantly better than the control group on both measures ($p = .036$ and $p = .034$ respectively). These results suggest that the TM technique is effective in improving perceptual-motor skills. However, there is a notable drawback to this study which makes this conclusion questionable. The two groups utilized may not have been comparable. The TM group was motivated to practice meditation and is likely to have expected improvement on perceptual-motor functioning since this is alluded to in the introductory lectures. On the other hand, the control group is not likely to have the same motivation nor expectations. Furthermore, the control group did not have the benefit of resting quietly with eyes closed for 20 minutes prior to administration of the task. For the purpose of the present study, an alternative interpretation of the improvement of the TM group in Blasdell's study is that it could have been the result of positive attitudes, expectancies and motivation toward the test situation along with the

subsequent effects of a mental device facilitating involvement in imagining. In other words, high susceptibility subjects in the TM group may have been able to utilize these antecedent variables to elicit the changes reported.

Interpretation of these results is further complicated by the failure of more recent studies to replicate these findings. Williams (1978) investigated the effect of TM on fine perceptual-motor skill (the Mirror Star Tracing Task) following several previous attempts in the laboratory to assess the influence of TM on a comparable measure (the pursuit rotor). These previous investigations found meditators to exhibit lower performance scores than non-meditators. Williams utilized two groups of subjects. The TM group consisted of 32 subjects and the Non-Meditating Control group also consisted of 32 subjects. Both groups performed 10 trials of the task on the 1st day and 10 trials on the following day. The main difference between this and the Blasdell study was that Williams had subjects in the TM group wait a minimum of three hours after meditating before performing the task.

The results showed no main nor interaction effects of groups by trials. In addition, no significant difference could be found between TM and the Control group on learning and performance. These results could not support the previous findings of Blasdell which indicates that the regular practice of TM improves perceptual-motor skills. Williams suggests that these findings may be due to the fact that the focus of attention in TM practice is predominantly on inner experiences, whereas the attention necessary for improving skill on a fine perceptual-motor task would be predominantly externally oriented. In addition, he proposes that the relaxation responses which may be elicited through the practice of TM may be inappropriate in this type of complex task. One factor overlooked in Williams interpretation of these results was the high level of inter-individual variability found in the TM group. Meditators were considerably less alike during early practice than non-meditators and maintained this tendency throughout the experiment to some extent. There is a possibility, therefore, that other subject characteristics interacting with the practice of TM could have been responsible for the high variability of performance scores. In keeping with the

argument being developed in the present study, it is possible that differences in hypnotic susceptibility between members of the TM group could have elicited varying scores with a high standard deviation. Controlling this variable by identifying subjects high and low in hypnotic susceptibility could test for the influence of this variable in eliciting varying effects.

Field Independence

In another study of perceptual-motor functioning, Pelletier (1977) investigated the effect of TM on field independence. There were two groups of subjects used. The experimental group consisted of 20 university students who began practicing TM after the study commenced. The Control group consisted of 20 university students who had not expressed interest in learning TM and acted as Non-Meditating Controls. Both groups were pre-tested on three measures relating to field independence:

1 Autokinetic Effect Latency

2 Rod and Frame Test

3 Embedded Figures Test.

After three months, both groups were post tested on the same three measures. The results showed that the TM group improved significantly greater than the control group on Autokinetic Effect Latency (ability to perceive movement of a spot of light), the Rod and Frame Test (ability to orient a rod along a vertical line against a tilted frame), and the Embedded Figures Test (ability to perceptually differentiate figure from ground). These results were significant at $p < .001$; $p < .001$; $p < .05$ levels respectively. These results show that the practice of TM tends to have a beneficial effect upon various aspects of perceptual-motor functioning. Unfortunately, the same methodological problem exists in this study as in the previous study; in that the TM experimental group and the control group may not be comparable since their motivation and expectancy for change could be quite different. In terms of the present study, it is conceivable that the results achieved by Pelletier could be due to the variables of positive attitudes, expectancies and motivation, along with the use of a mental device facilitating involvement with suggestion-related imagining rather than being the result of the TM technique itself.

2. Attention Deployment and Cognitive Flexibility

The question of underlying causes of these previously reported consequent effects upon perceptual-motor functioning becomes more complicated when later studies fail to replicate these earlier findings. In a more recent study, Reed (1975) investigated the effect of TM on cognitive flexibility, field dependence, and attention deployment. In her dissertation investigation, she utilized an experimental group comprised of 32 university students, a control group of the same number of university students, and an equivalent post-test only group. Two of the three groups were pre-tested on a range of measures in each of the three categories under investigation:

1 Cognitive Flexibility

2 Field Dependence

3 Directional Priorities in Attention Deployment.

Subsequently, the experimental group learned TM and practiced the technique for four months. The control groups had no treatment. After the four month period, the three groups were post-tested on the same measures. The results showed that there was no significant difference between the TM group and the control groups on measures of Cognitive Flexibility nor Field Dependence. In Attention Deployment, the TM group changed in the direction of greater external deployment of attention; the opposite of that which was hypothesized.

This result is difficult to interpret. It is possible that this indicates that neither the TM technique nor the variables under investigation in the present study have any effect upon perceptual-motor functioning. However, since the previous two studies have suggested otherwise, the overall results seem unclear. However, another interpretation, in keeping with the position of the present study, is that perhaps both the antecedent variables of positive attitudes, expectancies and motivation as well as involvement in imagining were not controlled for. In other words, perhaps those practising TM and those in the control groups consisted of both high and low susceptibility subjects, randomly present. If this was the case, then the lack of separation into high and low susceptibility subjects within groups may have contaminated the results, since low susceptibility subjects may not have incorporated both antecedent

variables and therefore not have achieved the expected results with TM.

3. Organization of Thinking and Recall

Further evidence for the effect of TM on cognitive functioning was produced by Miskiman (1977) in an investigation of organization of thinking and recall. He hypothesized that TM would enhance the capability for secondary organization which in this case includes the organization of items into categories based upon qualities they hold in common and the ability to apply these categories to new items. His design utilized an experimental group of 60 university students interested in learning TM and a non-meditating control group of 60 university students. Both groups were pre-tested on the Index of Clustering using both clustered and random word lists, and there was no significant difference between groups on the mean index of clustering. During a 40 day treatment period, the experimental group learned and practiced TM. During the same period the control group sat quietly with eyes closed for 20 minutes twice daily. Following the treatment period, both groups were post-tested on the Index of Clustering with the additional factor of an imposed recall delay of two minutes, four minutes, and six minutes to also measure the efficiency of recall over time.

The results showed that the TM group had a significantly greater increase on the mean index of clustering than the control group at $p < .001$ level. In addition, over the six minutes recall delay, the TM group maintained a significantly higher mean index of clustering for combined random and clustered lists than the control group, and that this relationship became progressively marked over time. The results achieved in this study strongly suggest that the TM technique enhances secondary organization and facilitates greater efficiency of recall.

This study has advantages over the previous investigations mentioned in that Miskiman provided a treatment control of sitting quietly with eyes closed for 20 minutes twice daily to demonstrate that the relaxing effects of resting quietly were different than those produced by the practice of TM. However, while this provided for a more adequate control comparison, it does not control for the possible subject variable of positive attitudes, expectancies and motivation as

well as involvement in suggestion-related imagining. Both the attitudes, expectancies and motivation of the control group and their use of sitting with eyes closed, in terms of imagination involvement, could have been vastly different. In other words, the control group was not given the same expectancies as the TM group received in introductory lectures. In addition, the control group was not trained in the use of a mental device which may be used to shift the cognitive orientation to an association with or involvement in suggestion-related imagining.

B. Effect on Emotional States

In contrast to hypnosis, nearly all of the research into the effect of TM on emotional states has focused on its purported claims of enhancing feelings of wellbeing, happiness, and serenity or its claims of reducing feelings of anxiety, depression, and other forms of psychological conflict. In other words, the research into hypnosis, in terms of its effect on emotional states, has mainly focused on the direct or indirect effect of suggestion in producing a specific emotional response. In contrast, the majority of research into TM has focused on emotional outcomes from the practice of the technique which indicate the beneficial effects of the technique itself. Therefore, nearly all of the empirical studies fall within the broad category of psychotherapeutic effects, since most of them deal with effects upon self actualization and anxiety. These will be reviewed more throughly in the next section of this chapter. For the purpose of providing some comparison with the effect of hypnosis on emotional states, however, the reports by three clinicians outlining their interpretation of the emotional effects of TM based upon its clinical use, will be presented.

In a recent paper Cassel (1976) outlined the fundamentals involved in the scientific process of TM. In this article he suggests that the clinician using TM as a therapeutic technique must understand the various stages experienced with the use of TM. In addition, he proposes that in order to achieve predictable results, the practice of TM must be done in conjunction with biofeedback monitoring by a licensed clinician. This gives the meditator precise physiological feedback and helps reinforce a relaxation response.

While the relationship of TM to biofeedback will not be dealt with in this study, the stages of experience posited by Cassel as in evidence with the joint use of TM and biofeedback have relevance both to mediating variables and emotional effects. The stages he outlines are as follows:

1 Orientation - this includes positive expectations as well as minimizing distractions and stress. In addition there occurs a familiarization with sympathetic and parasympathetic aspects of the autonomic nervous system

2 Relaxation - this includes the proper posture as well as muscle relaxation and anxiety reduction through positive imaginings, rhythmical breathing and electromyograph recordings

3 Centering - this involves relaxed attention, guided imagery, temperature control and control of alpha and theta brain waves

4 Creating a Retreat - this involves a trust in the clinician, the use of the Mantra to hold thoughts on the surface, and a feeling of energy. Furthermore, this involves a feeling of transcendence which, according to Cassel, occurs through "...detaching one's self from the present environment which includes all of one's problems and worries, and substituting peace, and quiet, and beauty... The mind follows the experience of the repeated mantra ... to quieter and deeper levels of mental activity; always charmed by the thrill of wellbeing and personal satisfaction" (p10).

A close inspection of the four stages proposed by Cassel reveals the strong possibility that the emotional effect of a feeling of well-being and satisfaction achieved by the meditator (and attributed in part to following the repeated Mantra) could be the result of an alternative set of variables. Looking at the four stages, an alternative interpretation in keeping with the direction outlined in the present study, would be that the variable of positive attitudes, expectancies and motivation toward the situation and the additional variable of a mental device facilitating suggestion-related imagining

appear to be progressively operational in the movement through the four stages and are likely to be the causal factor in the serene emotional state achieved. Cassel himself refers to positive expectations, minimizing distractions, positive imaginings, fostering imagery, trusting the clinician (i.e. a willingness to cooperate), and substituting awareness of one's problems with covert thoughts or images of peace, quiet and beauty.

In another recent article, Avila & Nummela (1977) offer a psychological interpretation of TM. They describe the physiological and emotional state achieved by the meditator through the use of the TM technique as

> a state of rest so deep that it is nearly impossible to provoke anxiety responses, and he is experiencing a unique sense of wellbeing
>
> (p843).

They compare the emotional and behavioural effects reportedly achieved as a result of TM with those achieved using systematic desensitization, although they believe TM to be more powerful and functional than systematic desensitization. Rather than TM acting solely as a reciprocal inhibitor (as relaxation is used in systematic desensitization), and in contrast to the use of imagery to perceptually explore a prescribed anxiety-producing set of stimuli, they propose that TM facilitates a fourth state of consciousness where (for the meditator) the

> thinking flows from Mantra to free thought and back again ... scanning or exploring his perceptual world
>
> (p843).

They believe this process has a more encompassing desensitizing result which is more functional in terms of its availability for use in varying situations.

Their interpretation appears to rest heavily on the Mantra as the important variable in the technique which creates the consequent effect of deep rest, lack of anxiety response, and an emotional

feeling of wellbeing. Positing these emotional benefits as being the result of innate characteristics of the Mantra seems to neglect the high imagery component of the Mantra which may be associated with the soothing relief of focusing attention away from disturbing thoughts. In this manner the "mental device" may shift cognitive orientation or, alternatively, may facilitate a conditioned response. Furthermore, other factors such as positive attitudes, expectancies and motivation as well as the relationship to the instructor were not adequately considered in their article. Therefore, the question of causal factors for consequent emotional effects of TM remains open, with two or more theoretical positions offering possible explanations.

C. Effect on Creativity

The effects of TM on measures of creativity have not been widely explored. However, two studies provide some evidence with regard to the relationship of TM to creativity. Prior to reviewing these studies, a comment regarding the creative experience and its relationship to hypnosis and meditation is in order. Bowers & Bowers (1972) have presented a thorough and cogent discussion of the creative experience as an altered state of consciousness (or transcendent experience). Their argument develops the central theme that creativity is the result of a loss of "Generalized Reality Orientation" (GRO) in association with an escalation of primary process mentation. In addition, the subject must be able to tolerate and control this experience so that it is integrated with reality. They argue for the relationship of this process to hypnosis. However, in terms of the variable - a shift in cognitive orientation from an objective perspective to one of involvement in suggestion-related imagining - which is treated in the present study, their explanation of the relationship between hypnosis and creativity could equally well apply to meditation. In other words, the loss of GRO and an escalation of primary-process thought, along with a tolerance and control of this experience applies equally well to the experiences reported by meditators (Deikman, 1966; Sacerdote, 1977). Therefore, the transcendent experience of creativity may be associated comparably with both hypnosis and meditation. In addition, the common variables to be investigated in this study quite possibly play a role in eliciting this experience using two seemingly different techniques.

Turning to the studies relating to creativity and its relationship to TM specifically, MacCallum (1977) performed an experiment to investigate the effect of the TM technique on a measure of creativity. His design included the use of an experimental group of 44 experienced meditators who had been practicing TM for at least three months. The control group consisted of 41 beginning meditators who had just learned the TM technique. The subjects in both groups were balanced for age, sex, education level, and income level. The experienced meditators were tested on the Torrence Test of Creative Thinking (TTCT) Verbal Form A. The beginning meditators were also tested on the TTCT Verbal Form A on the day after they learned to meditate. The TTCT measures fluency, flexibility and originality of thinking. The results showed that the experienced meditators scored significantly higher than the controls on all three areas of creative thinking at the $p < .01$ level.

This result has been interpreted as strongly suggesting that the practice of TM increases creativity, since long-term meditators scored much higher than beginning meditators. However, this conclusion needs to be treated with caution for two reasons. Firstly, the statistical analysis was a comparison of raw scores of the two groups without a baseline level having been established. This factor of no pre-test baseline means there is no way of adequately assessing the degree of change with the use of TM. Secondly, other factors for the experimental group may have produced this result. Since creativity may be associated with imagination involvement, it is possible that high susceptibility subjects were the main subjects finding enough reinforcement in TM to continue for a longer period of time, thus enhancing their involvement in imagination and, in conjunction, enhancing their creativity. In other words, by the end of at least three months of meditating, the two groups may not have been comparable, leaving high susceptibility subjects continuing to meditate. These subjects would be most likely to be capable of tolerating a loss of GRO, as well as an increase in primary process thought; factors associated with creativity (Bowers & Bowers, 1972; Bowers, 1979).

The evidence linking TM with increased creativity also becomes somewhat suspect with a failure by Schwartz (1974) to show a difference on creativity measures between teachers of TM and non-meditating controls. Schwartz used an experimental group of 16 teachers of TM

and a control group of 16 non-meditators. Each group was administered two standard measures of creativity - The Wallace-Kogan Test, which requires the use of problem solving creativity reflecting a logical, analytic type of thinking, and a story telling task, which required the use of creative imagination or intuition, fantasy and non-rational type of thinking. The results showed no significant difference overall between the TM group and the control group on the two measures used. On some scales, particularly of the Wallace-Kogan Test, the TM group performed consistently worse. However, on the story telling task, the TM group performed consistently higher than the control group. Schwartz suggests that the explanation for this finding may lie in Robert Ornstein's distinction between left and right sides of the brain. He states that

> too much meditation may interfere with a persons logical, left hemisphere process, or the sort of problem solving creativity required by the Wallace-Kogan Test
>
> (p43).

This explanation would also be consistent with that proposed by Patricia Bowers (1979) for the link between hypnosis and creativity which she proposes also relates to facilitating effortless, right hemispheric activity and imagery processes in creative problem solving.

For the purpose of the present study where a comparison is being made between hypnosis and various forms of meditation, this explanation could be expanded as follows. If teachers of TM are mainly high susceptibility subjects (as Walrath & Hamilton's study seems to suggest), then they would tend to score higher on measures of creativity utilizing imagination involvement such as a story telling task and lower on measures of creativity utilizing logical, objective, analytically-oriented thought. However, the relationship of both hypnosis and meditation to creativity may be much more complex than this would make it appear. Hypnotic susceptibility has been shown to have some relationship to intelligence in terms of intellectual capability (Salter, 1952). This relationship may also exist with meditation. Therefore, some high susceptibility subjects may be

able to score higher on measures of problem solving creativity using logical thought than others and thusly confound the results in terms of a comparison between meditators and non-meditators. It might be more fruitful to compare high and low susceptibility subjects in each of these groups to investigate the relationship between TM and creativity. In terms of the common mediating variable proposed in the present study between hypnosis and meditation, there appears to be a precedent for this. As presented earlier, Bowers & Bowers (1972) found a high correlation between hypnotic susceptibility levels and performance on measures of creativity, and Patricia Bowers was able to replicate some of these findings (Bowers, 1979).

Summary

In summary, the literature reporting the effects of TM on perceptual/cognitive functioning indicates that the practice of TM tends to improve perceptual-motor functioning, field independence, and organization of thinking and recall. However, this must be interpreted with caution due to apparent methodological problems with the studies involved as well as the existence of non supportive findings in a more recent investigation.

The literature relating to the effects of TM on emotion arises from clinical interpretation of reported emotional outcomes as a result of practing the TM technique. The predominant outcomes reported are feelings of peace, serenity, wellbeing and personal satisfaction and are mainly interpreted as being the result of the Mantra in fostering deep rest and a relaxation response. An alternative interpretation, in keeping with the direction of the present study, is that these emotional outcomes may be the result of operationalizing the beforementioned variables of willingness to cooperate and involvement in suggestion-related imagining.

In terms of the effect of TM on creativity, the evidence is unclear. One study suggested that the practice of TM improved creativity. Another found no such effect. Because of methodological problems these results are difficult to interpret. It seems likely that there is a relationship between meditation and creativity, particularly in view of the likelihood of a loss of GRO and an escalation of primary process thought being involved in creativity.

However, creativity may also involve more logical, analytical, problem-solving abilities which draw upon an objective reality orientation. While creativity is not well understood, especially in terms of its relationship to hypnosis or meditation, one fruitful avenue of investigation may be through the use of high and low susceptibility subjects since this may reduce some of the methodological problems involved in previous studies.

Psychotherapeutic Effects

The majority of research into the psychotherapeutic effects of TM which are relevant to the present study have related specifically to effects upon anxiety and self actualization. Therefore, these will be treated separately within this section in order to give them adequate coverage. However, the literature regarding the general effects of TM on psychological health and reduction in pathology, based upon clinical interpretation, case study, and empirical investigation, will be briefly presented prior to reviewing the effects on self actualization and anxiety.

Since the claim is often made by proponents of meditation techniques, of which TM is no exception, that regular practice leads to improved psychophysiological functioning, greater stability and enhanced psychological integration, it is not surprising that a number of clinicians and investigators have studied this claim in order to assess the place of meditation in psychiatry, psychoanalysis, psychotherapy, counselling, as well as the other helping professions.

A. Theoretical Models for the Psychotherapeutic Effect on TM

An article with a theoretical basis and developed out of both clinical experience and scientific investigation into both meditation and psychotherapy was written by Goleman (1971). He discussed the use of meditation as metatherapy and referred to TM as fostering improved psychological functioning through the process of unstressing. Using the Mantra to induce an alert state of deep rest, Goleman suggests that this then allows the meditator to remove the accumulation of stress related to past experiences by effortlessly derepressing them and restoring an integrated functioning level. He compares this process with that of the normalizing function of dreaming which he sees as the

organism

> maintaining itself as an integrated unit by readjusting to a state of normality parts that have become misshapen and dysfunctional during waking activities
>
> (p15).

Goleman concurs with Wallace et. al., (1971) in suggesting that the practice of TM brings about a relaxed state of awareness as evidenced by hypometabolic functioning and synchronous alpha brain wave production. In addition, he suggests that these changes, reflecting a fourth major state of consciousness, may become incorporated into the waking activities of the meditator, rather than existing solely during meditation, to produce a fifth state of consciousness resembling what Fromm describes as enlightenment. The therapeutic process of TM referred to by Goleman is relevant to the present study inasmuch as it offers a psychodynamic interpretation of the factors leading to improvement in psychological health, development of self actualizing behaviour, and relaxation as well as desensitization associated with a reduction in anxiety. While the psychodynamic aspects of unstressing and derepression will not be treated in the present study, they are valuable concepts and may be complementary to the behavioural variables to be investigated.

A more recent treatment of the psychotherapeutic effects of TM was written by Bloomfield and Kory (1976). Bloomfield is an experienced meditator, a teacher of TM and a psychiatrist who uses TM as an adjunct to psychotherapy. This work on TM, Psychiatry and Enlightenment offers a more popularized treatment of the subject, however theoretical concepts and empirical evidence are thoroughly utilized to strengthen the case for the benefits of TM. Bloomfield & Kory offer a similar explanation to that of Goleman for the beneficial psychological effects reported with the use of TM. Although their stress on the importance of the Mantra in silently stilling the organism and leading to a state of least excitation of consciousness through which the resultant benefits accrue is much greater. They view the state of least excitation posited for TM as primarily due to the physiological and psychological effect of the Mantra and evidenced

by the changes observed in both these areas of functioning. TM is purported to promote

> the resolution of deep-rooted stresses and conflicts through wholly physiological means and therefore involves no struggle to excavate or grapple with the past ... deep-rooted stresses tend to dissolve during the TM technique when a person is enjoying a maximum degree of inner stability and wellbeing
>
> (p245).

While they present a cogent argument in favour of the technique of TM itself (and in particular the proper use of the Mantra) as responsible for improved psychological health, incorporation of self actualizing behaviour, and reduction in anxiety, many of their comments regarding the proper practice of the technique may be alternatively interpreted along lines consistent with the argument developed in the present study. For example, Bloomfield suggests that an objective analysis of the TM instruction while the meditator is learning the technique would block the correct practice of the discipline. He comments as follows:

> When a qualified instructor takes responsibility for determining what to do next during each step of instruction, this problem disappears. The person learning the TM technique from a qualified teacher can sit back and simply enjoy his experience. He just answers the teacher's questions and follows the teacher's instructions which lead step by step to the state of least excitation of consciousness
>
> (pp79-80).

In terms of the position being developed here, this description of non critical acceptance and following the teacher's instructions is likely to incorporate the first antecedent variable of susceptibility to hypnosis - a "willingness to cooperate" along with its sub-parts of positive attitudes, expectancies and motivation. This possibility

appears as likely, in terms of the resultant psychotherapeutic results, as the proposition that the practice of the TM technique is the causal factor. This leaves the second antecedent variable - a shift in cognitive orientation from an objective perspective to involvement in suggestion-related imagining. The emphasis by Bloomfield & Kory on the power of the Mantra to elicit a beneficial psychophysiological effect is expressed throughout their work. They claim that the Mantra will be repeated to oneself many thousands of times in the course of a meditator's life, and in so doing will create a whole constellation of changes. The use of a mental device to shift the perspective away from logical, externally-oriented thought (as Benson has outlined) has previously been compared with involvement in suggestion-related imagining and has been considered remarkably similar. Therefore, while Bloomfield & Kory present evidence for the beneficial effect of the TM technique on psychological health, there is a likelihood that these same effects may be explained in terms of the subject variables under investigation in the present study which are posited as eliciting common effects in both hypnosis and meditation.

B. Clinical Case Studies of the Psychotherapeutic Effect of TM

Turning to clinical case studies and investigations relating to the psychotherapeutic effect of TM, Bloomfield reports a case study in which he used TM as an adjunct to psychiatric treatment. The case reported was that of an inpatient in a clinical psychiatric setting who was admitted for treatment of severe depression and paranoid tendencies. The patient received traditional psychiatric treatment for the condition. However, in addition, the patient learned and practiced the TM technique for six months. The Minnesota Multiphasic Personality Inventory (MMPI) was administered upon admission (and before learning TM) and again after six months of psychiatric treatment together with the practice of TM. The patient demonstrated a significant reduction in psychopathology at the end of the treatment period (Bloomfield, 1977). This finding may be interpreted as demonstrating the effectiveness of TM in reducing psychopathology, since the normal rate of recovery using traditional psychiatric treatment would not likely have been either as quickly realized nor as consistently shown across the scales of the MMPI. However, since no

controlled study was undertaken and the result achieved could have been due to a number of other factors than the practice of TM, this finding must be cautiously interpreted.

The caution with which the previous finding must be interpreted is underscored by the material presented in another case report. French, Schmid & Ingalls (1975) present a clinical case report of a 39 year old female admitted for psychiatric treatment. She reportedly had learned the TM technique and began to practice it. Initially, she experienced sustained optimism and moderate euphoria, which she valued. In addition she experienced the continued presence of an altered state of consciousness within days of beginning TM. After two weeks of practising the technique, she began to experience compelling euphoric fantasies outside of the meditation sessions themselves. According to French, et. al. these led to unusual behaviour which they described as psychotic. Three months after beginning TM she was admitted for treatment and in a three hour interview she remained moderately euphoric with no change of affect. She later reported that during the interview she was "not totally there" and could not "return to the here and now" (p58). The MMPI administered at that time showed excessive pressure from unconscious material resulting in anxiety, social and emotional alienation and withdrawal, as well as obsessive qualities.

The authors' interpretation is that meditation in general tends to derepress material from the unconscious which may not be integrated by some people. As with the previous study, the conclusion that the practice of TM led to a decompensation and resultant psychotic episode, and therefore that the technique may be contraindicated for some people, needs to be treated with caution. It is possible, for instance, that she practiced the technique wrongly or without supervision. In any case, it is difficult to draw any firm conclusions from these two reports. It appears that the TM technique, or the mediating variables posited here and facilitated by the technique, have an effect upon psychodynamics, particularly with respect to uncovering repressed material. However, this material then appears to either be integrated on the one hand or to overwhelm the subject. The reason for this is unclear, although the evidence seems to show that there is a tendency to uncover material using both hypnosis and

and meditation. While this factor will not be treated directly in the present study, it does attest to the commonalities between the two disciplines in terms of their potential effect on psychopathology.

C. Experimental Evidence for the Psychotherapeutic Effect of TM

The remainder of this section, before turning to effects upon self actualization and anxiety, will be devoted to a review of three experiments dealing with the effect of TM on psychological health.

Glueck and Stoebel (1975) performed a clinical study of the effects of TM, biofeedback training, and autogenic training on recovery rates with psychiatric inpatients. Patients were randomly assigned to one of the treatment conditions which they practiced in addition to traditional psychiatric treatment being employed. The dependent measures were as follows:

1 physiological measures of skin resistance and EEG alpha production

2 MMPI

3 Minnesota Hartford Personality Assay (MHPA) - a description of behaviour by professional staff

4 automated daily nursing notes.

Unfortunately, only part way into the treatment period the biofeedback group had to be discontinued due to expressed difficulties by Ss in using this as a sole device. In addition, the autogenic training group had to be discontinued due to complaints of boredom in using this technique. The investigators then chose comparison "twins" within the patient population for those remaining in the TM group. These twins acted as a control group who received only traditional psychiatric treatment. The treatment period ended upon discharge and the data for the two groups was collected and analyzed after the discharge of all patients in both groups. The results showed significantly higher levels of recovery for the TM group than for comparison twins, an increase in skin resistance for all Ss in the TM group in every session, and production of synchronous alpha EEG by the TM group. In addition, 68% of the TM group continued to meditate on a regular or irregular basis following discharge, as determined by a follow-up questionaire. The earlier problems

confronted in this study indicate that the reinforcement necessary to continue practicing the technique was present with the TM group but not with the biofeedback group nor with the autogenic training group. While this may be supportive of the findings showing dramatic improvement by the TM group in terms of suggesting that it is the benefit derived from the technique which reinforces its practice, a different interpretation is also possible. As the authors themselves suggest in a later article,

> The meditation patients were exposed to many demand characteristics that the matched group were not. For example, the meditation patients received considerable extra attention from charismatic instructors, they acquired a sense of importance from being members of an 'elite' research group; and they had a sense of personal gain, receiving at no cost the TM training for which they would have paid outside the hospital
>
> (Glueck & Stroebel, 1978, p414).

These factors suggested by the authors indicate that variables other than or in addition to the technique itself may be responsible for the benefits derived. In terms of the present study, the close association between the demand characteristics stated and the variables proposed as being in operation within both hypnosis and meditation leaves open the possibility that rates of recovery may have been influenced by these variables.

In an earlier investigation by Ross (1977), a group of 17 university students who practiced the TM technique regularly were compared with a group of 13 university students who practiced the TM technique irregularly in order to assess the effects of regular practice on measures of anxiety, neuroticism and psychoticism. The dependent measures were the Institute for Personality and Ability Testing Anxiety Scale (IPAT) form I, the PENL Psychoticism-Neuroticism Scales, and the PENL Extraversion and Lie Scales. All subjects were pre-tested on the IPAT and PENL before learning TM and post-tested again after four months of practicing TM. The results were as

follows:

1 both groups declined significantly on IPAT with the regular meditators showing a greater decline than irregular meditators, although not reaching significance ($p = < .07$);

2 scores on PENL Neuroticism Scale declined significantly more for regular meditators than for irregular meditators ($p < .01$);

3 regular meditators showed a decline in psychoticism on the PENL in the direction hypothesized, but the difference between meditators only approached significance ($p = > .05$).

These results indicate that the regular practice of the TM technique is more effective than the irregular practice in producing a psychotherapeutic effect. One major problem with this study which renders this conclusion suspect is that no group using a comparison treatment was utilized. For the purpose of the present study, no definitive statement can be made in terms of whether these effects were due to the unique characteristics of the technique itself or other motivational factors. In other words, it is possible that regular practitioners of any purportedly beneficial technique would demonstrate greater improvement on measures of psychopathology than irregular practitioners, and that the reason could be greater expectancies and motivation as well as greater reinforcement through the ability to practice involvement in imagining.

Some of the methodological problems evident in the study by Ross were overcome in a more recent investigation into the effects of TM and Muscle Relaxation on Trait Anxiety, Maladjustment, and other variables. Zuroff & Schwarz (1978) compared the effects of the regular practice of TM and Muscle Relaxation with a Non-Meditating Control group over a nine week treatment period. Subjects were randomly assigned to each group and facilitation of beneficial expectations were given through comparable preparatory lectures. Subjects then practiced for nine weeks, during which time they were assessed on the dependent measures before and after training, during treatment, and following the nine week period. The measures used, which are relevant to considerations here, were a self report anxiety measure

assessing subjects' experienced anxiety (Adjective Check List), an objective behavioural assessment of anxiety (Behavioural Anxiety Measure), and a measure of psychological maladjustment (Rotters Incomplete Sentences Test).

Results showed no evidence of a treatment effect for either TM or Muscle Relaxation on behavioural trait anxiety, maladjustment, nor arousal reduction. However, on self report anxiety, the TM group showed a significant decrease whereas the Muscle Relaxation group did not.

This investigation offers a more tightly controlled study of the variables in question, with improvement over the previously mentioned investigation by Ross. Therefore, the results appear less suspect and offer some interesting findings. When subjects were randomly assigned and given comparable expectancies, the TM technique differed from a Muscle Relaxation technique only in terms of significant reduction in subjectively experienced trait anxiety. In addition, neither TM nor Muscle Relaxation had any effect upon behavioural trait anxiety, maladjustment, nor arousal reduction. Contrary to the previous findings, therefore, this indicates that the TM technique may have a less profound psychotherapeutic effect, with its main advantage over other self-regulatory techniques being restricted to subjectively experienced anxiety. This may be explained, in terms of the position developed in the present study, by the possibility that the positive attitudes and expectancies of the TM group, coupled with a mental device facilitating involvement in imagining may have a greater effect upon subjective experiences of anxiety than a muscle relaxation technique using a mode-specific approach to somatic relaxation. Anxiety, comprising both cognitive and somatic elements, may be alleviated more effectively in terms of subjective experience by a "target precept" such as a Mantra or repetitious suggestion which directly relate to or are associated with feelings of relaxation, pleasantness, and overall reductions in anxiety.

To summarize the psychotherapeutic effects of TM (in terms of reduced pathology, enhanced psychological integration and greater stability), clinicians using TM as an adjunct to psychotherapy generally support the claims that the TM technique leads to improved

psychological functioning. They offer both a physiological and psychodynamic interpretation for the effect of the Mantra in promoting this improvement, although an alternative interpretation in keeping with the position developed in the present study cannot be ruled out. In addition, case studies have provided contradictory evidence; one study reporting evidence that the use of TM was responsible for a reduction in psychopathology, while the other cited evidence that the use of TM was responsible for an increase in psychopathology. Finally, empirical investigations have suggested that the regular use of the TM technique promotes a higher level of recovery from psychiatric disorders and is responsible for reductions in anxiety, neuroticism and psychoticism. While the results of these studies generally provide strong evidence for the therapeutic effect achieved by those practicing the TM technique, it remains unclear as to whether it is the technique itself or other mediating variables interacting with the technique which have led to the results achieved.

D. Effect on Self Actualization

The literature relating to the effect of TM on measures of self actualization is extensive, probably due to the close relationship between the characteristics of self actualizing persons as postulated by Maslow and the claims made by the proponents of TM for the beneficial effects of the technique in terms of a higher level of personality integration. In general, the reports of improved psychological stability, improved perceptual/cognitive funtioning, increased creativity, a greater sense of well being and appreciation for life, as well as increased ego strength, inner directedness and transcendent experiences lead to the conclusion that those practicing the discipline move in the direction of expressing greater self actualizing values and behaviour. Clinicians report that meditating clients become less deficiency motivated and more growth motivated without the dangers that can accompany passive contemplation (e.g., lack of decision making (Bloomfield & Kory, 1976). In addition, they show a greater sense of their own identity and self reliance. Commenting upon the effects of TM on self actualization as manifested by a greater sense of inner directedness, Carrington & Ephron (1975) state:

> Persons meditating over a period of time frequently report experiencing an increased sense of their own identity. They may find that they identify their own personal 'rights' in situations where formerly they were unaware of them, and are better able to withstand social pressures without abandoning their own opinions (p273).

In the laboratory, interest in the effects of TM on self actualization has been considerable and gives empirical evidence related to the more subjective claims made by clinicians and by meditators themselves. In this section, four studies exploring the effect of TM on self actualization using the Personal Orientation Inventory (POI) as a dependent measure will be presented. These are relevant since the POI will be the dependent measure also used to assess changes in self actualization in the present study. Additionally, three studies utilizing other measures of self actualization in conjunction with TM will be briefly presented in order to give an indication of results achieved using differing instruments.

1. Investigations Using the Personal Orientation Inventory (POI)

Orme - Johnson & Duck (1977) conducted a comparative investigation of university students using the TM technique and also attending the Maharishi International University (MIU) (n = 48) with both the normative group of entering college freshman as reported in the POI manual (n = 2,046) and the normative group of persons judged by clinical psychologists as self actualizing (n = 29). They hypothesized that MIU students, having practiced TM for a significant period on a regular basis, would score significantly higher on the POI that non-meditating college students, and compare favourably with those judged to be relatively self actualizing. The results showed that MIU students scored significantly higher than the non-meditating college freshman on eight of the 12 scales, including the major scales of Time Competence and Inner Directedness. In addition, the MIU students scored significantly higher than the self actualizing group on two scales, did not differ on five scales, and scored significantly lower on five scales.

This result may be interpreted as supporting the hypothesis that the regular practice of TM improves self actualizing values and behaviour. However, two other factors need to be considered. Firstly, there were no baseline scores obtained for the MIU students before beginning TM. Therefore, they may already have been more self actualizing than other entering college freshman and perhaps were attracted to TM and to the MIU because of this. They also may have begun TM and the MIU with more positive attitudes, expectancies and motivation to achieve personal growth which could have been as important a variable as the practice of the technique itself. Secondly, the profile patterns of a group trying to fake a good response on the POI and the profiles of MIU students were similar. Therefore the results may have been influenced to some extent by trying to make a good impression.

Another study investigating the influence of TM on a measure of self actualization was performed by Nidich, Seeman & Dreskin (1973). This was a replication of a previous study by Seeman, Nidich & Banta which found significantly greater changes on many scales of the POI for a TM group than for non-meditating controls. In this study, the 2x2 pre/post design consisted of an experimental group of nine subjects who learned TM following introductory lectures and who chose to practice the technique. The control group consisted of nine subjects who attended introductory lectures but who chose not to practice the technique. The POI was administered to both groups two days prior to the experimental group beginning TM and again 10 weeks later. The results were as follows:

1 the TM group scored significantly higher than the controls on the Time Competence and Inner Directedness scales of the POI at the $p < .05$ and $p < .01$ level respectively;

2 on two scales the TM group scored higher than the control group, but only approaching significance;

3 on two scales the TM group scored significantly higher than the control group at the $p < .05$ level;

4 on two scales the TM group scored significantly higher than the control group at the $p < .01$ level.

Therefore, the TM group showed a significantly greater change in the direction of self actualization than the control group on seven of the 12 scales, including the two major scales of Time Competence and Inner Directedness.

This evidence strongly suggests that the practice of TM positively influences self actualization, especially since the two groups had both shown motivation to improve by attending introductory lectures on their own volition. However, while the control group had shown motivation to improve in terms of personal growth, they finally decided not to pursue the training in TM. Therefore, they may have lacked the committment or readiness to achieve personal growth; which would have influenced the findings.

