FOR MEDITATION INSTRUCTIONS:

Books:

Tapes:

5.1 Self-Control and Self-Regulation Strategy: Toward a Working Definition

In a previous work, I defined self-control as "the ability to decide what one wants to do, and the skills to follow through with that decision" (Shapiro, 1978b, p. 246). In order to decide what one wants to do, one must first learn to become aware of when one is acting by habit and reflex (i.e. non-conscious decisions). Second, one must have the skills to perceive increased alternatives, new ways of perceiving and acting in the world. Third, one needs the skills to carry the decision through.

A self-control or self-regulation technique, therefore, is a cognitive or behavioral activity generated by an organism and maintained over time in order to facilitate the attainment of certain goals that the organism defined as desirable.*

*The process by which this definition was arrived at and comparison with other definitions of self-control is not included here as it is outside the primary scope of this book. It is discussed in detail, however, in my forthcoming book, *The Psychology of Self-Control.*
“ROUND-ONE STUDIES”

Almost without exception the studies viewing meditation as self-regulation strategy have focused on its relaxation (stress reduction) component. This is true in the stress studies, therapy studies, the majority of the addiction studies, and the hypertension research.

The “first-round” of studies viewing meditation as a self-regulation strategy helped establish interest in the field. These early studies suggested that meditation may be quite promising for a variety of clinical problems.

Generally these “first-round” studies consisted of anecdotal case reports, intensive design studies containing “non-specific variables,” and/or combining techniques for treatment and/or comparing meditation to control groups, but not to other, similar techniques. Because this “first-round” literature has been reviewed at length elsewhere (including both clinical/therapeutic effects [Smith, 1975; Shapiro & Giber, 1976] and physiological effects [Woolfolk, 1975; Davidson, 1976]), only a brief summary is provided here. As this first-round literature is generally quite flawed methodologically, I have confined myself to general comments on methodological issues. Specific criticisms of individual studies may be found in the tables accompanying the discussion. The clinical tables (5.1-5.3), based on Shapiro and Giber (1978), have been updated by David Giber: the physiological tables (5.4-5.6), based on Woolfolk (1975), have been updated by Roger Walsh. Tables 5.1-5.3 are particularly addressed to descriptions of independent variables such as therapist contact, length of training, description of techniques; method of subject selection; descriptions of dependent variables for clinical problems; methods of data collection, the nature of data collected, be it physiological, behavioral, subjective, overt-concurrent; types of follow-up; and the quality of control procedures. Tables 5.4-5.6 give a systematic basis for 1) comparing physiological changes such as oxygen consumption, skin response, blood pressure, heart rate, EEG resulting from different independent variables like yoga, Zen, transcendental meditation (TM); and 2) looking at methodological issues within each study: experience of meditators, type of design, and quality of control procedure.

5.2 Stress and Stress Disorders: Round-One Fears, Phobias, Stress and Tension Management

There have been twenty round-one studies concerned with the reduction of fears and phobias and stress and tension management.* These studies suggest that meditation may be a promising clinical intervention technique for several stress-related dependent variables. All studies reported successful outcomes on dependent variables ranging from fear of enclosed places, examinations, elevators, being alone (Boudreau, 1972) to “generalized anxiety” (Shapiro, 1976), anxiety neurosis (Girodo, 1974), pain due to bullet wounds, back pain (French & Tupin, 1974) and fear of heart attack (French & Tupin, 1974), rehabilitation after myocardial infarct (Tulpule, 1971), and bronchial asthma (Honsberger, 1973). Many of these studies involved within-subject design (Boudreau, 1972; Shapiro, 1976; Girodo, 1974; French & Tupin, 1974) and a combination of meditation and other techniques, with meditation sometimes first (Girodo, 1974), sometimes second (Boudreau, 1972), sometimes concurrent (Daniels, 1975; Shapiro, 1976) with other modes; the data were gathered by subjective measures (patient verbal self-report). Girodo (1974) also used an anxiety symptom questionnaire and Shapiro (1976) had the patient monitor daily feelings of anxiety using a wrist counter.

The study by Vahia et al. (1972), the first to use control groups, reported a consistent and greater reduction in anxiety for the treatment group. The control group consisted of a “pseudo-yogic treatment” with only superficial use of postures and breathing exercises. Data were gathered from patient notebooks, from Taylor’s Manifest Anxiety Scale, and from relatives, friends, and colleagues. Its conclusions will be discussed in greater detail in the following section: Meditation and Psychotherapy.

