


Methodological Issues in Meditation Research: An Applied Clinical Model

10.1 Introduction

 MEDITATION, if it is to be considered an empirically effective clinical strategy, needs to be subjected to the same scientific scrutiny as any other psychotherapeutic strategy. Further, it should be apparent from the methodological issues raised throughout the book that many of the research concerns with meditation are similar to those encountered in psychotherapeutic outcome studies. This summary attempts to suggest ways of tightening future research in order to ensure more clinically reliable and valid results.

This summary discussion is guided by the question with which we opened the book and with which we have been concerned throughout, "What effect does the teaching of meditation have on a person who practices, and why?"

In order to answer this question, it has been necessary to look separately at each of the key words in the sentence. In Chapters Five and Seven we reviewed the empirical literature on the *effects* of meditation, both as a self-regulation strategy and

as an altered state of consciousness. In Chapter One we noted the importance of the *teaching*, including the therapist's orientation, expectations, belief in the efficacy of the strategy, style of teaching, and relationship variables. In Chapter One and in more detail in Chapter Eight, we discussed the question of what is *meditation*, and what are its components. In Chapter One we explored the issue of the *individual* (or client) who might most benefit from meditation as well as the importance of *practice* or adherence to the technique. Finally, in Chapter Nine, we reviewed difference meditating mechanisms which might help answer the question, *why* does meditation work?

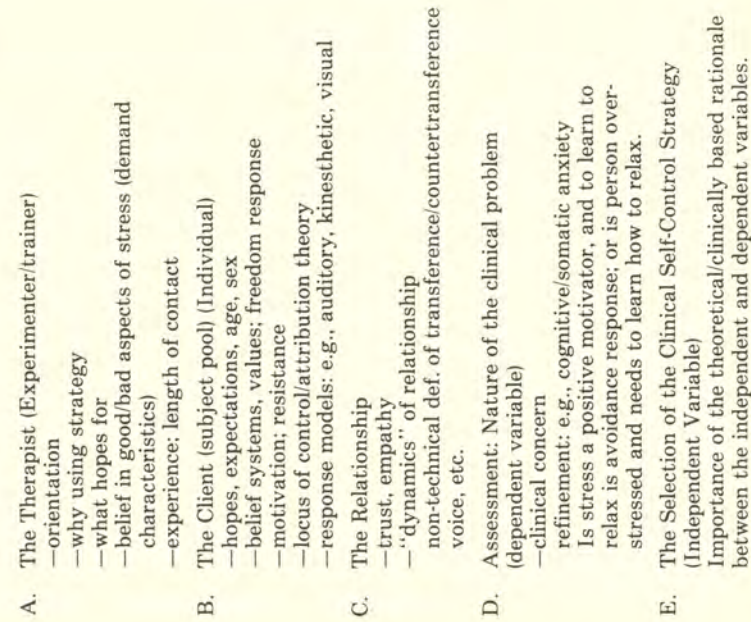
10.2 An Interactive, Omnideterministic Model

WE HAVE DEALT with each of the above issues separately. However, this was only a function of the linear style in which a book is written, and was not intended to imply a lack of interaction between variables. In fact, as suggested in Chapters Eight and Nine, quite the opposite is true. Following general systems theory, I believe in an omni-deterministic model in which each part can and often does interact and effect all other parts. Figure 10.1 presents a general interaction model of therapy in the form of a modified flow chart.

The model is interactive in that therapist and client styles, personalities and belief systems form the basis for not only the relationship, but also such issues as what the clinical concern is, how best to deal with it, whether treatment has been successful, etc. This is not intended to imply a position asserting the client's essential equality of therapeutic knowledge, or to be an abrogation of the therapist's responsibility. However, it is intended to suggest the essential interactive nature of the process and to acknowledge that the client also has a view of the problem, has a certain style and belief system which need to be considered in the teaching process.

The model is represented by a flow chart. For example, when evaluation is made and there is not "treatment success," a reevaluation at all stages may be necessary: is this the most salient concern, the most effective strategy, the best way of teaching this strategy to this particular client? is our relationship facilitating or hindering therapy, and so on?

FIGURE 10.1
An Interactive Systems Theory Model for Utilizing Meditation as a Self-Control Technique in the Management of a Clinical Problem, such as Stress.



In this model, I am conceptualizing meditation as a self-regulation strategy and discussing its implications for the clinical problem of stress. I choose this example because it is one which has wide applicability to most clinicians. However, as we have noted throughout the book, I could have as easily labeled the chart, "A Model for Utilizing an Altered State of Consciousness Technique—Meditation—for the Attainment of Spiritual Harmony." Although the terms may be harder to define in the latter example, the model is no less applicable.