In a more recent dissertation study, Russie(1976) explored the effect of TM on mental health, including the role of expectation, rigidity and self control. He utilized two matched groups of university students. The experimental group consisted of 26 subjects who practiced the TM technique subsequent to being administered the POI and a self report questionaire relating to the role of expectations, rigidity and self control. The control group consisted of 26 non-meditators who were also administered the POI and the self report questionaire. Following the treatment period, both groups were post tested on the POI to determine changes on the scales and correlation analysis was performed on the three areas of the questionaire and the results achieved by subjects on the POI. The results showed the TM group changed significantly in the direction of self actualization on eight scales of the POI. In addition, certain prospective meditator's expectations of self actualization changes were found to significantly correlate with results achieved on six of the 10 POI scales measured.

Using a TM experimental group and the POI as a dependent measure, the investigator was able to achieve very similar results to those reported previously. This adds support to previous findings which indicated that the variable of the TM technique was responsible for the observed increases in self actualization and that generally, the practice of TM tends to promote improved psychological health. As with the previous two studies, however, it is not clear whether it is an important element operating within the technique itself (such as

the effect of the Mantra) which leads to the results reported or whether other factors including the variables to be investigated in the present study play a role in the effects elicited. The fact that in the study by Russie a positive relationship was found between meditators expectations of improvement in self actualization and the results achieved on six out of the 10 scales measured suggests that other variables such as expectancies play a strong part in the outcome.

Another recent dissertation study investigating the effect of TM on self actualization was performed by Joscelyn (1979). The noticeable difference between this study and the previous three is the inclusion of a Treatment Control group (TC) consisting of 18 subjects, in addition to the TM group (N = 24) and a Non-Meditating Control group (N = 10). The Treatment Control group consisted of subjects involved in a human relations workshop during the two month treatment period. Subjects were pretested on the POI, Rotters Internal-External Locus of Control Scales (I-E), and the Marlowe-Crowne Social Desirability Scale (MCSD). After the two month treatment period, subjects were posttested on the same measures. An Analysis of Variance and one-tailed t-tests were applied to the pre to post test changes for each of the groups.

The results of the ANOVA showed no significant differences on pre to post test changes between the three groups. However, the t-test showed a significant improvement for the TM group on eight scales of the POI and the Internality scale of the Rotters I-E, whereas the TC group showed significant improvement on four scales of the POI and the Non-Meditating Control group showed a significant improvement on only one POI scale. The results achieved by Joscelyn are somewhat less impressive than those achieved in the previous three studies, since the TM group did not show significantly greater improvement on measures of self actualization than the other two groups. However, the fact that the TM group significantly improved on more scales of the POI than the TC group by two to one and more than the Non-Meditating Controls by eight to one indicates that the practice of TM is effective in facilitating greater self actualizing values and behaviour.

The importance of Joscelyn's study, in addition to these findings, is that subjects involved in a human relations workshop (designed in

part to promote a greater sense of personal integration, self esteem and interpersonal skills) showed significant changes on the POI exceeding that of the Non-Meditating Controls. This may indicate that involvement in any form of self improvement or awareness program will tend to increase self actualizing values and behaviour, or alternatively that the expectations of those involved in treatment applications (e.g. TM and the Treatment Control conditions) have a placebo effect which is partly responsible for these changes.

2. Investigations Using Measures Other than the POI

Turning to investigations into the effect of TM on self actualization using dependent measures other than the POI, Ferguson & Gowan (1977) studied the effects of both short term and long term practice of TM on self actualization and anxiety. Three groups of subjects were used:

1. a TM group of short term meditators who only had practiced the technique for the treatment period of six and a half weeks
2. a TM group of long term meditators
3. a control group of non-meditators who had regular encounter group class meetings once per week during the treatment period.

The dependent measures chosen were the Northridge Developmental Scale (measuring self actualization, aggression, depression and neuroticism), the State-Trait Anxiety Inventory (STAI) and the Cattell Anxiety Scale (IPAT). Subjects were pretested on all of the measures prior to the short-term meditators learning TM. A post-test was administered six and a half weeks later.

The results were as follows:

1. the TM group demonstrated changes in the direction of improved mental health on all six indices. The changes on five of the six indices were significant
2. the short term meditators showed a significantly greater increase in self actualization than non-meditating controls ($p < .025$)

3 the short term meditators showed a significant decrease in depression ($p < .005$) and neuroticism ($p < .025$)

4 the short term meditators showed a significant decrease on the STAI ($p < .0005$) and on the Cattell Anxiety Scale ($p < .025$)

5 the long term meditators scored significantly higher than short term meditators on self actualization ($p < .001$) and significantly lower than short term meditators on Depression ($p < .01$), Neuroticism ($p < .005$), the STAI ($p < .025$), and the IPAT ($p < .0005$);

6 no significant changes occurred for non-meditating controls.

This evidence has been referred to as strongly indicating that the TM technique elicits improvement in psychological health in several key areas, not the least of which are increases in self actualization and reduction in anxiety. These results are also noteworthy since they suggest that the longer a subject practices the technique, the greater will be the increase in self actualizing values and behaviour, accompanied by a greater reduction in anxiety. Furthermore, the non-meditating controls were receiving regular encounter group treatment designed to facilitate similar personal growth to that which was measured by Ferguson & Gowan. These factors considered in conjunction with the impressively high statistical results add strong support to the previous findings that the practice of TM tends to improve self actualization and reduce anxiety.

Although, as with the previous studies, several problems need to be mentioned. Firstly, the short term meditators showed baseline levels on anxiety, depression and neuroticism which were significantly higher than the control group and a baseline level on self actualization which was lower than the control group. This suggests that a regression to the mean may have been a factor and also indicates that less well adjusted subjects may be attracted to TM with positive attitudes, expectancies and motivation to achieve results. Secondly, the long term meditators were compared with a treatment control group which only operated for six and a half weeks. The post test for the long term TM group was administered after 43 months of practice. Therefore, there is no way of establishing with any degree of certainty whether or not after 43 months the control group would achieve the same

improvement. Finally, the encounter group treatment received by the control group, while promoting similar long term goals, fosters short term expectancies of increased insight or awareness into defenses, repressed feelings, and other psychological conflicts inhibiting personal growth which may initially lessen self confidence and increase anxiety. In this regard, it is interesting to note that the control group showed increases in neuroticism, depression and anxiety (on one scale) as well as a reduction in self actualization after the treatment period. While these drawbacks appear to be present, the overall results are impressive, especially in view of the degree of change demonstrated by the short term TM group. This does not, however, rule out the presence of the variables proposed in the present study as responsible for the changes observed.

A further study investigating the relationship of TM to self actualization and "negative personality characteristics" was carried out by Shapiro (1977). The relevance of this particular investigation, in terms of the present study, is that Shapiro surveyed the subject's preliminary expectancies, regularity of practice, supplementary program attendance, sex, age, and education to examine any correlations with the effects of the technique later achieved. He utilized one experimental group of 180 subjects about to begin the TM program. There were no control treatments administered. His subjects were pre-tested on the Northridge Developmental Scale (NDS) and the STAI before learning the TM technique. The subjects also completed a preliminary questionaire on expectancies and on demographic data. The subjects practiced TM for four months and were then post-tested on the NDS and the STAI. They also completed a follow-up questionaire on their regularity of practice and involvement in supplementary programs. His findings were as follows:

1 a significant increase in self actualization ($p < .001$) and significant decreases in negative personality characteristics (aggression, depression, neuroticism ($p < .001$)

2 a significant decrease in anxiety ($p < .001$)

3 one significant correlation between preliminary expectancies and changes on indices ($r = -.17$)

4 no significant correlation between attendance at

supplementary programs and changes on indices

5 a significant correlation between regularity of practice and change in self actualization (r = .15)

6 a significant correlation between pre-test personality characteristics and regularity of practice (ranging from r - .13 to r = .14)

This evidence lends some support to the previously reported findings of Ferguson & Gowan which suggest that the practice of TM improves self actualization and results in reductions in anxiety. The question of the personality types attracted to and benefiting from the technique remains unclear. Whereas the evidence presented by Ferguson & Gowan suggests that subjects high in anxiety, depression and neuroticism are attracted to TM, Shapiro's correlation between pre-test personality characteristics and regularity of practice indicates that subjects low in anxiety, depression and anxiety as well as relatively self actualizing are attracted and gain from TM. Another noteworthy point is that one significant correlation was found between preliminary expectancies and changes on indices, although, as Shapiro points out, this was only one of a number of expectancies surveyed. The most that can be said from these findings is that the evidence is contradictory as to the type of person who is likely to practice the technique regularly and receive benefit from it. However, in terms of its relationship to the present study, the subject variable of high or low susceptibility does not relate to negative personality characteristics (which were those investigated by Shapiro), but instead to the aforementioned antecedent variables. Since some (although small) correlation was found by Shapiro between expectancies using TM and since this is one element of the variables to be investigated here, there remains some likelihood that the type of person to benefit from TM is a high susceptibility subject

One further study into the effect of TM on personality factors indicating an outcome of improved psychological health and self actualizating values and behaviour merits attention here. Penner, et. al., (1973) conducted an experiment on the effect of an in-depth TM course on the personalities of the participants. The study utilized a group of experienced meditators who were pre-tested on the

Omnibus Personality Inventory (OPI) before taking part in an intensive 22 day program on TM entitled the "Arcata Course". The Ss then engaged in the course over the treatment period. This entailed attendance at videotaped lectures by Maharishi Mahesh Yogi three times daily as well as regular daily meditation sessions. The group of meditators was post-tested on the OPI following the 22 day treatment period. The scores of the experimental group were then compared with those of the normative sample of the test as described in the test manual.

The results were as follows:

Category I - anxiety level decreased for the TM group and was significantly lower than for the normative group ($p < .05$);

Category II -
1. the TM group was more expressive of impulses and more aggressive than normative group on pre-test, and moved in the direction of the norm on the post-test;
2. the TM group scored lower on Social Extraversion on the pre-test than the norm group, but moved in the direction of the norm on the post test;
3. the change for the TM group away from scepticism of religious beliefs in the direction of orthodox religious views was significant ($p < .05$);

Category III - no significant change for the TM group from pre-test to post-test on Aestheticism, Complexity, Autonomy, Altruism, Practical Outlook, and Masculinity-Femininity scales;

Category IV - The TM group did not differ significantly from the normative group on pre-test of Thinking Introversion, Personal Integration, and Response Bias. On the post-test of Thinking Introversion, Personal Integration, and Response Bias, the TM group scored significantly higher than the normative group.

These results have shown either a significant improvement or a movement in the direction of improvement for the TM group on several scales including indices of anxiety, expression of impulses and aggression, social extraversion, thinking introversion and personal integration after their involvement in an in-depth TM course. In other words,

this indicates that those already practicing the TM technique will tend to markedly improve in psychological health as a result of their involvement in an intensive course on TM. This probability has also been suggested by clinicians using TM to foster personal growth by their clients (Bloomfield, 1976). Two possibilities for this improvement in personality factors indicating greater self actualizing behaviour are apparent. Either the intense in-depth course helps the experienced TM practitioner to more accurately follow the correct meditation procedure (i.e. adhere more correctly to the technique), or it stimulates improvement through encouragement, morale boosting, heightening expectancies, and generally promoting an enhancement of involvement with the "mental device" and/or imagining associated with the suggestions of personal growth and positive behaviour change. The evidence presented by Penner, et. al. makes it difficult to discern which may have led to the improvements noted. However, one finding may give some indication. Penner, et. al. point out that the Response Bias subscale scores for the TM group increased significantly from pre-test to post-test. This indicates that the TM group was trying to impress by making a good response and suggests that the findings of their study are suspect. An interesting possibility is that while the improvements shown may be suspect in terms of indicating any effect of the program on the personalities involved, it may suggest that the training received led to a strong willingness to cooperate with the instructors in fulfilling the suggested outcomes of the training. This means that there may have been an involvement of at least one of the variables proposed within the present study in terms of the results achieved with TM on measures of self actualization. Although, in this particular case, the motives and expectancies appear to have unfortunately encouraged a "fake good" response. Therefore, it is not known whether these positive motives and expectancies had no effect on the dependent measure or contributed to the improvements shown.

E. Summary of the Effects of TM on Self Actualization and Psychological Health

To summarize the effects of TM on self actualization, investigators using various measures of self actualization, psychological health and personality characteristics have yielded results indicating that the practice of the TM technique enhances self actualizing values

and behaviour and improves psychological health. In four studies using the POI, statistically significant changes in the direction of greater self actualization were achieved on seven or eight of the 12 scales of the POI by subjects practicing the TM technique. In addition, an important factor in each of the studies is that on the two major scales of Inner Directedness and Time Competence the subjects practicing TM showed significant increases. These two major scales reportedly are the most reliable indicators on the POI of self actualizing values and behaviour. Further support for these findings was provided by three investigations into the effect of TM on self actualization and psychological health utilizing other dependent measures. In two studies using the NDS, significant improvement was observed on measures of self actualization, depression, neuroticism and anxiety in subjects practicing TM. In one of these studies a treatment control was compared with the TM group and the control group showed no significant changes. Finally, in one further study utilizing the Omnibus Personality Inventory, the results suggest that the practice of TM leads to an improvement in psychological health.

Taken together, these findings are impressive. However, they must be considered in light of certain drawbacks or contradictory findings in each of the studies. These include methodological weaknesses, findings related to an expectancy effect, findings related to an attempt to impress, and unclear evidence related to personality characteristics and their effect on outcomes. In spite of these drawbacks, the evidence suggests that some characteristic of the TM technique has a positive effect upon self actualization and upon general psychological health. The question that appears to remain is whether this beneficial effect is due to an element peculiar to the technique itself, such as the Mantra or some other aspect of the program, or to other mediating variables which are not unique to TM, such as those to be investigated in the present study.

F. Effects on Anxiety

1 Factors Involved in an Anxiety Response

The final section in the literature review of Transcendental Meditation will include significant studies relating to the effect of the TM technique on measures of anxiety. Prior to presenting these

findings, however, a brief discussion of factors involved in anxiety response will ensue. This may help clarify the components involved in anxiety as well as possible causal factors so that an understanding of how TM (as well as hypnosis and other relaxation techniques) may effect this state can be gained.

Borkovec (1976), gives a thorough treatment to the subject of the regulation of anxiety and offers insight into the components responsible for an anxiety reaction. His model involves cognitive, overt behavioural, and physiologic factors which overlap in terms of triggering and sustaining an anxiety response to a particular stimulus. While a thorough description of this process would be too lengthy and is unnecessary for the purpose of this study, the concept of individualized cognitive and behavioural factors such as cognitive avoidance responses, false feedback, misattribution, demand/expectancy, attention focusing as well as autonomic awareness in the maintenance of an anxiety response (and their place alongside of physiological response patterns) has relevance and merits attention. This was first mentioned in the literature review of hypnosis where the contention by Davidson & Schwartz that relaxation procedures have mode-specific effects on cognitive and somatic anxiety was presented (see p27). They suggest that different techniques may effect cognitive or somatic anxiety more dramatically depending on which mode is predominantly operational in the technique itself. In addition, the other important factor, according to Borkovec, is which element is predominant in maintaining the anxiety reaction. In other words, a technique which is cognitively oriented may have the most dramatic effect on anxiety if the physiological component maintaining the anxiety is relatively weak. Borkovec states this principle as follows:

> To the extent that the immediate anxiety reaction involves a weak physiological component, simple manipulations of the cognitive and behavioural components of fear (such as demand/suggestion) will be effective in changing those components. To the extent that the immediate anxiety reaction involves a strong physiological component, such manipulations will be ineffective and will be effective only after the autonomic component is reduced (p277-278).

In terms of the present study, all three of the treatment conditions to be utilized (e.g. hypnosis, TM and a Western meditation) appear to incorporate a strongly cognitive mode of operation. This suggests, according to the theories of Borkovec and Davidson & Schwartz, that the greatest effect upon anxiety should be in cognitive anxiety as opposed to somatic anxiety; although, the differentiation is not considered total by either of the authors mentioned and this helps explain some of the evidence reported in both hypnosis and TM on reductions in somatic anxiety.

While this sophistication in understanding anxiety response and treatment is still being developed and therefore at present leaves many questions unanswered, it may be an important consideration to bear in mind when reviewing the reported effects of TM on anxiety in this chapter as well as evaluating the final results of the present investgation in order to compare the effects of the treatment conditions on the State-Trait Anxiety Inventory (STAI). The present study will focus on predominantly cognitive measures (although the STAI incorporates elements of both cognitive and somatic anxiety). Interestingly, in this regard, Borkovec stresses the importance of cognitive factors in maintaining an anxiety response and in addition claims that

> Particular cognitive styles, already existing, or experimentally induced, are quite capable of precluding extinction of anxiety, despite repeated unreinforced CS
>
> (pp307-308).

The preclusion of extinction may indicate the strength of cognitive factors. In terms of the potential beneficial power of these factors in reducing anxiety, on the other hand, Borkovec writes

> Michenbaum's studies suggest that the presence or absence of self instructions importantly contributes to problem behaviour, while recent research on covert rehearsal indicates that cognitive instructions and imagery may be as powerful in improving performance as overt rehearsal
>
> (p270).

In terms of the mediating variables purported to effect anxiety using the three treatment conditions in the present study, the elements of cognitive instructions, rehearsals, and imagery advanced by Borkovec are remarkably similar to positive attitudes, expectancies and motivation and involvement in suggestion-related imagining. These cognitive factors may contribute to effects on anxiety, particularly utilizing a cognitive measure, and the results may provide further understanding of the mode-specific effects of these three techniques. In any case, mode-specific effects on anxiety need to be considered in the review of the literature in order to assess potential differentiation between cognitive and somatic effects. In addition, bearing in mind Borkovec's model, the importance of covert rehearsal and imagery in reducing an anxiety response warrants consideration in terms of their possible influence within the treatment conditions utilized in the present study.

2. Experimental Investigations into the Effect of TM on Anxiety

Turning to specific investigations into the effect of TM on anxiety, a number of controlled experiments will be reviewed which have relevance to the present investigation. As with the area of self-actualization and improved psychological health, the literature is extensive relating to the effect of TM on anxiety. This is expected, since in general terms TM may be classified as a relaxation technique. Therefore, scientific interest in the usefulness of the technique to reduce anxiety is predictable. The studies chosen for review here are those which have utilized effective control conditions and, with one exception, are those which have used the STAI as a dependent measure. This measure will also be incorporated into the present investigation.

Nidich, Seeman & Seibert (1977) investigated the influence of the TM program on State Anxiety to see if the practice of TM would reduce this specific type of anxiety, particularly after being subjected to a demanding task. Two groups of subjects were used. The experimental group (n = 8) consisted of subjects who learned and practiced TM for the six week duration of the experiment and who were exposed to the principles of the Science of Creative Intelligence (SCI). The control group (n = 9) did not meditate during the treatment period, but they were taught the principles of the SCI. Both groups were

pre-tested on the STAI - A State Scale two days prior to the experimental group learning TM. No significant differences on the STAI were found. Six weeks later, after the TM group practiced meditation and were taught the principles of SCI, and subsequent to the control group learning the principles of SCI, a demanding task was administered to both groups (Remote Associates Test). During this test both groups reported feeling anxious. Immediately following the test, the TM group was instructed to meditate for 15 minutes and the control was instructed to sit quietly with eyes closed for 15 minutes. Both groups were then post-tested on the STAI - A State Scale. The results showed a significant reduction in anxiety for the TM group (compared with the pre-test scores), whereas the reduction in anxiety shown by the control group did not reach significance.

These results suggest that the practice of the TM technique is more effective in reducing and recovering from an anxiety response than is the practice of sitting quietly with eyes closed. It also suggests that learning the principles of the TM program itself, even with resting quietly, is insufficient to bring about the same changes as the practice of TM. However, these findings may be somewhat suspect, since the control group were taught the principles of the TM program. This in itself could have established a negative expectancy effect, since the principles which were taught strongly suggest that one must practice the TM technique to gain full benefit from the program. This possible negative expectancy of the control group and the probable positive expectancy of the TM group indicate that the results achieved had something to do with the difference in expectancies between the two groups. Furthermore, the group with positive expectancies showed significantly greater changes in State Anxiety, which supports the position developed in the present study. This position is more strongly supported, since the TM group also had the opportunity to practice using a "mental device" possibly facilitating involvement in suggestion-related imagining, whereas the control group only had one opportunity to relax directly before the post-test. Even though both conditions may allow for a shift in cognitive orientation, the TM group had the advantage of practicing this shift in orientation, whereas the control group did not. Overall, the differences in subject variables (e.g. positive attitudes, expectancies, and motivation as well as involvement in suggestion-related imagining)

could possibly have affected the results.

In an investigation into the effects of TM on trait anxiety, Stern (1977) compared a group of meditators who had been practicing the TM technique for between six months and six years ($n = 37$) with a control group of non-meditators about to learn the TM technique ($n = 15$). Both groups were administered the STAI-Trait scale. The results showed that the TM group scored significantly lower on the measure of Trait Anxiety than the control group at the $p < .001$ level.

The results of this investigation support previous findings and general opinion that the practice of the TM technique tends to reduce anxiety. This particular finding would suggest that this reduction in anxiety relates to general levels of trait anxiety in addition to specific state anxiety. The strength of this finding may be minimized, however, due to one methodological problem and at least one alternative interpretation of the findings. In the first case, since no pre-test was utilized, there is no way of knowing whether the TM group began using the technique with a higher level of trait anxiety, the same level of trait anxiety, or a lower level of trait anxiety than the control group. Therefore, the difference shown in the results may have already existed prior to their practice of TM. Recalling the results of previous studies mentioned, one study suggested that those interested in learning TM were high in anxiety (Ferguson & Gowan, 1977) and one study indicated that those low in anxiety were interested in learning TM (Shapiro, 1977). In Stern's study, there is no way of determining whether the TM group was comparable to the group evaluated by Ferguson & Gowan or comparable to the group evaluated by Shapiro, or unlike both groups prior to learning TM.

An alternative interpretation, taking into consideration this factor, would be that while the control group may have incorporated the same attitudes, expectancies and motivation for improvement as the TM group, and therefore were more comparable than a non-meditating control group not about to learn TM, it is possible that this variable is not effective until coupled with some element of the practice of the technique. In keeping with the position of the present study, this may mean that only when positive attitudes, expectancies and motivation are joined by a shift in cognitive orientation to involvement in suggestion-related imagining are the beneficial results

achieved. In other words, the results achieved in terms of anxiety reduction may be due either to a unique aspect of the TM technique (such as the Mantra) or to the operation of the mediating variables to be investigated in the present study.

In an experiment using a population other than university students, Ballou (1977) studied the effects of TM on anxiety using inmates of Stillwater State Prison. He used three groups of subjects for the study:

1 an experimental group who learned and practiced TM during the study;

2 a control group interested in learning TM but who did not practice the technique;

3 a control group not interested in learning TM.

All three groups were pre-tested on the STAI. The STAI was then administered on a weekly basis over the 10 week duration of the treatment period, with the experimental group learning the TM technique after the second week. All three groups were post-tested on the STAI at the end of the 10 week period. The results showed that on the pretest all three groups scored high on the STAI - State Scale with no significant difference between groups. By the third week, the experimental group scored significantly lower than both of the control groups on the State Scale and maintained that position for the remainder of the study. The control groups' scores on the State Scale did not change significantly throughout the duration of the experiment. The results were significant at the $p < .001$ level.

These results indicate that the practice of the technique significantly reduces State Anxiety after a short period of time and maintains this level with continued practice. In addition, this reveals that those uninterested in learning TM as well as those motivated to learn the technique do not experience a reduction in State anxiety over the same period of time due to other factors. This suggests that motivation to improve, in terms of anxiety reduction, is insufficient by itself to produce the desired effect. Therefore, the evidence tends to confirm that the practice of the TM technique was the variable responsible for the significant change in the dependent

measure rather than the motivation to improve. Although the evidence supporting the uniqueness of the technique as the variable responsible would have been stronger if one of the control groups in this study had been given a placebo treatment.

The fact that the Ss in the control group indicated interest in learning TM but were prevented from doing so during the study may have counteracted any motivational effect, especially if viewed according to the position taken in this study in terms of the necessity of both a motivational, expectancy element and an involvement in imagining element as part of the subject variable. In other words, they may have fulfilled the first part but were unable to fulfill the second part of the variable by being disallowed to practice the technique. One other factor which bears mentioning is that the experimental group receiving lectures and personal instruction in TM as part of the program were given very special attention not afforded the control group. This attention would also have included encouragement and expectancy for improvement which may have been the opposite message implied or expressed to the control groups; especially if they had the opportunity to discuss the experiment with inmates in the TM group. Therefore, any one of a combination of the following may have been responsible for the changes recorded:

1 the variables to be investigated in the present study and associated with high susceptibility

2 the TM technique

3 special personal attention

4 encouragement and expectancy for improvement.

Among the more recent studies dealing with the effect of the TM technique on measures of anxiety level was that of Dillbeck (1977). His experiment was conducted over a two week treatment period and involved three groups:

1 group A relaxation control (n=17)

2 group A meditation (these were the same subjects as Group A relaxation control who later learned the TM technique)

3 group B - TM who learned the TM technique and practiced it during the two week period.

All subjects were pre-tested on the STAI - Trait Scale prior to the TM group learning to meditate. During the treatment period, group A relaxation sat quietly with eyes closed for 15 minutes twice daily. Group B - TM practiced the TM technique twice daily for 15 minutes. Both groups were then post-tested on the STAI - Trait Scale. Following this period, group A - meditation learned the TM technique, practiced it for two weeks and were then retested on the STAI - Trait Scale for comparison with the other two groups.

The results were as follows:

1 the TM group (group B - TM) showed a significantly greater reduction in anxiety than relaxation controls (group A - relaxation control)

2 Group A meditation showed significantly greater reduction in anxiety than Group A - relaxation control

3 the TM group (group B - TM) and Group A - Meditation showed nearly identical reduction in anxiety.

This study appears to have been well controlled, utilizing a treatment control group who later learned the TM technique and were measured after both treatments. Furthermore, the fact that both experimental groups showed significant reductions in Trait anxiety over and above that achieved by the same subjects resting with eyes closed as a treatment condition before learning TM, strongly suggests that the use of the TM technique was responsible for the reductions in anxiety measured. While it appears that some element of the TM technique was responsible for the changes observed, one must be cautious in interpreting this to mean that the element involved is unique to TM. The TM group and the group A - meditation subjects attended introductory lectures on TM discussing the possible benefits received from the practice. The relaxation controls received no such suggestion of benefits to be received and therefore the expectancy effect was not fully controlled for. Therefore, it cannot be fully ruled out that variables in addition to the technique or other than the unique aspects of the technique (e.g. the Mantra) were responsible for the effects noted. This possibility is also advanced by Smith (1975) in his review of the literature on the psychotherapeutic aspects of meditation. In relation to reported findings of

decreased anxiety and general psychopathology through the use of meditation he writes

> this general finding is not clear evidence that meditation is in and of itself therapeutic. The critical therapeutic variables underlying meditation could be something other than the meditation exercise. Two main possibilities not controlled for in the studies reviewed are
> (a) expectation of relief and
> (b) the regular practice of sitting quietly
>
> (Smith, 1975, p562).

In Dillbeck's study, the second possibility mentioned by Smith was adequately controlled for. However, it is not known whether the relaxation controls had the same expectation of relief as the experimental groups or not. Furthermore, even if these two possibilities were the same for all groups, other underlying therapeutic variables than those posited by Smith could have been responsible for the results achieved. In keeping with the position developed in the present study, the subject variable utilized by the experimental groups but not utilized by the relaxation control group which led to greater reductions in anxiety may have been high hypnotic susceptibility, consisting of positive attitudes, expectancies and motivation along with involvement in suggestion-related imagining. Unique elements of the practice of the meditation exercise may not have been responsible for the significantly greater reductions in anxiety as much as the added expectancies and motivation promoted by the TM program coupled with the regular practice of a "mental device" shifting the cognitive orientation away from objective awareness to involvement in suggestion-related imagining. However, subjects practicing the relaxation control condition may have incorporated both of these variables to some extent. In this regard, Carrington (1977) suggests that subjects merely relaxing with eyes closed may in fact achieve the "meditative mood" and thereby receive some benefit by it. This would seem to be most probable for high susceptibility subjects in the relaxation control group who may be able to operationalize these variables more easily than low susceptibility subjects. However, without

the added suggestions offered in introductory lectures (or by instructors) and guidance in a technique shifting cognitive orientation it would be expected that results achieved would be less than those achieved by subjects instructed in these areas. The results of the Dillbeck study support this interpretation.

While the number of studies finding a relationship between the practice of the TM technique and reductions in both state and trait anxiety indicate that some aspect of the TM program produces these psychotherapeutic changes, it remains uncertain whether the mediating variables responsible are elements unique to the practice of the TM exercise (e.g. the Mantra), expectancies and motivation, close personal attention, the practice of regularly sitting quietly with eyes closed, a shift in cognitive orientation from an objective perspective to involvement in suggestion-related imagining, or any combination of the above. In addition, if elements of the TM technique are responsible for reductions in anxiety, as the evidence suggests may be the case, is this because of any uniqueness of the TM technique or are there common mediating variables leading to this effect in various forms of meditation, hypnosis, and other relaxation techniques? Some clarification of this question may be gained from the results of the present study.

Another investigation into the effects of various meditation techniques (including TM) on anxiety relates closely enough to this area to warrant attention. Davidson, Goleman & Schwartz (1976) studied the effect of length of time having practiced meditation on measures of attentional absorption and trait anxiety. Four groups of subjects were utilized:

1 non-meditating controls

2 beginning meditators

3 short-term meditators

4 long-term meditators.

The meditators in groups two, three and four were practicing various forms of meditation including TM and Zen. The Ss in all four groups were administered three dependent measures:

1 the Shor Personal Experience Questionaire (PEQ)

2 the Tellegan Absorption Scale (TAS)

3 the STAI - Trait Scale.

The comparative results showed that there was an increase in intensity on PEQ from controls to long-term meditators, that there was a progressive increase in the score on the TAS from controls to long-term meditators and that there was a progressive decrease in scores on the STAI - Trait Scale from controls to long-term meditators. The consistency of effects recorded on all three measures, including anxiety, utilizing practitioners of varying forms of meditation suggests that there is a common feature of meditation techniques which is responsible for beneficial psychological effects, and that these beneficial effects accumulate over time. This latter finding of increased benefit over time was supported by the results of Ferguson & Gowan previously mentioned (see p92).

Unfortunately, there is no way of determining whether any form or forms of meditation had a greater effect than any other on the measures used since there was no attempt to differentiate between practitioners of various disciplines. However, the results leave open the possibility that there are common variables interacting with various forms of meditation (including TM and a Western Meditation to be utilized in the present study) which lead to reductions in anxiety, and that those variables may be the ones proposed in this study. In addition, considering the observed effects of hypnosis on reductions in psychopathology, including reductions in anxiety, the likelihood of the same variables responsible for changes with the use of meditation as also responsible for changes reported with the use of hypnosis remains high.

One further study deserves attention here, since the author investigated the effect of TM on trait anxiety and self esteem, both of which relate closely to the dependent variables utilized in this study. Berkowitz (1977), in a dissertation study, randomly assigned subjects interested in the TM program to four groups. Group E1 was assessed just prior to learning TM and post-tested five weeks later, Group E2 was assessed just prior to learning TM and post-tested 13.5 weeks later. Group C1 was assessed

and then reassessed after a five week period, and just prior to learning TM. Group C2 was assessed and then reassessed after three months, but did not choose to learn TM. The dependent measures were the State - Trait Anxiety Inventory (STAI): Trait Scale and the Tenessee Self Concept Scale.

Results showed a significantly greater decrease in trait anxiety by the long-term TM group (E2) than by the Non-Meditating Control Group (C2). There was no significant correlation between frequency of meditation and degree of improvement. Berkowitz concluded that practicing TM for one to three months has a greater effect on trait anxiety than on self esteem and that practicing the TM technique is more effective than just making a commitment to practice it.

These results add further evidence suggesting that the practice of TM elicits beneficial psychotherapeutic effects in terms of anxiety reduction. However, previous findings with regard to frequency of meditation and degree of improvement (Davidson, et.al., 1976; Ferguson & Gowan, 1977) were not supported. The significant reduction in Trait anxiety is also impressive since this is considered a more enduring anxiety trait. The failure to find any significant change in self esteem as a result of practicing TM is more difficult to explain. It is possible that if other aspects of self actualizing values and behaviour were assessed (e.g. time competence and inner directedness), then significant improvement would have been found, since self esteem (self regard) is only one of the subscales of the POI and interrelated to the other areas of self actualization.

The overall results of Berkowtiz's study are perhaps less impressive than that reported by other investigators, since significant changes on only one measure were found for the TM group. In addition, there was no control for other treatment conditions, nor for an expectancy effect within treatment conditions. It is therefore possible that the results achieved by those using TM were due to the mediating variable proposed in the present study (hypnotic susceptibility) as well as to the antecedent variables of positive attitudes, expectancies and motivation along with involvement in imagining.

The final section of the literature review will be concerned with studies comparing the effects of hypnosis and meditation on

psychological health and functioning. This will be presented in order to evaluate areas of commonalities and differences in terms of both mediating variables and consequent effects, drawing specifically from the evidence derived from comparative investigations.

A COMPARISON OF HYPNOSIS AND MEDITATION

A thorough treatment of the literature dealing with hypnosis and Transcendental Meditation requires a separate chapter devoted to clinical and investigative opinion as well as empirical studies comparing the experience and the effects elicited with the two techniques. While similar subjective experiences, mediating variables and consequent effects from the two disciplines have been reviewed previously, these reports mainly have arisen from separate investigations. Therefore, it will be important, for the purpose of the present study, to review any remaining clinical opinions and findings where a direct comparison of hypnosis (or a closely related discipline) and some form of meditation has been made. Literature comparing hypnosis, relaxation training, meditation, autogenic training or other forms of relaxation/awareness techniques which have already been reviewed or mentioned (e.g. Benson, et. al., 1974; Glueck & Stroebel, 1975; Onda, 1974; Paul, 1969; Sacerdote, 1977; Walrath & Hamilton, 1975) may be referred to here, since these findings indicate a similarity of mediating variables and consequent effects. However, the primary focus in this section will be on those studies not previously mentioned.

Comparisons between various consciousness altering/self regulation techniques, including hypnosis and meditation, have been made by both clinicians and investigators alike. In this section the literature reviewed arises from two categories. Firstly there will be a presentation of clinical opinions regarding the differences and similarities between meditation and hypnosis or similar disciplines. Secondly, there will be a brief presentation of empirical evidence comparing meditation and hypnosis or a related discipline to ascertain whether existing evidence lends support to the aforementioned opinions. In addition, the supportive or non-supportive relationship of existing evidence to the position developed in the present study will be considered. In the latter instance, particular attention will be paid to evidence suggesting the incorporation of the mediating variables to be investigated in this study, or other alternatives.

Clinical Reviews Comparing Hypnosis and Meditation

Gellhorn & Kiely (1972) presented an article reviewing the neurophysiological and clinical aspects of mystical states of consciousness. Their review focused on many physiological correlates of the meditative "state" in comparison with autonomic-somatic changes found with related techniques. The detailed neurophysiological review undertaken by the authors extends to areas outside the scope of the present investigation. However, in terms of comparing the effects of meditation and hypnosis on psychophysiological functioning where the psychological and somatic overlap is apparent, a brief description of their position is indicated.

Gellhorn & Kiely discuss laboratory findings which they feel strongly suggest that the practice of meditation and other related techniques create a shift in nervous system responses by changing the balance from the Ergotropic to the Trophotropic side. This Trophotropic function activates autonomic changes of reduction in cardiac rate, blood pressure, sweat secretion as well as pupillary constriction and increased gastro-intestinal motor and secretory function. On the somatic level, this is manifested by a synchrony of EEG, a loss of skeletal muscle tone and increased secretion of insulin. At the behavioural level, they maintain this is evidenced by inactivity, drowsiness and sleep. The Ergotropic system, conversely, activates the opposite autonomic response, somatic manifestations, and behavioural activity, including elevation of adrenalin output, behavioural arousal, and heightened emotional activity and responsiveness. They suggest that the state of "relaxed awareness" precipitated by meditation and related techniques is neurophysiologically produced through activation of some Trophotropic functions, but that there is also a compensatory activation of some Ergotropic functions which prevent the subject from passing into a state of sleep.

While Gellhorn & Kiely recognize similarities in the way in which meditation and related techniques physiologically elicit changes associated with relaxed awareness, they conclude that in terms of hypnosis, the psychophysiological states achieved differ significantly. They write that:

> Physiologically as well as psychologically, the states of consciousness produced by the Zen and

> Transcendental techniques of meditation seem distinct from common states such as wakefulness or sleep, and distinguishable as well from the spectrum of states elicitable through hypnosis. There would, in fact, appear to be nothing physiologically distinctive of the hypnotic state, but rather that a range of affective and behavioural patterns may be hypnotically induced whose physiological correlates are indistinguishable from those characteristics of the waking state. The principle psychological distinction from the normal would appear to be the suspension of autonomous will or intentionality. In the latter respect, there would appear to be some degree of overlap between hypnosis and the states of consciousness associated with meditation and ecstacy
>
> (pp402-403).

While the present study will not investigate physiological correlates of hypnosis and meditation, the conclusions reached by Gellhorn & Kiely may be relevant. If the hypnotic technique can only elicit a range of affective and behavioural patterns which have no physiological correlates outside of the normal waking state, then the psychological and psychotherapeutic effects of hypnosis reported earlier have either occurred distinct from physiological changes or they accompany physiological changes under certain conditions for which Gellhorn & Kiely could not find evidence. This may have a bearing on the present study, since the evidence reported by Gellhorn & Kiely indicates that hypnosis and meditation are separate states, eliciting separate psychophysiological effects. This would of course mean that the position hypothesizing common mediating variables between hypnosis and meditation would have to be discarded. However, the opinions of Gellhorn & Kiely in this area are not entirely supported.

In a more recent review of relaxation elicitation through what he refers to as "neutral hypnosis", Edmonston (1977) presents a contrary opinion to that of Gellhorn & Kiely. In reviewing the literature comparing hypnotic states with the relaxation response, he

concludes that they are virtually the same. He presents evidence from a number of studies, including that of Benson, Beary & Carol (1974), comparing physiological indices of both hypnosis and relaxation. He maintains that, with some exceptions, common effects were observed. He states:

> The physiology of subjects in hypnosis tends to yield the same sort of changes as that of subjects in a relaxation condition. These changes (or lack thereof) closely parallel those seen in the relaxation response described by Benson, Beary & Carol (1974)
>
> (p73).