<table>
<thead>
<tr>
<th>Table 5.1: Studies on Fears and Phobias, Stress and Tension Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investigations</strong></td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>Rahim, S. (1972)</td>
</tr>
<tr>
<td>Dahmen, G. (1972)</td>
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<tr>
<td>French, P. and Trench (1973)</td>
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<td>Smith, J. (1973)</td>
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<td>Vallee, J. et al. (1974)</td>
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</tbody>
</table>

**Table 5.1 (cont.)**

<table>
<thead>
<tr>
<th><strong>Investigations</strong></th>
<th><strong>Clinical Problem</strong></th>
<th><strong>Sts of age, sex, strata</strong></th>
<th><strong>Age and length of treatment</strong></th>
<th><strong>Frequency of Treatment</strong></th>
<th><strong>Substance used</strong></th>
<th><strong>Dose (mg or units)</strong></th>
<th><strong>Follow-up</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rahim, S. (1972)</td>
<td>Case study of 3 children with phobic anxiety, ages 6 to 12</td>
<td>3 children, ages 6 to 12</td>
<td>6 weeks, daily</td>
<td>Single</td>
<td>Subsequent</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Dahmen, G. (1972)</td>
<td>Case study of 2 children with phobic anxiety, ages 6 and 7</td>
<td>2 children, ages 6 and 7</td>
<td>6 weeks, daily</td>
<td>Single</td>
<td>Subsequent</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>French, P. and Trench (1973)</td>
<td>Case study of a young child with phobic anxiety, age 5</td>
<td>1 child, age 5</td>
<td>6 weeks, daily</td>
<td>Single</td>
<td>Subsequent</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Smith, J. (1973)</td>
<td>Case study of 2 children with phobic anxiety, ages 6 and 7</td>
<td>2 children, ages 6 and 7</td>
<td>6 weeks, daily</td>
<td>Single</td>
<td>Subsequent</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Vallee, J. et al. (1974)</td>
<td>Preliminary results of a double-blind, placebo-controlled study of clomipramine treatment of phobic anxiety</td>
<td>50 children, ages 8 to 14</td>
<td>6 weeks, daily</td>
<td>Single</td>
<td>Subsequent</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
Stress and Stress Disorders

Other studies, using control-group designs, have also reported a consistent reduction in anxiety for the meditating treatment group. The data have been gathered primarily by pre-test and post-test questionnaires, including Speigelberger’s State-Trait Anxiety Inventory (Smith, 1976; Goleman & Schwartz, 1976; Davidson, Goleman & Schwartz, 1976; Ferguson & Gowan, 1976; DiBartocci, 1977), the IPAT anxiety questionnaire (LaZar et al., 1977; Ferguson & Gowan, 1976) the Bendig anxiety scale (Hjelle, 1974), and the Test Anxiety Scale for Children (Linden, 1973). Other data measuring anxiety-related behaviors include heart rate and phasic skin conductance (meditators recovered more quickly after viewing a stressful film [Goleman & Schwartz, 1976] and insomnia (meditators showed substantial improvement on variables of sleep onset and rated difficulty of falling asleep [Woolfolk, Carr-Kaffash & McNulty, 1976]).

5.2A Meditation and Psychotherapy

THIS MATERIAL FOLLOWS the section on stress because the two “control group” studies researching meditation and psychotherapy have focused on the stress-reduction aspect of meditation. Further, it should be noted that most of the studies detailing meditation’s potential psychotherapeutic stress-reduction effects have been done with normal subjects. Although the results are provocative, generalization to clinical populations must proceed cautiously. In addition to the anecdotal case reports (e.g., Kondo, 1958; Boudreau, 1972; Giroud, 1974; Deathridge, 1976), there have been two “control” group designs to assess meditation’s effectiveness as psychotherapy (Vahia et al., 1973) and as an aid to psychotherapy (Glueck & Stroebel, 1975). As noted above, the theoretical rationale for the use of meditation in both of these studies involves the role of stress as a mediating variable. Vahia et al. (1973) noted that the exercises of Patañjali teach one to develop internal standards and to rely less on the views and standards of others. He noted that as long as the individual is vulnerable to external standards or internalized “conscience” standards, he will be vulnerable to stress. Therefore, stress is seen as the mediating variable which these exercises correct. Similarly, Glueck and Stroebel (1975) suggested that many psychiatric patients activate the emergency response.
system, (Cannon’s [1932] fight or flight; Selye, [1956]), at inappropriate times and with inappropriate or misperceived stimuli. They suggest that training in self-regulation techniques like meditation may help in dealing with those problems.