In fact, one of the primary weaknesses in meditation studies thus far has been the lack of a clear theoretical rationale linking the independent variable and the selection of the dependent variable. Future research should attempt to clarify precisely the theoretical rationale connecting the independent and dependent variables. This relationship should be the foundation of a proposed research design, not an afterthought; and it should make future researchers decide whether they are conceptualizing meditation as a self-regulation strategy, or as an altered state of consciousness (cf. E in Figure 10.1).

Further, careful consideration should be given to the nature of the independent variable. It is crucial that experimenters report accurately all procedures used. In this way meditation techniques are described behaviorally, and may be compared for clinical efficacy with other cognitive focusing, relaxation, and self-regulatory strategies.

Second, clinician/experimenter orientation and contact should be more precisely described as part of the treatment (A in Figure 10.1). This description should include both length and frequency of contact, and if possible, the actual monitoring of positive verbal and non-verbal statements the experimenter makes to the client. This monitoring of differential reinforcement of client behavior may give experimenters a method of operationalizing one aspect of the concept of demand characteristics (F in Figure 10.1). Demand characteristics are an important part of any therapeutic treatment strategy in a clinical or educational setting. Therefore, rather than reducing demand characteristics by the use of a tape recorder or some mechanical means of training, I would suggest, at least initially, that these demand characteristics be explicitly stated and maximized for clinical success.

Third, experimenters should try to standardize expectation effects. Although the media and cultural milieu cannot be con-

trolled, standard written introductory expectations could be read to all groups participating in the experiment (Barlow, Leitenberg & Agras, 1969; Nidich, Seeman & Dreskin, 1973). In this way, there can be a systematic effort to take subjects' expectations into account as part of the treatment variable (Smith, 1975) (B in Figure 10.1). For example, in certain studies (Smith, 1976; Lesh, 1970), as well as in the introductory and preparatory lectures of TM, the expectation effect is maximized by explicitly stating the benefits of the treatments. In addition, other nonspecific effects, such as a) being in a structured treatment/training framework, or b) the need to reorganize and replan one's life in order to find the time to practice meditation two times a day may also be factors in the therapeutic efficacy of the techniques (McFall & Hammen, 1971). When the technique involves practice at home, the experimenter should make a concerted effort to determine how much the subjects have in fact practiced. This "practice effect" should be reported as part of the intervention (F in Figure 10.1).

Fourth, it may be important to evaluate the quality of the meditation experience. For example, how do we know that the subjects have meditated rather than just sat? How do we know which subjects have learned to focus attention effectively? Vahia et al. (1972, 1973) for example noted that psychoneurotic patients with psychosomatic disorders showed significantly more improvement depending on their differential ability to concentrate. Possible methods for concurrent validity of the meditation experience are suggested by the perceptual studies (Pelletier, 1974), by physiological criteria (Griffith, 1974; Davidson, 1976; Honsberger & Wilson, 1973), and/or rater coding of subjective responses (Maupin, 1965; Deikman, 1966).

Fifth, it may be important to look at the length of treatment. This would also include time per day. Is there an optimal maximum amount of time per day? Can one practice too much (French, Schmid & Ingalls, 1975)? What is the relationship between length of experience and effectiveness (Benson & Wallace, 1972; Shafii, Lavelly, & Jaffe, 1975; Otis, 1974). Recent studies, for example, suggest that the effectiveness of meditation as a treatment depends on both steady and prolonged practice of the technique (Lazar et al., 1977, Marcus, 1975).

In summary, future research should also continue to pinpoint answers to the following questions about the independent variable: what are the inert and what are the active variables of

the treatment strategy: attention focusing, muscular relaxation, just sitting with eyes closed? What is the role of the demand characteristics? What are the effects of subject's motivation, expectation; therapist's expectation; the structured "non-specific" variables of the research design itself? Insofar as we can begin to specify precisely the above aspects of the independent variable, appropriate research designs may be undertaken, and the answers to the variance of treatment success attributable to various aspects of the independent variable may be determined.

It should be emphasized, however, that from a clinical standpoint, the above questions are of secondary importance. Questions of primary importance include the following: for which clinical populations, under what conditions, for what clinical problems, are what meditation treatments effective?

In order to answer these questions, a few additional comments about subject selection, data gathering and research design are in order. Although standard scientific procedures do not need to be reiterated here, some caveats particular to meditation research may be useful. Regarding subject selection, in addition to subject motivation, expectations, commitment and history of prior meditation, it is important to obtain detailed information about subject's prior clinical history (B in Figure 10.1). For example, Girodo, in his study of anxiety neurosis, found that Yoga treatment was effective only for those with a short prior history (average 14.2 months), and that those with a longer history of illness (average 44.2 months) achieved successful remission of symptoms only with the addition of imaginal flooding (Girodo, 1974). Prior length and severity of illness may also be important in determining the effectiveness of meditation with related problems such as hypertension, insomnia, and asthma.