In view of Gellhorn & Kiely's conclusion, and considering the interpretation of Edmonston that there are similar physiological effects elicited by hypnosis and relaxation techniques, the physiological relationship between hypnosis and meditation remains unclear. Although the balance seems to weigh in favour of a similarity in state and consequent effects, particularly when one takes into account the findings of Benson, Beary & Carol that similar mediating variables appear to be responsible for eliciting similar effects with hypnosis autogenic training, mantra meditation and Jacobson's Progressive Relaxation. The remaining clinical opinions, in fact, underscore the diversity of opinion on this subject and therefore indicate the lack of certainty with respect to this relationship. These are most pronounced in the area of physiological correlates, but uncertainty is also evident with respect to psychological effects.

In their book discussing the benefits to be derived from the TM program, Bloomfield & Kory (1976) strongly support the conclusion reached by Gellhorn & Kiely that hypnosis and meditation elicit separate states and different psychophysiological effects. They interpret hypnosis as involving a volitional component, or effort to achieve a goal, as well as belief in the power of the hypnotist. Conversely, they review the TM technique as non-volitional, effortless, and claim that beneficial effects may be realized by a person sceptical of the program. They write that

> Scientific research and clinical hypnotherapists have verified that the TM technique is neither related to hypnotic induction nor produces a state even vaguely similar to a hypnotic trance (p101).

While Bloomfield has investigated the effects of TM on psychopathology and has used the TM program as an adjunct to psychotherapy, his conclusions here seem overstated and lacking in an adequate consideration of the evidence which suggests that similarities in the two states do exist.

In terms of the verification by clinical hypnotherapists, the comments referred to earlier by Sacerdote (1977) tend to disclaim this contention. As a clinician utilizing hypnosis to elicit mystical states as part of the psychotherapeutic process, Sacerdote states that

> If we compare the subjective experiences of people trained in Transcendental Meditation with the experiences spontaneously reported by good hypnotic Ss, we find similarities if not identity... (p311).

Furthermore, other experienced clinicians and investigators have noted the similarities in underlying variables, state experience, and consequent effects between hypnosis and meditation. Writing from a psychodynamic viewpoint, Erickson & Rossi (1976), for instance, suggest that hypnotic suggestion is actually utilizing a person's own mental processes in ways that are outside his usual range of ego control. They claim that an unconscious search goes on in everyday trance experiences when attention is fixated, and they relate the altered states of consciousness reportedly produced by hypnosis, meditation and other disciplines as capable of similar transformations. They comment,

> Altered states of consciousness, wherein attention is fixated and the resulting narrow frame of reference shattered, shifted and/or transformed with the help of drugs,

> sensory deprivation, meditation, biofeedback or whatever, follow essentially the same pattern but with varying emphasis on different stages
>
> (p171).

In essence, then, Bloomfield & Kory suggest that the TM technique produces a unique psychological state with beneficial consequent effects, whereas Sacerdote and Erickson & Rossi suggest that a similar state is elicited using hypnosis and meditation, primarily due to the underlying variable of attention fixation. In terms of the present study, Bloomfield contends that positive attitudes, expectancies and motivation are unnecessary for benefits to be received and that even a sceptic may benefit from the technique. However, this is an assumption, and without experimentation one cannot know how many true sceptics have found benefit and how many are the "drop-outs" from the TM program. In keeping with the position developed in this study, it is probable that some people who agree to learn TM claim to be sceptical but are also subconsciously hoping to be convinced of the benefits they will derive, while others are more completely sceptical and in fact find no benefit from the technique and later discontinue the practice. Therefore, the claim by Bloomfield does not rule out the existence of the first subject variable associated with high sucsceptibility - positive attitudes, motivation and expectancies toward the situation - which is posited as common to both hypnosis and meditation. In terms of the second subject variable, comprising a shift in cognitive orientation from an objective perspective to involvement in suggestion related imagining, the Mantra (or mental device) and the attention fixation referred to by Erickson & Rossi may encourage this shift in cognitive orientation and therefore lead to involvement in suggestion-related imagining in both hypnosis and meditation.

A further clinical opinion dealing with the relationship between hypnosis and meditation which attempts to account for both differences and similarities observed warrants attention. Davidson & Goleman (1977) compare the effects elicited with both techniques. They view meditation in terms of susceptibility levels and response patterns to stimuli which are specific to the type of meditation. They then

contrast this with hypnosis. In terms of hypnotic susceptibility and its relationship to attentional competence, they cite evidence which shows that attention self regulation is associated with high performance on hypnotic susceptibility scales. Relating this subject variable to meditation, they write,

> If tests of hypnotizability do in fact reflect attentional competence, then we might expect to find that people who are initially attracted to meditation are more highly susceptible before beginning their practice than a comparable control group
>
> (p295).

As referred to earlier (p5), this relationship was partially confirmed by Walrath & Hamilton who presented evidence which suggested that either the practice of TM led to increases in hypnotizability or that high susceptibility subjects were attracted to TM. Although Davidson and Goleman refer to this similarity between hypnosis and meditation in terms of attentional competence as a subject variable, they also suggest that there are differences between types of meditation in terms of specific response patterns and the response patterns elicited through hypnosis. According to Davidson & Goleman, "concentrative" meditation and "mindfulness" meditation affect the stimulus set (or physiological sensitivity) of the subject, although in a different manner, while in hypnosis the subject may report analgesia, for example, yet physiological reactions remain unchanged. They conclude in this regard that

> it appears that procedures based upon suggestion act primarily on the output side of the organism and alter the response set, while other altered states appear to exert consequential effects on the input or afferent side and alter the person's stimulus set
>
> (p299).

Therefore, while susceptibility levels seem to correlate with a subject's effectiveness in utilizing hypnosis and meditation, Davidson & Goleman suggest that the state changes and concomitant

response patterns elicited are different. However, they do comment that further research is necessary to determine whether high susceptibility subjects could show alterations in stimulus set during certain types of hypnotic suggestion. They state that

> It may be that the interaction of certain procedures with Ss who are highly susceptible would result in the type of attentional change characteristic of concentrative meditation (p299).

This has direct significance for the present study, since high susceptibility subjects will be utilized in both hypnosis and meditation treatment conditions. If encouragement of the mediating variables is the common factor necessary for high susceptibility subjects to manifest the changes in attention which Davidson & Goleman suggest are characteristic of concentrative meditation, and if these variables are common to hypnosis, TM and a Western Meditation, then common consequent effects should be elicited through the three treatment conditions under investigation. The clinical opinions of Edmonston, Erickson & Rossi, Sacerdote, and Davidson & Goleman indicate that a relationship between the state and consequent effects of hypnosis and meditation exists, although the precise nature of this relationship remains unclear. Physiological processes concomitant with the state changes induced by both hypnosis and meditation seem highly variable and this may indicate further difficulties in using autonomic correlates to investigate the similarities and differences in the two disciplines. This, of course, is beyond the scope of the present study.

On the other hand, in terms of the psychological state changes, the range of alterations in consciousness produced by the two disciplines appears extensive and therefore may indicate the complexities facing investigations attempting to study the similarities and differences in state effects. This also lies outside the scope of the present study. In terms of the psychological and psychotherapeutic effects of the two disciplines, there are also controversial areas. However, considering the number of investigations, clinical case reports, and opinions suggesting common effects produced by the

two states, and using this information to devise a study which carefully controls for the subject variables recognized in hypnosis, some clarification of this relationship may be achieved. Furthermore, the variables to be investigated in the present study, which have provided a convergence of paradigms in hypnosis theory, may also offer some clarification of the relationship between hypnosis and meditation by showing that the same factors are responsible for common consequent effects for high susceptibility subjects. However, the contrary opinions of Gellhorn & Kiely and Bloomfield & Kory inject a note of caution in this hypothesis and perhaps are an indication of a more complex relationship between hypnosis and meditation than has previously been suggested.

The fact that subjects have shown both similar and different state changes, autonomic changes, and consequent effects using both hypnosis and meditation may indicate that the variables underlying the technique, in terms of those to be investigated in the present study, are held in common but that when coupled with another subject variable, such as the intentions for use of the technique, they create differing psychophysiological effects. For instance, a subject intending to use the imagery component (or mental device) to avoid experiencing unpleasant thoughts or sensations may be involved in "delusional imagery" with accompanying effects. Another subject intending to use the imagery component as a focal point may achieve a shift in cognitive perspective which may be termed "ideational imagery" and achieve a state which in hypnosis has been referred to as observer consciousness or the "hidden observer" with accompanying effects (Shor, 1965; Bowers, 1976). The subject may distract himself through involvement in imagining (or a mental device) in the first instance, and promote a passive, detached awareness through involvement in imagining in the latter instance. In other words, both techniques may allow for the underlying variables to be utilized in varying ways and thereby create both similar and different effects depending upon the specific manner in which they are used. This mental set or intentionality acting upon the proposed mediating variables may have something to do with the confusion in the literature relating to both hypnosis and meditation over volition or striving. While some researchers conclude that striving is a necessary element of hypnosis and counterproductive in meditation, others conclude that beneficial psychological effects result from both due

to a relaxed state which is contrary to striving. Even goal-directed fantasy, as treated by Spanos, is associated with non-volitional effects using hypnosis.

Before turning to the remainder of the literature comprising controlled experimentation, perhaps the concluding clinical opinion regarding the relationship between hypnosis and meditation should be left to Carrington (1977). She writes,

> The relationship between meditation and hypnosis is not entirely solved, however. It is possible that in the broadest sense of the term, meditation is a form of 'hypnosis', although it is certainly not the kind of hypnosis we know in the West. Western hypnosis is a highly motivated state where the subject plays a 'role' acting out certain prescribed actions or thoughts. Abraham Maslow, who has called the Western form 'striving hypnosis', points out that a much less familiar type, 'being hypnosis' allows the subject to move away from role playing and enter an intense absorption similar to that of 'peak experiences' or mystic states of contemplation. This being hypnosis is used almost exclusively for certain spiritual disciplines such as Yoga or Zen. It is possible that it is a form of meditation, or vice versa
>
> (p26).

It might only be added that Western hypnosis does not always involve role playing, in the opinion of many researchers and clinicians. Furthermore, the reports indicate that relaxation hypnosis may be utilized in such a way that the resemblance to Maslow's concept of "being hypnosis" is remarkably similar, and that this use of hypnosis is not exclusive to Eastern spiritual disciplines, but is used frequently in hypnotherapy as an induction procedure. Therefore, the incorporation of the variables to be investigated in this study (e.g. those associated with susceptibility, leading to non-volitional, effortless experiencing) may lead to the experiences of "being hypnosis" in Maslow's terms, or the "meditative mood" in Carrington's

terms, utilizing hypnosis, Transcendental Meditation, or a Western Meditation.

Empirical Studies Comparing Hypnosis and Meditation

Research studies comparing the effects of hypnosis (or a closely related discipline) and meditation are not large in number, and those investigating common underlying variables are very few. Several of these studies have been mentioned earlier in the literature review where this was deemed appropriate. To conclude the review of the literature, a remaining few significant studies bearing on the relationship between the two disciplines will be discussed.

Van Nuys (1973) conducted a correlational study to explore the relationship between meditation and hypnotizability. He hypothesized that the ability to meditate would show strong relationship to hypnotizability due to the common underlying variables of concentration, selective attending, and absorption in the object of attention while disregarding irrelevant stimuli. He comments that hypnotic induction produces a

> kind of sensory deprivation which in turn leads to a regression within the ego. Thus ... it is through a selective attending that a S enters hypnosis. The fact that some people are able to enter hypnosis through their selective attending and some are not suggests, among other possibilities, differences in the degree or quality of their attending
>
> (p60).

He investigated the relationship between attentional skill and both meditation and hypnosis by recording the number of intruding thoughts or perceptions his subjects experienced while concentrating on an object. His sample consisted of 47 university students who were instructed in the first experiment to focus their attention on a lit candle. They were asked to press a button each time they were aware of an intruding thought or perception as they attempted to focus attention on this object. In addition they were told that a fleeting thought would not count as an intrusion if they were able to

avoid getting caught up in a stream of thought about it. In other words, if they were able to remain aware of it, observe it as it occurs and return to the object of attention. The number of intrusions were then electronically recorded. In the second experiment, the same instructions applied. However, the object of attention was changed to an internal focal point - the subject's own breathing. The number of intrusions were measured in the same manner as in the first experiment. A correlational analysis was then performed on the number of intrusions by each subject with their scores on the previously administered scales of hypnotizability - The Field Depth of Hypnosis Inventory and the Harvard Group Scale of Hypnotic Susceptibility: Form A. A significant negative correlation would represent subjects' scoring low on intrusions (high attentional skills) and high on hypnotic susceptibility.

The results showed that the concentration, attending and absorption skills associated with meditation (and indicated by intrusion scores) correlated significantly with both measures of hypnotic susceptibility ($r = -.42$). These results are somewhat complicated by the fact that some subjects had both low intrusion scores (high attentional skills) and yet scored low on hypnotic susceptibility scales. In other words, some subjects are able to concentrate effectively and disregard irrelevant stimuli, although, contrary to Van Nuys' expectations, they are low susceptibility subjects. In general, these findings do indicate some relationship between attentional skills and the disciplines of hypnosis and meditation. In terms of the underlying variable of concentration as it relates to hypnotic susceptibility (and by inference also to the ability to meditate) Van Nuys concludes;

> The ability to concentrate appears to be a necessary condition for hypnotic susceptibility, but it is not in itself a sufficient condition, since some Ss who show good concentration are relatively insusceptible
>
> (p67).

The importance of these findings for the present study is that they suggest a relationship between the underlying variables and

state effects of hypnosis and meditation. In addition, these results indicate that the variables involved in attentional skills are necessary, but insufficient alone to produce high susceptibility and the consequent effects thereof. Therefore, since the second antecedent variable to be investigated in the present study appears to include the attentional components proposed by Van Nuys (e.g. concentration and disregarding irrelevant stimuli) and since it has been shown to be related to both hypnosis and meditation, it is expected to meet the necessary criterion for high susceptibility in all treatment conditions. Additionally, since the second antecedent variable may go beyond these attentional components in terms of creating a shift in cognitive orientation to involvement in suggestion-related imagining, and since this is operationalized along with the first variable, it may create the necessary condition for similar consequent effects using all three treatment conditions.

The relationship between hypnotic susceptibility and meditation in terms of the variables of attentional skills and absorption was demonstrated more recently by Spanos et. al. (1979). In their study, 50 undergraduate subjects were utilized. Twenty-five of these had previously practiced meditation (meditation group) and 25 had not previously practiced meditation (non-meditation group). Subjects were asked to attend to a nonsense sound (Mantra) for 15 minutes, electronically recording intruding thoughts during this period. They were measured on the Tellegen and Atkinson Absorption Scale, the Harvard Group Scale of Hypnotic Susceptibility, and three Lickert-type scales assessing self esteem, depressive affect, and psychosomatic symptoms.

Results of a correlational analysis showed that for meditators the HGSHS correlated significantly with intrusions ($r = -.36$ such that negative correlation equals positive attentional skills), self-rated degree of meditating ($r = .40$), and absorption ($r = .37$). However, meditators did not significantly differ from non-meditators on the HGSHS or absorption scores. They conclude that meditators appear better than non-meditators in sustained non-analytic attending and suggest that the possible difference may have been positive motivation and attitude by the meditation group.

These results help to confirm the importance of attentional skills in the practice of meditation and indicate some relationship between hypnotic susceptibility and attentional skills, depth of meditation and absorption. In addition, Spanos et. al. suggest that the antecedent variable of positive attitudes and motivation may have played a part in these results. In terms of the relevance to the present study, these overall results are compatable with the position developed and to be investigated here. However, the failure of Spanos et. al. to find any significant difference between meditators and non-meditators on hypnotic susceptibility and absorption scores suggests that this relationship may be complex and remains unclear.

This complexity is underscored by the results of a study performed earlier comparing the effects of TM, autohypnosis, and instructed relaxation on physiological measures. This investigation was carried out by Walrath & Hamilton (1975) and was briefly mentioned earlier. Three groups of volunteer subjects were used:

1 an experimental group of subjects already practicing TM

2 an experimental group of subjects practicing autohypnosis

3 a control group given an instructed relaxation treatment.

Baseline measures were obtained on heart rate, discrete galvanic skin resistance (GSR), basal GSR, and respiration for all groups. Measures on these scales were then taken periodically during each of the treatment conditions, and the changes on each of the measures achieved by the experimental groups and control group were compared. In addition, both TM subjects and non-TM subjects were administered the Stanford Scale of Hypnotic Susceptibility to determine if there was a relationship between hypnotizability and the practice of TM.

The results were as follows:

1 All groups showed a significant decrease in heart rate and there were no significant differences between groups

2 The reduction in the number of discrete GSR responses from baseline to experimental conditions was significant for all groups with no significant difference between groups

3 Baseline scores on basal GSR showed no significant difference between groups. A reduction was achieved on basal GSR for all groups with no significant difference between groups

4 All groups showed significant reduction in respiration with no significant difference between groups

5 44% of non-TM subjects scored highly susceptible (scores of 10 or higher) on the Stanford Scale, while 100% of the TM subjects scored highly susceptible with scores of 11 or 12 out of a possible of 12 on the Stanford Scale.

The authors conclude that

> In general, autohypnosis and meditation produce similar effects on autonomic arousal and the effects do not differ from those observed in an instructed relaxation control group. The relationship between hypnotic susceptibility and meditation bears further exploration. Results of earlier studies attributing unique hypometabolic functioning to the practice of meditative techniques must be interpreted with caution
>
> (p196).

Although their study dealt primarily with the physiological effects of TM and techniques closely related to hypnosis, the findings strongly suggest a relationship between hypnosis and meditation which includes hypnotic susceptibility in terms of a possible mediating variable.

While the aforementioned clinical opinions and reviews of findings indicate a controversy over the physiological correlates of the two disciplines as well as complexities for their future exploration, it may be concluded that enough evidence exists linking hypnosis and meditation, in terms of the subject variable of susceptibility and consequent effects, that the likelihood of this relationship being present in effects upon psychological health is high. The fact that similar effects upon improvements in self actualization and

reductions in anxiety were observed in separate investigations of the two techniques strengthens this hypothesis. In addition, the positive evidence relating hypnotic susceptibility to both meditation and hypnosis indicates that the mediating variables proposed in the present study are likely to be responsible for the effects elicited.

A more comprehensive investigation was conducted by Morse et. al. (1977). Their investigation is relevant to this study for several reasons. They investigated the effects of two types of meditation (TM and simple word meditation), hypnosis, autohypnosis, and simple relaxation on both physiological and subjective measures. In addition, the subjects were measured in a complex set of six conditions to determine whether certain conditions preceding the treatment technique supplemented or detracted from the results. The conditions were as follows:

1 alert state

2 relaxation state

3 hetero-hypnosis-relaxation

4 hetero-hypnosis-task

5 auto-hypnosis-relaxation

6 meditation - either TM or simple word type.

Also the subjects were divided into four groups in terms of their training prior to exposure to the experimental conditions. These were TM, autohypnosis, those trained in both, and those receiving no training. Finally, prior to the treatment condition of simple relaxation (No.6), subjects were told that other subjects utilizing this treatment mode had performed as well as those in the meditation and hypnosis conditions on previous trials. In other words, in addition to controlling for the practice of various disciplines and the treatment conditions within which these operate, a motivation and expectancy effect was also encouraged.

Therefore, to summarize the procedure, subjects in each of the four groups were assessed on both physiological and subjective measures in a baseline condition and while engaging in each of the treatment conditions; some with prior activities and others with varying activities as part of the treatment approach.

Overall, the complexity of experimental groups interacting with treatment conditions and, in addition, the inclusion of prior activities to arouse or relax, deal with a number of variables not adequately treated in previous studies. The introduction of task motivational instructions in the simple relaxation condition is also an improvement over previous studies. Therefore, it should yield evidence regarding common effects upon physiological and subjective measures as well as indicate the importance of one of the variables to be investigated in the present study. Although it varies from the present study in terms of its physiological and experiencial dependent measures, and in terms of treating only one of the suggested antecedent variables, the thoroughness with which comparative factors are explored using remarkably similar techniques should provide evidence which helps to clarify various questions regarding the relationship of hypnosis to meditation.

The results achieved by Morse, et. al. strongly support the conclusions reached in their literature review. Their comments were as follows:

> in a clinical study, meditation (TM and a simple word type) was shown to be a rapid, effective method for hypnotic induction. Hypnosis has been used for anxiety control, tension reduction, and analgesia and in a recent study TM was used effectively for the same purpose. Patients who used both hypnosis and meditation reported that the subjective sensations were similar for the two states. It has also been shown that hypnosis practice can result in psychological, medical, and sociological benefits similar to those reported for TM practice. Therefore, there appears to be similarities between TM and relaxation hypnosis
>
> (p307).

The evidence supporting this conclusion was as follows:

1 baseline figures for skin resistance (SR) showed that the TM group and the hypnosis group had lower SR (54.2 ohms) than the untrained group (97.1 ohms). Therefore, baseline figures suggest that either these subjects were initially

much more stressed or that the training caused the decrease in SR

2 When relaxation preceded either TM or hypnosis, the mean increase in SR was much greater than when the first condition was TM or hypnosis without prior relaxation

3 All of the measures in the relaxation state were significantly different than those in the alert state. No significant differences were noted between hypnosis, meditation, and relaxation

4 Significant decreases in SR were observed when Ss went from relaxation hypnosis to task hypnosis

5 Simple word meditation showed a greater increase in SR when going from the alert state to meditation than TM

6 On eight objective measures, meditation, relaxation hypnosis, and relaxation yielded similar physiological responses suggestive of deep relaxation. The authors hypothesize that simple relaxation may have been as effective on these measures due to motivation and expectation

7 Slow alpha EEG production was similar in meditation, relaxation hypnosis, and relaxation

8 When blood pressure readings were used as stressful stimuli, results indicate that TM tends to be more effective than relaxation and simple word meditation, but does not seem to be better than relaxation hypnosis

9 TM and simple word meditation reduced muscle activity better than hypnosis or relaxation

10 Physiological findings were opposite for task hypnosis compared with relaxation hypnosis and resembled the alert state except for synchronous alpha production

11 On subjective measures, Ss reported effects greater for meditation and relaxation hypnosis than for simple relaxation. Ss disagreed as to which of the two techniques was better

12 Alpha was produced by Ss concentrating to achieve a goal (hypnosis-task), therefore this effect may not be related to relaxation as previously thought.

The physiological effects of hypnosis and meditation observed by Morse et.al., while supportive of the relationship between the two states, is difficult to interpret; especially in view of the contrary opinions reported earlier. However, this area falls outside of the scope of the present study and is clarifying merely in terms of presenting further evidence for the commonalities of underlying variables and consequent effects hypothesized in the present study.

Particularly with respect to the investigation by Morse et.al., the evidence shows that common physiological effects may be elicited using hypnosis and meditation; and at times using simple relaxation. This suggests that the two states and concomitant physiological changes are potentially the same. In addition, the fact that when motivation and expectations are encouraged in simple relaxation, the results show similar effects on physiological measures to those achieved using TM and hypnosis, indicates that the variable of positive attitudes, expectancies and motivation are common to both meditation and hypnosis. Finally, subjective experiences were greater for Ss utilizing meditation and relaxation hypnosis than for those utilizing simple relaxation (even though expectancies and motivation were the same). Therefore, it is likely that meditation and relaxation hypnosis incorporate at least one other variable which elicits psychological effects which are not incorporated in simple relaxation. Both meditation and hypnosis appear to encourage a shift in cognitive orientation using a mental device which facilitates involvement in suggestion-related imagining. Since simple relaxation did not include a similar mental device, it seems probable that it is this second variable, which in conjunction with the first variable proposed, led to greater effects on subjective experience using these techniques.

This second variable appears to have a strong cognitive component of imagining, and this may help to explain the greater effects on a subjective measure which is cognitively oriented. Whereas, on physiological measures where cognitive mode-specific techniques may have less dramatic effects, hypnosis, meditation and simple relaxation yielded similar results. Perhaps hypnosis, meditation and simple relaxation may all act as a reciprocal inhibitor to some extent (see Boudreau, 1972) by reducing somatic reactions, due to the common variables of expectations and the regular practice of sitting quietly with eyes closed for a standard time twice a day as suggested by

Smith (1975). However, as stated previously, the nature of the physiological effects as well as the underlying variables responsible for these effects is unclear.

A very recent study, which lacked the complexity of controlled conditions evident in the investigation by Morse et.al., but instead is more closely related to the present study due to the similarity of the independent and dependent variables, was conducted by Hurley (1980). In this experiment, Hurley sought to provide further evidence with respect to self regulatory techniques and their psychotherapeutic effects by using a comparative design employing three different techniques. He recognized the reported evidence of beneficial effects using stress reduction and self regulation techniques, but also commented upon the contradictory findings reported (which has been mentioned in the present study).

Hurley randomly assigned 60 subjects to each of the four groups. These included:

1 a hypnotic treatment group in which subjects were taught both hetero and auto hypnosis with suggestions for security, calm and confident responses, and relaxation

2 a biofeedback training group which stressed attending to cues of deep relaxation

3 a trophotropic response group which was taught Benson's simple word meditation technique

4 a no treatment control group.

Subjects were pretested on the IPAT Anxiety scale, the Rotters I-E Scale, and the Ego Strength Scale (Barron, 1953). The three treatment groups met once per week for training and in addition practiced their technique twice daily for 15 to 20 minutes. They were all post-tested in the same measures after completion of the eight week treatment period.

The results of several Analyses of Covariance yielded the following findings:

1 a significantly greater reduction in anxiety by the treatment groups than by the control group

2 a significantly greater increase in ego strength by the treatment groups than by the control group

3 a significantly greater decrease in anxiety by the hypnosis group than the controls, however no significant difference on this measure between the biofeedback group and the controls

4 A significantly greater increase in ego strength by both the hypnosis and biofeedback group compared with the controls.

These results suggest that hypnosis is more effective in reducing anxiety than either simple word meditation or biofeedback training. In addition, it indicates that both hypnosis and biofeedback are equally effective in increasing ego strength. The success of hypnosis (with suggestions for relaxation and confidence) in eliciting reductions in self-report anxiety is expected since its effect on measures containing both somatic and cognitive anxiety items have been reported previously. The beneficial effect upon ego strength also supports previous findings.

The lack of similar success with simple word meditation in Hurley's study is more difficult to explain in terms of the position being developed in the present study. However, it is possible that since Benson's technique does not involve the indoctrination process of lectures imparting impressive research findings and psychophysiological explanations for the effectiveness of the meditation technique, the positive attitudes, expectancies and motivation encouraged in hypnosis and meditation such as TM are minimized. This could inhibit the effectiveness of the technique, especially if the antecedent variables proposed in the present study have important interaction effects. In addition, Hurley did not control for hypnotic susceptibility in his study. This was shown to be an important factor in outcome using Benson's simple word meditation (Benson et.al., 1978) and therefore the lack of control for this mediating variable may have confounded these results. This points further to the importance of examining these variables in terms of their possible mediating influence in hypnosis and meditation. Results of the present study may shed more light on the subject variables operating within these various techniques.

The final study to be considered was conducted by Barmark &

Gaunitz (1979). While this investigation of the subjective phenomena and effects upon physiological arousal of TM and relaxation hetero-hypnosis was not as comprehensive as that of Morse et.al. (1977), it is highly relevant here since it is a direct comparison of two of the treatment applications utilized in the present study and in addition is a very recent partial replication of the results reported by Morse et. al.

In their investigation, Barmark & Gaunitz utilized 23 meditators experienced in the practice of TM and 19 subjects scoring high on the Harvard Group Scale of Hypnotic Susceptibility. The hypnosis group had very little prior experience with hypnosis. Subjects acted as their own controls through periods of sitting quietly. During the meditation and hypnosis sessions, physiological measures of arousal were taken for each group respectively. Following these sessions, subjective reports of S's experiences during the practice of each technique were recorded.

The results showed that on physiological measures, there was no significant difference between the TM group and the relaxation hypnosis group; neither could be identified as producing a low arousal state. In addition, subjects in both the TM and relaxation hypnosis group reported similar subjective experiences. The authors concluded that both TM and relaxation hetero-hypnosis elicited similar phenomonological experiences, marked by an altered state of consciousness with accompanying changes in distribution of attention and in body image.

These results help corroborate the findings reported earlier which showed similar subjective experiences by those Ss practicing TM and those Ss in hypnosis (Sacerdote, 1977; Morse et.al., 1977). This is particularly true for relaxation hetero-hypnosis, which is the type to be used in the present study. The lack of evidence showing neither TM nor hypnosis to be identified with a low arousal state is more difficult to interpret. It appears, as stated earlier, that TM and hypnosis have greater effects upon cognitive measures such as reported subjective experiences. This may lend more evidence to the possibility of mode-specific effects with techniques using a mental device comprising a strong cognitive component of involvement

in imaginings. It may also help to explain the similar subjective reports of altered states of consciousness by both TM and hypnosis subjects. Conversely, the inconsistent physiological effects are beyond the scope of the present study, however the concept of mode-specific effects reported earlier may also help to explain these results with respect to somatic measures. The other interesting observation made by Barmark & Gaunitz is that both TM and hypnosis are associated with a change in the distribution of attention. This could be related to the common antecedent variable proposed in the present study of a shift in cognitive orientation from an objective perspective to involvement in imagining.

Summary of Studies Comparing Hypnosis and Meditation

While the psychological and related effects reported on self actualization and anxiety are somewhat divided, the majority of clinicians and investigators recognize at least some relationship between hypnosis and meditation. Separate investigations have supported this contention, although no experimental investigations comparing the effect of hypnosis and differing forms of meditation on self actualization and anxiety have been reported.

In terms of the underlying variables responsible for the beneficial effects on psychological health elicited using hypnosis and meditation, clinical opinion and empirical evidence have suggested both separate as well as common causes for these effects. These include unique aspects of the meditative technique (e.g. the Mantra), special attention given to the meditator by the instructor (a subject-experimenter interaction effect), group support and encouragement, a state of passive concentration, attention fixation, non-analytic attending and absorption, expectation of relief, regular practice of sitting quietly with eyes closed for a standard period of time each day, a quiet environment, relaxed muscle tonus, a passive attitude, a mental device used to shift the cognitive orientation away from logical-oriented thought, and the two antecedent variables associated with high susceptibility and to be investigated in the present study - positive attitudes, expectancies and motivation towards the test situation as well as a shift in cognitive orientation from an objective perspective to involvement in suggestion-related imagining. Several of these are very closely related to each other or may be subsumed under a more

general category. Furthermore, there may be others which have not yet been investigated or reviewed. For example, the intent of the subject to use the technique in a particular manner was suggested earlier as a subject variable which may be differentiated from attitudes, motivation, and expectancies, and which may influence other variables to effect dependent measures in a variety of ways.

The variables mentioned have not yet been explored thoroughly enough to warrant any definite conclusions, however the evidence presented thus far suggests that hypnotic susceptibility is a common subject variable in eliciting effects with both hypnosis and meditation. In addition, the evidence points towards the incorporation of positive attitudes, expectancies and motivation in conjunction with a shift in cognitive orientation from an objective perspective to involvement in suggestion-related imagining as elements which high susceptibility subjects engage more easily and thus elicit the common effects observed using hypnosis and meditation. These indications as well as the lack of sufficient existing evidence in this area suggests that further exploration of the relationship between hypnosis and meditation is warranted.

CHAPTER THREE

THE EXPERIMENT

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STATEMENT OF HYPOTHESES

From the line of argument which has been developed, the hypotheses to be tested may be grouped into three broad areas.

Firstly, the practice of Hypnosis, TM, and the Western Meditation as well as the placebo control (PSI) will significantly reduce anxiety and increase self actualization, and that the non-meditating control condition will not elicit significant changes on these measures.

Secondly, the practice of Hypnosis, TM and the Western Meditation will interact with Hypnotic Susceptibility to produce a significant change in the direction of reductions in anxiety and increases in self actualization.

Thirdly, there will be a significant positive correlation between Attitudes, Expectancies and Motivation as well as Involvement in Imagining with Hypnotic Susceptibility, and that these two antecedent variables considered together will account for a greater amount of the variance of susceptibility than either factor considered independently.

THE METHOD

The method chosen to test the aforementioned hypotheses will be treated under the following categories:

I Research Design and Analysis Procedures

II Description of the Dependent Measures, and Pre and Post Experimental Questionaires

III Subjects

IV Procedures

I. Research Design and Analysis Procedures

A. Research Design

The 5x2x2 factorial design for the present study involved the use of randomized blocks within a pre/post (repeated measures) configuration. Also, two additional independent variables were included to test for their correlation with the random block (mediating variables) in the pre/post design.

The first independent variable consisted of five treatment and control conditions. These included a Hypnosis group, a TM group, a Western Meditation group, a placebo control group, and a nonmeditating control group.

The second independent variable involved a randomized block consisting of two levels: High and Low Hypnotic Susceptibility. Hypnotic Susceptibility, for the purpose of this experiment, can be defined as the willingness and ability to respond to ideas and suggestions and to allow them to take effect without effort or interference.

Subjects were randomly assigned to groups according to their classification on this variable following the pre-experimental administration of the Harvard Group Scale of Hypnotic Susceptibility. There were unequal sample sizes of this variable in each of the treatment groups, however, since there were proportionate numbers of cases in the subclass (Hypnotic Susceptibility), no bias should be present in the tests of significance for this fixed model (Ferguson, 1971, p241). By assessing subjects on the classification of Hypnotic

Susceptibility prior to exposure to the treatment conditions, the sensitivity of the experiment to this homogeneous classification should be achieved, and for the purpose of this experiment yield advantages over a design without random blocks (Keppel, 1973).

The main interaction effects of the two independent variables (consisting of five levels and two levels respectively) were evaluated in terms of the pre to post test changes on the dependent measures. The dependent measures chosen were the State-Trait Anxiety Inventory (STAI) and the Personal Orientation Inventory (POI). Details of these measures are presented later in this chapter.

Following from the hypotheses outlined, the mixed 5x2x2 factorial design was chosen to assess:

1 the main effect of treatment conditions on changes in State and Trait Anxiety as well as Self Actualization

2 the interaction effect on changes in State and Trait Anxiety as well as Self Actualization between treatment conditions as a function of Hypnotic Susceptibility, and

3 the correlation between Attitudes, Expectancies & Motivation as well as Involvement in Imagining (antecedent variables) and Hypnotic Susceptibility (mediating variable).

This design is diagramatically depicted in Figure 1, showing the first independent variable of five treatment conditions, the second independent variable of two randomized blocks, and antecedent variables for correlation with Hypnotic Susceptibility levels, and the hypothesized changes on the dependent measures of State-Trait Anxiety and Self Actualization.

FIGURE 1

DIAGRAMATIC REPRESENTATION OF THE MIXED 5x2x2 DESIGN SHOWING INDEPENDENT VARIABLES, DEPENDENT VARIABLES, AND HYPOTHESIZED CHANGES ON THE MEASURES FROM PRE TO POST TEST

Independent Variable	Mediating Variable (Random Blocks)	Antecedent Variables (Correlation with Mediating Variable)	Dependent Measures & Hypothesized Changes		
			X-1	X-2	POI
1. Hypnosis	1 - High Susceptibility	1 - High Attit. & Imag. (+)	(-)	(-)	(+)
	2 - Low Susceptibility	2 - Low Attit. & Imag. (+)	NS	NS	NS
2. TM	1 - High Susceptibility	1 - High Attit. & Imag. (+)	(-)	(-)	(+)
	2 - Low Susceptibility	2 - Low Attit. & Imag. (+)	NS	NS	NS
3. Western Meditation	1 - High Susceptibility	1 - High Attit. & Imag. (+)	(-)	(-)	(+)
	2 - Low Susceptibility	2 - Low Attit. & Imag. (+)	NS	NS	NS
4. Placebo Control (PSI)	1 - High Susceptibility	1 - High Attit. & Imag. (+)	NS	NS	NS
	2 - Low Susceptibility	2 - Low Attit. & Imag. (+)	(-)	(-)	(+)
5. Non-Meditating Control	1 - High Susceptibility	1 - High Attit. & Imag. (+)	NS	NS	NS
	2 - Low Susceptibility	2 - Low Attit. & Imag. (+)	NS	NS	NS

NS = no significant differences

The present study is concerned with the effects of Hypnosis and Meditation (as well as any placebo effect) on the dependent measures, and in addition, the interaction effect of Hypnotic Susceptibility with each of these conditions.

Planned comparisons of the effectiveness of the treatment conditions with the placebo control and non-meditating control conditions is also important. Finally, the effectiveness of Hypnotic Susceptibility levels interacting with treatment conditions compared with the effectiveness of these levels interacting with placebo and non-meditating control conditions is also warranted.

B. Analysis Procedures

In order to assess these individual and combined relationships, it was decided to proceed with an analysis of the data using planned comparisons of significance as well as to provide supplementary data on the main and interaction effects assessed by both a 2-way and 3-way Analysis of Variance.

Since variance differences are hypothesized on pre and post test changes as a result of the application of treatment conditions, 2-tailed F-tests of significance were appropriate in evaluating within group changes (Ferguson, 1971) (see Appendix H for methodological note). Two tailed F tests were also administered to test for the significant difference between the variance of treatment and control groups on pre to post changes. Finally, 2-tailed F tests were used to test for variance differences on pre and post test changes for High and Low Susceptibility subjects within each group as well as to test for significant variance differences on pre and post test changes for High and Low Susceptibility subjects in different groups.

The procedure followed for 2-tailed F Tests on pre and post test changes within groups was calculated according to the method described by Ferguson for "Significance of the Difference Between Correlated Variances" (Ferguson, 1971, p167). Two-tailed F Tests of significant differences between the variances of treatment groups compared with Control groups were calculated according to the method described by Ferguson for "Significance of Difference Between Variances of Independent Samples" (Ferguson, 1971, pp164-166). Where unequal numbers

occurred within cells, a harmonic mean was calculated, as recommended by Keppel (1973) for use when applying F tests for unequal numbers.