The Vahia study (1973) was done with patients diagnosed with psychoneuroses or psychosomatic disorders. The treatment was based on the concepts of Patañjali. The techniques were a graduated series of five Yoga meditation exercises beginning with attempts to gain voluntary control over the musculature (asana exercises—selected postures for relaxation); followed by attempts to gain voluntary control over the autonomic nervous system (prānāyāma—breathing exercises); to restrain the senses by voluntary withdrawal from the external environment (pratyāhāra); and still later a gaining of control over thought processes themselves (e.g., four, dhārāna—selection of an object for concentration). Finally, development of total concentration on the selected object and eventually union—dhyana—was sought. There was significant improvement on psychological tests, such as MMPI, Taylor’s Manifest Anxiety Scale, and Rorschach, for individuals who practiced the complete series of meditation exercises, compared to a control group, matched for age, sex, and diagnosis, who practiced only the first three exercises.

A second study, more elaborate in scope, was done by Glueck and Stroebel (1975). Initially, they had three groups of psychiatric in-patients: an autogenic training group, a biofeedback group, and a TM group. The initial two control groups dropped out of the study, so a comparison group matched for age, sex, and level and kind of psychopathology, as measured by the MMPI at the time of admission, was used. Diagnoses included schizophrenia, neurosis, personality disorder, alcoholism, drug dependence, adjustment reaction. Patients practicing TM showed a statistically significant greater degree of improvement upon discharge (based on the report of the treating psychiatrist) than that of the hospital’s other patients and also a significantly better level of improvement than their comparison twins.

5.3 Addiction and Drug Use

THERE HAVE BEEN eight first-round studies evaluating meditation’s effectiveness in treating various types of addictions and drug use.* The research design of these studies falls into two categories: retrospective polling and longitudinal design. Seven of these studies indicate that meditation may be a promising preventive and/or rehabilitative strategy in decreasing the use of addictive substances. In the one study showing negative results (Anderson, 1977), it was noted, that motivation and adherence treatment seem to be an important variable in determining the success of treatment. It is hard to make more definite claims for meditation’s effectiveness at this point because of a number of methodological problems. For example, the retrospective questionnaires in the first group of studies (Benson, 1969; Benson & Wallace, 1972b; Shafi, Lavelly, & Jaffe, 1975) are subject to several criticisms. Subjects were asked to recall daily drug use patterns as far back as two years. There are three possible problems with this type of questionnaire: 1) A subject’s report on a paper and pencil questionnaire may be inadvertently inaccurate; we may not be aware of how we in fact act, 2) A subject’s memory of two years ago may be faulty (Benson & Wallace, 1972b), and 3) Subjects may try to deceive the experimenters to gain experimenter approval—i.e. demand characteristics. With regard to demand characteristics, the most experienced meditators noted that they had “strong positive feelings about the experience of meditation” (Shafi, Lavelly, & Jaffe, 1974). This positive feeling about meditation, coupled with the instructions in the TM initiation that drug use adversely affects TM performance, may have contributed to an exaggeration on the retrospective questionnaire about the decrease in drug use and the magnitude of prior drug-use patterns. As Shafi, Lavelly, and Jaffe (1974) noted, meditators retrospectively reported using twice as much marijuana prior to their TM initiation as non-meditators.

A second problem with the retrospective questionnaires is one of sample bias (Marcus, 1975). In the above studies, the questionnaire was only given to long-term meditators. The TM initiates who stopped meditating (thirty percent of the original sample) were not considered (Shafi, Lavelly, & Jaffe, 1974). Therefore, there may have been a subject selection bias in that the surveyed

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group had a commitment to meditation.

Finally, the earliest two studies (Benson, 1969; Benson & Wallace, 1972b) had no control group. Shaﬁii, Lavelly and Jaffe’s (1974; 1975) studies on marijuana and alcohol abuse added a control group; TM meditators provided their own matched control. However, the control group does not effectively control for possible variance of treatment due to subject’s motivation and/or expectations.

Because of the methodological problems inherent in retrospective sampling, the more recent drug studies have employed prospective longitudinal designs (Shapiro & Zifferblatt, 1976; Lazar, Farwell & Farrow, 1977; Brautigam, 1971). In these studies, self-report of drug use was obtained on a daily, ongoing basis. Although there is still the possibility of deception in two of the studies (Lazar, Farwell & Farrow, 1977; Brautigam, 1971), the possibilities of inadvertent inaccurate reporting and of memory lapses are minimized. The most effective means of data gathering thus far have combined drug-use information from self-report with the concurrent validity of random urinalysis checks (Shapiro & Zifferblatt, 1976a). Thus, these longitudinal within-subject (Shapiro & Zifferblatt, 1976a) and group designs (Lazar, Farwell & Farrow, 1977; Brautigam, 1971) improve on previous studies, though not definitive because of their own methodological problems including self-report without concurrent validity (Lazar, Farwell & Farrow, 1977; Brautigam, 1971); combination treatments (Shapiro & Zifferblatt, 1976); and lack of control for demand, expectation effects, and subject motivation (Shapiro & Zifferblatt, 1976; Lazar, Farwell & Farrow, 1977; Brautigam, 1971).