Subject's prior clinical history may also be important as a means of screening patients to determine their appropriateness for learning meditation. For example, psychotic patients with strong paranoid systems or a poor sense of reality testing may not be appropriate subjects. Further, people experiencing acute anxiety and trauma may be overwhelmed with the emotionally charged material that might present itself during meditation (Patel, 1975). To deal with any "overwhelming" emotional reactions that may develop in their patients, Glueck and Stroebel (1975) had experienced teachers check the patient's meditation

process on a daily basis during the first three weeks. They note, as did French et al., (1975) that overt psychotic episodes may be precipitated in individuals with psychiatric disorders who meditate more than the prescribed twenty minutes twice a day. This has been refined by Walsh and Rauch (1979) who note that intensive meditation by individuals with a history of schizophrenia may precipitate psychotic episodes.

Future research should also investigate differences between subjects who begin meditation, and those who do not (Lesh, 1970; Stek & Bass, 1973), as well as differences between those who continue meditation and those who quit. Finally, the relationship between sex of subject and treatment outcome has not, to my knowledge, been explicitly addressed and needs to be.

Regarding data-gathering strategies, future research should attempt to corroborate self-report data with other overt behavior or physiological measures. This should involve the issue of how self-report measures on global paper and pencil tests translate into actual behavior in the patient's life. Clinically oriented studies are also needed to determine whether statistical significance on a pre-post test, for example anxiety, is of clinical significance to the patient (Lykken, 1968).

In addition, future research also needs to pinpoint the nature of the clinical problem as precisely as possible (D in Figure 10.1). For example, Davidson and Schwartz (1976) suggest that there are actually differences between the technique of meditation and other self-regulation techniques, and that it is "the imprecise" measuring of the dependent variable that is lumping the results together. The one study to test this (Schwartz et al., 1978) gave a group of meditators and a group of individuals who exercised an anxiety questionnaire involving both somatic and cognitive components. Subjects who practiced physical exercise reported relatively less somatic and more cognitive anxiety than meditators. Meditators, conversely, reported less cognitive and more somatic anxiety than the exercisers. This study suggests the potential clinical promise of refinement of dependent variables. However, since the study was not a longitudinal design, the results are somewhat difficult to interpret definitively. If further research bears out this hypothesis, however, matching meditation technique to "cognitively anxious" people, exercise to "somatically anxious" people has clear clinical relevance.

Future research may also attempt to combine the independent variable of meditation with other self-regulation strategies (e.g., Woolfolk, 1980 in press; Shapiro, 1978b) to make it a more powerful clinical intervention (Chapter Six). For example, in a well-designed N=1 study, Woolfolk found that formal meditation plus "short" meditations made contingent upon recognizing anger appeared to be more effective than formal meditation alone. Again, these results, though promising, await further replication.

In general, we are developing a literature on subject (client) variables, dependent variables, and their interaction with meditation. This literature should help us choose the intervention best suited to a particular patient and where appropriate, develop refinements and/or combination of treatment interventions.

Future research also needs to be sensitive to the type of research design (G in Figure 10.1). When meditation is conceptualized as a self-regulation strategy for anxiety reduction, stress and tension management, or reduction of fears and phobias as in Chapter Five certain research methodologies are necessary. To support its effectiveness as a treatment of choice, control-group designs involving other self-regulatory strategies need to be employed (Smith, 1975; Goleman & Schwartz, 1976; Woolfolk et al., 1976). These control group designs should address questions of if, how, and to what extent does the state of relaxation during meditation generalize to non-meditating times? Is meditation as effective as other self-regulation techniques such as Progressive Relaxation in the management of stress and tension? or as effective as systematic desensitization in the reduction of fears and phobias? (Kirsch & Henry, 1979). Additional studies may then be necessary to determine relative variance of the different components of meditation as in Chapter Eight: the use of mantra (Smith, 1976); the role of expectations (Smith, 1976; Hjelle, 1974; Malec and Sippelle, 1978). Other studies will also need to try to determine what may be mediating aspects of meditation's effects: muscular relaxation, just-sitting, reciprocal inhibition, cognitive refocusing, interruption of the threat-arousal-threat spiral and so on, as discussed in Chapter Nine.