In addition to the F test applications, between subjects and within subjects, assessment of significant changes from pre to post test were accomplished by applying a 2-way and 3-way analysis of variance. The 2-way ANOVA evaluated the simultaneous main effect of the five treatment conditions on pre and post test changes for significant variance differences between Groups x Pre and Post Test Scores. The 3-way ANOVA application evaluated the global interaction effect of the five treatment conditions on pre to post test changes as a function of High and Low Hypnotic Susceptibility levels. This application assessed significant variance differences between Groups x Hypnotic Susceptibility x Pre and Post Test Scores. The 2-way and 3-way analysis of variance were applied according to the procedure outlined by Keppell (1973), and were carried out on a Burroughs 6700 computer using a program designed for an analysis of variance with single or repeated measures by Dr K. McFarland of the Psychology Department, Massey University.

The correlation of the independent (antecedent) variables of Attitudes, Expectancies and Motivation as well as Involvement in Imagining with the dependent (mediating) variable of Hypnotic Susceptibility was assessed through the application of a Multiple Regression Correlational Analysis as described by Ferguson, 1971 (pp392-403). Through this procedure, the weighted means of the independent variables can be assessed for their maximum possible correlation with the criterion variable of Hypnotic Susceptibility. By maximizing the efficiency of prediction in this manner, it can be determined how effective the antecedent variables of Attitudes, Expectancies and Motivation as well as involvement in imagining predict the level of Hypnotic Susceptibility. This analysis procedure was also carried out on a Burroughs 6700 computer using the program Statistical Package for the Social Sciences (SPSS).

In addition to those procedures described above, supplementary data consisting of the interaction of the independent variables (classifying subjects according to High and Low attitudes and Imagining) with the treatment or control condition was analyzed using 2-tailed F tests of significance for changes from pre to post test as well as

for comparison of significant differences between groups. Two-way and three-way analysis of variance were also applied in the same manner described above for High and Low Hypnotic Susceptibility subjects. The three-way ANOVA application assessed the global interaction effect for significant variance differences between Groups X Attitudes X Pre and Post Test Scores, and between Groups X Imagining X Pre and Post Test Scores. These results supplement the findings from the F tests, and multiple correlation concerned with Hypnotic Susceptibility by indicating common or differing tendencies between Hypnotic Susceptibility and Attitudes and/or Imagining. Additionally this information could reinforce the evidence which may be found through the multiple regression application relating to the strength of Attitudes and Imagining as predictor variables of Hypnotic Susceptibility.

II. Description of the Dependent Measures and Pre and Post Experimental Assessment Questionaires

The measurements used for assessment of subjects in the present study included

A pre-experimental administration of the "Harvard Group Scale of Hypnotic Susceptibility" as well as an "Attitudes, Expectancies and Motivation Questionaire"

B pre and post experimental administration of the "State-Trait Anxiety Inventory (STAI) A-State and A-Trait scales as well as the "Personal Orientation Inventory" (POI)

C post experimental administration of the"Involvement in Imagining Questionaire"

A. The Harvard Group Scale of Hypnotic Susceptibility (HGSHS) and the Attitudes Expectancies and Motivation Questionaire.

1. The HGSHS - Form A was chosen for the pre-experimental assessment of subjects on Hypnotic Susceptibility, from which the randomized block was established. Hypnotic Susceptibility acts as both a dependent variable (for correlation with Attitudes and Imagining) and an independent variable (for interaction effects with treatment conditions) in the present study. The HGSHS - Form A was considered desirable for the purpose of the present study, since 57 subjects required assessment of their Hypnotic Susceptibility level. Group

administration with self-report scoring was effective for time saving. This is accomplished with the HGSHS - Form A which was adapted for this purpose by Shor and Orne (1962) from the individually administered, Stanford Hypnotic Susceptibility Scale; Form A developed by Weitzenhoffer and Hilgard in 1959. This version is claimed to maintain the characteristics of the Stanford Hypnotic Susceptibility Scale under group conditions (Shor & Orne, 1962). The self-report scoring is the only fundamental change, however the validity of this form of scoring is supported by studies showing that the scores achieved with group induction and self scoring are congruent with those achieved with individual induction and objective scoring (Bentler & Hilgard, 1963). Further evidence of the validity of the measure is indicated by the comparison of self-report scores simultaneously with scoring by raters on seven of the 11 behavioural items. This yielded a correlation of r = .82 (Shor & Orne, 1962).

2. The Attitudes, Expectancies and Motivation Questionaire was administered prior to the HGSHS:A so that experience with hypnosis would not influence the results on this measure. This questionaire was adapted from an "Attitude and Expectancies Questionaire" developed by Barber & Calverly (1966) which was used to assess changes in susceptibility correlated with prior attitudes and expectancies. Since scores on these indices were found to significantly correlate with daily susceptibility levels, this measure was chosen for adaptation to the present study. The attitudes and expectancies items were not changed in any fundamental respect, but the addition of a "motivation" item was included (see Appendix B for details).

The total score possible was 26 on the seven items presented. Since the response on this measure indicated generally positive attitudes, expectancies and motivation, the mean for the index was skewed. Therefore, those scoring 0 to 18 were deemed low attitude subjects and those scoring 19 to 26 were deemed high attitude subjects.

Since the response to this measure was highly skewed, the approximate mean chosen for the differentiation of high and low attitudes subjects led to unequal Ns in each group. While an attempt was made to ensure minimal discrepancy in high and low sample sizes in order to maintain the validity of the analysis, two groups ended up

with N = 1 for low attitudes subjects. Therefore, in order to maintain validity, the raw data for low attitudes subjects was removed from the computation of the 3-way Anova. Two-tailed F tests were also computed on raw data for high attitude subjects only. Further details are presented in the Supplementary Results section of Chapter Four.

B. The Personal Orientation Inventory (POI) and the State-Trait Anxiety Inventory (STAI): A State and A Trait Scales.

1. The POI was chosen as the dependent measure on which change in Self Actualization were assessed. This inventory was developed by Shostrom (1966) to provide

> a comprehensive measure of values and behavior seen to be of importance in the development of the self-actualizing person (p4).

Since the present study deals with changes in Self Actualization as indicating improvement in psychological health and reduction in pathology, a comprehensive measure of an individual's ability to develop and utilize unique capabilities and potential, with relative freedom from emotion conflicts, was seen as an appropriate instrument for one of the dependent measures. The frequency with which the POI has been used by researchers in similar areas also underscores its appropriateness for the present study.

The Inner Directedness Scale (I) and the Time Competence Scale (TC) are considered the major areas of importance in the personal development and interpersonal interaction of the individual (Shostrom, 1966), and therefore in the present study the results indicating improvement on these two scales will be given more emphasis than those on the subscales.

To a lesser degree, while the 10 subscales reflect important facets of the self actualizing person (Shostrom, 1966), these scales were not developed as independent dimensions and, unlike the time (TC) and support (I) scales, items from the inventory can contribute to the measurement of more than one scale. Due to the interrelationship among the subscales, a summary of results has been the common mode of

presentation in the literature. Since the subscales will be given less emphasis in the present study, in keeping with the custom established in other studies, this mode of presentation will also be adhered to here.

The validity of the POI as a measure of self actualization is reported by Shostrom using four criterion areas: Nominated Groups, Concurrent Validity, Correlation with Other Scales, and Encounter Group Research. Supportive evidence of concurrent validity indicated the sensitivity of the measure in clinical settings. The POI scales supportedly differentiated between "beginning patients entering therapy" and "patients in advanced states of psychotherapeutic progress" at the $p < .01$ level or higher. In correlating the POI scales with other scales, it is reported to show a meaningful relationship with the Depression, Psychasthenia and Social I.E. scales of the M.M.PI. for beginning and advanced therapy groups, with correlations as high as $r = -.65$. Finally, several studies reported by Shostrom on investigations of changes on POI scales following encounter group experiences significantly differentiated between those participating in the experience and a control group not taking part.

Test-retest reliability coefficients for the Time Competence and Inner Directedness scales were .71 and .77 respectively. For the subscales they range from .52 to .82. In general, these correlations compared favourably with those reported for other personality inventories.

2. The State-Trait Anxiety Inventory (STAI) was chosen as the dependent measure on which changes in anxiety were assessed. This measure was considered particularly suitable for the present study for two essential reasons. Firstly, other investigations into the effects of meditation, relaxation training and other self-regulatory techniques have used the STAI as a dependent measure. Secondly, and perhaps more importantly, the STAI is designed to measure two distinct anxiety concepts; State and Trait Anxiety. This distinction is important for the present study, since planned comparisons between the effectiveness of different treatment conditions as well as between the second independent variable of High and Low Hypnotic Susceptibility on reductions in anxiety may show differences in this effect on either

State or Trait Anxiety. This would be masked by a measure which did not make this distinction. State Anxiety is conceptualised as a transitory emotional state

> that is characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity. A-State may vary in intensity and fluctuate over time
>
> (Spielberger et.al., 1970 p3).

On the other hand, Trait Anxiety is conceptualized as a more stable aspect of the individual, reflecting anxiety proneness and a

> tendency to respond to situations perceived as threatening with elevations in A-State Intensity
>
> (Spielberger et.al., 1970 p3).

The concurrent validity of the measure has been tested through correlations with other anxiety measures. The STAI show moderately high correlations with the IPAT and TMAS ($r = .75$ and $r = .80$ respectively).

The construct validity was demonstrated in several studies showing the sensitivity of the A-State Scale to varying conditions of stress and non-stress. For males, all items but one discriminated stressful from non-stressful conditions. For females, all 20 items discriminated stressful from non-stressful conditions.

The validity of the instrument is also underscored by the correlation obtained between the STAI and various scales of other personality tests. These indicated the sensitivity of the State and Trait Scales to clients presenting with emotional problems as compared with educational-vocational problems.

Test-retest reliability coefficients on the A-Trait Scale ranged from .73 to .86 over test-retest periods of one hour to 104 days for male subjects. For female subjects over the same period, the coefficients ranged narrowly from .75 to .77. On the A-State Scale, the

test-retest reliability coefficients were significantly lower, ranging from .16 to .54. This was anticipated, since the A-State Scale was designed to reflect transitory anxiety which is the result of unique situational factors at the time of testing. Reliability of the A-State Scale is reinforced by alpha coefficients measuring internal consistency. On this measure, the reliability of the scale was high, with alpha ranging from .83 to .92 (Spielberger et.al., 1970).

C. The "Involvement in Imagining" Questionaire was administered along with the POI and STAI in the post test session. The decision to administer this as a post-test measure was made so that in addition to imagining and absorption items (which could have been assessed in the pretest session) a "mental device" item could be included relating to the specific device utilized by each particular treatment method. This questionaire was adapted from a series of standardized questions used by Spanos et. al. (1977) to investigate the role of goal-directed fantasies and involuntary experience in response to hypnotic suggestions. Involvement in Imagining in the present study includes those things related to the suggestions, comments, instructions given on the type of each technique with which the subject imagined, pictured, thought about, or associated changes in values and behaviour. This closely parallels the use of imagining investigated by Spanos et. al. (1977) in which goal-directed fantasies and absorption were key items. Therefore, the format for assessing the extent to which subjects became involved in imagining was essentially maintained, with the exception that in the present study a written questionaire was used as opposed to a direct inquiry of each subject by the two experimenters, which was undertaken by Spanos, et.al. (1977) (see Appendix C).

In addition, one further item was added to the questionaire, which was not used by Spanos et. al. Since a "mental device" as defined by Benson et. al., (1974) has been hypothesized as occuring in both the practice of hypnosis and meditation, it was decided to include a mental device item which attempts to assess the degree to which the subject associated the device utilized by each technique with changes in behaviour and feelings. It may be that both imagining changes presented through suggestion as well as associating them with a mental device plays a role in facilitating improvement in State/Trait Anxiety and Self Actualization.

III Subjects

The subjects for the study were solicited from first year papers in psychology and education at Massey University at the beginning of the second term, May to August 1980. In addition, seven subjects from a 3rd-year social work paper also volunteered to take part in the experiment. The number of those volunteering for the study and attending the pre-test sessions was 73. Females volunteered to take part in the study at a rate just over three times that of males, resulting in N = 55 and N = 18 for the two groups respectively at that time. The average age of the subjects volunteering was 20.9 years. The educational level and social class of the subjects were considered approximately equal. Following random assignment of subjects to treatment or control groups the ratio of females to males remained fairly constant with the following numbers present in each group: Hypnosis (F = 11, M = 4) TM (F = 10, M = 5) WM (F = 12, M = 3) PSI (F = 11, M = 3) C (F = 11, M = 3). The attrition rate over the six week treatment period was slightly less than that reported for other studies involving the practice of meditation, with 57 subjects remaining in the study over that period and completing the post-test battery. Five males and 11 females withdrew from the experiment over the period, leaving the following members in each group, for which data was collected:

Hypnosis (F = 10, M = 2) TM (F = 7, M = 5) WM (F = 9, M = 1)

PSI (F = 9, M = 3) C (F = 9, M = 2).

IV Procedure

A. Soliciting Volunteers

Subjects for the experiment were solicited from three large first-year psychology and education papers at Massey as well as from a smaller third-year social work paper. The lecturers in each of those papers were informed regarding the nature of the experiment by way of personal discussion, and a consent to solicit subjects was given. In addition, a brief written description of the nature of the study and subject's involvement over the six weeks was presented to each lecturer upon request (see Appendix A).

Students in each of the classes were asked to volunteer to take part in the experiment following an oral presentation in paraphrased form of the abovementioned material describing the nature of the study. They were essentially told that the experiment would involve learning a form of hypnosis or meditation as a self regulation skill and that this skill has been shown to be effective in facilitating self control, decision making, concentration, as well as reducing tension in stressful situations. In this manner an attempt was made to control for positive attitudes, expectancies and motivation by encouraging a positive approach to all treatment and placebo conditions. This replicates, to some extent, the encouragement given in introductory lectures or teaching sessions where TM and other forms of meditation as well as hypnotherapy are instructed. Students were also requested to make a serious commitment to the study if they chose to volunteer in order to avoid a large drop-out rate. Finally they were told of the extent of their involvement, including exposure to a test of Hypnotic Susceptibility, in order to allay fears about hypnosis based upon previous misconceptions. Those volunteering signed up for the experiment and were personally contacted and informed of the date, time and venue for the two pre-test sessions.

B. Pre-Test Sessions

The pretest sessions were held over two consecutive days (June 23rd and 24th) in the same venue - the Psychology Department testing room. Four sessions were arranged each day so that students could choose the session which was most suitable to their lecture schedule. Subjects were required to attend one session on each of the two days.

On the first day of the pretest period the session lasted for approximately 70 minutes. Subjects were first asked to complete the "Pre-experiment Questionaire" (Attitudes, Expectancies and Motivation Questionaire). Ten minutes were allowed for this procedure. Next, according to the recommendation in the manual, preliminary remarks were made prior to administrating the Harvard Group Scale of Hypnotic Susceptibility. These remarks were primarily designed to help subjects feel more at ease with the subsequent experience by

1 recognizing the tendency for people to feel uneasy about a new experience

2 reassuring the subjects that hypnosis is not as removed from ordinary experience as they may have expected; that it is largely a matter of their willingness to be responsive to ideas and to allow these to act upon them without effort or interference; and that they will not be asked to do anything embarrassing or silly nor will the experience probe into their personal affairs

3 informing them of the scientific nature of the experiment into the process of hypnosis and subject differences in response to hypnosis

4 allowing any questions to be asked regarding the forthcoming experience. These were answered by paraphrasing the previous information.

The HGSHS was then administered by taped instruction. The main procedures and instructions were pre-recorded by the author verbatim from the HGSHS manual. Subjects were then given sufficient time to record their remarks in the "Response Booklet" and reminded of their 2nd pretest session on the following day.

Prior to the second pretest session, scores were obtained for subjects on the Attitudes Questionaire and on the HGSHS. In addition, subjects were randomly assigned to one of the treatment or control groups so that the appropriate taped instructions and written information on the practice of the technique could be handed out directly following the second session.

On the second day of the pretest period, the session lasted for approximately 60 minutes. Subjects were administered the State-Trait Anxiety Inventory and the Personal Orientation Inventory during this session. Before leaving the testing room, subjects were again informed briefly about the nature of the study, at which time further positive expectancies were facilitated for all subjects in treatment and placebo control conditions by reiterating skills to be learned. Subjects were then informed of their assigned groups and reminded of the length of the treatment period as well as the date for the post-test session (August 4th). Subjects assigned to the Control condition were assured of the availability of any or all of the hypnosis and

meditation techniques for their use following the completion of the treatment period. In this manner it was hoped to ensure participation by the control subjects in terms of their presence at the post-test session. Subjects then picked up the proper tape cassette for their group. These consisted of guided instruction, information giving, and reinforcement of expected positive results as presented through the Hypnosis, TM, Western Meditation and Placebo control (PSI) techniques.

C. Description of the Treatment Tapes

1. Hypnosis: The hypnosis tape was made by Mr Lewis Simpson, a local Hypnotherapist practicing in Palmerston North. This included a brief description of the hypnotic "State", an induction process involving suggestions for relaxation and a series of suggestions related to anxiety reduction and ego strengthening emphasising overall improved response to stressful situations. The approach was similar to that used by Hartland (1971).

2. Transcendental Meditation: The TM tape was made by Mr Michael Tyne-Corbold of the "TM Relaxation Association" in Auckland. This involved three lessons in the practice of TM, consisting of information regarding the beneficial psychophysiological effects of its practice, the postulated causes for the calming, self improvement observed with the use of the technique, and guided instruction in the practice of the Mantra as the essence of the TM technique.

3. Western Meditation: The Western Meditation tape was reproduced from the set of meditation lessons entitled "How to Control Your Emotions Through Meditation" by Mr Roy Masters of the Foundation of Human Understanding in Los Angeles, California, U.S.A. Lesson one from this set was reproduced on a separate "experiment master tape" to which were added instructions in the daily use of the tape over the six week period. The lesson included introductory remarks differentiating "hypnosis" from "meditation", postulated psychodynamic causes for tension and conflict, instructions in the self awareness (meditation) technique along with suggestions related to achieving a more detached, effortless observer state of consciousness. In addition it included suggestions designed to facilitate improved responses to stressful instructions without encouraging a more relaxed or pleasureful feeling state.

4. Placebo Control (PSI): The Periodic Somatic Inactivity (PSI) tape was made by the author, adhering closely to the instructions given by Smith (1978) in simulating a meditation technique in terms of facilitating positive attitudes and expectancies toward improvement. The technique was described as a self regulation device, shown to be effective in reducing anxiety and generally improving responses to stressful situations. The introductory comments, presenting the postulated psychophysiological causes for these improvements as well as alluding to research evidence indicating the beneficial effects of PSI were read verbatim from those comments used by Smith. The author then instructed the subject in a five-minute practice period in the use of PSI, asking him/her to sit quietly with eyes closed. Following this period, an explanation of the various possible physical, mental, and emotional experiences which may occur during PSI were made in order to simulate those explanatory remarks given in the hypnosis and meditation tapes. The subject was then instructed to practice the technique for 15 to 20 minutes twice daily for the six week treatment period, according to the written instructions given.

Written instructions accompanied each of the tapes, giving specific instructions in the correct use of the tapes over the six week period, and encouraging the standardized effortless attitude towards the practice of the technique (see Appendices D, E, F and G).

D. Treatment Period: During the six week treatment period, subjects in each of the three treatment and Placebo Control groups were asked to return a series of cards on which they checked their regularity of practice, indicating the number of times they practiced the technique for each week. In addition, each subject was contacted personally by phone twice during this period and asked if he/she were continuing with the practice of the technique and if there were any problems with it. In this manner, the weekly or monthly "check-ups" required by those teaching some techniques of meditation were simulated and the possible effects of encouragement and expectancy of results could be controlled across treatment and placebo conditions.

E. Post Test Session: The post test session was held on August 4th for all subjects. The venue was the same as for the pretest. Four sessions were again arranged for subjects' convenience, and each subject

was to choose one session to attend.

The session lasted approximately 60 minutes, during which time the subjects were administered the State-Trait Anxiety Inventory (STAI), the Personal Orientation Inventory (POI) and the "Post-Test Questionaire" (Involvement in Imagining).

Following this session, subjects were informed in greater detail regarding the purpose of the present study and any questions arising therefrom were answered. Subjects were also given the opportunity of confidentially discussing their particular experience with the experimenter if they had outstanding issues of concern. Finally, subjects who were interested were offered the opportunity of learning any of the techniques with which they had not been involved.

CHAPTER FOUR

RESULTS

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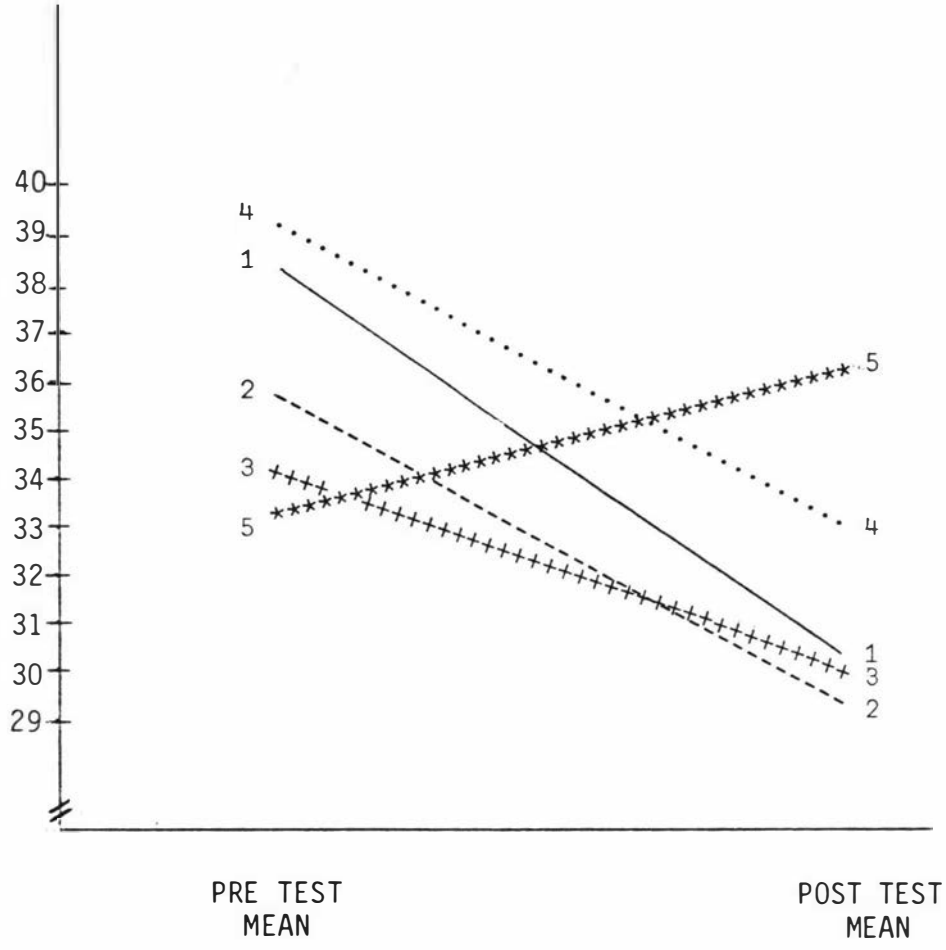


KEY: 1 ———— Hypnosis
2 ---------- TM
3 ++++++++++ Western Meditation
4 ..... Placebo Control (PSI)
5 ********** Non-Meditating Control.

Figure 2 - The Change on the STAI-A State Scale from Pre to Post Test for Each of the 5 Groups

RESULTS

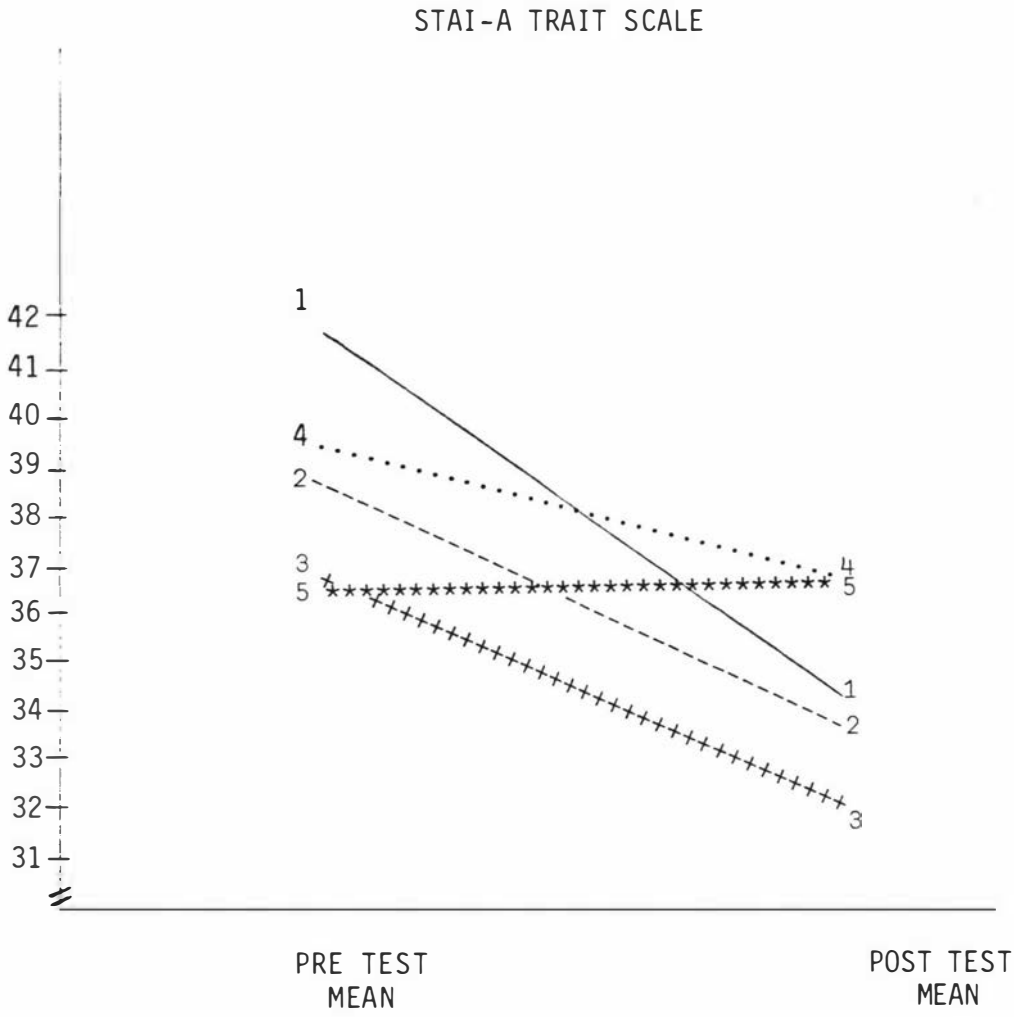
The results of the pretests on the dependent measures showed only a moderate departure from a homogeneity of variances between the five groups when tested according to the method referred to by Ferguson (Ferguson, 1971). He comments that a level of moderate departure from homogeneity should not seriously affect the results achieved when using an analysis of variance, and therefore an ANOVA application was maintained, following planned comparisons.

SECTION 1

TREATMENT AND PLACEBO EFFECT ON STATE/TRAIT ANXIETY AND SELF ACTUALIZATION

Figure 2 presents the changes in State Anxiety from pre to post test for each of the five groups. It shows both the magnitude of change for each group and the interaction between Groups X Pre and Post Test. Two-tailed F tests revealed a significant decrease in State Anxiety for the Hypnosis group ($F(1,47) = 10.21$, $p < .01$), the TM group ($F(1,47) = 6.58$, $p < .05$), and the Placebo control group ($F(1,47) = 5.56$, $p < .05$). The Western Meditation group changed in the predicted direction, however the decrease was not significant ($F(1,47) = 2.29$, $p > .05$). The non-meditating control group showed an increase in State Anxiety, however this did not reach significance ($p > .05$). Comparing changes in treatment groups with the non-meditating controls, revealed a significantly greater decrease in State Anxiety for the Hypnosis group ($F(1,47) = 10.50$, $p < .01$), the TM group ($F(1,47) = 7.81$, $p < .01$), the Western Meditation group ($F(1,47) = 4.21$, $p < .05$) and the Placebo Control group ($F(1,47) = 7.02$, $p < .05$).

Results of the ANOVA showed a significant interaction effect on changes in State Anxiety between Groups X Pre and Post Test Scores ($F(4,47) = 3.08$, $p < .03$). This is in accord with the above results. (See Appendix I - Table 1 for details of the ANOVA summary.



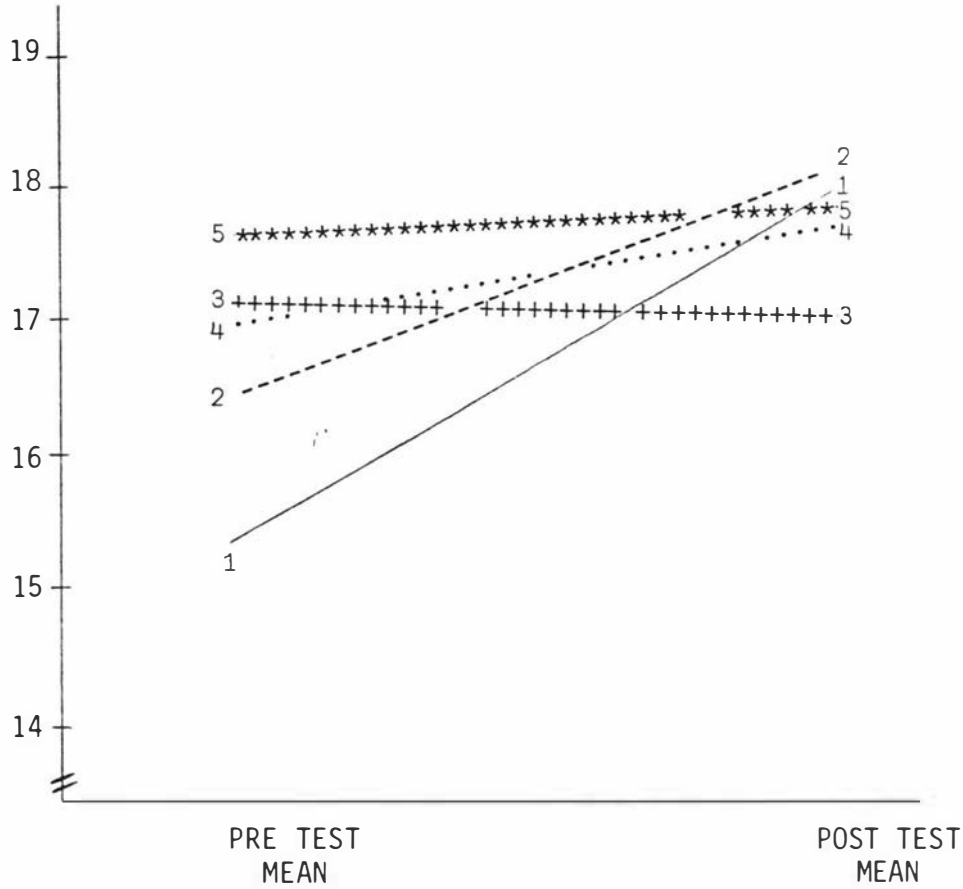
KEY: 1 ———— Hypnosis
2 ---------- TM
3 ++++++++++ Western Meditation
4 ..... Placebo Control (PSI)
5 ********** Non-Meditating Control.

Figure 3 - The Change on the STAI-A Trait Scale from Pre to Post Test for Each of the 5 Groups.

In Figure 3 the change in Trait Anxiety from pre to post test for each of five groups is presented, showing main and interaction effects. Two-tailed F tests revealed a significant decrease in Trait Anxiety for the Hypnosis group ($F(1,47) = 12,69$, $p < .01$), the TM group ($F(1,47) = 5.42$, $p < .05$), and the Western Meditation group ($F(1,47) = 5.03$, $p < .05$). The Placebo Control group changed in the predicted direction, however the decrease was not significant ($F(1,47) = 1.78$, $p > .05$).

Comparisons with the non-meditating controls, using two-tailed F tests, showed a significantly greater decrease in Trait Anxiety for the Hypnosis group than the Non-Meditating Control group ($F(1,47) = 6.48$, $p < .05$).

Results of the ANOVA showed no significant effect in Trait Anxiety between Groups x Pre and Post Test Scores ($p > .05$). See Appendix I- Table 2 for details of the ANOVA summary.



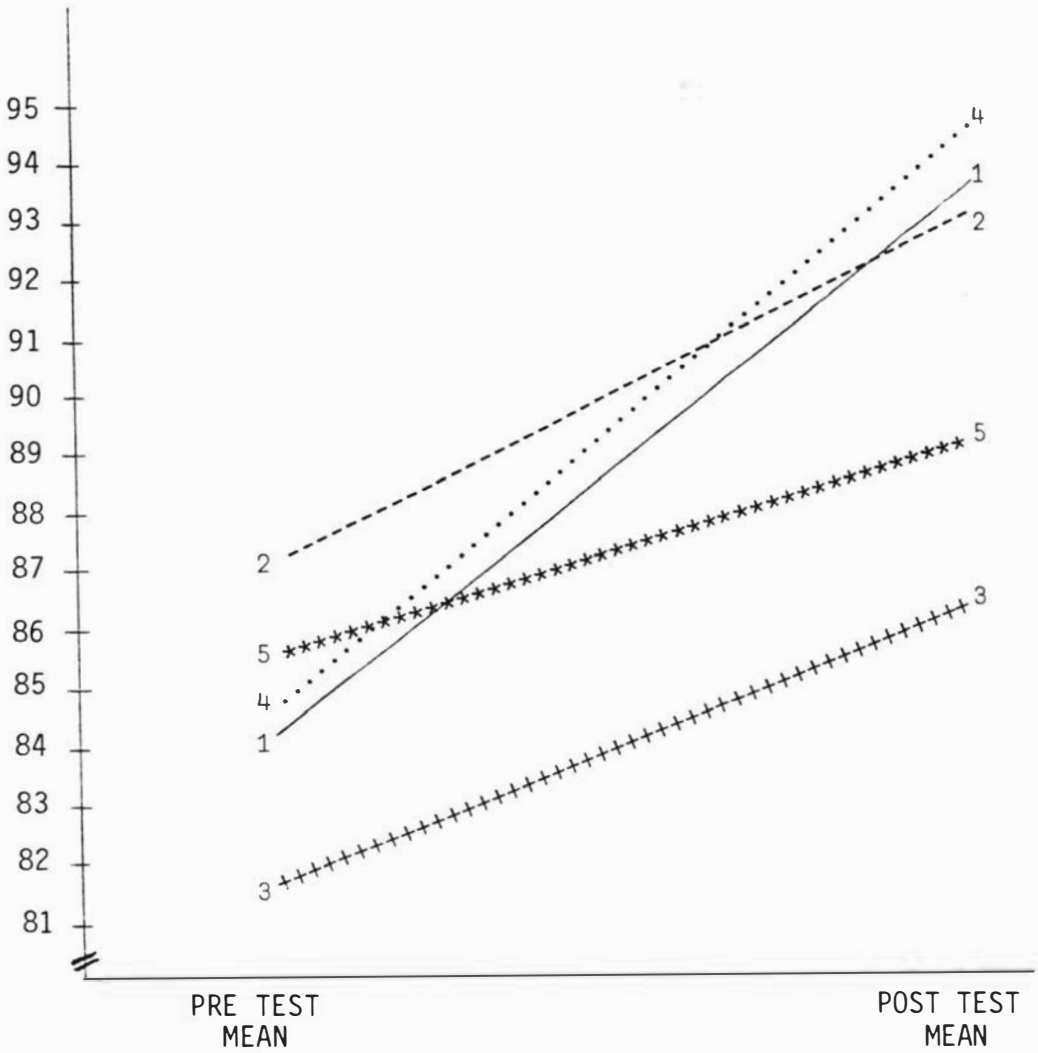
KEY:
1 ———— Hypnosis
2 ---------- TM
3 ++++++++++ Western Meditation
4 ..... Placebo Control (PSI)
5 ********** Non-Meditating Control.

Figure 4 - The Change on the POI Time Competence Scale from Pre to Post Test for Each of the 5 Groups.

Figure 4 presents the change on the major POI scale of Time Competence from pre to post test for each of the five groups, showing main and interaction effects. Two-tailed F tests revealed a significant increase in Time Competence for the Hypnosis group ($F(1,47) = 10.74$, $p < .01$) and the TM group ($F(1,47) = 4.68$, $p < .05$). The Western Meditation group, the Placebo Control group and the Non-Meditating Control group showed no significant change from pre to post test ($p > .05$).

Comparisons with the Non-Meditating Controls, using two-tailed F tests, revealed a significantly greater increase in Time Competence for the Hypnosis groups than the Non-Meditating Control group ($F(1,47) = 4.69$, $p < .05$).

Results of the ANOVA showed no significant interaction effect on changes in Time Competence between Groups x Pre and Post Test Scores ($p > .05$). See Appendix I - Table 3 for details of the ANOVA summary.



KEY: 1 ———— Hypnosis
2 ---------- TM
3 ++++++++++ Western Meditation
4 ..... Placebo Control (PSI)
5 ********** Non-Meditating Control.

Figure 5 - The Change on the POI Inner Directedness Scale from Pre to Post Test for Each of the 5 Groups.

Figure 5 presents the change on the major POI scale of Inner Directedness from pre to post test for each of the five groups, showing main and interaction effects. Two-tailed F tests revealed a significant increase in Inner Directedness for the Hypnosis group ($F(1,47) = 15.39$, $p < .01$), the TM group ($F(1,47) = 6.52$, $p < .05$), and the Placebo Control group ($F(1,47) = 15.78$, $p < .01$). The increase for the Western Meditation group was in the predicted direction, however it was not significant ($F(1,47) = 3.26$, $p > .05$).