Further, all seven studies suffer from the lack of a clear theoretical rationale linking their independent and dependent variables. For example, Brautigam (1971) divided the dependent variable into two groupings: light drugs (hashish) and heavy drugs (LSD, amphetamines, opiates), though lumping LSD, amphetamines, and opiates together clouds several issues. First, amphetamines and LSD do not produce physical addiction, whereas opiates do. Second, possible reasons for using LSD and amphetamines—e.g., self-knowledge, creativeness, spiritual enlightenment and expansion of consciousness (Cohen, 1969)—could be quite different from the reasons for opiate use such as...
social pressure, rebellion against authority, primary reinforcement, escape from social and emotional problems, and relief of withdrawal symptoms (Shapiro & Zifferblatt, 1976). As Brautigam’s (1971) report now stands, it is impossible to tell who stopped taking which “heavy drugs” for what reasons.

5.4 Hypertension

SEVEN FIRST-ROUND studies have involved the use of meditation in reducing blood pressure (Benson & Wallace, 1972a; Benson et al., 1974a; 1974b; Patel, 1973; Patel, 1975a; 1975b; Stone & DeLeo, 1976; Datey, et al., 1969). Certainly, from a research standpoint, blood pressure is one of the “cleanest” dependent variables to measure. These studies consistently indicate a reduction in blood pressure in the treatment group (Benson & Wallace, 1972a; Benson et al., 1974a, 1974b; Patel, 1973; Patel, 1975a, 1975b; Stone & DeLeo, 1976; Datey et al., 1969), in the use of hypertensive medication (Patel, 1973; Datey et al., 1969), and in reports of somatic symptoms (Datey et al., 1969). Follow-up data have shown that treatment gains were maintained during a twelve-month period (Patel, 1975b).

Although the treatment effect seems relatively clear, there are still several unanswered questions as to what is causing that effect. The treatment interventions have ranged from a combination of Yoga breathing, concentration, and muscle relaxation (Datey et al., 1969), the “Relaxation Response” technique (Benson & Wallace, 1972a; Benson et al., 1974a; 1974b), a combination of Yoga, breath meditation, muscle relaxation, concentration, and biofeedback (Patel, 1973), to a Buddhist meditation procedure (Stone & DeLeo, 1976). Future research should attempt to isolate the variance of treatment success due to different aspects of the intervention. Further research should also determine whether the results are maintained. For example, Pollack et al. (1977) found that changes in blood pressure had disappeared after six months. For a more detailed discussion of possible variables influencing treatment outcome, readers are referred to an excellent review of the literature by Jacob, Kraemer and Agras (1977).
5.5 Physiological Changes

The studies discussed in 5.1-5.3 suggest that meditation may be a promising therapeutic intervention strategy for several different clinical areas. One hypothesis that attempts to explain meditation's effectiveness in these clinical areas is that meditation helps relax an individual. There seems general agreement that meditation does, in fact, produce a state of relaxation (Smith, 1975; Benson, Beary, & Carol, 1974), variously described as an activity (effortless breathing, [Shapiro & Zifferblatt, 1976b]); a "state" (the hypometabolic state, [Wallace, Benson, & Wilson, 1971]); and a response (the relaxation response, [Benson, Beary, & Carol, 1974]). This relaxation, as a mediating mechanism, is discussed in Chapter Nine.

I would like here to briefly review the round one physiological changes evidenced during the act of meditation itself: reduced heart rate*, decreased oxygen consumption**, decreased blood pressure†, increased skin resistance‡, and increased percent time, regularity and amplitude of alpha activity§. These results, summarized by type of meditation technique, are presented in tables 5.4-5.6.