These "control" group designs must face the difficult task of determining what, in fact, is a control group. Although investigators have utilized as a control group "just sitting," saying "one," "thinking positive thoughts," each of these, to a

greater or lesser extent, may involve "conscious effort to focus attention," which was part of our Chapter One definition of what meditation is! Even the second part of the definition "in a non-analytical manner and an attempt to reduce ruminating thought" implicitly acknowledges that in the initial stages thought does occur, so some overlap would occur with a control group which was to actively generate thoughts. Perhaps a control group doing crossword puzzles or mathematical games which involved continuous active analysis, would be suitable. Although there would be conscious attempts to focus attention in these groups, the awareness would be of a different type, and the implicit instructions for the use of analysis would be the opposite of meditation.

When meditation is conceptualized as an altered state of consciousness (Chapter Seven), a different research methodology may be necessary. As Tart has pointed out, there is a need for detailed mapping of internal states of consciousness. However, since these internal states are subjective phenomena, it may be quite helpful if the subject is also the experimenter. This raises several methodological problems, including experimenter bias and reactive effects of observation (Tart, 1972). For mapping the subjective experiences of altered states, well documented intensive research designs seem necessary.* This is especially true until we have more accurate knowledge about the dependent variables associated with altered states. In addition, we need to continue to search for physiological correlates of these "altered states," such as the promising literature on hemispheric laterality (Davidson, 1976).

Finally, in researching states of consciousness, it is important to decide whether consciousness is viewed as an independent or dependent variable. In other words, is the researcher interested in looking at how meditation techniques produce different states of consciousness (dependent variable), or how altered states of consciousness (independent variable) affects subsequent self-referential attitudes and/or behavior?

*Dukes, 1965; Lachenmeyer, 1970; Gottmann, McFall, & Barnett, 1969; Chassan & Bellak, 1966; Mitchell, 1969; Thoresen, 1972; Yates, 1970; Honig, 1966; Sidman, 1960; White, 1972; White, 1971.

10.3 Comments on the Philosophy of Science

THE ABOVE DISCUSSION on research design suggests an interesting observation: that the philosophy of science necessitates a two-step process. The first step involves forming intuitive hypotheses based on past data, anecdotal reports, and subjective experiences as are most clearly seen in the early clinical studies and with the research on subjective experiences during meditation. These studies are almost exclusively case studies involving within-subject designs. These case studies may cause us to rethink our models and pose questions which challenge our theoretical constructs. They help us gain specific information about the independent variable, possible dependent variables, data gathering strategies, and possible methodological problems.

The second step in the process involves control-group designs to determine treatment variance within the independent variable: expectation effects, nonspecific variables, demand characteristics, etc. Although I believe strongly in the importance of control procedures, I also believe that there are limitations to control group designs in which clinical inferences are based only on statistical significance of group averages as measured by pre- and post-tests. Further, even when control group designs are necessary for pinpointing variance of treatment success, it is important to point out that we can only take this posture because case studies and the testing of intuitive hypotheses were previously undertaken. One cannot have a tight, well controlled research design without a clear dependent variable. The connection between the independent and dependent variable, however, is part of the simultaneous process of theory testing and theory building, and does not spring forth without some prior hypothesis testing.

We may now be at a point in meditation research where, when meditation is conceptualized as a self-regulation strategy, control group designs are useful and even necessary. However, when meditation is conceptualized as an altered state of consciousness, a different methodology may be required. The dependent variables are not as clear, are more delicate, more difficult to ferret out. Therefore, there may still be a need to use well documented intensive designs to gain specific information about the dependent variables, data gathering strategies, and possible methodological problems.

Future researchers need to clarify which dependent variables are being investigated and then determine appropriate methodologies. Both types of methodologies—intensive design and control group designs—can represent scientific inquiry at its best. Both can complement each other and add to our knowledge, so that science truly serves the promotion of human welfare.

10.4 Summary

FUTURE CLINICALLY oriented research needs to include precise descriptions of the independent variable; control for expectation effects and subject motivation; and where clinically appropriate, demand characteristics; exercise care in subject selection and specification of the dependent variable; provide a rationale connecting dependent and independent variables; utilize data-gathering strategies that provide precise information and, where possible, concurrent validity and follow-up data; and finally, emphasize research designs appropriate to the dependent variable investigated.

Because of the excitement and aura of mystery currently surrounding the technique of meditation, there is a tendency to let enthusiasm replace methodology. However, by taking into account the methodological concerns above, it is possible to design clinically oriented research studies that provide relevant information about the efficacy of different types of meditation strategies for specific types of populations with specific concerns. This is the type of research that can truly be of use to fellow researchers, clinicians, and ultimately to patients themselves.