Comparisons with the Non-Meditating Control group, using two-tailed F tests, revealed no significant difference in increases on Inner Directedness between any of the treatment or Placebo Control groups and the Non-Meditating Controls.

Results of the ANOVA showed no significant interaction effects on changes of Inner Directedness between Groups x Pre and Post Test Scores ($p > .05$). See Appendix I - Table 4 for details of the ANOVA summary.

Results on the 10 subscales of the POI are summarized below. Table 1 presents the F values for comparison of pre to post test changes on the subscales of the POI for each of the five groups. Also indicated are significantly greater effects achieved compared with the Non-Meditating Control group.

Two-tailed F tests revealed the following results:

1 The Hypnosis group showed a significant increase on six of the 10 subscales of the POI

2 The TM group showed a significant increase in four of the 10 subscales of the POI

3 The Western Meditation group showed a significant increase on three of the 10 subscales of the POI

4 The Placebo Control group showed a significant increase on seven of the 10 subscales of the POI

5 The Non-Meditating Control group showed a significant increase on two of the 10 subscales of the POI.

Comparisons with the Non-Meditating Control group, using two-tailed F tests, revealed a significantly greater increase for the Hypnosis group than the controls on the SAV ($F(1,47) = 8.88$, $p < .01$) and the SR ($F(1,47) = 13.14$, $p < .01$) subscales. The TM group showed a significantly greater increase than the controls on the S subscale ($F(1,47) = 4.92$, $p < .05$). The Placebo Control group showed a significantly greater increase than the controls on the SAV ($F(1,47) = 10.38$, $p < .01$) and the SR ($F(1,47) = 6.09$, $p < .05$) subscales. The Western Meditation group showed no significant difference in increase on subscales compared with the Non-Meditating Controls ($p > .05$)

The results of the ANOVA showed a significant interaction effect on changes in subscales between Groups X Pre and Post Test Scores for the SAV ($F(1,47) = 4.19$, $p < .005$) and SR ($F(1,47) = 3.66$, $p < .02$) subscales. See Appendix I - Tables 5-14 for details of the ANOVA summaries).

TABLE 1

F VALUES FOR INCREASES FROM PRE TO POST TEST ON SUBSCALES OF THE POI FOR EACH OF THE 5 GROUPS

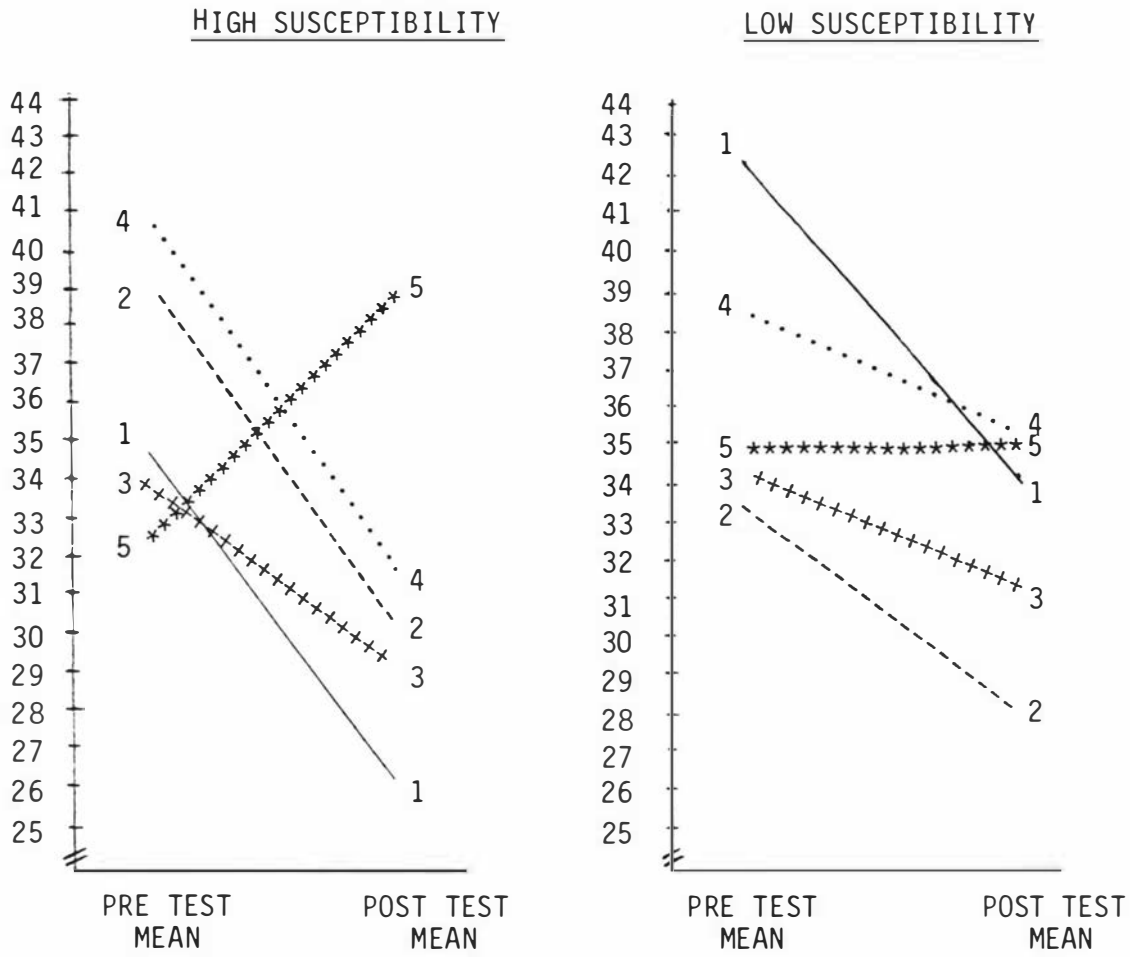
GROUPS

POI SUBSCALES	Hypnosis F(1,47)	TM F(1,47)	Western Meditation F(1,47)	Placebo Control F(1,47)	Non-Med Control F(1,47)
Self Actualizing Values	10.56 ** +	.47	2.84	12.89 ** +	.88
Existentiality	14.84 **	4.41 *	4.90 *	4.48 *	7.41 **
Feeling Reactivity	.005	.217	.67	.568	.10
Spontaneity	6.65 *	12.51 ** +	3.53	6.18 * +	.18
Self Regard	17.15 ** +	1.11	.045	6.33*	.91
Self Acceptance	5.00 *	7.47 **	.73	6.63*	1.96
Nature of Man Constructive	.35	.14	.49	.01	.30
Synergy	2.65	.016	.60	2.87	5.36 *
Acceptance of Agression	1.94	3.59	5.91 *	4.98 *	.03
Capacity for Intimate Contact	5.96 *	17.42**	10.66**	8.29**	2.28

* Significant at $p < .05$

** Significant at $p < .01$

\+ Significantly greater than Non-Meditating Controls at $p < .05$



KEY:
1 ———— Hypnosis
2 ---------- TM
3 ++++++++++ Western Meditation
4 ..... Placebo Control (PSI)
5 ********** Non-Meditating Control.

Figure 6 - The Change on the STAI-A State Anxiety Scale from Pre to Post Test for High and Low Susceptibility Subjects in Each of the 5 Groups.

Section 2

Three-Way Interaction Effect of Treatment by Pre and Post Test as a Function of Hypnotic Susceptibility on State-Trait Anxiety and Self Actualization

Since the independent variable of Hypnotic Susceptibility consisted of sample sizes with unequal numbers for High and Low cells, an unweighted means analysis, recommended by Keppel (1973) for such conditions, was used.

Figure 6 presents the change in State Anxiety from pre to post test for High and Low Susceptibility subjects in each of the five groups. It shows both main effects and the interaction effect between Groups x Pre and Post Test as a function of High and Low susceptibility.

Two-tailed F tests revealed a significant decrease in State Anxiety for High and Low Susceptibility subjects in the Hypnosis group ($F(1,47) = 4.95$, $p < .05$); ($F(1,47 = 4.50$, $p < .05$) and for High Susceptibility subjects in the TM group ($F(1,47) = 4.97$, $p < .05$) and the Placebo Control group ($F(1,47) = 5.70$, $p < .05$). High Susceptibility subjects in the Western Meditation group changed in the predicted direction, however the decrease was not significant ($F(1,47) = 1.77$, $p > .05$).

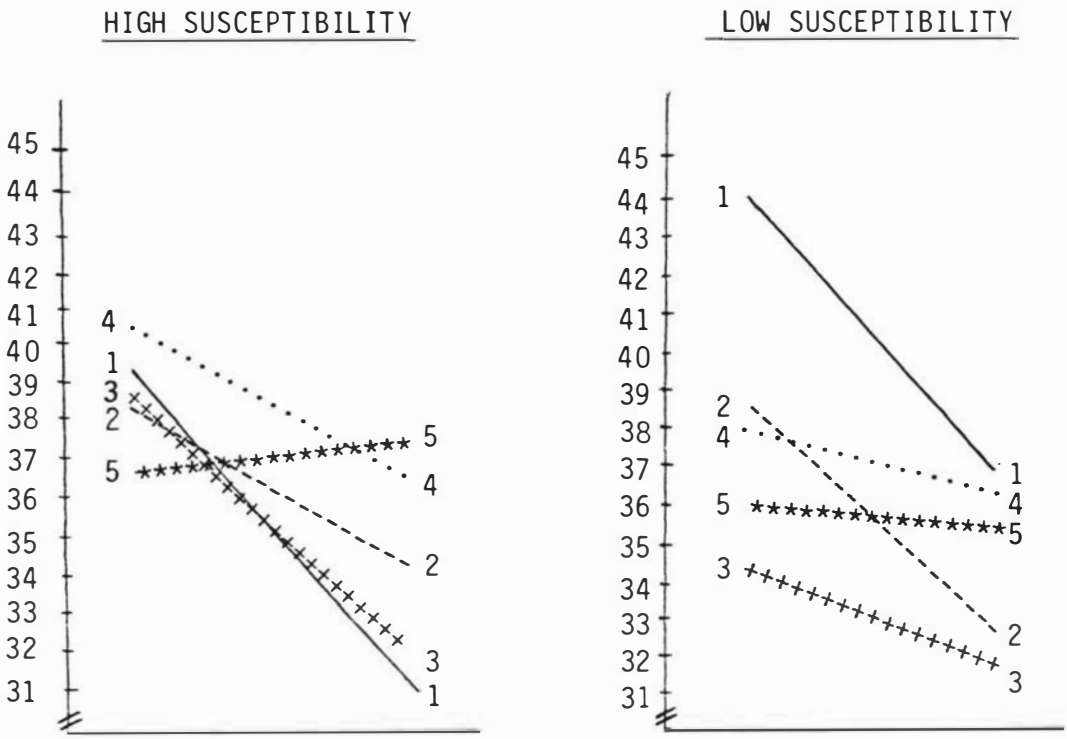
Comparisons of the change in State Anxiety between High Susceptibility subjects in the treatment groups and High Susceptibility subjects in the Non-Meditating Control group, using 2-tailed F tests, revealed a significantly greater reduction by High Susceptibility subjects in all treatment and Placebo Control groups than High Susceptibility subjects in the Non-Meditating Control group (Hypnosis $F(1,47) = 8.02$, $p < .01$; TM $F(1,47) = 8.04$, $p < .01$; WM $F(1,47) = 4.84$, $p < .05$; PSI $F(1,47) = 8.68$, $p < .01$).

Comparisons of the changes in State Anxiety between Low Susceptibility subjects, in the treatment groups and Low Susceptibility subjects in the Non-Meditating Control group, using Two-tailed F tests, revealed no significant differences ($p > .05$).

Results of the two-way and three-way ANOVA are shown in the

appendix (see Appendix I - Table 1 for details).

Therefore, across three treatment conditions as well as the Placebo Control application, there was a tendency for High Susceptibility subjects to show greater reductions in State Anxiety than Low Susceptibility subjects. High Susceptibility subjects in all treatment and Placebo Control conditions showed significantly greater reductions than High Susceptibility subjects in the Non-Meditating Control group, whereas Low Susceptibility subjects in treatment and Placebo Control conditions showed no significant difference in reductions compared with Low Susceptibility subjects in the Non-Meditating Control group.



KEY - 1 ———— Hypnosis
2 ---------- TM
3 ++++++++++ Western Meditation
4 ..... Placebo Control (PSI)
5 ********** Non-Meditating Control

Figure 7 - The Change on the STAI-A Trait Anxiety Scale from Pre to Post Test for High and Low Susceptibility Subjects in Each of the 5 Groups.

Figure 7 presents the change in Trait Anxiety from pre to post test for High and Low Susceptibility subjects in each of the five groups. It shows both main effects and the interaction effect between groups X pre and post test as a function of high and low susceptibility.

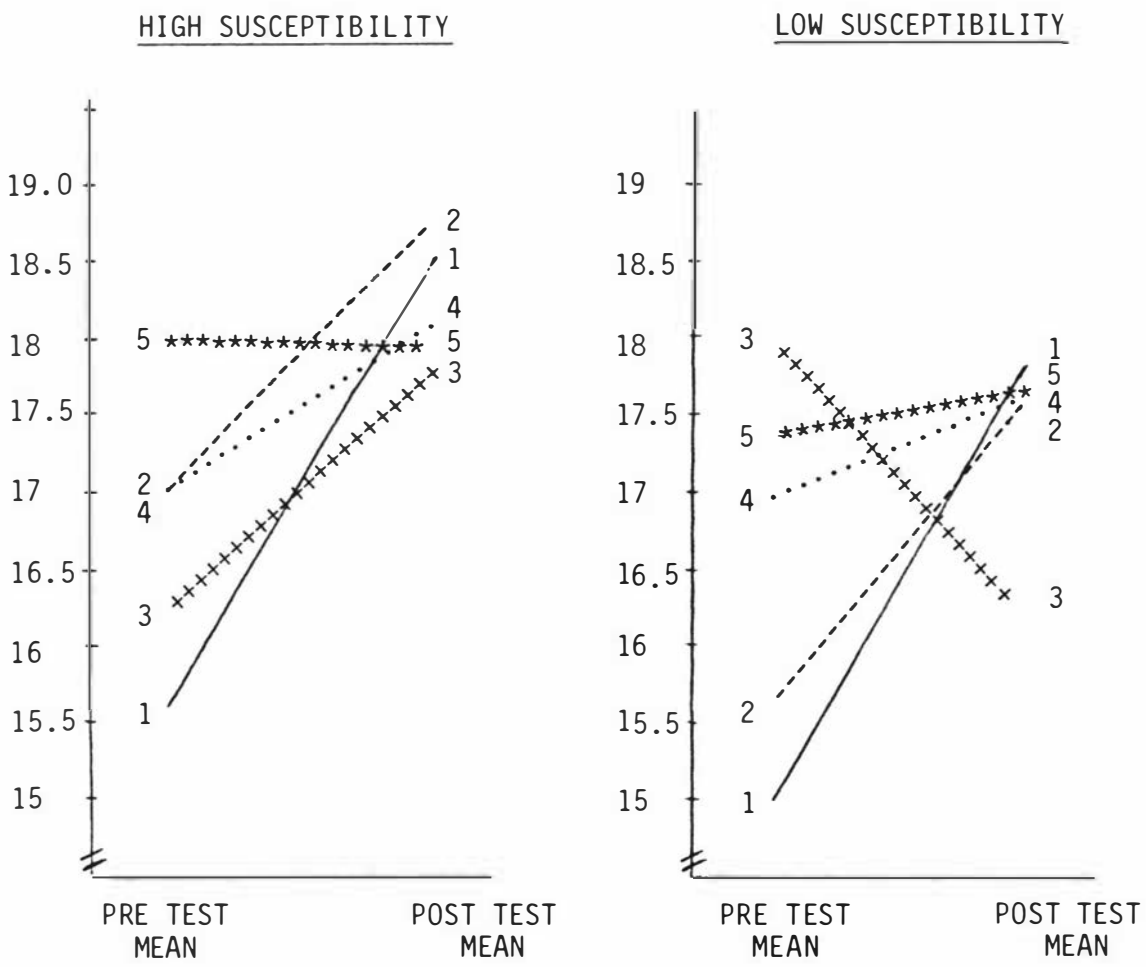
Two-tailed F tests revealed a significant decrease in Trait Anxiety for High and Low Susceptibility subjects in the Hypnosis group ($F(1,47) = 6.37$, $p < .05$; $F(1,47) = 5.40$, $p < .05$) and for High Susceptibility subjects in the Western Meditation group ($F(1,47) = 4.83$, $p < .05$). High Susceptibility subjects in the TM and Placebo Control groups changed in the predicted direction, however the decrease was not significant ($F(1,47) = 1.89$, $p > .05$; $F(1.47) = 1.53$, $p > .05$). In addition, Low Susceptibility subjects in the TM group showed a decrease in Trait Anxiety, however this decrease did not reach significance ($F(1,47) = 3.22$, $p > .05$).

Comparisons of the change in Trait Anxiety between High Susceptibility subjects in the treatment groups and High Susceptibility subjects in the Non-Meditating Control group, using two-tailed F tests revealed no significant differences ($p > .05$).

Comparisons of the change in Trait Anxiety between Low Susceptibility subjects in the treatment groups and Low Susceptibility subjects in the Non-Meditating Control group also revealed no significant differences ($p > .05$).

Results of the 2-way and 3-way ANOVA are shown in the appendix. (See Appendix I - Table 2 for details of the ANOVA summary).

The tendency observed with State Anxiety was not maintained with equal potency on the Trait Anxiety scale, however High Susceptibility subjects did show greater reductions than Low Susceptibility subjects in two out of the three treatment conditions.



KEY:
1 ———— Hypnosis
2 ---------- TM
3 ++++++++++ Western Meditation
4 ..... Placebo Control (PSI)
5 ********** Non-Meditating Control

Figure 8 - The Change on the POI Time Competence Scale from Pre to Post Test for High and Low Susceptibility Subjects in Each of the 5 Groups.

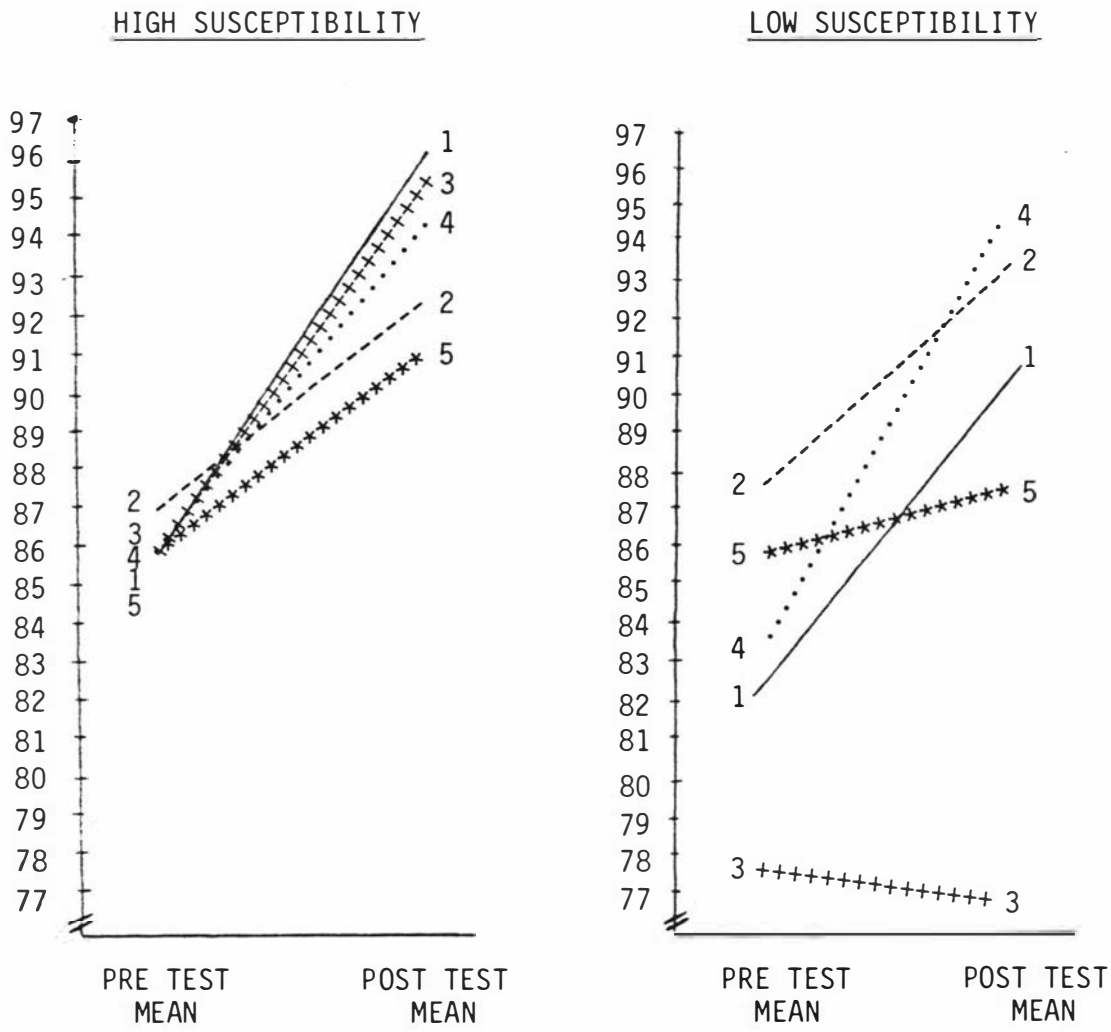
Figure 8 shows the change on the major POI scale of Time Competence from pre to post test for High and Low Susceptibility subjects in each of the five groups. It shows both main effects and the interaction effect between Groups X Pre and Post Test as a function of High and Low Susceptibility.

Two-tailed F tests revealed a significant increase in Time Competence for High and Low Susceptibility subjects in the Hypnosis group ($F(1,47) = 7.91$, $p < .01$; $F(1,47) = 4.75$, $p < .05$). High Susceptibility subjects in the TM, Western Meditation and Placebo Control groups also increased, however, these changes did not reach significance ($F(1,47) = 1.85$, $p > .05$; $F(1,47) = 1.28$, $p > .05$; $F(1,47) = .82$, $p > .05$). In addition, Low Susceptibility subjects in the TM group showed increases in Time Competence, however this increase did not reach significance ($F(1,47) = 2.51$, $p > .05$).

Comparisons of the change in Time Competence between High Susceptibility subjects in the treatment groups and High Susceptibility subjects in the Non-Meditating Control group, using 2-tailed F tests, revealed no significant differences ($p > .05$).

Comparisons of the change in Time Competence between Low Susceptibility subjects in the treatment groups and Low Susceptibility subjects in the Non-Meditating Control group also revealed no significant differences ($p > .05$).

Results of the 2-way and 3-way ANOVA are shown in the appendix. (See Appendix I - Table 3 for details of ANOVA summary).



KEY:
1 ———— Hypnosis
2 ---------- TM
3 ++++++++++ Western Meditation
4 ..... Placebo Control (PSI)
5 ********** Non-Meditating Control.

Figure 9 - The Change on the POI Inner Directedness Scale from Pre to Post Test for High and Low Susceptibility Subjects in Each of the 5 Groups.

Figure 9 presents the change on the major POI scale of Inner Directedness from pre to post test for High and Low Susceptibility subjects in each of the five groups. It shows both main effects and the interaction effect between Groups X Pre and Post Test as a function of High and Low Susceptibility.

Two-tailed F tests revealed a significant increase in Inner Directedness for High and Low Susceptibility subjects in the Hypnosis group ($F(1,47) = 8.61$, $p < .01$; $F(1,47) = 5.78$, $p < .05$) and the Placebo Control group ($F(1,47) = 6.07$, $p < .05$; $F(1,47) = 8.65$, $p < .01$). Significant increases in Inner Directedness were also achieved by High Susceptibility subjects in the Western Meditation group ($F(1,47) = 9.09$, $p < .01$).

Comparisons of the change in Inner Directedness between High Susceptibility subjects in the treatment groups and High Susceptibility subjects in the Non-Meditating Control group, using 2-tailed F tests, revealed no significant differences ($p > .05$).

Comparisons of the change in Inner Directedness between Low Susceptibility subjects in the treatment groups and Low Susceptibility subjects in the Non-Meditating Control group also revealed no significant differences ($p > .05$).

Results of the 2-way and 3-way ANOVA are shown in the appendix. (See Appendix I - Table 4 for details of the ANOVA sumary).

Overall, for the four major scales of State-Trait Anxiety and Self Actualization, there was a tendency for High Susceptibility subjects to show greater improvement than Low Susceptibility subjects. High Susceptibility subjects in the treatment conditions showed significant improvements on nine occasions, with three of these at the $p < .01$ level of confidence. On the other hand, Low Susceptibility subjects showed significant improvement on five occasions, four of which were in the Hypnosis group. In addition, the only significant improvement at the $p < .01$ level of confidence by Low Susceptibility subjects occurred on the Inner Directedness scale by the Placebo Control group.

Results on the 10 subscales of the POI for High and Low Susceptibility subjects in each group are summarized below.

Tables 2 and 3 present the F values for comparison of pre to post test changes on subscales of POI for High and Low Susceptibility subjects respectively in each of the five groups. Also indicated are significantly greater effects achieved by treatment groups compared with the Non-Meditating Controls.

Two-tailed F tests revealed the following results:

1 High Susceptibility subjects in the Hypnosis group showed a significant increase from pre to post test on five of the 10 subscales of the POI

2 Low Susceptibility subjects in the Hypnosis group showed a significant increase from pre to post test on one of the 10 subscales

3 High Susceptibility subjects in the TM group showed a significant increase on three of the 10 subscales

4 Low Susceptibility subjects in the TM group showed a significant increase on two of the 10 subscales

5 High Susceptibility subjects in the Western Meditation group showed a significant increase on three of the 10 subscales

6 Low Susceptibility subjects in the Western Meditation group showed no significant changes on any of the 10 subscales

7 High Susceptibility subjects in the Placebo Control group showed a significant increase on two of the 10 subscales

8 Low Susceptibility subjects in the Placebo Control group showed a significant increase on four of the 10 subscales

9 High Susceptibility subjects in the Non-Meditating Control group showed no significant increases on any of the 10 subscales

10 Low Susceptibility subjects in the Non-Meditating Control group showed a significant increase on one of the 10 subscales. (See Tables 2 and 3 for details).

TABLE 2

F VALUES FOR INCREASES FROM PRE TO POST TEST ON SUBSCALES OF THE POI FOR HIGH SUSCEPTIBILITY SUBJECTS IN EACH OF THE 5 GROUPS

	GROUPS				
POI SUBSCALES	Hypnosis F(1,47)	TM F(1,47)	Western Meditation F(1,47)	Placebo Control F(1,47)	Non-Med. Control F(1,47)
Self Actual. Values	6.04 * +	0.20	3.86	6.38 * +	.24
Existentiality	7.11 * *	.89	6.36 *	1.59	1.82
Feeling Reactivity	.035	.36	.52	.23	.15
Spontaneity	5.24 *	6.84 *	8.79 **	.49	.66
Self Regard	14.67 * * + +	1.05	1.74	1.37	.47
Self Acceptance	1.33	4.16 *	2.07	4.66 *	1.96
Nature of Man Constructive	4.17 *	0.0	.03	.13	0.0
Synergy	2.97	.32	1.27	1.27	3.87
Acceptance of Aggression	2.24	1.30	2.92	.64	.16
Capacity for Intimate Con.	2.02	5.92 *	6.50 *	3.88	1.17

* Significant at $p < .05$

** Significant at $p < .01$

\+ Significantly greater than Non-Meditating Controls at $p < .05$

++ Significantly greater than Non-Meditating Controls at $p < .01$

TABLE 3

F VALUES FOR INCREASES FROM PRE TO POST TEST ON SUBSCALES OF THE POI FOR LOW SUSCEPTIBILITY SUBJECTS IN EACH OF THE 5 GROUPS

	GROUPS				
POI SUBSCALES	Hypnosis F(1,47)	TM F(1,47)	Western Meditation F(1,47)	Placebo Control F(1,47)	Non-Med. Control F(1,47)
Self Actual. Values	3.86	.62	.11	5.56*+	.62
Existentiality	6.63*	3.66	.24	2.62	5.54*
Feeling Reactivity	.006	.009	.18	.32	.02
Spontaneity	1.49	4.83*	.17	7.11**	.06
Self Regard	3.21	.17	1.06	5.08*	.37
Self Acceptance	3.57	2.82	.08	1.81	.25
Nature of Man Constructive	1.58	.25	.70	.25	.57
Synergy	.24	.15	0.0	1.39	1.39
Acceptance of Agression	.16	2.07	2.55	5.00*	.10
Capacity for Intimate Con.	3.33	10.53**	3.58	3.79	.95

* Significant at $p < .05$

** Significant at $p < .01$

\+ Significantly greater than Non-Meditating Controls at $p < .05$

Comparisons of High Susceptibility subjects in the treatment groups with High Susceptibility subjects in the Non-Meditating Control group revealed the following results: High Susceptibility subjects in the Hypnosis group showed a significantly greater increase than High Susceptibility subjects in the Non-Meditating Control group on the Self Actualizing Values ($F(1,47) = 4.55$, $p < .05$) and the Self Regard ($F(1,47) = 10.24$, $p < .01$) subscales.

High Susceptibility subjects in the Placebo Control group showed a significantly greater increase on the Self Actualizing Values subscale than High Susceptibility subjects in the Non-Meditating Control group ($F(1,47) = 4.55$, $p < .05$).

Comparisons of Low Susceptibility subjects in the treatment groups with Low Susceptibility subjects in the Non-Meditating Control group revealed the following results: Low Susceptibility subjects in the Placebo Control group showed a significantly greater increase than Low Susceptibility subjects than the Non-Meditating Control group on the Self Actualizing Values ($F(1,47) = 4.94$, $p < .05$) and the Self Regard ($F(1,47) = 4.11$, $p < .05$) subscales.

Overall, the tendency for High Susceptibility subjects to manifest greater improvement on measures of psychological health across treatment conditions was supported on the POI subscales. This was evident in the Hypnosis group, the TM group and the Western Meditation group.

The notable exception was the Placebo Control group, where Low Susceptibility subjects showed a greater number of significant increases than High Susceptibility subjects (see tables 2 & 3).

Results of the 2-way and 3-way ANOVA are shown in the appendix (see Appendix I - Tables 5-14 for details).

Section 3

Correlation Between Attitudes, Expectancies & Motivation and Involvement in Imagining with Hypnotic Susceptibility

The correlation matrix for the antecedent variables of Attitudes, Expectancies and Motivation (Attitudes) and Involvement in Imagining (Imagining) and the dependent variable of Hypnotic Susceptibility (Susceptibility) is presented in Table 4. The findings show a low to moderate correlation between Attitudes, Expectancies and Motivation and Hypnotic Susceptibility ($r = .32$). Involvement in Imagining is shown as negligibly associated with Hypnotic Susceptibility ($r = -.06$). In addition, Attitudes, Expectancies and Motivation and Involvement in Imagining are shown to have a low correlation with each other ($r = .12$). Therefore, of the antecedent variables, only Attitudes Expectancies and Motivation appear to indicate predictability of Hypnotic Susceptibility. The two antecedent variables appear to be measuring different aspects of Hypnotic Susceptibility, and the inclusion of both does not contribute substantially to prediction.

The multiple correlation coefficients for the antecedent variables (Attitudes and Imagining) with the dependent variable (Susceptibility) are presented in Table 5. When Attitudes, Expectancies and Motivation is considered independently the multiple $R = .32$ ($F(1,47) = 5.05$, $p < .05$). With Involvement in Imagining also considered, the sum of scores on the antecedent variables yields a correlation with Hypnotic Susceptibility of $R = .34$ ($F(2,43) = 2.73$, $p > .05$). The beta coefficient for Attitudes was significant ($F = 5.29$). For Imagining, the beta coefficient was not significant ($F = .47$). The square of the multiple R shows the amount of variance of Hypnotic Susceptibility accounted for by Attitudes, Expectancies and Motivation to be just over 10% (.103). When Involvement in Imagining is also included, the amount of the variance increases slightly to just over 11% (.1126).

Therefore, of the two factors considered, Attitudes, Expectancies and Motivation can be seen to be a low to moderate predictor of Hypnotic Susceptibility, accounting for just over 10% of the variance.

However, the addition of the antecedent variable, Involvement in Imagining, to that of Attitudes, Expectancies & Motivation, only increases the prediction very slightly, and adds negligibly to the total variance.

TABLE 4

MEANS, STANDARD DEVIATIONS, AND CORRELATION MATRIX FOR THE ANTECEDENT VARIABLES (ATTITUDES AND IMAGINING) AND THE DEPENDENT VARIABLE (SUSCEPTIBILITY)

VARIABLES	N	$\overline{X}$	SD
Attitudes, Expectancies & Mot.	57	20.19	3.19
Involvement in Imagining	46	10.13	2.69
Susceptibility	57	6.98	2.26

	ATTITUDES	IMAGINING	SUSCEPTIBILITY
ATTITUDES	X	.12	.32
IMAGINING	.12	X	-.06
SUSCEPTIBILITY	.32	-.06	X

TABLE 5

MULTIPLE REGRESSION CORRELATION FOR THE ANTECEDENT VARIABLES (ATTITUDES, AND IMAGINING) WITH THE DEPENDENT VARIABLE SUSCEPTIBILITY)

ATTITUDES, EXPECTANCIES & MOTIVATION

	ANALYSIS OF VARIANCE				
MULTIPLE R = .32		df	Sum of Squares	Mean Square	F
R SQUARE = .10	REGRESSION	1	23.58	23.58	5.05
ADJUSTED R SQUARE = .08	RESIDUAL	44	205.43	4.67	
STANDARD ERROR = 2.16					

ATTITUDES, EXPECTANCIES & MOTIVATION AND INVOLVEMENT IN IMAGINING

	ANALYSIS OF VARIANCE				
MULTIPLE R = .34		df	Sum of Squares	Mean Square	F
R SQUARE = .11	REGRESSION	2	25.79	12.90	2.73
ADJUSTED R SQUARE = .07	RESIDUAL	43	203.21	4.73	
STANDARD ERROR = 2.17					

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA	F
ATTITUDES	.32	.10	.10	.32	.24	.33	5.29
IMAGINING	.34	.11	.01	-.06	-.08	-.01	.47
(CONSTANT)					(3.07)		

SUPPLEMENTARY RESULTS

There are three specific areas which may assist in the interpretation of the aforementioned results. First are the findings for subjects in the treatment and placebo conditions who scored high on the Attitudes, Expectancies and Motivation Questionaire. These results are particularly indicated, since the antecedent variable of Attitudes, Expectancies and Motivation showed some association to hypnotic susceptibility, and therefore a similar trend on measures of anxiety and self actualization for the subjects scoring high on this measure would supplement previous findings.

The second specific area includes findings for subjects who scored high and low on the Involvement in Imagining post test questionaire. While this factor was virtually uncorrelated with Hypnotic Susceptibility, significant results of planned comparisons may indicate its independent influence within treatment or placebo conditions in terms of an interaction effect on changes in the dependent measures.

The third area includes findings related to changes in anxiety and self actualization for the treatment groups in comparison with the Placebo Control group. In addition, a comparison of High and Low Susceptibility, High and Low Attitudes, and High and Low Imagining subjects in the treatment groups with High and Low Susceptibility, High and Low Attitudes, and High and Low Imagining, subjects in the Placebo Control group with respect to outcomes on dependent measures is also indicated. These findings may help clarify the relationship between the treatment conditions and placebo control conditions as well as indicating similarities and differences in their effects on the dependent measures.

Section 1

The 3-Way Interaction Effect of Treatment by Pre and Post Test as a Function of Attitudes, Expectancies and Motivation on Anxiety and Self Actualization

Since the response to the Attitudes, Expectancies and Motivation Questionaire was highly skewed in the positive direction, a division of subjects into High and Low Attitudes at the mean led to unequal sample sizes, with N = 1 in two of the five Low Attitudes cells.

Consequently, F tests of statistical significance for unequal N's using the application of a harmonic mean (Keppel, 1973), customarily used throughout the present study, would lead to an artificially low N figure. Therefore, in order to determine the significance of the interaction effect on the Attitudes variable, it was decided to apply two-tailed F tests to the High Attitudes cell only, following the computation of an appropriate error term for this set of calculations according to the method recommended by Keppel (1973, p350). In addition, a 2-way ANOVA was applied to investigate the interaction effect of Groups x Pre and Post changes using the High Attitudes cell only. The results of the F tests were as follows:

1 On the STAI-State Anxiety Scale, High Attitudes subjects in the Hypnosis and TM groups showed a significant decrease from pre to post test ($F(1,39) = 5.82$, $p < .05$; $F(1,39) = 6.94$, $p < .05$)

2 On the STAI-Trait Anxiety Scale, High Attitudes subjects in the Hypnosis, TM, and Western Meditation groups showed a significant decrease from pre to post test ($F(1,39) = 8.93$, $p < .01$; $F(1,39) = 4.59$, $p < .05$; $F(1,39) = 4.59$, $p < .05$).

3 On the major POI Scale of Time Competence, High Attitudes subjects in the Hypnosis group showed a significant increase from pre to post test ($F(1,39) = 10.21$, $p < .01$)

4 On the major POI Scale of Inner Directedness, High Attitudes subjects in the Hypnosis group ($F(1,39) = 17.59$, $p < .01$), the TM group ($F(1,39) = 4.70$, $p < .05$), the Western Meditation group ($F(1,39) = 7.46$, $p < .01$) and the Placebo Control group ($F(1,39) = 6.68$, $P < .05$) showed significant increases from pre to post test

5 On the subscales of the POI, High Attitudes subjects in the Hypnosis group showed significant increases from pre to post test on six of the 10 subscales. In the TM group, High Attitudes subjects showed significant increases on three of the 10 subscales. In the Western Meditation group, High Attitudes subjects showed significant increases on four of the 10 subscales. In the Placebo Control group, High Attitudes Subjects

showed a significant increase on one of the subscales. In the Non-Meditating Control group, High Attitudes subjects showed a significant increase on one of the subscales. (See Table 7 for the scales on which High Attitudessubjects showed significant improvement).