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<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Design</th>
<th>Quality of Control Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jennings, et al., 1977</td>
<td>Change During Medication</td>
<td>Adequate greater than baseline</td>
</tr>
<tr>
<td>Jennings, Wilson, &amp; Smith, 1977</td>
<td>Change During Medication</td>
<td>Adequate greater than baseline</td>
</tr>
<tr>
<td>Jennings, Wilson, &amp; Smith, 1976</td>
<td>Change During Medication</td>
<td>Adequate greater than baseline</td>
</tr>
<tr>
<td>Young, 1977</td>
<td>Change During Medication</td>
<td>Adequate greater than baseline</td>
</tr>
<tr>
<td>Young, 1975</td>
<td>Change During Medication</td>
<td>Adequate greater than baseline</td>
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<tr>
<td>Young, Adams &amp; Hoppe, 1977</td>
<td>Change During Medication</td>
<td>Adequate greater than baseline</td>
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<tr>
<td>Young, Adams &amp; Hoppe, 1975</td>
<td>Change During Medication</td>
<td>Adequate greater than baseline</td>
</tr>
<tr>
<td>Williams, 1976</td>
<td>Change During Medication</td>
<td>Adequate greater than baseline</td>
</tr>
<tr>
<td>Williams, &amp; Wexler, 1975</td>
<td>Change During Medication</td>
<td>Adequate greater than baseline</td>
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<tr>
<td>Schuur, 1973</td>
<td>Change During Medication</td>
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<td>Olson, Johnson, 1973</td>
<td>Change During Medication</td>
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<tr>
<td>Williams, &amp; Wexler, 1975</td>
<td>Change During Medication</td>
<td>Adequate greater than baseline</td>
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**Table 5.5** Summary of Studies of Transcondylar Mediation Based Partially on Mobak (1975)
5.6 Comparisons with Other Self-Regulation Strategies: Physiological, Metabolic, EEG Patterns

**There was initial enthusiasm that meditation might be a unique strategy (Muchlan, 1977), different from all other self-regulation strategies. It was suggested, on the basis of certain first-round studies that this uniqueness could be measured by the physiological parameters noted in section 5.5. However, Benson (1975, 1977) suggested that this physiological response pattern is not particularly unique to meditation per se but is common to any passive relaxation procedure. This view has been supported and replicated by a number of studies which suggest no physiological difference between meditation and other self-regulation strategies, and often no differences between meditation and a “just sit” control group. For example, earlier studies suggested that skin resistance significantly increased within subjects (Wallace et al., 1971; Wallace, 1970) and in a TM group versus a control group (Orme-Johnson, 1973). Recent studies, however,* show no significant difference on galvanic skin response (GSR) between meditation and other self-regulation strategies, including self-hypnosis, Progressive Relaxation, and other instructional “relaxation” control groups. Further, the above studies also show no difference between meditation and other self-regulation strategies on heart rate or respiration decrease.

Curtis and Wesberg (1976) tested differences between a meditation group, a deep muscle relaxation group, and non-experienced individuals and found no difference either between groups or between trials on GSR, heart rate, or respiration. They noted that there was high subject variability, with some subjects “actually increasing their rate of functioning,” and that the few measurements approaching statistical significance were in the control group and not in the meditators or relaxers. In their short report, Cauthen and Prymak (1977) tested five different groups (N=7): experienced meditators (subjects

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averaging five years experience), moderately experienced meditators (fourteen months), novice meditators (seven days), a relaxation group (five days), and a pseudo-TM group that thought about a word. These groups were compared on measures of respiration, GSR, temperature, and heart rate. The authors note that there was no significant difference for any group before, after, or during the experimental period for GSR or respiration, a finding which, as noted, goes counter to previous studies. The Cauthen and Prymak study (1977) does not seem to tease out any particularly unique physiological changes as a result of meditation, even when long-term meditators are tested.

In a related study, Travis et al. (1976) compared subjects who had meditated an average of five to thirty months with a control group which simply relaxed. After a two-minute baseline period, experimental subjects meditated for twenty minutes and then had a ten-minute post-meditation follow-up. There was no significant change in the meditating group in heart-rate decrease, electromyogram (EMG) decrease, or increase in occipital alpha. The only significant changes were in the control group on decrease in occipital alpha, decrease in heart rate, and decrease in frontal EMG. The authors note that most striking was the lack of changes in alpha and EMG occurring during Transcendental Meditation, compared with those previously reported (Wallace, 1970; Wallace et al., 1971). The changes in the control subjects, the authors note, seem most likely to be the result of sleep or sleep onset that occurred in thirteen of the sixteen control subjects.

In an interesting and complex study, Morse et al. (1977) looked at four experimental groups (trained in TM but not hypnosis, trained in auto-hypnosis but not TM, trained in both, trained in neither). Each of these four groups was monitored under six conditions: alert state, relaxation, heterohypnosis relaxation, heterohypnosis task, autohypnosis relaxation, and meditation. During the meditation session, those who had not practiced TM were given one of the following words: one, on, flower, garden, river, sail. There were four different orders in which the four groups underwent the six conditions. There was no significant condition effect between the alert state and the experimental condition, but not among the experimental conditions, according to GSR. There was interhemispheric EEG synchronicity in all experimental conditions: That is, when synchronization of slow alpha occurred, it was not unique to TM but found in all the relaxation conditions. Neither respiration rate, pulse rate, nor systolic and diastolic blood pressure differentiated experimental conditions. The authors noted the physiological responses of TM and simple word meditation were similar, and concluded that, “It appears that relaxation, meditation, and relaxation hypnosis yield similar physiological responses suggestive of deep relaxation.”

The Morse study (1977), in addition to supporting the literature suggesting a lack of uniqueness of meditation on measures of GSR and heart rate, also calls into question its uniqueness in terms of EEG pattern—the synchronization of slow alpha (cf. Glueck & Stroebel, 1976). Further, the above studies suggest that there is not a unique respiratory effect as a result of meditation. This lack of unique respiratory effect has also been replicated by Pagano (Note 14), who found no difference between meditation and a Progressive Relaxation group, and Fenwick et al. (1977), who found no difference between meditation and listening to music. Fenwick et al. (1977) noted that subjects who were tense to begin with showed a greater relaxation effect than subjects who were not, and suggested that the findings of Wallace et al. (1971) may have been due to high initial levels of metabolism and tension. Regarding metabolic change, Fenwick et al. (1977) noted that subjects in the fasting meditation group, a control group used to reduce the level of tension and metabolism to the lowest possible level, “showed that under these circumstances meditation failed to produce any significant change in the metabolic rate.”

A similar lack of metabolic uniqueness has also been found by other investigators. Michaels, Huber and McCann (1976) attempted to differentiate meditators from resting controls biochemically. Since stress increases blood catecholamines, the experimenters looked at plasma epinephrine and norepinephrine as well as lactate. Twelve experienced meditators (more than twelve months experience) were compared with controls matched for sex and age who rested instead of meditating. There were no significant fluctuations of plasma epinephrine during meditation. Neither were significant differences observed between controls and meditators. The same held true for plasma lactic acid concentration, thus failing to replicate the earlier findings on TM (Wallace, 1970).
More recent studies further call into question the uniqueness of meditation's effects. In an earlier study, Goleman and Schwartz (1976) showed increased responsiveness of meditators to an upcoming stressful event on a film and their quicker recovery time as compared to a relaxing control group. However, from a cognitive standpoint, in terms of number of post-stress intrusive thoughts, significant differences between meditators and controls have not been detected (Kanas & Horowitz, 1977). Further, earlier theories which suggested that TM was unrelated to sleep have recently been called into question by Pagano et al. (1976) and Young and Berger (1975) who note that at least beginning meditators may spend an appreciable part of their time in sleep stages two, three, and four.

Thus it appears that the original belief that meditation would be able to be discriminated as a unique physiological state has not been confirmed—either on an autonomic or metabolic level, or in terms of EEG pattern. Although it does seem clear that meditation can bring about a generalized reduction in multiple physiological systems, thereby creating a state of relaxation in the individual (Davidson, 1976; Shapiro & Giber, 1978), it is not yet clear from the available data that this state is differentiated from relaxation effects of other techniques, whether they be hypnosis (Walrath & Hamilton, 1977) or deep muscle relaxation (Curris & Weissberg, 1976; Cauthen & Prymak, 1977; Travis, Kondo & Knott, 1975; Morse et al., 1977, etc.). The constellation of changes is, in most studies, significantly different between meditation and placebo control groups, but not between self-regulation treatment groups.

In conclusion, it should be noted that not everyone would agree with the above interpretation of the findings (e.g., Jevning & O'Halloran, 1980 in press); the results are not unequivocal. For example, Elson, Hauri and Cunis (1977) compared meditation with a "wakefully relaxed" group and a group of AnandaMarga meditators. They noted that "meditation was characterized by a marked increase in basal skin resistance and by a decrease in respiratory rate, changes which were not observed in the controls. Further, six of the eleven controls fell asleep, while none of the meditators fell asleep—rather meditators remained in a relatively stable state at alpha and theta EEG activity." Also, Jevning and O'Halloran (in press, 1980) suggest blood flow as a metabolic measure unique to meditation. They believe that
additional unique physiological response patterns will be found, and that current findings do not reflect this simply because we do not yet have sensitive enough physiological measures to ferret out the unique aspects of meditation patterns as compared to other self-regulation strategies.

5.7 Comparison with Other Self-Regulation Strategies: Clinical

SIMILAR FINDINGS are also now being reported on a clinical level. Meditation appears to be equally effective but no more effective than other self-regulation strategies for dependent variables ranging from anxiety (Beiman et al., in press 1980; Goldman, Domil ´or & Murray, 1979; Kirsch & Henry, 1979; Boswell & Murray, 1979; Zuroff & Schwartz, 1978; Smith, 1976; Thomas & Abbas, 1978), anxiety in alcoholics (Park et al., 1978), to alcohol consumption (Marlatt et al., in press, 1980), insomnia (Woolfolk et al., 1976) and borderline hypertension (Surwit, Shapiro, Good, 1978). Self-regulation strategies compared include Progressive Relaxation (Woolfolk et al., 1976; Marlatt et al., 1979; Beiman et al., 1979; Boswell & Murray, 1979; Thomas & Abbas, 1978), Benson’s Relaxation Response (Marlatt et al., in press, 1980; Beiman et al., in press, 1980), a pseudo-meditation treatment (Smith, 1976), anti-meditation treatments (Goldman et al., 1979; Boswell & Murray, 1979; Smith, 1976), self-administered systematic desensitization (Kirsch & Henry, 1979) and cardiovascular and neuromuscular biofeedback (Surwit, Shapiro & Good, 1978; Hager & Surwit, 1978).