Overall, the tendency observed previously for High Susceptibility subjects in treatment conditions to show greater changes on measures of anxiety and self actualization appears to be repeated for High Attitudes subjects. When a comparison is made between the number of scales and the configuration in which High Susceptibility subjects showed significant improvements from pre to post test and the number of scales and the configuration in which High Attitudes subjects showed significant improvements, the similarities are apparent.

Table 6 presents the scales of each of the dependent measures on which High Susceptibility and High Attitudes subjects in each group recorded significant improvements. It can be seen that for the Hypnosis group, High Susceptibility and High Attitudes subjects both showed significant improvements on 10 of the 14 scales, including all of the four major scales of the STAI and POI. In addition, eight of the 10 scales on which significant improvement was noted were the same for both groups of subjects. For the TM group, a similar pattern can be seen. High Susceptibility subjects showed significant improvements on four of the six scales in which High Attitude subjects recorded significant improvement. Although, for the TM group it is noteworthy that High Attitudes subjects showed a significant improvement on three of the four major scales, whereas High Susceptibility subjects showed a significant improvement on one of the four major scales (see Table 6 for the details). For the Western Meditation group, High Susceptibility subjects showed a significant improvement on five of the six scales in which High Attitudes subjects recorded significant improvement, including the same two major scales. With respect to the Placebo Control group, there appears to be a strengthening of the converse trend mentioned earlier (see p 72), wherein Low Susceptibility and Low Attitudes subjects showed a greater number of significant improvements across all scales than High Susceptibility and High Attitudes subjects.

TABLE 6

SCALES ON WHICH HIGH SUSCEPTIBILITY AND HIGH ATTITUDE SUBJECTS IN EACH GROUP SHOWED SIGNIFICANT IMPROVEMENT

	Hypnosis		TM		Western Meditation		Placebo Control		Non-Med. Control	
SCALES	H/S	H/A	H/S	H/A	H/S	H/A	H/S	H/A	H/S	H/A
STAI-STATE	*	*	*	*			*			
STAI-TRAIT	*	**		*	*	*				
POI-TC	**	**								
POI-I	**	**		*	**	**	*	*		
SAV	*	**					*	**		
EX	*	**			*	*				*
FR						**				
S	*	**	*	*	**	*				
SR	**	**								
SA		*	*	**			*			
NC	*									
SY		*								
A										
C			*	**	*	**				

* Significant at $p < .05$
** Significant at $p < .01$

(For F values, see Appendix J)

While this tendency was complicated somewhat for High Susceptibility subjects by significant improvements on two of the four major scales, it appears to be more consistent for High and Low Attitudes subjects. In the latter case, High Attitudes subjects showed significant improvements on only one major scale and one subscale, while Low Attitude subjects showed significant improvements on seven of the 14 scales, including two of the major scales. This observation is noted for the Placebo Control group since an F test application could be used on larger numbers in the Low Attitude cell than occurred in the other groups ($n = 5$). (See Section 3-C of supplementary results for further comment in this regard p86).

Results of the 2-way ANOVA for Groups x Pre and Post Test changes for High Attitude subjects on all scales are presented in the appendix (see Appendix I - Tables 15-28 for details of the ANOVA summaries).

Section 2

The 3-Way Interaction Effect of Treatment by Pre and Post Test as a Function of Involvement in Imaginings on Anxiety and Self Actualization

Since the separation of subjects into High and Low Imagining led to approximately equal sample sizes (in contrast with the "Attitudes" variable), a return to the usual *a priori* comparison was made using a computed harmonic mean for subject numbers in all cells, followed by F tests for significance according to the procedure recommended by Ferguson and referred to earlier (see p.141).

Results of the 2-tailed F tests for High and Low Imagining subjects were as follows:

1 On the STAI State Anxiety Scale, High Imagining subjects in the Hypnosis, TM and Western Meditation groups showed a significant decrease from pre to post test ($F(1,38) = 8.54$, $p < .01$; $F(1,38) = 6.53$, $p < .05$; $F(1,38) = 8.25$, $p < .01$). Low Imagining subjects in the Placebo Control group also showed significant decrease from pre to post test ($F(1,38) = 7.61$, $p < .01$).

2 On the STAI-Trait Anxiety Scale, High Imagining subjects in

the Hypnosis and Western Meditation group showed a significant decrease from pre to post test ($F(1,38) = 7.30$, $p < .05$); $F(1,38) = 8.42$, $p < .01$). Low Imagining subjects showed no significant decreases from pre to post test in any of the treatment or Placebo Control groups.

3 Results of the 3-way ANOVA on changes in State and Trait Anxiety for Groups x Imagining x Pre and Post Test are shown in the appendix. (See Appendix I - Tables 29-30 for details).

4 On the major POI Scale of Time Competence, High Imagining subjects in the Hypnosis and the TM groups showed a significant increase from pre to post test ($F(1,38) = 12.21$, $p < .01$; $F(1,38) = 10.16$, $p < .01$). Low Imagining subjects showed no significant increases from pre to post test in any of the treatment or Placebo Control groups.

5 On the major POI Scale of Inner Directedness, High Imagining subjects in the Hypnosis, Western Meditation and Placebo Control groups showed significant increases from pre to post test ($F(1,38) = 14.09$, $p < .01$; $F(1,38) = 8.59$, $p < .01$); $F(1,38) = 6.11$, $p < .05$). Low Imagining subjects in the TM and Placebo Control groups showed significant increases from pre to post test ($F(1,38) = 4.16$, $p < .05$); $F(1,38) = 7.12$, $p < .05$).

6 On subscales of the POI,

a High Imagining subjects in the Hypnosis group showed a significant improvement on five of the 10 subscales, while Low Imagining subjects showed a significant improvement on four of the 10 subscales.

b High Imagining subjects in the TM group showed a significant improvement on two of the 10 subscales, while Low Imagining subjects also showed a significant improvement on two of the 10 subscales.

c High Imagining subjects in the Western Meditation group showed a significant improvement on five of the subscales, while Low Imagining subjects showed a significant improvement on one subscale.

d High Imagining subjects in the Placebo Control group showed a significant improvement on two of the subscales, while Low Imagining subjects showed a significant improvement on three of the subscales.

Results of the 3-way ANOVAs on changes on scales of the POI for Groups x Imagining x Pre and Post Test are shown in the appendix (see Appendix I - Tables 31-42 for details).

The tendency observed earlier with respect to High Susceptibility and High Attitudes subjects (see Table 6) appears similar for High Imagining subjects, particularly in the Hypnosis and Western Meditation groups. Table 7 presents the scales of the STAI and the POI in which significant improvement was shown by High and Low Imagining subjects in each of the treatment and Placebo Control groups. It can be seen that High Imagining subjects in the Hypnosis group showed significant improvement on nine of the 14 scales, including all of the four main scales of the STAI and POI. High Imagining subjects in the Western Meditation group showed significant improvement on eight of the 14 scales, including three of the four main scales. This trend was the same as that shown for High Attitudes subjects and slightly higher than that shown by High Susceptibility subjects (see Table 6). High Imagining subjects in the TM group showed a significant improvement on four of the 14 scales, including two of the four main scales. For the TM group, this trend was slightly less than that shown by High Attitudes subjects, but slightly greater than that shown by High Susceptibility subjects (see Table 6). High Imagining subjects in the Placebo Control group showed a significant improvement on three of the 14 scales. For the Placebo Control group a similar trend was observed with Imagining as with Hypnotic Susceptibility and Attitudes. Subjects scoring low on these variables tended to show a greater number of significant improvements on scales of the STAI and POI than those scoring high. This is unique among all groups in the present study in this respect.

TABLE 7

SCALES OF THE STAI AND POI IN WHICH HIGH AND LOW IMAGINING SUBJECTS IN EACH GROUP SHOWED SIGNIFICANT IMPROVEMENT

SCALES	Hypnosis		TM		Western Meditation		Placebo Control	
	H/I	L/I	H/I	L/I	H/I	L/I	H/I	L/I
STAI-STATE	**		*		**			**
STAI-TRAIT	*				**			
POI-TC	**		**					
POI-I	**			*	**		*	*
SAV	*	*					*	*
EX	**				*			
FR				*	**			
S	*		**		**			
SR	**	*						*
SA	**				*		*	
NC		**						
SY		*						
A					**			
C			*	**		*		*

* Significant at $p < .05$

** Significant at $p < .01$

(For F values, see Appendix K)

Section 3

Comparison of the Treatment Groups with the Placebo Control Group

A. The Comparison of Treatment Effects

The comparison between the treatment and placebo control conditions on changes in State Anxiety showed no significant differences in reduction by the treatment groups and the Placebo Control group (see Section 1 for the results of the F tests on changes in State Anxiety for each of the five groups). The Hypnosis, TM, and the Placebo Control all showed significant reductions in State Anxiety.

The comparison between the treatment and placebo control conditions on changes in Trait Anxiety showed significant reductions by all of the three treatment groups, while the Placebo Control group showed no significant changes (see Section 1 for results of the F tests). However, the reductions by treatment groups were not significantly greater than the reduction by the Placebo Control group.

On the major scales of the POI, comparisons between the treatment and placebo control conditions on changes in "self actualization" showed significant increases by the Hypnosis and TM groups on the Time Competence Scale, whereas the increase by the Placebo Control group was not significant (see Section 1 for results of the F tests). However, the increase by the treatment groups were not significantly greater than those achieved by the Placebo Control group. On the Inner Directedness Scale, there were no significant differences between increases by the treatment groups and the increase by the Placebo Control group (see Section 1 for results of the F tests). The Hypnosis, TM and Placebo Control groups all showed significant increases in Inner Directedness.

On the subscales of the POI, comparisons between the treatment groups and the Placebo Control group on changes in "self actualization" showed no significant differences in increases on any of the 10 subscales. The Hypnosis group showed significant increases on six subscales. The TM group showed significant increases on four subscales. The Western Meditation group showed significant increases on three subscales. The Placebo Control group showed significant increases on seven subscales. (See Table 1 for results of the F tests).

Overall, the findings showed the hypnosis condition to have elicited a significant improvement on 10 of the 14 scales administered, including all of the four main scales. The TM condition was shown to have elicited a significant improvement on eight of the 14 scales including all of the four major scales. The Western Meditation condition was shown to have elicited a significant improvement on four of the 14 scales, including one of the four major scales. The placebo control condition was shown to have elicited a significant improvement on nine of the 14 scales, including two of the four major scales. Therefore, while the placebo control condition showed at least equal efficacy in improving scores on the subscales of the POI as the three treatment conditions, on the major scales of State-Trait Anxiety, Time Competence, and Inner Directedness, it was shown to be less effective than either the hypnosis or the TM condition in significantly improving measures of anxiety and self actualization. Both Hypnosis and TM affected significant improvement in all four major scales while the placebo control application only affected significant improvements on two of these scales. This is noteworthy since the four major scales are discrete indices, each measuring different aspects of anxiety and self actualization, while the subscales are interrelated leading to a response on one subscale affecting one or more of the other subscales.

B. Comparison of the Interaction Effect on Changes in Anxiety & SA Between Treatment Conditions and the Placebo Control Condition as a Function of Hypnotic Susceptibility

On the STAI-State Anxiety Scale, F tests revealed no significant differences between reductions shown by High Susceptibility subjects in the treatment groups and High Susceptibility subjects in the Placebo Control group. High Susceptibility subjects in the Hypnosis, TM, and Placebo Control groups all showed significant reductions (see Section 2 for results of the F tests). Low Susceptibility subjects in the treatment groups also showed no significant differences in reductions in State Anxiety compared with Low Susceptibility subjects in the Placebo Control group.

On the STAI-Trait Anxiety Scale, F tests revealed significant reductions by High Susceptibility subjects in the Hypnosis and the Western Meditation groups, while High Susceptibility subjects in the Placebo Control group showed no significant change (see Section 2 for

results of the F tests). However, no significant differences between reductions by High Susceptibility subjects in any of the treatment groups and reductions by High Susceptibility subjects in the Placebo Control group were found. F-Tests also revealed no significant difference between reductions by Low Susceptibility subjects in any of the treatment groups and reductions by Low Susceptibility subjects in the Placebo Control group.

On the major POI Scale of Time Competence, F tests revealed a significant increase by High Susceptibility subjects in the Hypnosis group, while High Susceptibility subjects in the Placebo Control group showed no significant change (see Section 2 for results of the F tests). However, no significant difference between increases by High Susceptibility subjects in any of the treatment conditions and increases by High Susceptibility subjects in the placebo control condition were found. F tests also revealed no significant difference between increases by Low Susceptibility subjects in any of the treatment groups and increases by Low Susceptibility subjects in the Placebo Control group.

On the other major scale of the POI, Inner Directedness, F tests revealed no significant differences between increases shown by High Susceptibility subjects in the treatment groups and High Susceptibility subjects in the Placebo Control group (see Section 2 for results of the F tests). High Susceptibility subjects in the Hypnosis, Western Meditation and Placebo Control groups showed significant increases in Inner Directedness. For Low Susceptibility subjects, no significant differences were also found between treatment and Placebo groups on increases in Inner Directedness. Low Susceptibility subjects in the Hypnosis and Placebo Control group showed a significant increase in Inner Directedness.

On the 10 subscales of the POI, 2-tailed F tests revealed a significantly greater increase by High Susceptibility subjects in the Hypnosis group than High Susceptibility subjects in the Placebo Control group on the Self Regard subscale ($F\ (1,47) = 5.08$, $p < .05$).

Results of the 3-way ANOVA showing interaction effects of Groups x Hypnotic Susceptibility x Pre and Post Test scores for all of the

aforementioned scales of the STAI and POI are presented in the appendix (see Appendix H - Tables 1-14, for details).

While planned comparisons and the analysis of variance showed only one significant difference (on the Self Regard subscale of the POI) between improvements by High and Low Susceptibility subjects in the treatment groups and improvements by Low Susceptibility subjects in the Placebo Control groups, a trend was observed. In the treatment groups, High Susceptibility subjects showed a greater number of significant improvements on scales of the STAI and POI than Low Susceptibility subjects. These ratios were: Hypnosis 10/3, TM 5/2, and Western Meditation 6/0. However, in the Placebo Control group, High Susceptibility subjects showed a significant improvement on four scales, while Low Susceptibility subjects showed a significant improvement on five scales (see Section 2 for results of the F tests). This trend must be viewed with caution, since on the major scales of State Anxiety, Trait Anxiety, Time Competence and Inner Directedness, High Susceptibility subjects in the Placebo Control group significantly improved on 2 scales (State Anxiety, $F(1,47) = 5.70$, $p < .05$ and Inner Directedness, $F(1,47) = 6.07$, $p < .05$) while Low Susceptibility subjects showed significant improvement on one scale (Inner Directedness, $F(1,47) = 8.65$, $p < .01$).

C. Comparison of the Treatment and Placebo Interaction Effects on Changes in Anxiety and Self Actualization as a Function of High and Low Attitudes

As stated previously, it is difficult to compare the results of Low Attitudes (L/A) subjects in the treatment groups with Low Attitudes subjects in the Placebo Control group due to small sample size, particularly for the Western Meditation group where N = 1. However, a comparison of High Attitudes (H/A subjects can be made, using 2-tailed F tests along with some mention of relevant trends observed with Low Attitudes subjects, where appropriate.

Two-tailed F tests comparing H/A subjects in treatment groups with H/A subjects in the Placebo Control group revealed a significant difference on only one scale; on the Self Regard subscale of the POI, H/A subjects in the Hypnosis group showed a significantly greater increase than H/A subjects in the Placebo Control group ($F_{1,47} = 7.84$,

$p < .01$).

However, it can be seen in Table 6 that the High Attitudes subjects in the treatment groups showed a significant improvement on at least as many scales as High Susceptibility subjects in those groups (with the exception of the hypnosis group). Conversely, for the Placebo Control group, High Attitudes subjects showed a significant improvement on only one major scale and one sub-scale of the POI, while Low Attitudes subjects showed a significant improvement on eight scales, including two major scales. These were:

1 State Anxiety ($F(1,47) = 5.14$, $p < .05$)

2 Inner Directedness ($F(1,47) = 13.53$, $p < .01$)

3 SAV ($F(1,47) = 6.91$, $p < .05$)

4 EX ($F(1,47) = 4.36$, $p < .05$)

5 FR ($F(1,47) = 4.86$, $p < .05$)

6 S ($F(1,47) = 5.49$, $p < .05$)

7 SR ($F(1,47) = 12.25$, $p < .01$)

8 C ($F(1,47) = 12.32$, $p < .01$).

The interesting trend observed here with the placebo control condition in relation to the Attitudes variable warrants mention, even though results on this Low Attitudes cell have not been mentioned previously. Since the Low Attitudes cell in the placebo control group contained a larger number of subjects ($n = 5$) the F test application here is appropriate. In addition, these results are valid, since with lower subject numbers the F test becomes more conservative, requiring a greater variance difference to achieve significance. Therefore, these results are quite significant.

D. Comparison of the Treatment and Placebo Interaction Effects on Changes in Anxiety and Self Actualization as a Function of High and Low Imagining

Comparison of the results observed for High and Low Imagining subjects in the treatment groups with High and Low Imagining subjects in the placebo control group revealed the following:

1 a significantly greater increase in Time Competence for High Imagining subjects in the Hypnosis group compared with High Imagining subjects in the Placebo Control ($F(1,38) = 4.56$, $p < .05$).

2 a significantly greater increase in SAV for Low Imagining subjects in the Placebo Control group compared with Low Imagining subjects in the TM group ($F(1,38) = 5.71$, $p < .05$).

3 a significantly greater increase in NC for Low Imagining subjects in the Hypnosis group compared with Low Imagining subjects in the Placebo Control group ($F(1,38) = 7.60$, $p < .01$).

The tendency observed for High and Low Susceptibility as well as High Attitudes subjects in the treatment groups appears similar for High and Low Imagining subjects, especially in the Hypnosis and Western Meditation groups. When the four main scales are considered, High Imagining subjects in all three treatment groups showed a greater number of significant increases than Low Imagining subjects. However, when the subscales are also included, the TM group shifts to a greater number of significant increases by Low Imagining subjects. For the Placebo Control group, a converse tendency can be seen with Low Imagining subjects showing a greater number of significant improvements on main and subscales than Low Imagining subjects. (Details can be seen in Table 7).

CHAPTER FIVE

DISCUSSION AND CONCLUSIONS

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DISCUSSION AND CONCLUSIONS

This study was designed to investigate several factors related to the effects of hypnosis and varying forms of meditation on anxiety reduction and improvement in self actualization. These included

1 the similarities and/or differences in the efficacy of varying techniques to foster psychological health

2 the possible role of the subject variables of hypnotic susceptibility and the hypothesized antecedent components of positive attitudes, expectancies & motivation along with involvement in imagining, and

3 any differences between these effects and those achieved by a placebo control technique.

The outcome of the study may be discussed along the aforementioned lines, since the findings indicate some tendencies of interest in each of these areas. The conclusion may thereafter be drawn with respect to the strength of these findings and the recognized limitations of the study.

The Effect of Treatment and Control Conditions on State Anxiety

There were several important findings in relation to the effect of the treatment and placebo control conditions on anxiety and self actualization. The most dramatic overall effect occurred on the State Anxiety Scale which measures the subjective, consciously perceived feelings of both tension and apprehension (Spielberger, et.al., 1970). On this measure, hypnosis, TM and the placebo control condition were shown to be effective in significantly reducing consciously perceived feelings of anxiety. In addition, all three treatment conditions (including the Western Meditation) as well as the placebo control condition were shown to be significantly more effective than a no-treatment control. This was verified by 2-tailed F tests and further supported by a significant interaction effect on the 2-way ANOVA between Groups X Pre and Post Test scores. The comparison effects appear to be magnified somewhat due to the differences between decreases in anxiety by the treatment and placebo groups compared with the increase in anxiety by the non-meditating controls. However, the strength of

these findings can be accepted and is impressive since the increase in the "transitory emotional state" of anxiety by the control group reflected the academic pressure evident in the final weeks of the term when assignments were due and term tests were being taken. .... Whereas for the treatment and placebo groups, the level of state anxiety decreased in spite of these pressures.

These results are highly supportive of previous evidence suggesting that the practice of hypnosis (especially relaxation hypnosis) as well as the practice of TM leads to beneficial effects in terms of anxiety reduction (Benson, et.al., 1974 & 1978; Morse, 1977; Morse, et.al., 1977; Nidich, et.al., 1977). These findings are more extensive, however, in suggesting a relationship between various forms of self regulation techniques as well as between these and a placebo control technique. While the Western Meditation technique only led to a reduction in state anxiety in the predicted direction, it was shown to be significantly more effective than a no-treatment control condition in reducing this anxiety. This suggests a relationship with both hypnosis and TM in terms of consequent effects on consciously perceived anxiety. This may not be surprising, since the technique appears to include elements similar to both (e.g. suggestions for psychophysiological benefits and the use of an attention-fixation device).

The significant effect of the placebo control condition on reductions in state anxiety also suggest a relationship between hypnosis, meditation and this condition. This supports the findings of Smith (1978) in which both TM and a placebo control elicited significant reductions in anxiety. However, this relationship is difficult to interpret. It could be argued, as Smith suggests, that the common variables of a positive expectation of improvement along with sitting quietly with eyes closed for 20 minutes twice daily facilitates beneficial psychotherapeutic effects in both TM and the placebo control condition. It could also be interpreted as meaning that the beneficial effects elicited by the conditions investigated here (e.g. hypnosis, TM and a Western Meditation) are due in large part to a placebo effect. This would support the comments of Kihlstrom (1979) on the importance of a placebo effect in the psychotherapeutic outcome using

hypnosis. On the other hand, it could also be argued that the variables of positive attitudes, expectancies & motivation along with sitting quietly with eyes closed may facilitate a hypnotic or meditative response leading to changes in behaviour and/or states of consciousness. This possibility is suggested by the findings of Barmark & Gaunitz (1980), Carrington (1977) and Sacerdote (1977).

These relationships may be clarified as the results are expanded into the area of other dependent variables as well as the effect of the proposed mediating and antecedent variables on these measures. At this point, however, the evidence suggests that hypnosis, meditation and the placebo control technique have similar psychotherapeutic value in terms of their efficacy in reducing state anxiety. This also suggests that similar variables may be in operation.

The Effect of Treatment and Control Conditions on Trait Anxiety

The effects of the treatment and placebo control conditions on trait anxiety suggests certain differences in the efficacy of these varying techniques to reduce different forms of anxiety. In contrast to the transitory emotional and physiological states measured by the State Anxiety Scale, trait anxiety is designed to measure a more stable and enduring aspect of the individual, which reflects anxiety proneness and a tendency to respond to perceived threats in a given situation (Spielberger, et.al., 1970).

On this anxiety measure, all three of the treatment conditions (hypnosis, TM and a Western Meditation) were found to significantly reduce trait anxiety, whereas the placebo control condition showed no significant reduction. In addition, only the hypnosis group showed a significantly greater reduction in trait anxiety than the no-treatment control group.

These findings suggest that as self regulation treatment modalities, hypnosis, TM and a Western Meditation are effective in reducing a more stable anxiety trait which is less prone to variations in intensity or fluctuations over time. Additionally, these findings indicate that in contrast to the beneficial effects of these treatments on state anxiety, their effect upon trait anxiety did not involve a placebo effect; since the placebo control condition did not achieve

significant results.

One further interpretation may be drawn, which supports the findings of Davidson & Schwartz (1976) with regard to mode-specific effects of self regulation techniques. Since the Trait Anxiety Scale involves anxiety proneness to "situations perceived as threatening", it appears to reflect an emphasis on cognitive anxiety rather than somatic anxiety. Therefore, techniques involving a high cognitive component (i.e. a mental device used to shift the cognitive orientation) may have a greater mode-specific effect on this measure than those techniques not emphasizing a mental device. Along this line, it is interesting to note that hypnosis had the greatest impact on trait anxiety, showing a significantly greater effect than the no-treatment control group. This was followed by both of the meditation techniques in terms of efficacy on this measure. It is possible that hypnosis is a more effective technique in reducing cognitive anxiety, especially where a mental set towards situations has been established and is counteracted by a shift in cognitive orientation leading to changes in the mental set and consequent perceived behaviour. The results obtained by Hurley (1980) in comparing the effectiveness of hypnosis, biofeedback, and simple-word meditation strengthen this possibility. In that investigation, hypnosis was also shown to be more effective than meditation in facilitating improved psychological functioning, albeit meditation also led to significant reductions in anxiety.

Overall, the results suggest that hypnosis, TM and a Western Meditation are effective treatments for the reduction of anxiety of both the state and trait type, although the effects are more consistent across conditions in reducing trait anxiety. Also, there is an indication of a placebo effect in the outcome of these techniques on state anxiety. This placebo effect has been mentioned earlier and supported by previous research (Smith, 1978). However, clarification of the role of expectancies, involvement in imagining, hypnotic susceptibility or a combination of these factors in the placebo condition is necessary in order to understand the nature of either a sole expectancy effect, or a complex cognitive process involving a hypnotic or meditative experience fostering beneficial changes on these measures.

The Effect of Treatment and Control Conditions on Self Actualization

On the measure of self actualization, which evaluates the degree to which an individual utilizes unique capabilities and potential with relative freedom from emotional conflicts (Shostrom, 1966), the results suggest that both hypnosis and TM are more effective than either the Western Meditation or a placebo control condition in facilitating improvement. This is particularly evident for the hypnosis condition which was shown to effect a significant improvement on both major scales of Time Competence and Inner Directedness as well as on six of the 10 interrelated subscales. Hypnosis was also significantly more effective than the no-treatment condition in facilitating increases on the major scale of Time Competence. TM was also shown to be effective in leading to improvement in self actualization albeit with a lesser effect over all. The TM group was found to significantly improve on both major scales as well as four of the six interrelated subscales. However, the changes on the major scales were not significantly greater than that achieved by the no-treatment control condition.

These results confirm the findings of Cummings (1978) and Morse et.al. (1977) that hypnosis (with suggestions for self improvement) is effective in improving self actualization. There is also confirmation of the findings of Nidich, et.al., (1977) and Ferguson & Gowan (1977) that TM is effective in improving self actualization. In comparative terms, the findings of Hurley (1980) are perhaps most relevant here, since the findings in the present study support that outcome more specifically. Hurley found hypnosis to be more effective than simple-word meditation in increasing ego strength. The results of the present study would suggest that there is a tendency in that direction, however the closeness of the results are also suggestive of a considerable degree of similarity in the effect of the two techniques.

The results of the Western Meditation condition are more difficult to interpret. While this condition was shown to be as effective as the other treatment conditions in reducing anxiety (particularly trait anxiety), it was shown to be relatively ineffective in improving self actualization. It may be that this technique interacts to a greater extent with one of the subject variables, leading to either increases or decreases of a greater magnitude than on anxiety scales and thereby

confounding the overall results when these blocks are not properly controlled. This is a likely possibility, since the presentation of suggestions along with this technique are less nurturing and supportive than those of hypnosis or TM. This could lead to an accessing of this information by some subjects and a resistance by others.

The results of the placebo control condition on self actualization suggest a moderate effectiveness on this measure. The placebo control condition was found to effect a significant increase in the major scale of Inner Directedness and seven of the 10 interrelated subscales. The possible reasons for this effectiveness appear similar to those presented earlier. Either the results achieved by each of these techniques is, in part, due to an expectancy effect, or the placebo condition facilitates the necessary variables responsible for the hypnotic or meditative response which leads to similar changes. The argument for a placebo effect does not appear to be entirely satisfactory, since the positive expectancies of the Western Meditation condition did not result in significant changes on the major scales. However, the argument for the placebo condition leading to a hypnotic or meditative state facilitating beneficial changes also falls short, since the hypnosis and TM conditions showed a greater number of increases on major scales. It can be postulated that both factors play a role to some extent, but that subjects can access the information slightly better using hypnosis or TM. In other words, there is a placebo effect operating to some extent in each of these conditions, as it may indeed operate in many forms of therapy (Kihlstrom, 1979). However, hypnosis and meditation can effect beneficial changes in psychological functioning beyond that achieved with expectancy, and this process is also involved to a lesser degree in the placebo control technique of sitting quietly with eyes closed.

To summarize, the findings on measures of anxiety and self actualization suggest that the practice of hypnosis, TM, and to a lesser degree a Western Meditation and placebo control condition, result in improved psychological functioning in terms of anxiety reduction and increased self actualization. This partly confirms hypothesis number one. These results also suggest that there are similarities in each of these techniques in terms of potential consequent effects, but that certain factors operating particularly within

the placebo control condition and Western Meditation may confound these results when subject variables in each of these techniques remain uncontrolled. This reiterates the importance stressed by Benson et.al. (1978) on controlling for such variables as hypnotic susceptibility and strongly underscores the conclusion of Joscelyn (1979) that placebo effects need to be more fully examined in meditation research.

Further clarification of the similarities and differences in these techniques in terms of subject variables will be considered next.

Interaction Effect of Hypnotic Susceptibility with Treatment and Control Conditions on State Anxiety

When the subject variable of hypnotic susceptibility was controlled for by separating subjects into high and low susceptibility cells within each group, a discernable trend was identified on the State Anxiety Scale.

High susceptibility subjects in the hypnosis, TM and placebo control groups showed significant reductions in state anxiety, whereas low susceptibility subjects in the hypnosis group were the only cell to elicit a significant reduction. Moreover, high susceptibility subjects in the hypnosis, TM, Western Meditation, and placebo control groups all showed significantly greater reductions than high susceptibility subjects in the no-treatment control group, whereas there were no significant differences in reductions by low susceptibility subjects in treatment groups compared with the no-treatment controls.

This evidence generally suggests that hypnotic susceptibility operates as a mediating variable in both hypnosis and meditation, resulting in beneficial psychotherapeutic effects on reductions in anxiety. This supports the findings of Benson, et.al. (1978), Heide (1980), and Walrath & Hamilton (1975) which also indicated the importance of the subject variable of hypnotic susceptibility in facilitating beneficial psychophysiological effects with the use of hypnosis and meditation.

However, this evidence should be treated with some caution due to several indications of confounding factors being involved. Firstly, both high & low susceptibility subjects in the hypnosis group showed

significant reductions in anxiety. Therefore, in this case, the level of hypnotic susceptibility was unlikely to have operated as a mediating variable. Secondly, neither high nor low susceptibility subjects in the Western Meditation group displayed significant changes on this measure. Therefore, controlling for this subject variable did not identify differences in results achieved and suggests its insignificance as a mediating variable here as well. Thirdly, the hypnotic susceptibility level appears to have been a factor in reductions achieved by the placebo control group. This suggests an expectancy effect operating not only in all of the conditions for which significant changes were observed, but also an expectancy effect operating in the measure of hypnotic susceptibility itself. Alternatively, as stated previously, the placebo control technique may include both an expectancy element and lead to changes in observable behaviour and/or state of consciousness similar to that achieved with the use of hypnosis and meditation.

One possible explanation for the confounding factors mentioned may lie in a possible difference between hypnosis as utilized on standard scales of susceptibility and hypnosis as utilized in the present study and indeed in much of clinical practice. On the standardized scales, while relaxation is a part of the induction process, the scores on both subjective and behavioural criteria relate more closely to task hypnosis, where there may be a subtle shift from non-volitional experiencing to more effortful striving in terms of imagery construction. This confounding of results due to inappropriate criteria measures for hypnosis may be the reason for conflicting results achieved when attempting to determine the importance of hypnotic susceptibility as a predictor of successful outcome in hypnotherapy (Perry, et.al., 1979). It may also help explain the lack of relationship between hypnotic susceptibility scores and the practice of meditation found by Spanos, et.al., (1979). In other words, subjects may be able to access information differently using relaxation hypnosis in the context of hypnotherapy compared with task hypnosis in the context of response to test suggestions on standardized scales. These differences may relate to accessing information through cognitive modes other than visual (mental imagery) in order to produce a psychotherapeutic responsivity to hypnosis (Bandler & Grinder, 1979).

Interaction Effect of Hypnotic Susceptibility with Treatment and Control Conditions on Trait Anxiety

On the Trait Anxiety Scale, a slightly different pattern has emerged. Generally, the results support a somewhat weaker tendency than that observed on the State Anxiety Scale with regard to this subject variable. High susceptibility subjects in the hypnosis and Western Meditation groups showed significant decreases in trait anxiety, while only low susceptibility subjects in the hypnosis group achieved significant results. In addition, neither high nor low susceptibility subjects in the TM or placebo control groups showed significant changes on this measure.

While these results reiterate to some extent the possible importance of hypnotic susceptibility as a mediating variable in the beneficial psychotherapeutic effects elicited using these treatment modalities, this is more clearly the case solely with the Western Meditation condition. For the hypnosis group, the level of susceptibility was unrelated to therapeutic outcome, and with both the TM and placebo control conditions there was less effect than when this variable remained uncontrolled. In the latter case, the loss of statistical power through lower numbers in each cell may have been responsible for these effects.

Overall, in terms of the efficacy of hypnosis and meditation to reduce state and trait anxiety, the evidence suggests that hypnotic susceptibility may play a mediating role. However, this indication needs to be treated cautiously due to three possible factors influencing these results. Firstly, there is sufficient evidence of a placebo effect in these results to suggest that expectancy alone or in combination with the regular practice of sitting quietly may be in operation in each of these conditions. Secondly, the regular practice of sitting quietly may interact with other variables than positive expectancies to produce a hypnotic or meditative response along with consequent changes in behaviour. Thirdly, the possible confounding of these results due to the difference mentioned earlier and further cited by Carrington (1977) between "being (relaxation) hypnosis" and "effortful (task) hypnosis". The former may only resemble the latter in some aspects and may therefore not be comparable.

Interaction Effect of Hypnotic Susceptibility with Treatment and Control Conditions on Self Actualization

On the major POI scales of Time Competence and Inner Directedness, the results suggest that hypnotic susceptibility plays a lesser mediating role in eliciting improvement in self actualization in subjects practicing hypnosis and meditation. High and low susceptibility subjects in the hypnosis group showed significant increases in Time Competence and high and low susceptibility subjects in the hypnosis and placebo control groups showed significant increases in Inner Directedness. The only condition for which hypnotic susceptibility was more strongly suggested as mediating improvement was the Western Meditation in which high susceptibility subjects alone showed a significant increase in Inner Directedness. Moreover, for the Western Meditation condition, in spite of the loss of statistical power, this was the only condition to elicit a greater number of significant increases on the major scales of self actualization by high susceptibility subjects than was demonstrated by subjects when this variable remained uncontrolled. Therefore, the results for the Western Meditation condition support the findings of Benson et. al., (1978) with respect to the importance of hypnotic susceptibility as a subject variable in improvement in psychological health as a result of meditation practice.

Interestingly, for the major scales of self actualization, hypnotic susceptibility appears to be unrelated to significant improvement when practicing hypnosis, TM or the placebo control condition. This underscores the confounding of this variable, mentioned earlier, in terms of the difference between the criterion measure (task hypnosis) and the therapeutic use of hypnosis (relaxation hypnosis). The latter has been shown to produce similar effects on psychophysiological measures to that achieved using meditation (Benson et. al., 1978; Hurley, 1980; Morse et.al., 1977). Moreover, the variations in outcome on the major scales using the placebo control application raises again the problem of distinguishing between an expectancy effect present in the use of each of these techniques and the similarities of subjective and behavioural experience between the regular practice of sitting quietly and the practice of hypnosis and meditation. This point reinforces the comment by Carrington (1977) on the difficulty of determining the similarity or difference in achieving the "meditative mood" between those meditating

and those sitting quietly with eyes closed.

For the interrelated subscales of the POI, the results interestingly suggest more strongly that hypnotic susceptibility plays a mediating role in eliciting improvement in self-actualization when practicing hypnosis, TM and a Western Meditation. High susceptibility subjects in each of these groups showed a greater number of significant increases than low susceptibility subjects on these subscales. In addition, for the first time, low susceptibility subjects in the placebo control group showed a greater number of significant changes than high susceptibility subjects on these subscales (see Tables 2 & 3).

To summarize, the findings for high and low susceptibility subjects in each of the treatment and control groups on measures of anxiety and self actualization suggests that this subject variable mediates the effect of hypnosis and meditation in reducing anxiety, especially of the transitory, consciously perceived or "state" type. To a lesser degree, there is some evidence to suggest that hypnotic susceptibility also plays a role in mediating the effect of hypnosis and meditation in reducing anxiety proneness or "trait" anxiety. These results appear to be confounded to some extent by a possible difference in the criterion measures of hypnotic susceptibility (task hypnosis) and the use of hypnosis (relaxation hypnosis) in the present study as a treatment modality. In addition, the placebo effect apparent on anxiety measures indicates either the importance of this factor in the results achieved using hypnosis and meditation, or the similarity of the practice of sitting quietly with eyes closed to the practice of hypnosis and meditation in terms of a hypnotic or meditative experience leading to changes in observable behaviour and/or state of consciousness.

On the measure of self actualization, the importance of hypnotic susceptibility as a mediating variable in the effect of hypnosis and meditation is more difficult to discern. To some extent, the evidence suggests that this subject variable plays a role in the results achieved with the practice of these techniques. This is particularly true for the Western Meditation condition and is supported for all three treatment conditions (hypnosis, TM and Western Meditation) by the results on the subscales. However, on the major scales of Time

Competence and Inner Directedness, this indication is present only for the Western Meditation condition.

Confounding Factors

The problems in terms of confounding factors (e.g. the criterion measure for hypnotic susceptibility and interpretation of the placebo effect) mentioned earlier for the anxiety measure appears to be even more applicable to the measure of self actualization. Overall, for the measure of self actualization, the results are more contradictory, with subscales showing a stronger indication of a mediating effect by hypnotic susceptibility than the major scales.