As examples of these types of studies involving clinical comparison of self-regulation techniques, let me describe two that seem representative: One on alcohol consumption (Marlatt et al., in press, 1980) and one on anxiety (Kirsch & Henry, 1979).

Marlatt et al. describe a nicely designed study which took heavy social drinkers through a two week pretreatment baseline phase, a six week treatment phase, and seven week follow-up. There were four groups, a meditation group ( Benson’s method), a Progressive Relaxation group, an attention placebo group practicing bibliotherapy, and a no-treatment control group that was monitored and took all the tests. This study is one of the first in
<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Meditation</th>
<th>Amount of Meditation</th>
<th>Changes During Meditation</th>
<th>Type of Design</th>
<th>Quality of Control Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jouve &amp; Schwartz, 1978</td>
<td>TM</td>
<td>9 weeks</td>
<td>Only significant difference between TM and relaxation was greater RM reduction in trait anxiety measured by the SRAI but not for anxiety measured by the Hospital Anxiety and Depression Scale. No difference in behavioral anxiety measures did not differentiate between meditators, relaxed and no treatment controls. Similar results were obtained for psychological maladjustment measured by Roter's Incomplete Sentence Test, locus of control, or reported alcohol or marijuana use.</td>
<td>Between-subjects</td>
<td>Good-random assignment of subjects. Attempts to equalize expectancies for TM and relaxation.</td>
</tr>
<tr>
<td>Goldman, Demir, &amp; Murray, 1978</td>
<td>Zen</td>
<td>5 days</td>
<td>Meditators reported more altered states of consciousness and relaxation. No significant differences on measures of anxiety (Spielberger's State-Trait Anxiety Inventory) or of perception (Holzman Inhibit and the Embedded Figures Test). Locus of control did not interact with treatment but volunteer versus course requirement status did, with volunteers reporting greater Zen-induced altered states and increasing proficiency across days.</td>
<td>Between-subjects</td>
<td>Very short training period but otherwise good. Employed two control groups, no treatment and placebo. Also controlled and tested for locus of control and volunteers versus subjects fulfilling course requirements.</td>
</tr>
<tr>
<td>Kirsch &amp; Henry, 1979</td>
<td>TM-like</td>
<td>Unclear</td>
<td>The three experimental treatments (systematic desensitization with meditation replacing progressive relaxation and meditation only) all showed significant reductions in public speaking anxiety and self and behavioral measures. Significant reductions in anticipatory pulse rate occurred only on the systematic relaxation treatment groups. Subjects who perceived treatments as highly credible showed greater improvement on both subjective anxiety and pulse rate than did subjects who perceived treatments as less credible.</td>
<td>Between-subjects</td>
<td>Good. Four groups matched according to level of performance.</td>
</tr>
<tr>
<td>Marlett et al., 1980</td>
<td>Benson</td>
<td>6 weeks</td>
<td>As opposed to the no treatment control group, meditation, progressive relaxation, and the bibliotherapy intervention groups all showed significant reductions in alcohol consumption and increases in intervallocusofcontrol. However, whereas these three groups did not differ significantly, the three treatment groups showed significant increases in ratings of daily relaxation, with the greatest effect in meditators. At seven week follow-up alcohol consumption in the three treatment groups remained less than pretreatment levels but not significantly vs. No significant differences were found in treatment outcome.</td>
<td>Between-subjects</td>
<td>Good. Subjects matched for baseline alcohol consumption. Attention control condition.</td>
</tr>
</tbody>
</table>

### Summary and Future Directions

The data from these studies indicate that meditation does not appear to be any more effective than other self-regulation strategies in reducing dependent variables. It should be noted, however, that my interpretations of the data are not without its critics. The critics point out that the data are limited and that the effectiveness of meditation may be influenced by other factors such as the therapist's style, the participant's motivation, and the duration of the treatment. Further research is needed to explore these factors and to determine the extent to which meditation is a beneficial intervention for the treatment of various mental health problems.

The data from these studies also suggest that meditation may be a useful adjunct to other forms of treatment. For example, meditation may be used to enhance the effectiveness of medication by reducing the side effects of the medication. Additionally, meditation may be used to improve the quality of life for individuals who are chronically ill or who are coping with a serious illness.

The future of meditation and self-regulation research is promising. As more research is conducted, we will have a better understanding of the mechanisms by which meditation works and how it can be used to improve mental health outcomes. Additionally, as more research is conducted, we will have a better understanding of the differences between different forms of meditation and how these differences may affect the effectiveness of the meditation.

### Table 5.8: Summary of Studies Comparing Meditation with Other Self-Regulation Strategies: Clinical Measures

<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Meditation</th>
<th>Amount of Meditation</th>
<th>Changes During Meditation</th>
<th>Type of Design</th>
<th>Quality of Control Procedures</th>
</tr>
</thead>
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</tr>
</tbody>
</table>
argued that therapists’ belief in treatment of credibility may have been a critical confounding factor in Vahia’s studies (cf. Smith, 1975). Further the fact that Glueck and Stroebe1’s study was conducted at the Institute for Living, where a great deal of TM research was being conducted, could have caused strong confounding demand characteristics, possibly accounting for subjects’ continuing to adhere to the TM program, while dropping out of the biofeedback treatment group.

What future directions might clinically oriented research profitably pursue? Let me suggest four different approaches, each of which is covered in more detail in subsequent sections of the book. The first involves a refinement of the independent variable. What are the active components of meditation (Chapter Eight)? Might these components be profitably combined with other self-regulation strategies (Chapter Six, also Woolfolk, 1979, Kirsch & Henry, 1979; Shapiro & Ziffrenblatt, 1976a; 1976b; Shapiro, 1978b)?

The second involves a refinement of the dependent variable. For example, Davidson and Schwartz (1976) have suggested that anxiety actually has both a cognitive and somatic component, and meditation may be more effective for reducing cognitive anxiety while doing relatively little for somatic anxiety.

A third approach (Chapter One), involves examining subject variables (Smith, 1978; Beiman et al., 1980, in press). This approach attempts, based on certain pre-test indicators, to develop a subject profile of those for whom meditation is likely to provide a successful clinical intervention.

The above three refinements would enable us to become more precise in choosing the correct clinical intervention (or combination of interventions) for a specific individual with a specific clinical problem.

A fourth suggested approach, not necessarily negating the others, involves looking at the phenomenology of meditation. This approach, valued by the Eastern tradition for centuries, is just beginning to gain favor within psychology. Despite certain problems, researchers are beginning to note its importance. For example, Morse et al. (1977) notes that physiological responses failed to show significant differences between the three relaxation states, but subject evaluation did show significance (cf. also Gilbert & Parker, 1975). Therefore, they cite and agree with Tart’s remark that “In subject’s own estimate of his behavior, an internal state is a rich and promising source of data which some experimenters tend to ignore in their passionate search for objectivity.” (Tart, cited in Morse et al., 1977). Similarly, Curtin and Wessberg (1976) noted that there were more positive subjective changes in the meditation group than in the control “relaxation group” even though there was no difference on physiological measures. They noted that if meditation has a unique effect, it seems one which is different from a visceral or neuromuscular effect.

If meditation is a unique technique, its uniqueness may not be as a self-regulation strategy and therefore it will not be seen as different from other self-regulation strategies on either a clinical or physiological basis, but may be seen to be unique in the way the individual experiences it. The literature on phenomenological or subjective experiences during meditation—meditation as altered state of consciousness will be discussed in Chapter Seven.

Chapter Five: Further Readings

REVIEWS OF THE LITERATURE

Clinical

Physiological
Davidson, J. Physiology of meditation and mystical states of consciousness, Perspectives in Biology and Medicine, 1976, 19,
Comparison with Other Self-Regulation Strategies

RESEARCH

Physiological


Clinical


Adverse Effects


Refining the Dependent Variable


6

A Model for Comparing Self-Regulation Strategies:
Zen Meditation and Behavioral Self-Management,
A case in point.

AT THE END of Chapter Five, I noted that one of the promising clinical directions for meditation involved a refinement of the strategy into its "active" components. In this way, we could strip the aura of mystery and mysticism from those aspects of meditation responsible for successful treatment. Further, we noted, as in the case of Woolfolk (1980, in press), we could, where appropriate, combine meditation with other self-regulation strategies. For example, a combination of two self-regulation strategies—e.g., biofeedback and autogenic training, has become common practice. However, in order to combine meditation with another technique in a sophisticated rather than a haphazard way, we need to develop expertise about what meditation is (see components, Chapter Eight), as well as how it compares with other self-regulation strategies.

Meditation has been compared on a descriptive level with several different self-regulation strategies—hypnosis (Davidson &

*Except, of course, for those to whom this is a component responsible for its success!