One possible explanation may be advanced for the more consistent results achieved with regard to hypnotic susceptibility as a mediating variable in its effects on anxiety reduction. It can be postulated that the focus on relaxation, non-analytic attending (Spanos, et.al., 1979), and effortless experiencing (Bowers, 1978) facilitated by hypnosis and meditation is likely to have a greater specific impact upon anxiety reduction due to the effect of reciprocal inhibition, as suggested by Boudreau (1972). High susceptibility subjects using these self regulation techniques may be more capable of either accessing the information to relax and effortlessly experience or to become absorbed in the mental device and subsequent imagery which inhibits conscious experiencing of anxiety and promotes a "relaxation response" (Benson et.al., 1974). This process may be more effective for high susceptibility subjects, especially in terms of attention fixation and absorption in imagining associated with relaxation, which is suggested by the findings of Bowers, (1979), Van Nuys (1973) and Walrath & Hamilton (1975).

On the other hand, the interaction of hypnotic susceptibility with these treatment conditions may be more complex with respect to their effect on self actualization. The kind of reciprocal inhibition involving a relaxation response suggested earlier may be insufficient to significantly increase self actualization. The manner of accessing this information for psychological benefit may involve more complex cognitive processes than expectation of improvement, attention fixation, and absorption in imagination associated with self improvement. This

may involve a cognitive restructuring of self perception through changes in attitudes, values and insight into behaviour which may be accessed by both high and low susceptibility subjects under certain conditions. This process has been purported to involve a type of "neurolinguistic programming" which is more extensive than responsivity to suggestion leading to a relaxation response (Bandler & Grinder, 1979). Responsiveness to hypnosis may be a mediating factor in psychotherapeutic effectiveness to some extent, as indicated by the results of high susceptibility subjects in the Western Meditation condition on the major scales and in the hypnosis, TM and Western Meditation conditions on the subscales of the POI. This is supported by the findings of Benson et. al., (1978), Kihlstrom (1979) and Mott (1979). However, since low susceptibility subjects also showed significant improvement in the hypnosis and placebo control condition, hypnotic responsivity as determined by standardized scales is not strongly suggested as a mediating variable, when self regulation techniques using non-analytic attending and/or effortless experiencing (relaxation hypnosis) are involved.

These results, therefore, partially support hypothesis number two for the interaction of hypnotic susceptibility with the three treatment conditions in effecting significant reductions in state and trait anxiety. However, on the measure of self actualization, while a tendency is indicated to some extent, the evidence is contradictory on major scales and subscales and cannot be said to clearly indicate an interaction effect.

The Role of the Antecedent Variable (Positive Attitudes, Expectancies & Motivation along with Involvement in Imagining)

Clarification of the posited antecedent variables may now be considered to determine whether these subject variables are significant predictors of hypnotic susceptibility and moreover, to consider whether they may play an independent role in the psychotherapeutic effects achieved with hypnosis and meditation.

Regarding the relationship of the antecedent variables to hypnotic susceptibility, the evidence from the multiple regression correlation suggests that positive attitudes, expectancies & motivation may be a

moderate predictor of hypnotic susceptibility. This variable was significantly correlated with susceptibility ($r = .32$; $F(1,47) = 5.05$, $p < .05$) and was shown to account for just over 10% of the variance. However, the variable of involvement in imagining was shown to be virtually uncorrelated with hypnotic susceptibility ($r = -.06$) and added negligibly to the total variance. Therefore, this suggests that involvement in imagining alone is a poor predictor of susceptibility, and only increases predictability very slightly when combined with positive attitudes, expectancies & motivation.

It appears, from these findings, that only one of the antecedent variables posited in the present study is significantly related to hypnotic susceptibility and may play a role in facilitating responsiveness to hypnosis and meditation. Since this subject variable relates to an expectancy effect, it may mean that, to some extent, the results achieved with the use of hypnosis and meditation are also due to expectations of benefit. This was suggested earlier in relation to the results achieved with the placebo control condition and supported by the comments of Kihlstrom (1979), Joscelyn (1979) and Smith (1978) on the possible placebo effects involved in the practice of hypnosis and meditation. Results of the F tests on the interaction of attitudes, expectancies & motivation with the treatment conditions may help clarify this finding.

These results suggest that positive attitudes, expectancies & motivation interact with the practice of hypnosis and meditation, leading to beneficial effects. This is clearly the case in the results achieved with the practice of hypnosis, TM and the Western Meditation, where there was significant improvement on the major scales of anxiety and self actualization by high attitudes subjects. This indicates, therefore, that positive attitudes, expectancies & motivation are important antecedents to the successful use of hypnosis and meditation for psychotherapeutic effects, and supports the findings of Barber & Calverly (1966) and Smith (1978) in this regard, while failing to confirm the contention of Bloomfield & Kory (1976) that positive expectations are unnecessary in order to achieve benefit through the use of TM.

These findings also suggest a placebo effect operating, to some

degree, in the effects of hypnosis and meditation, although this indication should be treated with caution for two reasons. Firstly, high attitudes subjects in the placebo control group achieved fewer significant results on the scales of anxiety and self actualization than high susceptibility subjects in that group and fewer significant results overall. If an expectancy effect were sufficient to produce positive changes on these measures, then this cell within the placebo control group should have shown a greater number of significant changes. This suggests that while positive attitudes, expectancies & motivation may be necessary antecedents of the beneficial use of hypnosis and meditation, it is not sufficient on its own or with merely sitting quietly with eyes closed to produce significant improvements in anxiety and self actualization. The fact that low attitudes subjects in the placebo control group showed greater improvement on two of the four major scales and seven of the 14 scales overall underscores this point. Secondly, these results must be viewed cautiously since they are based on the findings for high attitude subjects only. The subjects volunteering for this experiment were generally highly motivated and possessed positive attitudes and expectancies. Therefore, the low attitude cells were too small and were discarded before F tests and ANOVAS were applied. Therefore, an adequate comparison with subjects not holding positive attitudes, expectancies & motivation cannot be made.

In terms of the second posited antecedent variable (involvement in imagining), it was shown to be virtually unrelated to hypnotic susceptibility as an antecedent condition. This fails to confirm the second part of the findings by Barber & Calverly (1966). However, while involvement in imagining may not account for a significant portion of the variance of susceptibility as measured by the standardized scales, its role in the use of hypnosis and meditation involving a process related to relaxation hypnosis may be clarified by the results of F tests of the interaction of this variable with the treatment modalities to produce beneficial changes on these measures.

The results for high and low imagining subjects in each of the three treatment conditions as well as the placebo control condition suggests that involvement in imagining interacts with the practice of hypnosis and meditation leading to beneficial psychotherapeutic effects.

This is more clearly the case with hypnosis and the Western Meditation, where high imagining subjects showed significant improvement on four and three of the major scales respectively. On the other hand, low imagining subjects in these groups showed no significant improvement on the four major scales of the STAI and POI. For the TM group, the findings indicate a less significant interaction effect, although high imagining subjects showed a greater number of significant improvements on the major scales than low imagining subjects by two to one.

Interestingly, the tendency observed for high attitude subjects in the placebo control condition appears to be sustained in the findings for high imagining subjects. Contrary to the findings for the hypnosis and meditation conditions, high imagining subjects in the placebo control group showed fewer significant improvements on the major scales of the STAI and POI than low imagining subjects by two to one. This result suggests that involvement in imagining is not a subject variable interacting with the placebo control condition to produce beneficial effects in terms of anxiety reduction and increases in self actualization.

The relationship of the subject variable, involvement in imagining, with hypnotic susceptibility and the treatment conditions utilized appears complex and not clearly discernable. Involvement in imagining was shown to be virtually unrelated to hypnotic susceptibility as measured by the standardized scale (HGSHS:A). However, in other studies its components (absorption and imagery) have been shown to be related to attentional skills, including non-analytic attending and effortless experiencing (Bowers, 1978; Spanos et.al., 1979). These have also been shown to be related to hypnotic susceptibility (Van Nuys, 1973). Moreover, in the present study, high imagining subjects showed significant improvement on all four of the major scales in the hypnosis group, while low imagining subjects in that group showed no significant improvement. These findings indicate a relationship between involvement in imagining and responsivity to hypnosis.

One possible explanation for the inconsistency of these findings relates to the previous point regarding the confounding of the criterion measures of hypnotic susceptibility with the ability to access information through hypnosis and meditation as utilized in the present study. This confounding factor may be further accentuated by the interrelationship of the three component parts of the subject variable of involvement

in imagining (imagery, absorption, and use of a mental device). Two of these were drawn from a previous study (Spanos et. al., 1977). It can be argued that there is a contrast between the conceptualized use of imagining in controlled experimentation (e.g. the use of imagery in the standardized scales of hypnotic susceptibility) presented by Spanos & Barber (1974) and the flexible manner of accessing information in a variety of metaphorical ways (e.g. mental imagery, auditory recall, and kinesthetic response) as suggested by Bandler & Grinder (1979). In this light, several different avenues of achieving significant beneficial effects on these measures can be proposed.

Firstly, subjects with high mental imagery ability may be able to access the information related to either task hypnosis or relaxation and meditation with suggestions for improved behavioural responses by visually imagining these processes taking place. This may become either volitional or non-volitional goal-directed striving with concomitant beneficial changes.

Secondly, subjects with low mental imagery ability may be able to access the information related to these forms of hypnosis and meditation which suggest beneficial psychophysiological changes by means of other complex cognitive, affective or kinesthetic processes involving memory, insight, or emotional experiences. This may also lead to concomitant beneficial changes.

Thirdly, either of these types of subjects may be able to report "imagery" involvement, "absorption in imagination", or "use of a mental device", confounding the results on this kind of questionaire.

In other words, each subject may be able to respond to hypnosis or meditation through varying channels of accessing the information presented (or associated with the mental device) and the differences in the mode of accessing this information (e.g. visual, auditory, kinesthetic) may be masked by factors uncontrolled in the type of imagining questionaire utilized. This may also assist in understanding the poor relationship between involvement in imagining and hypnotic susceptibility found in the present study. The confounding aspects of assessing hypnotic susceptibility through the mode of task hypnosis, while utilizing varying modes of accessing information in

the practice of hypnosis and meditation may seriously affect any findings pertaining to the relationship between hypnotic susceptibility and involvement in imagining. The fact that the results of both high susceptibility and high imagining subjects indicate to some extent the interaction of these variables with the treatments involved suggests that either these variables independently effect these changes or that there is an interrelationship which requires further exploration.

Overall, the results for the posited antecedent variables (positive attitudes, expectancies & motivation along with involvement in imagining) partially support hypothesis number three for the correlation of positive attitudes with hypnotic susceptibility. However, the remainder of the hypothesis related to the correlation of involvement in imagining with hypnotic susceptibility was not supported.

The results help to clarify the relationship between hypnotic susceptibility and positive attitudes, expectancies & motivation by showing a significant relationship between the two. In addition, the findings indicate that positive attitudes, expectancies & motivation play a significant role in the effect of hypnosis and meditation on psychological measures and moreover that this extends beyond a placebo effect. Therefore, the overall results for this subject variable tend to support its antecedent relationship to hypnotic susceptibility as proposed in this study.

In terms of the relationship between hypnotic susceptibility and involvement in imagining, the results can be said to be contradictory and inconclusive. On the one hand, no relationship between these two variables was found. On the other hand, involvement in imagining was shown to play a significant role in the effect of hypnosis and meditation on psychological measures and that this was not present to the same degree in the placebo control condition. This appears to be confounded by several factors related to two main areas:

1 the differing modes of accessing information involved in the three criteria of imagining utilized in the questionaire, and

2 the relationship between hypnotic susceptibility measures and the psychotherapeutic use of hypnosis and meditation in terms of hypnotic susceptibility or responsivity.

Each of these factors may involve different modes of accessing information by subjects and not coincide with depth of hypnosis as measured by standardized scales, thereby yielding varying psychotherapeutic effects for high and low susceptibility subjects. This may help to explain the continuing controversy between those claiming the clinical relevance of hypnotizability (Bowers & Kelly, 1979; Kihlstrom, 1979; Mott, 1979) and those suggesting a poor relationship between hypnotizability and the psychotherapeutic gains of those showing a low depth of hypnotic response in its clinical use (Erickson & Rossi, 1979; Perry 1979).

Limitations of the Study

Although hypnosis and meditation were found to be similarly effective in reducing anxiety and increasing self actualization, as well as to involve similar subject variables interacting with these conditions, a number of limitations can be identified in the present study which either confounded results or made them difficult to interpret.

One significant limitation was that of sample size. While the overall number of subjects in each treatment condition was sufficient to draw valid comparisons between groups, this was more difficult when each group was further divided into two cells to control for hypnotic susceptibility, attitudes, and imagining. When these cells were identified and controlled, there were very low subject numbers in some of the cells. This was particularly true for the variable of positive attitudes, expectancies & motivation, where sample sizes in two of the groups reached $n = 1$, and therefore this cell had to be discarded in the statistical application of F tests of significance.

Since the F test becomes more conservative with lower numbers and therefore requires a greater variance in order to achieve significance, the results reported here using a smaller harmonic mean are valid. It could also be argued that when F tests had identified significant differences between groups, this finding is highly significant for smaller sample sizes, since these comparisons are treated even more conservatively with the F test application. However, further studies should be developed with this in mind, since more reliable results

comparing these factors may be found with larger sample sizes.

Another limitation referred to earlier was the possible difference between the criteria measure for hypnotic susceptibility (e.g. the HGSHS:A) and the use of hypnosis and meditation in the treatment conditions. This appears to have confounded the results with respect to the role of hypnotic susceptibility in the psychotherapeutic outcome of the practice of hypnosis and meditation. The mode of accessing the information relating to psychotherapeutic benefit (whether externally induced or self induced) may be subtly different for certain types of subjects. This may make task hypnosis with high mental imagery suitable for some and relaxation hypnosis with effortless experiencing and other modes of cognitive absorption suitable for others. The lack of control for these subject variables and mode-oriented effects for differing techniques may be a significant factor in the contradictory findings regarding the clinical relevance of hypnotic susceptibility. Future studies should be designed to control for these possible variables.

A third area of limitation which has been identified and is reflected in the findings is that of a highly skewed sample on the variable of positive attitudes, expectancies & motivation. Since an attempt was made to control for the positive attitudes facilitated by introductory lectures or remarks conveyed to subjects learning either hypnosis or meditation, the study primarily attracted subjects who were highly motivated and who possessed positive attitudes and expectancies. Therefore, an adequate comparison of the effectiveness of these techniques with subjects manifesting low attitudes, expectancies & motivation could not be made. Inferences were drawn from the results with high attitude subjects in each treatment group and in comparison with high attitude subjects in the placebo control group. However, the strength of these conclusions would have been increased by comparison with a low attitude cell in each group.

A fourth limitation identified was the instrument used for assessing the degree to which subjects were involved in imagining. It appears that this measure may have confounded the results, especially with regard to the relationship of involvement in imagining to hypnotic susceptibility. The three factors assessed using this measure

(imagery, absorption and the use of a mental device) may be experienced differently by subjects who cognitively access the information presented in varying ways; in much the same manner as suggested for hypnotic susceptibility. Therefore, some subjects may experience "imagery" subjectively as a visual process, while others may experience this as auditory recall, primary process thought, or kinesthetic responsiveness. Absorption in these experiences may also differ for subjects in each of these modes of experience, while the same may be true for the association with the use of a mental device. This indicates the need for further clarification of the process of imagining which shifts the cognitive orientation from an objective perspective to involvement in imagining. The manner in which subjects operationalize this process through different modes of experience, leading to accessing information more effectively in behaviour change when using hypnosis and meditation needs to be more carefully explored.

The final area of limitation concerns the use of a placebo control condition. While results achieved by the placebo control group suggest the importance of an expectancy effect also operating in the beneficial psychotherapeutic outcome of the practice of hypnosis and meditation there were other possible confounding effects of this condition which call into question the degree to which a placebo effect was operating. Smith (1978) identified two variables associated with this technique which are common to the practice of meditation:

1 a positive expectancy of benefit, and

2 sitting quietly with eyes closed for 20 minutes twice a day.

The importance of the first variable was supported by the results in the present study with respect to the positive attitudes, expectancy & motivation variable interacting with treatment conditions. However, the second variable of sitting quietly with eyes closed may have involved complex elements which require further clarification. For example, the results indicate that involvement in imagining was more important when practicing hypnosis and meditation than when practicing the placebo control technique (PSI), even though subjects in all of these conditions were sitting quietly with eyes closed. Therefore, subjects utilizing each of these techniques may access the information differently and still achieve beneficial psychotherapeutic results.

This suggests that either different types of subjects are able to utilize these conditions more effectively or that there are differences in each of these techniques which encourage alternative forms of accessing information and subsequent changes in perception, values, and behaviour. Future studies should take these factors into consideration in research into hypnosis and meditation in an attempt to achieve further clarification of these similarities and differences.

Suggestions for Further Research

A number of questions have been raised as a result of the findings achieved in the present study as well as to the limitations described in the preceding section. These suggest several directions which may be pursued in subsequent research into the relationship between the therapeutic use of hypnosis and meditation.

This study has provided some evidence for the similarity of psychotherapeutic effects achieved with the regular practice of hypnosis and meditation. However, there were some apparent differences in consequent effects observed, particularly between the Western Meditation condition and the other treatments. It would be valuable, therefore, to provide further evidence with regard to the effects of different forms of meditation in comparison with hypnosis and TM. If this could be accomplished with larger sample sizes and include the Western Meditation condition, then a confirmation or contradiction of the present findings could be achieved and help further the understanding in this area.

The other major area in which significant questions have been raised involves the possible subject variables held in common between those receiving benefit from the practice of hypnosis and those receiving benefit from the practice of meditation. Due to the confounding factors referred to earlier, more research is necessary in order to clarify the importance of hypnotic susceptibility, positive attitudes, expectancies & motivation, and involvement in imagining as subject variables interacting with these treatment conditions.

Further clarification of the clinical relevance of hypnotic susceptibility in terms of its role in the psychotherapeutic benefit derived from hypnosis and meditation may be achieved if subject

differences in response to different modes of experiencing hypnosis are taken into consideration. This suggests that future research into the importance of hypnotic susceptibility as a subject variable in these conditions may profit from distinguishing between subjects who respond well to task-oriented hypnosis as represented by the accomplishment of test suggestions in standardized scales and those who respond well to relaxation-oriented hypnosis related to effortless experiencing and non-analytic attending. This calls into question the relevance of the criteria measures presently being used to assess hypnotic susceptibility in terms of the possible differences in modes of accessing the information by different types of subjects. This also suggests the importance of exploring the linguistic techniques utilized in the instruction of hypnosis and meditation to determine the effects of the use of metaphor and association to the mental device to produce cognitive, affective, and somatic changes which become manifested in observable behaviour. Future research may possibly assess the responsiveness of subjects to induction techniques or meditative techniques differing in their linguistic framework as well as in either task accomplishment or effortlessly experiencing to determine whether this relates to differences on hypnotic susceptibility scores.

The results achieved with the subject variables of positive attitudes, expectancies & motivation as well as involvement in imagining also suggests some fruitful lines of approach for further research. Positive attitudes were clearly shown to be an important factor in the benefits derived from hypnosis and meditation. However, this was less clearly demonstrated for the placebo control condition. Future research may clarify these findings by sample selection which is less skewed in the positive direction and by utilizing a larger sample size over all in order to make an adequate comparison between high and low attitudes subjects.

In terms of the subject variable of involvement in imagining, there was an indication of its importance in the benefits derived from hypnosis and meditation as well. Future studies may also clarify this relationship by the use of larger sample sizes. In addition, a clarification of possible subject differences in terms of modes of experiencing involvement in imagining is necessary. The possible confounding of the involvement in imagining questionaire results as indicated by the negligible relationship of this variable to

hypnotic susceptibility suggests the need for assessing subjects on the mode of experience with regard to imagery, absorption, and association with a mental device. Differentiating between high mental imagery, high auditory "imagery", and high kinesthetic "imagery", may clarify subject differences in mode of experiencing. Additionally, this may indicate subject differences interacting with different approaches to hypnosis and meditation leading to varying consequent effects. This line of approach may also be fruitful in the investigation of the "absorption" component of involvement in imagining. If these differences were assessed with regard to involvement in imagining, then the relationship of each of these modes to hypnotic susceptibility and to the benefits derived from varying forms of hypnosis and meditation may be found.

One further area suggested for future research deserves mention here. This involves the use of placebo control techniques. The results of this study have indicated the importance of including a placebo control condition in research related to hypnosis and meditation. Future studies may clarify the role of expectancy effects in the practice of hypnosis and meditation by including a placebo control technique. However, it may be even more valuable to examine the possibility of including contrasting placebo techniques in an attempt to distinguish between an expectancy effect along with sitting quietly with eyes closed and effects related to a hypnotic or meditative experience involved in that process. In other words, if a more active placebo control condition were also used, then any differences between this and an effortless placebo condition could be assessed. This may assist in clarifying the process involved in the placebo control condition utilized here in terms of its overall relationship to hypnosis and meditation.

Conclusions

The findings of the present study demonstrate the tendency of the regular practice of hypnosis and meditation to result in beneficial psychotherapeutic effects in terms of anxiety reduction and increased self actualization. This appears particularly strong for the practice of hypnosis, TM, and the Western Meditation with regard to anxiety reduction as well as for the practice of hypnosis and TM for increases

in self actualization. Moreover, the evidence suggests that hypnosis and meditation have elements in common, resulting in similar psychotherapeutic effects when practiced regularly under similar conditions. There is some indication that one element in common may be a placebo effect which may be further delineated as positive attitudes, expectancies & motivation toward the practice of the technique. This was shown to play a significant role in the outcome resulting from the practice of hypnosis, TM and the Western Meditation. However, there is also evidence that positive attitudes, expectancies & motivation alone are insufficient to explain the results achieved using these self regulation modalities. In addition, the findings suggest that the placebo control condition facilitates beneficial psychotherapeutic effects due to variables in addition to an expectancy effect. In the latter case, it is possible that in addition to positive expectations for improvement and the regular practice of sitting quietly with eyes closed, the placebo control condition may affect subjective changes in consciousness and/or cognitive set resembling hypnosis and meditation and resulting in similar changes in perception, values, and behaviour.

The relationship of hypnotic susceptibility as a subject variable interacting with hypnosis and meditation appears complex. On the one hand, there was an identifiable tendency for high susceptibility subjects in the hypnosis and meditation conditions to manifest a greater number of significant improvements on anxiety and self actualization. On the other hand, low susceptibility subjects, particularly in the hypnosis group, also showed significant improvements on these scales.

Overall, hypnotic susceptibility appears to interact more significantly with hypnosis and meditation in reducing anxiety and this may be due to the greater ability of high susceptibility subjects to fixate on a mental device and access information associated with relaxation. However, high susceptibility subjects appear to have no advantage over low susceptibility subjects in utilizing hypnosis or TM to facilitate increases in self actualization, and yet curiously high susceptibility subjects appear better able to realize increases in self actualization when utilizing the Western Meditation technique.

This confounding of results when assessing the relevance of the subject variable of hypnotic susceptibility suggests important

differences in the current methods of assessing hypnotizability using standardized scales and the clinical use of hypnosis to facilitate psychotherapeutic change. There may be differences in the mode of accessing information and non-volitionally responding to suggestions between task hypnosis as utilized in the application of test suggestions and relaxation hypnosis as clinically utilized in both hypnosis and meditation to promote perception change or cognitive restructuring, leading to behavioural changes.

These findings underscore the difficulties in adequately describing the phenomena of hypnosis and the plethora of theories of both the "state" and "cognitive behavioural" schools of thought. The findings with regard to the complexity of the subject variables involved also help explain the variety of opinions regarding the therapeutic value of hypnosis and meditation along with the diversity of opinion and conflicting evidence on the clinical relevance of hypnotic susceptibility. Further questions are also posed by the findings of the present study with respect to the probable placebo effect evident in hypnotic susceptibility, the significant correlation between susceptibility and positive attitudes, expectancies & motivation and more importantly, the finding of a lack of relationship between involvement in imagining and susceptibility. The latter finding is further complicated by the results suggesting an independent effect of involvement in imagining interacting with hypnosis and meditation to produce beneficial psychological effects.

Important questions remain concerning the relevance of the subject variable of hypnotic susceptibility in the beneficial effects derived from hypnosis and meditation as well as concerning the antecedent variables of hypnotic susceptibility. However, it can be concluded that the findings suggest a relationship between hypnosis and meditation in terms of common consequent effects and underlying subject variables. More evidence is clearly needed to determine the precise nature of this relationship, especially in terms of exploring the possible subject variables held in common. This may be fruitfully examined along the lines of clarifying the role of hypnotic susceptibility in task and relaxation hypnosis, the modes of accessing information presented in hypnosis and meditation (e.g. visual, auditory, kinesthetic) and the similarities and differences between hypnosis, meditation and varying types of placebo control techniques.

APPENDICES

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APPENDIX A

INFORMATION PRESENTED FOR SOLICITING SUBJECTS

Information on an Experiment Using Hypnosis and Meditation for Self Improvement

Introduction

An experiment using human subjects will be conducted during June and July (a period of six weeks beginning June 23rd and finishing August 4th) as part of a Ph.D study in Psychology. Subjects who volunteer to take part in this study will firstly be assessed on a standard measure of hypnotic susceptibility. This is a completely safe device utilizing relaxation and imagination which asks for simple responses to suggestions which are neither embarrassing or "gimmicky". Afterwards, each subject will be administered three questionaires in a separate testing situation. Following this, each subject will be randomly assigned to one of four hypnosis or meditation techniques or a control group, and will be given taped instructions in the technique. It will then be necessary to practice the method twice per day, at a time of your choosing, for 15 to 20 minutes utilizing the tapes. This will continue throughout the treatment period of six weeks, during which time the self regulation skill will be mastered by the subject. This skill has been shown to be valuable in facilitating self control, decision making, concentration as well as reducing tension in stressful situations. Therefore, the subject is expected to benefit accordingly and to possess a skill which may also be of use with others when working in a helping situation.

To learn various meditation or hypnosis skills can often be expensive, however since this is part of an experiment, no charge will be made. In addition, each subject may keep the taped instructions for future use. The main request of the investigator is that each person volunteering make a serious commitment to continue with the experiment for the entire six weeks. Even a small drop-out rate could negate the results of the experiment and therefore unless there are very exceptional circumstances, it is requested that each person complete the

six weeks of practicing the technique as well as the follow up questionaires once the experiment commences. Each subject's scores and responses will be treated anonymously and records of results will only be published as part of the Ph.D dissertation without names being associated.

Subject's Involvement

Participation in the following sessions will be required by those volunteering for the study. This is necessary both in order to ensure proper methodology and to ensure that each subject is mastering the self regulation skill being taught.

1 attendance at a testing session where the Harvard Group Scale of Hypnotic Susceptibility - Form A will be administered

2 attendance at a second pre-test session where the POI, STAI and a pre-test questionaire will be administered

3 practice the technique regularly twice per day for six weeks and be contacted as a check-up

4 attend a post-test session at the conclusion of the six week period where the POI, STAI and a self report questionaire will be administered.

Subject's Overall Time Commitment

Session		Time
1	Testing (HGSHS)	1 hr 10 min
2	Testing (POI, STAI, Pre-Experiment Questionaire)	1 hr
3	Regular Practice (Six weeks - 15 min twice/day)	21 hrs
4	Post Testing (POI, STAI, (Self Report Questionaire)	1 hr
	Total hours over six weeks	24 hrs 10 min

Total Days of Participation - 45

APPENDIX B

ATTITUDES, EXPECTANCIES & MOTIVATION QUESTIONAIRE

PRE-EXPERIMENT QUESTIONAIRE

Please answer the following items truthfully. Tick one answer for each item:

A. I think I will find the hypnosis experiment today:

1.	Satisfying	More Satisfying Than Unsatisfying	Equally Satisfying and Unsatisfying	More Unsatisfying Than Satisfying	Unsatisfying
	.....	.....	.....	.....	.....
2.	Interesting	More Interesting Than Boring	Equally Interesting and Boring	More Boring Than Interesting	Boring
	.....	.....	.....	.....	.....
3.	Pleasant	More Pleasant Than Unpleasant	Equally Pleasant and Unpleasant	More Unpleasant Than Pleasant	Unpleasant
	.....	.....	.....	.....	.....
4.	Sensible	More Sensible Than Silly	Equally Sensible And Silly	More Silly Than Sensible	Silly
	.....	.....	.....	.....	.....
5.	Beneficial	More Beneficial Than Detrimental	Equally Beneficial And Detrimental	More Detrimental Than Beneficial	Detrimental
	.....	.....	.....	.....	.....

B. I believe that during the hypnosis experiment today, I will be (please fill in percentage to total 100%):

1. deeply hypnotized ... percent of the time
2. medium hypnotized ... percent of the time
3. lightly hypnotized ... percent of the time
4. not hypnotized ... percent of the time

Total = 100%

C. Please tick the item which best represents how important it is for you to respond well to hypnosis:

Important	More Important Than Unimportant	Equally Important And Unimportant	More Unimportant Than Important	Unimportant
.....	.....	.....	.....	.....

D. If responding to hypnosis can be viewed as a skill in the use of ideas, how desirable is it for you to master such a skill. (Please tick the item which best describes how you feel):

Desirable	More Desirable Than Undesirable	Equally Desirable and Undesirable	More Undesirable Than Desirable	Undesirable
.....	.....	.....	.....	.....

APPENDIX C

INVOLVEMENT IN IMAGINING QUESTIONAIRE

Post - Test Questionaire

1. Briefly describe the kinds of experiences you had during the practice of the technique:

2. Briefly describe any experiences you had during other times of the day which may have been related to the practice of the technique:

3. I am interested in the things you tended to think about, imagine, or picture during the practice of the technique. Can you briefly describe these:

4. I am interested in the things you tended to think about, imagine, or picture at other times during the day which may have been related to the practice of the technique. Can you describe these:

(2)

5. Some people imagine various things related to the information presented by the instructor. Some also imagine themselves responding in a less effortful, more relaxed and aware manner to daily situations. If you tended to imagine these things, could you give a brief description of what you imagined:

6. Please put a tick by the item which best represents how absorbed or involved you were in the information presented during the practice of the technique.

..... A. I was completely absorbed in thinking about and/or imagining the positive changes in responding which were presented.

..... B. I was more absorbed than unabsorbed in thinking about and/or imagining the positive changes in responding which were presented.

..... C. I was more unabsorbed than absorbed in thinking about and/or imagining the positive changes in responding which were presented.

..... D. I was not at all absorbed in thinking about and/or imagining the positive changes in responding which were presented.

7. Please tick the statement which best represents your use of the instructor's voice, the mantra or the concentration on the hand, depending on which group you were in:

..... A. The voice, mantra, or concentration on the hand led to a change which was more beneficial than detrimental in the way I responded to situations and to how I felt.

(3)

..... B. The voice, mantra, or concentration on the hand led to a change which was more beneficial than detrimental in the way I responded to situations and to how I felt.

..... C. The voice, mantra, or concentration on the hand led to a change which was more detrimental than beneficial in the way I responded to situations and to how I felt.

..... D. The voice, mantra, or concentration on the hand led to a detrimental change in the way I responded to situations and to how I felt.

..... E. The voice, mantra, or concentration on the hand did not seem to be associated with any beneficial or detrimental changes in the way I responded to situations nor to how I felt.

APPENDIX D

INSTRUCTIONS FOR THE USE OF THE HYPNOSIS TAPE

The tape you will be using to learn the self regulatory technique of hypnosis contains approximately 30 minutes of material. The first few minutes of the tape deals with an explanation of the process of hypnosis including a description of the "state" and its value to you in learning to achieve it. These preparatory remarks are important to note in the first week of practice. However, when using the tape after the first week of practice you may want to begin with the actual session in hypnosis. The remaining 20-25 minutes of the tape contains the instruction in hypnosis itself.

In order to master this self regulatory skill and to achieve the resultant benefits, the best way in which to use the tape over the six weeks is as follows (please attempt to keep to this guide):

1. During the first two weeks, use the tape twice daily in order to gain practice in achieving this relaxed, aware "state".
2. During the next two weeks, use the tape once daily and practice achieving this relaxed, aware "state" for 15-20 minutes once daily on your own.
3. During the final two weeks, use the tape every other day, and practice achieving this relaxed aware "state" on your own for 15-20 minutes twice daily on alternate days.

If you make a commitment to follow these instructions, you should have a good command of the skill by the end of the six weeks and you can expect to benefit accordingly.

The most productive attitude to have in using this technique is <u>not</u> to <u>try</u> hard to <u>make</u> anything happen. The process is one of effortless observation and an exertion of effort is antagonistic to it. The suggestions can take effect if you recognize their value, allow them to manifest themselves, and observe anything which presents itself in the process without trying to change it.

APPENDIX E

TAPED RECORDED INSTRUCTION IN TM RELAXATION

1 Before starting your tape recorded lessons, you should have already gone through the introductory leaflet, "TM Relaxation", and the preparatory lecture, "Meditative Relaxation". These provide you with useful concepts, but you are not required to study or learn those lectures, just to read them through.

2 The tape contains the three basic lessons, plus a short review lesson. The three basic lessons should be taken on three successive days. After you have completed the basic lessons, the review lesson can be used immediately prior to any session of TM Relaxation.

3 Each of the three basic lessons will take about three quarters of an hour including a 15-20 minute session of TM Relaxation. The review lesson takes only a few minutes plus 15-20 minutes of TM Relaxation.

4 With the introductory and preparatory material are three supplementary sheets, one for each of the basic lessons. While those sheets contain important material we do not want to make your lessons too long. You can read them either immediately after the lesson or at some time between the lessons.

5 At the first lesson you will be shown how to do TM Relaxation and given some practice, alternated with instructions and explanations.

6 At the second lesson you will be given some further instruction and will hear two explanatory talks. Between the two talks you will be expected to have 15-20 minutes of TM Relaxation.

7 At the third lesson you will hear a further two talks and have a session of TM Relaxation between them. One talk answers several questions often raised at this stage in learning, and the other tells you what is the best attitude to have towards TM Relaxation for optimum effect.

8 Once you have done the first lesson, you will have enough knowledge to be able to practice TM Relaxation effectively and should do so

(2)

for 15-20 minutes twice each day for good results. During the first three days your lesson can be regarded as one of these sessions.

9 The short review lesson can be used before any session of TM Relaxation, after you have completed the three basic lessons. You can use it every time, if you like, or just whenever you wish to refresh your understanding of the technique. If you are taking part in a research programme, you should follow closely whatever instructions the director of the programme may give you in this respect.

MICHAEL TYNE-CORBOLD, B.A. Dip. T.M.R.,

Honorary Research Director.

APPENDIX F

INSTRUCTIONS FOR THE USE OF THE WESTERN MEDITATION TAPE

The tape you will be using to learn the Western Meditation technique contains approximately 20 minutes of instruction in the practice of the technique. This instruction is presented on one side of the tape only and no further lessons or review of the method is included.

Prior to the actual practice of the technique there are a few minutes of preparatory or explanatory remarks. These are important to note in the first week of practice. However, when using the tape after the first week of practice you may want to begin with the actual meditation.

In order to master this self regulatory skill, the best way in which to use the tape over the six weeks is as follows (please attempt to keep to this guide):

1 During the first week meditate using the tape twice daily.

2 During the second week meditate on your own once daily and use the tape once daily.

3 During the third week meditate on your own every other day (twice daily) and use the tape on alternate days.

4 During the fourth week, use the tape on only two days and meditate on your own the other five days.

5 During the fifth week, use the tape on only one day and meditate on your own the remaining six days.

6 During the sixth week, meditate twice daily on your own throughout the week.

These instructions are also repeated at the end of the tape. If you make a commitment to follow these, you should have a good command of the technique by the end of the six weeks and you can expect to benefit accordingly.

(2)

The most productive attitude to have in using this technique is not to try hard to make anything happen. The process is one of effortless observation and an exertion of effort is antagonistic to it. Another hint when first learning to practice is to close your eyes at the beginning of the actual meditation instructions. The instructor does not ask you to do this until part way into the lesson, however you may find it useful.

APPENDIX G

INSTRUCTIONS FOR THE USE OF THE PERIODIC SOMATIC INACTIVITY TAPE

The tape you will be using to learn the PSI technique contains approximately 20 minutes of material. The first few minutes are devoted to an explanation of the way in which PSI works as a self regulatory technique, a mention of the research evidence supporting its value in this regard and a brief description of the technique itself. This is followed by a request to practice the technique for a few minutes in order to become familiar with it and then by some comments related to the experience you may have had. Some common questions often asked are then presented and answered. The instructions conclude by asking you to practice the technique again for 15-20 minutes followed by a few brief comments on this more lengthy experience.

In order to master this self regulatory skill, the best way in which to use the tape over the six weeks is as follows (please attempt to keep to this guide):

1 On the first day, follow the instructions carefully taking note of the explanatory remarks.

2 On the second and third days, listen again to the explanatory remarks and then go on to practice the technique as instructed for 15-20 minutes.

3 For the remainder of the first week practice the technique twice daily without using the tape.

4 During each of the following weeks (weeks 2-6) review the technique one day using the tape and on the remaining six days practice the technique on your own.

These instructions are also repeated on the tape itself. If you make a commitment to follow them, you should have a good command of the technique by the end of the six weeks and you can expect to benefit accordingly.

The most productive attitude to have in using this technique is

(2)

not to try hard to make anything happen. The practice of sitting quietly with eyes closed twice daily (without effort) will facilitate the self regulatory skills referred to in this tape and supported by research findings.

APPENDIX H

METHODOLOGICAL NOTE

For the purpose of interpreting the significance of a priori comparisons drawn from an analysis of variance application, a number of approaches have been suggested over the past several decades. There has been considerable difference of opinion over which form of planned comparison is most suitable to any particular experimental method in order to avoid making Type I or Type II errors when interpreting the data (Ferguson, 1971; Keppel, 1973). Ferguson (1971) comments that the choice of method utilized for planned comparisons following Anova results is a "thorny problem" for which no widely accepted method of deciding between the various suggested approaches exists (p268). This has led to a controversy over the years in terms of the accepted or preferred mode of analysis. In addition, the more widely accepted view has varied from time to time.

Considering this continuing controversy, it has been considered appropriate for the line of argument and subsequent a priori comparisons developed in this study, to apply a 2-tailed F test of significance to variance differences whether or not the Anova results led to a rejection of the null hypothesis. This is considered a prudent and acceptable approach when applying a priori comparisons (Ferguson, 1971, p269). Since a $p < .05$ level of confidence was required to achieve significance using the F test, and considering the conservative nature of this approach with smaller numbers in each group, the protection against Type I errors may be reasonably assured.

APPENDIX I

MEAN TABLES/ANOVA SUMMARIES

Table 1 High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the STAI-A State Scale

Groups	Pre test	Post test
Hypnosis	38.56	30.62
TM	35.96	29.59
Western Meditation	34.17	30.40
Placebo Control	39.41	33.56
Control	33.37	36.82

Groups	Hypnotic Susceptibility	Pre test	Post test
Hypnosis	High	34.87	26.75
Hypnosis	Low	42.25	34.50
TM	High	38.71	30.57
TM	Low	33.20	28.60
Western Meditation	High	34.00	29.14
Western Meditation	Low	34.33	31.67
Placebo	High	40.43	31.71
Placebo	Low	38.40	35.40
Control	High	32.33	38.83
Control	Low	34.40	34.80

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	62.354	1.08	.38
Variable B - Suscept.	1	27.258	.47	.50
A X B Interaction	4	91.546	1.58	.19
Error for AB	47	57.926		
Within Subjects				
Variable C - Pre/Post	1	440.590	12.92	.001**
C X A Interaction	4	105.184	3.08	.02 *
C X B Interaction	1	8.602	.25	.63
C X A X B Interaction	4	26.530	.78	.55
Error for CAB	47	34.999		

* Significant at $p < .05$

** Significant at $p < .01$

Table 2 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the STAI-A Trait Scale

Groups	Pre test	Post test
Hypnosis	41.69	34.13
TM	38.49	33.54
Western Meditation	36.76	32.00
Placebo Control	39.39	36.56
Control	36.42	36.45

Groups	Hypnotic Susceptibility	Pre test	Post test
Hypnosis	High	39.13	31.25
Hypnosis	Low	44.25	37.00
TM	High	38.57	34.29
TM	Low	38.40	32.80
Western Meditation	High	38.86	32.00
Western Meditation	Low	34.67	32.00
Placebo	High	40.57	36.71
Placebo	Low	38.20	36.40
Control	High	36.83	37.50
Control	Low	36.00	35.40

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A Groups	4	46.570	.60	.66
Variable B - Suscept.	1	0.920	.00	.97
A X B Interaction	4	50.670	.66	.63
Error for AB	47	77.143		
Within Subjects				
Variable C - Pre/Post	1	422.893	16.54	.0004**
C X A Interaction	4	41.763	1.63	.18
C X B Interaction	1	4.838	.19	.67
C X A X B Interaction	4	7.168	.28	.89
Error for CAB	47	25.553		

** Significant at $p < .01$

Table 3 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-TC Scale

Groups	Pre test	Post test
Hypnosis	15.31	18.13
TM	16.30	18.16
Western Meditation	17.14	17.02
Placebo Control	17.00	17.87
Control	17.70	17.90

Groups	Hypnotic Susceptibility	Pre test	Post test
Hypnosis	High	15.63	18.50
Hypnosis	Low	15.00	17.75
TM	High	17.00	18.71
TM	Low	15.60	17.60
Western Meditation	High	16.29	17.71
Western Meditation	Low	18.00	16.33
Placebo	High	17.00	18.14
Placebo	Low	17.00	17.60
Control	High	18.00	18.00
Control	Low	17.40	17.80

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	3.401	.32	.86
Variable B - Suscept.	1	6.304	.60	.55
A X B Interaction	4	1.4648	.14	.96
Error for AB	47	10.589		
Within Subjects				
Variable C - Pre/Post	1	33.208	7.95	.007*
C X A Interaction	4	7.685	1.84	.14
C X B Interaction	1	2.488	.60	.55
C X A X B Interaction	4	2.705	.65	.63
Error for CAB	47	4.178		

** Significant at $p < .01$

Table 4 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-I Scale

Groups	Pre test	Post test
Hypnosis	84.06	93.50
TM	87.11	93.26
Western Meditation	81.62	86.29
Placebo Control	84.76	94.31
Control	86.73	89.40

Groups	Hypnotic Susceptibility	Pre test	Post test
Hypnosis	High	85.88	96.25
Hypnosis	Low	82.25	90.75
TM	High	86.43	92.71
TM	Low	87.80	93.80
Western Meditation	High	85.57	95.57
Western Meditation	Low	77.66	77.00
Placebo	High	85.71	94.43
Placebo	Low	83.80	94.20
Control	High	85.67	91.00
Control	Low	85.80	87.80

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	127.744	.73	.58
Variable B - Suscept.	1	386.378	2.20	.14
A X B Interaction	4	167.478	.95	.56
Error for AB	47	175.445		
Within Subjects				
Variable C - Pre/Post	1	1177.048	35.87	.0000**
C X A Interaction	4	38.484	1.17	.33
C X B Interaction	1	55.035	1.68	.20
C X A X B Interaction	4	29.360	.89	.52
Error for CAB	47	32.818		

** Significant at $p < .001$

Table 5 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-SAV Subscale

Groups	Pre test	Post test
Hypnosis	20.00	22.25
TM	21.37	20.90
Western Meditation	18.64	19.81
Placebo Control	18.76	21.24
Control	20.83	20.18

Groups	Hypnotic Susceptibility	Pretest	Post test
Hypnosis	High	19.75	22.25
Hypnosis	Low	20.25	22.25
TM	High	21.14	21.00
TM	Low	21.60	20.80
Western Meditation	High	19.29	21.29
Western Meditation	Low	18.00	18.33
Placebo	High	18.71	21.29
Placebo	Low	18.80	21.20
Control	High	20.67	20.17
Control	Low	21.00	20.20

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	13.745	1.63	.18
Variable B - Suscept.	1	2.548	.30	.59
A X B Interaction	4	5.408	.64	.64
Error for AB	47	8.437		
Within Subjects				
Variable C - Pre/Post	1	24.015	8.83	.005**
C X A Interaction	4	11.394	4.19	.006**
C X B Interaction	1	2.852	1.05	.31
C X A X B Interaction	4	.462	.17	.95
Error for CAB	47	2.719		

** Significant at $p < .01$

Table 6 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-EX Subscale

Groups	Pre test	Post test
Hypnosis	21.38	24.94
TM	23.20	25.14
Western Meditation	20.64	22.69
Placebo Control	22.90	24.86
Control	21.80	24.32

Groups	Hypnotic Susceptibility	Pre test	Post test
Hypnosis	High	21.00	24.63
Hypnosis	Low	21.75	25.25
TM	High	24.00	25.29
TM	Low	22.40	25.00
Western Meditation	High	20.29	23.71
Western Meditation	Low	21.00	21.67
Placebo	High	24.00	25.71
Placebo	Low	21.80	24.00
Control	High	21.00	22.83
Control	Low	22.60	25.80

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	19.8389	.77	.55
Variable B - Suscept.	1	.373	.01	.90
A X B Interaction	4	14.160	.55	.70
Error for AB	47	25.675		
Within Subjects				
Variable C - Pre/Post	1	151.979	31.34	.000**
C X A Interaction	4	2.488	.51	.73
C X B Interaction	1	.021	.004	.95
C X A X B Interaction	4	3.762	.78	.55
Error for CAB	47	4.484		

** Significant at $p < .001$

Table 7 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-FR Subscale

Groups	Pre test	Post test
Hypnosis	15.94	16.13
TM	16.34	17.61
Western Meditation	14.31	16.76
Placebo Control	15.51	17.57
Control	15.60	16.65

Groups	Hypnotic Susceptibility	Pre test	Post test
Hypnosis	High	16.13	16.75
Hypnosis	Low	15.75	15.50
TM	High	15.29	17.43
TM	Low	17.40	17.80
Western Meditation	High	16.29	18.86
Western Meditation	Low	12.33	14.67
Placebo	High	16.43	18.14
Placebo	Low	14.60	17.00
Control	High	17.00	18.50
Control	Low	14.20	14.80

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	6.251	.49	.74
Variable B - Suscept.	1	73.725	5.81	.02*
A X B Interaction	4	23.006	1.81	.14
Error for AB	47	12.893		
Within Subjects				
Variable C - Pre/Post	1	51.754	17.23	.0003**
C X A Interaction	4	4.135	1.38	.26
C X B Interaction	1	2.476	.82	.63
C X A X B Interaction	4	1.069	.36	.84
Error for CAB	47	3.004		

** Significant at $p < .001$

* Significant at $p < .05$

Table 8 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-S Subscale

Groups	Pre test	Post test
Hypnosis	12.88	14.31
TM	12.71	14.69
Western Meditation	12.10	13.14
Placebo Control	12.70	14.09
Control	12.95	13.18

Groups	Hypnotic Susceptibility	Pre test	Post test
Hypnosis	High	13.25	15.13
Hypnosis	Low	12.50	13.50
TM	High	12.43	14.57
TM	Low	13.00	14.80
Western Meditation	High	11.86	14.29
Western Meditation	Low	12.33	12.00
Placebo	High	14.00	14.57
Placebo	Low	11.40	13.60
Control	High	13.50	14.17
Control	Low	12.40	12.20

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	4.044	.42	.80
Variable B - Suscept.	1	26.385	2.74	.10 NS
A X B Interaction	4	3.817	.40	.81
Error for AB	47	9.643		
Within Subjects				
Variable C - Pre/Post	1	38.783	22.02	.001**
C X A Interaction	4	2.157	1.22	.31
C X B Interaction	1	2.720	1.54	.22
C X A X B Interaction	4	3.232	1.84	.14
Error for CAB	47	1.761		

** Significant at $p < .01$

Table 9 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-SR Subscale

Groups	Pre Test	Post Test
Hypnosis	10.25	13.00
TM	12.61	13.31
Western Meditation	12.31	12.45
Placebo Control	10.93	12.60
Control	11.87	11.23

Groups	Hypnotic Susceptibility	Pre Test	Post Test
Hypnosis	High	10.00	13.75
Hypnosis	Low	10.50	12.25
TM	High	12.43	13.43
TM	Low	12.80	13.20
Western Meditation	High	11.29	12.57
Western Meditation	Low	13.33	12.33
Placebo	High	10.86	12.00
Placebo	Low	11.00	13.20
Control	High	11.33	10.67
Control	Low	12.40	11.80

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	7.657	.94	.55
Variable B - Suscept.	1	5.308	.65	.57
A X B Interaction	4	2.264	.28	.89
Error for AB	47	8.161		
Within Subjects				
Variable C - Pre/Post	1	22.532	9.01	.005**
C X A Interaction	4	9.165	3.67	.01*
C X B Interaction	1	3.717	1.49	.23
C X A X B Interaction	4	2.586	1.03	.40
Error for CAB	47	2.501		

* Significant at $p < .05$

** Significant at $p < .01$

Table 10 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-SA Subscale

Groups	Pre Test	Post Test
Hypnosis	15.56	17.38
TM	15.27	17.49
Western Meditation	15.57	16.26
Placebo Control	16.89	18.97
Control	16.73	17.87

Groups	Hypnotic Susceptibility	Pre Test	Post Test
Hypnosis	High	16.62	18.00
Hypnosis	Low	14.50	16.75
TM	High	15.14	17.57
TM	Low	15.40	17.40
Western Meditation	High	16.14	17.86
Western Meditation	Low	15.00	14.67
Placebo	High	16.57	19.14
Placebo	Low	17.20	18.80
Control	High	16.67	18.33
Control	Low	16.80	17.40

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	13.613	.71	.59
Variable B - Suscept.	1	17.391	.91	.65
A X B Interaction	4	5.797	.30	.87
Error for AB	47	19.080		
Within Subjects				
Variable C - Pre/Post	1	66.176	17.78	.0003**
C X A Interaction	4	2.236	.60	.67
C X B Interaction	1	3.479	.93	.66
C X A X B Interaction	4	1.502	.40	.81
Error for CAB	47	3.722		

** Significant at $p < .001$

Table 11 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-NC Subscale

Groups	Pre Test	Post Test
Hypnosis	12.00	12.31
TM	11.70	11.90
Western Meditation	11.10	11.50
Placebo Control	11.44	11.39
Control	11.33	11.63

Groups	Hypnotic Susceptibility	Pre Test	Post Test
Hypnosis	High	11.25	12.88
Hypnosis	Low	12.75	11.75
TM	High	11.00	11.00
TM	Low	12.40	12.80
Western Meditation	High	11.86	12.00
Western Meditation	Low	10.33	11.00
Placebo	High	11.29	11.57
Placebo	Low	11.60	11.20
Control	High	10.67	10.67
Control	Low	12.00	12.60

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	2.545	.57	.69
Variable B - Suscept.	1	4.768	1.08	.31
A X B Interaction	4	7.812	1.76	.15
Error for AB	47	4.429		
Within Subjects				
Variable C - Pre/Post	1	1.414	.85	.64
C X A Interaction	4	.165	.10	.98
C X B Interaction	1	.839	.50	.51
C X A X B Interaction	4	2.468	1.48	.22
Error for CAB	47	1.664		

Table 12 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-SY Subscale

Groups	Pre Test	Post Test
Hypnosis	7.19	7.75
TM	7.73	7.69
Western Meditation	6.69	6.98
Placebo Control	7.14	7.73
Control	7.23	8.03

Groups	Hypnotic Susceptibility	Pre Test	Post Test
Hypnosis	High	6.63	7.50
Hypnosis	Low	7.75	8.00
TM	High	7.86	7.57
TM	Low	7.60	7.80
Western Meditation	High	6.71	7.29
Western Meditation	Low	6.67	6.67
Placebo	High	7.29	7.86
Placebo	Low	7.00	7.60
Control	High	6.67	7.67
Control	Low	7.80	8.40

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	2.494	1.78	.15
Variable B - Suscept.	1	1.334	.95	.67
A X B Interaction	4	1.921	1.37	.26
Error for AB	47	1.398		
Within Subjects				
Variable C - Pre/Post	1	5.044	7.44	.009**
C X A Interaction	4	.555	.82	.52
C X B Interaction	1	.308	.45	.51
C X A X B Interaction	4	.289	.43	.79
Error for CAB	47	.678		

** Significant at $p < .01$

Table 13 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-A Subscale

Groups	Pre Test	Post Test
Hypnosis	15.95	17.13
TM	14.96	16.57
Western Meditation	14.76	16.83
Placebo Control	15.50	17.40
Control	15.55	15.60

Groups	Hypnotic Susceptibility	Pre Test	Post Test
Hypnosis	High	15.63	17.50
Hypnosis	Low	16.25	16.75
TM	High	14.71	16.14
TM	Low	15.20	17.00
Western Meditation	High	17.86	20.00
Western Meditation	Low	11.67	13.67
Placebo	High	16.00	17.00
Placebo	Low	15.00	17.80
Control	High	16.50	17.00
Control	Low	14.60	14.20

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	3.988	.28	.89
Variable B - Suscept.	1	68.984	4.89	.03*
A X B Interaction	4	42.114	2.98	.03*
Error for AB	47	14.119		
Within Subjects				
Variable C - Pre/Post	1	48.915	11.89	.002**
C X A Interaction	4	3.425	.83	.51
C X B Interaction	1	.016	.00	.95
C X A X B Interaction	4	1.999	.49	.75
Error for CAB	47	4.114		

* Significant at $p < .05$

** Significant at $p < .01$

Table 14 - High/Low Susceptibility Means (Pre/Post Test) and Anova Summary - Groups/Susceptibility/Pre & Post Test on the POI-C Subscale

Groups	Pre Test	Post Test
Hypnosis	17.00	19.00
TM	17.23	20.73
Western Meditation	15.74	18.48
Placebo Control	18.36	20.77
Control	17.88	19.15

Groups	Hypnotic Susceptibility	Pre Test	Post Test
Hypnosis	High	17.00	18.75
Hypnosis	Low	17.00	19.25
TM	High	16.86	19.86
TM	Low	17.60	21.60
Western Meditation	High	17.14	20.29
Western Meditation	Low	14.33	16.67
Placebo	High	18.71	21.14
Placebo	Low	18.00	20.40
Control	High	18.17	19.50
Control	Low	17.60	18.80

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	18.543	.89	.52
Variable B - Suscept.	1	9.989	.48	.50
A X B Interaction	4	14.406	.69	.60
Error for AB	47	20.817		
Within Subjects				
Variable C - Pre/Post	1	149.260	37.43	.0000**
C X A Interaction	4	3.635	.91	.53
C X B Interaction	1	.073	.02	.89
C X A X B Interaction	4	.613	.15	.96
Error for CAB	47	3.988		

** Significant at p <.001

Table 15 - High Attitudes Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the STAI-A State Scale

Groups	Pre Test	Post Test
Hypnosis	34.00	26.88
TM	37.22	29.44
Western Meditation	34.33	28.78
Placebo Control	37.25	32.38
Control	32.20	35.30

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	54.020	1.20	.32
Error for A	39	44.925		
Within Subjects				
Variable B - Pre/Post	1	431.931	11.56	.002**
B X A Interaction	4	83.703	2.24	.08 NS
Error for BA	39	37.365		

** Significant at $p < .01$

Table 16 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the STAI-A Trait Scale

Groups	Pre Test	Post Test
Hypnosis	39.63	31.88
TM	37.56	32.00
Western Meditation	36.33	30.78
Placebo Control	39.50	36.00
Control	36.50	36.20

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	43.937	.70	.60
Error for A	39	62.580		
Within Subjects				
Variable B - Pre/Post	1	448.712	15.57	.0006**
B X A Interaction	4	34.324	1.19	.33
Error for BA	39	28.821		

** Significant at $p < .001$

Table 17 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-TC Scale

Groups	Pre Test	Post Test
Hypnosis	15.50	18.50
TM	17.11	18.67
Western Meditation	17.00	17.56
Placebo Control	17.00	18.00
Control	18.10	18.10

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	3.479	.39	.81
Error for A	39	8.813		
Within Subjects				
Variable B - Pre/Post	1	32.632	8.64	.006**
B X A Interaction	4	5.744	1.52	.21
Error for BA	39	3.775		

** Significant at $p < .01$

Table 18 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-I Scale

Groups	Pre Test	Post Test
Hypnosis	85.25	96.00
TM	90.44	96.00
Western Meditation	85.33	92.33
Placebo Control	86.00	92.63
Control	85.70	89.10

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	84.291	.60	.67
Error for A	39	140.579		
Within Subjects				
Variable B - Pre/Post	1	970.712	34.48	.0000**
B X A Interaction	4	31.339	1.11	.36
Error for BA	39	28.154		

** Significant at $p < .001$

Table 19 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-SAV Subscale

Groups	Pre Test	Post Test
Hypnosis	19.50	22.13
TM	21.67	21.33
Western Meditation	19.33	20.89
Placebo Control	19.00	21.25
Control	21.10	20.10

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	5.747	.69	.61
Error for A	39	8.340		
Within Subjects				
Variable B - Pre/Post	1	22.702	8.21	.007**
B X A Interaction	4	11.237	4.07	.008**
Error for BA	39	2.764		

** Significant at $p < .01$

Table 20 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-EX Subscale

Groups	Pre Test	Post Test
Hypnosis	21.63	25.25
TM	24.56	25.89
Western Meditation	20.78	23.44
Placebo Control	23.50	24.75
Control	21.70	23.90

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	25.217	1.13	.36
Error for A	39	22.392		
Within Subjects				
Variable B - Pre/Post	1	107.175	22.53	.0001**
B X A Interaction	4	4.261	.90	.52
Error for BA	39	4.756		

** Significant at $p < .001$

Table 21 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-FR Subscale

Groups	Pre Test	Post Test
Hypnosis	16.00	16.50
TM	17.00	18.33
Western Meditation	15.11	17.56
Placebo Control	15.63	17.25
Control	15.50	16.60

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	7.194	.50	.74
Error for A	39	14.509		
Within Subjects				
Variable B - Pre/Post	1	42.850	12.91	.001**
B X A Interaction	4	2.235	.67	.62
Error for BA	39	3.321		

** Significant at $p < .01$

Table 22 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-S Subscale

Groups	Pre Test	Post Test
Hypnosis	13.50	15.63
TM	13.78	15.44
Western Meditation	12.33	14.11
Placebo Control	13.50	14.25
Control	12.90	13.10

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	9.630	1.45	.24
Error for A	39	6.643		
Within Subjects				
Variable B - Pre/Post	1	37.139	19.91	.0002**
B X A Interaction	4	2.792	1.50	.22
Error for BA	39	1.866		

** Significant at $p < .001$

Table 23 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-SR Subscale

Groups	Pre Test	Post Test
Hypnosis	10.13	13.63
TM	12.44	13.78
Western Meditation	12.00	12.67
Placebo Control	11.63	12.13
Control	12.00	11.40

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	5.709	.69	.61
Error for A	39	8.294		
Within Subjects				
Variable B - Pre/Post	1	25.480	13.39	.001**
B X A Interaction	4	10.103	5.31	.002**
Error for BA	39	1.903		

** Significant at $p < .01$

Table 24 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-SA Subscale

Groups	Pre Test	Post Test
Hypnosis	16.25	18.00
TM	16.00	18.44
Western Meditation	16.44	17.33
Placebo Control	16.75	18.25
Control	16.50	17.80

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	0.842	.07	.99
Error for A	39	12.377		
Within Subjects				
Variable B - Pre/Post	1	54.303	17.030	.0004**
B X A Interaction	4	1.462	.46	.77
Error for BA	39	3.189		

** Significant at $p < .001$

Table 25 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-NC Subscale

Groups	Pre Test	Post Test
Hypnosis	11.50	12.75
TM	11.44	11.44
Western Meditation	12.00	12.11
Placebo Control	11.88	12.13
Control	11.40	11.40

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	2.172	.56	.69
Error for A	39	3.857		
Within Subjects				
Variable B - Pre/Post	1	2.268	1.15	.29
B X A Interaction	4	1.221	.62	.65
Error for BA	39	1.973		

Table 26 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-SY Subscale

Groups	Pre Test	Post Test
Hypnosis	6.88	7.75
TM	7.89	7.89
Western Meditation	6.78	7.22
Placebo Control	7.25	7.75
Control	7.40	8.00

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	2.073	1.33	.28
Error for A	39	1.562		
Within Subjects				
Variable B - Pre/Post	1	5.115	7.19	.01*
B X A Interaction	4	.439	.62	.66
Error for BA	39	.712		

* Significant at $p < .05$

Table 27 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-A Subscale

Groups	Pre Test	Post Test
Hypnosis	15.75	17.75
TM	15.44	17.22
Western Meditation	16.78	18.67
Placebo Control	15.38	16.63
Control	15.50	15.30

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	13.224	.95	.55
Error for A	39	13.895		
Within Subjects				
Variable B - Pre/Post	1	39.420	9.22	.005**
B X A Interaction	4	3.613	.85	.51
Error for BA	39	4.276		

** Significant at $p < .01$

Table 28 - High Attitude Means (Pre/Post Test) and Anova Summary - Groups/Pre & Post Test on the POI-C Subscale

Groups	Pre Test	Post Test
Hypnosis	17.25	18.75
TM	18.56	21.00
Western Meditation	16.56	19.56
Placebo Control	18.75	20.13
Control	17.50	19.00

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	4	12.291	.65	.63
Error for A	39	18.776		
Within Subjects	1	84.252	26.02	.0001**
Variable B - Pre/Post	4	2.274	.70	.60
Error for BA	39	3.238		

** Significant at $p < .001$

Table 29 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the STAI-A State Scale

Groups	Imagining	Pre Test	Post test
Hypnosis	High	38.83	29.00
Hypnosis	Low	35.83	29.67
TM	High	36.20	27.60
TM	Low	36.57	31.29
Western Meditation	High	37.00	27.33
Western Meditation	Low	32.86	31.00
Placebo	High	37.40	35.20
Placebo	Low	41.14	31.86

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	76.826	1.43	.25
Variable B - Imagining	1	0.908	.02	.89
A X B Interaction	3	9.636	.18	.91
Error for AB	38	53.852		
Within Subjects				
Variable C - Pre/Post	1	935.606	30.89	.0000**
C X A Interaction	3	6.267	.21	.89
C X B Interaction	1	19.851	.66	.57
C X A X B Interaction	3	53.853	1.78	.17
Error for CAB	38	30.290		

** Significant at $p < .001$

Table 30 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the STAI-A Trait Scale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	44.00	35.00
Hypnosis	Low	37.67	31.33
TM	High	38.00	32.40
TM	Low	38.86	34.57
Western Meditation	High	40.33	30.67
Western Meditation	Low	36.43	32.57
Placebo	High	41.80	39.80
Placebo	Low	38.00	34.29

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	47.335	.64	.60
Variable B - Imagining	1	111.811	1.51	.22
A X B Interaction	3	51.870	.70	.56
Error for AB	38	73.810		
Within Subjects				
Variable C - Pre/Post	1	660.991	22.28	.0001**
C X A Interaction	3	24.199	.82	.50
C X B Interaction	1	21.811	.74	.60
C X A X B Interaction	3	13.029	.44	.73
Error for CAB	38	29.670		

** Significant at $p < .001$

Table 31 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the POI-TC Scale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	14.67	18.33
Hypnosis	Low	16.17	17.67
TM	High	14.20	18.00
TM	Low	18.00	18.43
Western Meditation	High	15.67	18.00
Western Meditation	Low	17.29	17.00
Placebo	High	16.80	17.40
Placebo	Low	17.14	18.29

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	1.293	.12	.95
Variable B - Imagining	1	13.740	1.25	.27
A X B Interaction	3	4.287	.39	.76
Error for AB	38	11.019		
Within Subjects				
Variable C - Pre/Post	1	62.632	16.47	.0005**
C X A Interaction	3	4.636	1.22	.32
C X B Interaction	1	22.017	5.79	.02*
C X A X B Interaction	3	4.089	1.08	.37
Error for CAB	38	3.803		

* Significant at $p < .05$

** Significant at $p < .001$

Table 32 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/ Imagining on the POI-I Scale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	79.50	93.17
Hypnosis	Low	89.83	95.67
TM	High	85.20	89.60
TM	Low	88.29	95.71
Western Meditation	High	84.67	95.33
Western Meditation	Low	82.57	87.71
Placebo	High	79.40	88.40
Placebo	Low	88.86	98.57

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	20.155	.10	.96
Variable B - Imagining	1	341.300	1.77	.19
A X B Interaction	3	211.257	1.10	.36
Error for AB	38	192.626		
Within Subjects				
Variable C - Pre/Post	1	1450.116	40.91	.0000**
C X A Interaction	3	16.139	.46	.72
C X B Interaction	1	30.910	.87	.64
C X A X B Interaction	3	34.977	.99	.59
Error for CAB	38	35.448		

** Significant at $p < .001$

Table 33 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the POI-SAV Subscale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	20.00	22.33
Hypnosis	Low	19.83	22.17
TM	High	21.60	21.20
TM	Low	21.14	20.71
Western Meditation	High	19.33	20.67
Western Meditation	Low	18.71	20.29
Placebo	High	17.20	19.60
Placebo	Low	19.86	22.43

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	13.280	1.90	.14
Variable B - Imagining	1	3.445	.49	.51
A X B Interaction	3	13.161	1.88	.14
Error for AB	38	6.990		
Within Subjects				
Variable C - Pre/Post	1	45.887	16.38	.0005**
C X A Interaction	3	9.502	3.39	.03*
C X B Interaction	1	0.049	.02	.89
C X A X B Interaction	3	0.023	.01	.99
Error for CAB	38	2.801		

* Significant at $p < .05$

** Significant at $p < .001$

Table 34 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the POI-EX Subscale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	19.50	24.33
Hypnosis	Low	23.00	25.33
TM	High	22.00	24.20
TM	Low	24.29	25.86
Western Meditation	High	17.67	21.00
Western Meditation	Low	21.71	24.00
Placebo	High	22.20	23.80
Placebo	Low	23.71	25.86

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	39.967	1.63	.20
Variable B - Imagining	1	121.505	4.96	.03*
A X B Interaction	3	3.291	.13	.94
Error for AB	38	24.522		
Within Subjects				
Variable C - Pre/Post	1	137.801	29.85	.0000**
C X A Interaction	3	3.632	.79	.51
C X B Interaction	1	4.414	.96	.66
C X A X B Interaction	3	2.112	.46	.72
Error for CAB	38	4.616		

* Significant at $p < .05$

** Significant at $p < .001$

Table 35 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the POI-FR Subscale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	15.00	15.50
Hypnosis	Low	17.00	17.17
TM	High	15.80	16.00
TM	Low	16.43	18.71
Western Meditation	High	14.67	18.67
Western Meditation	Low	15.29	17.14
Placebo	High	15.00	16.80
Placebo	Low	16.14	18.29

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	1.220	.09	.96
Variable B - Imagining	1	25.505	1.98	.16
A X B Interaction	3	5.921	.46	.72
Error for AB	38	12.906		
Within Subjects				
Variable C - Pre/Post	1	56.010	17.69	.0003**
C X A Interaction	3	6.480	2.04	.12
C X B Interaction	1	0.001	.00	.98
C X A X B Interaction	3	4.089	1.29	.29
Error for CAB	38	3.172		

** Significant at $p < .001$

Table 36 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post/Test Groups/Imagining on the POI-S Subscale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	12.33	14.17
Hypnosis	Low	13.67	15.00
TM	High	11.80	14.40
TM	Low	13.29	14.86
Western Meditation	High	11.67	15.00
Western Meditation	Low	12.14	13.00
Placebo	High	12.60	13.40
Placebo	Low	13.14	14.71

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	2.732	.25	.86
Variable B - Imagining	1	6.601	.60	.55
A X B Interaction	3	4.149	.38	.77
Error for AB	38	10.985		
Within Subjects				
Variable C - Pre/Post	1	64.608	33.84	.0000**
C X A Interaction	3	1.030	.54	.66
C X B Interaction	1	3.496	1.83	.18
C X A X B Interaction	3	2.417	1.27	.30
Error for CAB	38	1.910		

** Significant at $p < .001$

Table 37 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the POI-SR Subscale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	9.33	13.00
Hypnosis	Low	11.00	13.50
TM	High	12.40	13.20
TM	Low	12.71	13.43
Western Meditation	High	12.00	13.67
Western Meditation	Low	11.86	12.00
Placebo	High	9.60	10.40
Placebo	Low	11.86	14.00

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	9.509	1.28	.30
Variable B - Imagining	1	15.268	2.05	.16
A X B Interaction	3	13.891	1.87	.15
Error for AB	38	7.438		
Within Subjects				
Variable C - Pre/Post	1	51.693	18.17	.0003**
C X A Interaction	3	6.068	2.13	.11
C X B Interaction	1	0.687	.24	.63
C X A X B Interaction	3	2.220	.78	.51
Error for CAB	38	2.845		

** Significant at $p < .001$

Table 38 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the POI-SA Subscale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	13.67	17.33
Hypnosis	Low	18.17	17.83
TM	High	15.20	17.40
TM	Low	15.29	17.57
Western Meditation	High	17.33	19.67
Western Meditation	Low	15.14	15.71
Placebo	High	16.20	18.80
Placebo	Low	17.29	19.14

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	8.572	.42	.75
Variable B - Imagining	1	0.099	.00	.94
A X B Interaction	3	28.877	1.40	.26
Error for AB	38	20.561		
Within Subjects				
Variable C - Pre/Post	1	77.065	21.91	.0001**
C X A Interaction	3	0.857	.24	.87
C X B Interaction	1	13.779	3.92	.05NS
C X A X B Interaction	3	4.174	1.19	.33
Error for CAB	38	3.518		

** Significant at $p < .001$

Table 39 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the POI-NC Subscale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	12.67	12.17
Hypnosis	Low	10.83	12.83
TM	High	12.40	12.20
TM	Low	11.00	11.43
Western Meditation	High	13.33	13.00
Western Meditation	Low	10.57	11.14
Placebo	High	10.60	11.20
Placebo	Low	12.00	11.57

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	2.575	.60	.62
Variable B - Imagining	1	12.795	2.99	.09 NS
A X B Interaction	3	9.356	2.18	.10 NS
Error for AB	38	4.285		
Within Subjects				
Variable C - Pre/Post	1	1.529	1.22	.28
C X A Interaction	3	0.555	.44	.73
C X B Interaction	1	3.019	2.41	.13
C X A X B Interaction	3	2.793	2.23	.10 NS
Error for CAB	38	1.254		

Table 40 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the POI-SY Subscale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	7.67	7.83
Hypnosis	Low	6.33	7.50
TM	High	7.60	8.00
TM	Low	7.86	7.43
Western Meditation	High	7.33	7.00
Western Meditation	Low	6.43	7.14
Placebo	High	7.00	7.40
Placebo	Low	7.29	8.00

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	2.105	1.39	.26
Variable B - Imagining	1	1.153	.80	.62
A X B Interaction	3	1.507	1.04	.39
Error for AB	38	1.447		
Within Subjects				
Variable C - Pre/Post	1	2.622	4.60	.04*
C X A Interaction	3	0.537	.94	.57
C X B Interaction	1	0.786	1.38	.25
C X A X B Interaction	3	1.023	1.80	.16
Error for CAB	38	.570		

* Significant at $p < .05$

Table 41 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the POI-A Subscale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	15.17	16.67
Hypnosis	Low	16.50	17.83
TM	High	15.60	16.00
TM	Low	14.43	16.86
Western Meditation	High	15.33	19.67
Western Meditation	Low	16.29	17.43
Placebo	High	14.80	17.20
Placebo	Low	16.14	17.43

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	7.655	.43	.74
Variable B - Imagining	1	2.043	.12	.74
A X B Interaction	3	3.988	.22	.88
Error for AB	38	17.736		
Within Subjects				
Variable C - Pre/Post	1	73.482	18.26	.0003**
C X A Interaction	3	2.080	.52	.68
C X B Interaction	1	1.996	.50	.51
C X A X B Interaction	3	6.274	1.56	.21
Error for CAB	38	4.025		

** Significant at $p < .001$

Table 42 - High/Low Imagining Means (Pre/Post Test) and Anova Summary - Pre & Post Test/Groups/Imagining on the POI-C Subscale

Groups	Imagining	Pre Test	Post Test
Hypnosis	High	16.33	18.33
Hypnosis	Low	17.67	19.00
TM	High	16.60	19.20
TM	Low	17.57	21.57
Western Meditation	High	16.00	18.00
Western Meditation	Low	16.43	19.71
Placebo	High	17.00	19.00
Placebo	Low	19.43	22.14

Source of Variance	df	MS	F-ratio	Prob.
Between Subjects				
Variable A - Groups	3	14.556	.67	.58
Variable B - Imagining	1	52.728	2.41	.13
A X B Interaction	3	4.297	.20	.90
Error for AB	38	21.874		
Within Subjects				
Variable C - Pre/Post	1	139.617	33.27	.0000**
C X A Interaction	3	1.800	.43	.74
C X B Interaction	1	1.668	.40	.54
C X A X B Interaction	3	1.889	.45	.72
Error for CAB	38	4.196		

** Significant at $p < .001$

APPENDIX J

F Values for Table 6

Scales	Hypnosis		TM		Western Meditation		Placebo Control		Non-Med. Control	
	H/S	H/A	H/S	H/A	H/S	H/A	H/S	H/A	H/S	H/A
STAI-STATE	4.95	5.82	4.97	6.94	1.77	3.54	5.70	2.73	3.51	1.10
STAI-TRAIT	6.37	8.93	1.89	4.59	4.83	4.59	1.53	1.82	.05	.01
POI-TC	5.19	10.21	1.85	2.75	1.28	.35	.82	1.14	.00	.00
POI-I	8.61	17.59	3.16	4.70	9.09	7.46	6.07	6.68	2.28	1.76
POI-SAV	6.04	10.68	.02	.17	3.86	3.75	6.38	7.85	.24	1.55
EX	7.11	11.84	.89	1.60	6.36	6.41	1.59	1.41	1.82	4.36
FR	.02	.32	.27	2.29	.52	7.71	.23	3.41	.14	1.56
S	5.24	10.37	6.84	6.38	8.79	7.26	.49	1.29	.66	.09
SR	14.76	27.58	1.05	4.00	1.74	1.00	1.37	.56	.45	.81
SA	1.33	4.12	4.16	8.03	2.07	1.06	4.66	3.02	1.96	2.27
NC	4.17	3.39	.00	.00	.03	.03	.13	.14	.00	.00
SY	2.97	4.61	.32	.00	1.27	1.19	1.27	1.51	3.87	1.53
A	2.24	4.01	1.30	3.17	2.92	3.58	.64	1.57	.16	.04
C	2.02	2.98	5.92	7.91	6.50	11.91	3.88	2.50	1.15	2.98

APPENDIX K

F Values for Table 7

	Hypnosis		TM		Western Meditation		Placebo Control	
Scales	H/I	L/I	H/I	L/I	H/I	L/I	H/I	L/I
STAI-STATE	8.54	3.36	6.53	2.47	8.25	.30	.43	7.61
STAI-TRAIT	7.30	3.61	2.83	1.66	8.42	1.34	.39	1.24
POI-TC	12.21	1.58	10.16	.13	3.83	.06	.25	1.05
POI-I	14.09	2.57	1.33	4.16	8.59	2.00	6.11	7.12
POI-SAV	5.20	5.20	.15	.19	1.70	2.36	5.50	6.31
EX	13.54	3.15	2.80	1.43	6.44	2.95	1.48	2.66
FR	.22	.02	.04	4.41	13.50	2.91	2.73	3.87
S	4.71	2.49	9.47	3.46	15.57	1.03	.87	3.46
SR	12.64	5.88	.58	.49	2.61	.02	.58	4.32
SA	10.22	.09	3.68	3.97	4.14	.28	5.14	2.62
NC	.57	8.53	.09	.45	.21	.82	.73	.48
SY	.14	6.39	.72	1.08	.45	2.40	.72	2.40
A	1.61	1.28	.23	3.92	12.48	.87	3.83	.95
C	1.55	1.21	4.31	10.20	2.55	6.88	2.55	4.70

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