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AN INVESTIGATION OF A ZEN MEDITATION PROCEDURE
AND ITS EFFECT ON SELECTED PERSONALITY
AND PSYCHOTHERAPEUTIC VARIABLES

DISSERTATION

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The purpose of the investigation was to determine the effectiveness of Zen meditation practice in facilitating positive change on the personality variables time competence, inner direction, locus of control, and field independence, as well as to investigate the subjective experiences of novice meditators.

Two population groups were included in the study: a student group and a clinical group. The student-population group consisted of forty-six undergraduate college students. The student subjects were randomly assigned to one of three groups: experimental group (Zen meditation group taught to focus attention on the breath, as well as a formal Zen posture), placebo group (formal Zen posture only), or control group (no treatment). The clinical-population group consisted of thirty-seven in-patient volunteers from the alcoholic-drug unit of a psychiatric state hospital. The clinical subjects were randomly assigned to either an experimental group (Zen meditation group which practiced focused attention on the breath, as well as a formal Zen meditation

posture) or a control group (no treatment).

Pretests and posttests were given to all groups on the Personal Orientation Inventory and Rotter's Internal-External Locus of Control Scale. A posttest measure of Witkin's Embedded Figure Test was administered to the clinical group only. The student-population experimental and placebo groups practiced as a group for thirty minutes on alternate days, two days a week for eight weeks. The clinical experimental group met as a group each weekday for half an hour for five weeks. All subjects answered a questionnaire after each session designed to investigate their covert experiences while practicing the procedure.

Analysis of covariance data indicated no treatment effect for the three personality variables: time-competence, inner-direction, and locus of control. However, t-test data did reveal a significant effect at the .05 level of significance on the field-independence measure for the clinical experimental group. Analysis of the questionnaire data revealed significant meditation-specific changes for individuals in both experimental groups but not for the placebo (posture only) group individuals.

TABLE OF CONTENTS

	Page
LIST OF TABLES	
Chapter	
I. INTRODUCTION	1
Statement of the Problem	
Purpose of the Study	
Hypotheses	
Definitions of Terms	
Background and Significance	
Delimitations	
Basic Assumptions	
II. REVIEW OF THE LITERATURE	22
History and Development of Zen in American Psychology	
Physiological Effects of Zazen and Other Meditation Procedures	
Psychological Effects of Zen and Other Meditation Procedures	
Other Related Literature	
III. METHODS AND PROCEDURES	106
Description of Subjects	
Instrumentation	
Self-Monitoring Questionnaire (Appendix H)	
Procedure for Collecting Data	
Rotation of Leaders	
Treatment of Data	
IV. RESULTS AND DISCUSSION	133
Results	
Discussion	
V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	163
Summary	
Conclusions	
Recommendations	

TABLE OF CONTENTS (continued)

	Page
APPENDIXES	173
A. Personal Data Questionnaire	
B. Personal Commitment Contract	
C. Personal Commitment Contract	
D. Consent for Release of Records	
E. Instructions for Zen Meditation Group, Student Population	
F. Instructions for Zazen Posture-Only Group, Student Population	
G. Instructions for Zen Meditation Group, Clinical Population	
H. Self-Monitoring Questionnaire	
I. Introductory Lecture, Clinical Population Group	
J. Student Recruitment Statement	
K. Transcription of Comments on Self- Monitoring Questionnaire	
BIBLIOGRAPHY	223

LIST OF TABLES

Table	Page
I. Means and Standard Deviations on the <u>Personal Orientation Inventory</u> Time-Competence Scores (Student Population Groups)	134
II. Analysis of Covariance Data for T-C Scores on the <u>Personal Orientation Inventory</u> (Student Population Groups)	135
III. Means and Standard Deviations for <u>Personal Orientation Inventory</u> Time-Competence Scores (Student Population Groups)	136
IV. Analysis of Covariance Data for I-D Scores on the <u>Personal Orientation Inventory</u> (Student Population Groups)	137
V. Means and Standard Deviations for <u>Internal-External Locus of Control Scale</u> Scores (Student Population Groups)	138
VI. Analysis of Covariance Data for Scores on the <u>Internal-External Locus of Control Scale</u> (Student Population Groups)	139
VII. Means and Standard Deviations for <u>Personal Orientation Inventory</u> Time-Competence Scores (Clinical Population Groups)	140
VIII. Analysis of Covariance Data for T-C Scores on the <u>Personal Orientation Inventory</u> (Clinical Population Groups)	140
IX. Means and Standard Deviations for <u>Personal Orientation Inventory</u> Inner-Direction Scores (Clinical Population Groups)	141
X. Analysis of Covariance Data for I-D Scores on the <u>Personal Orientation Inventory</u> (Clinical Population Groups)	142
XI. Means and Standard deviations for <u>Internal-External Locus of Control Scale</u> (Clinical Population Groups)	143

LIST OF TABLES (continued)

Table	Page
XII. Analysis of Covariance Data for <u>Internal-External Locus of Control Scale</u> (Clinical Population Groups)	144
XIII. Means and Standard Deviations on the <u>Embedded Figures Test</u> (Clinical Population Group)	144
XIV. One-Tailed t-Test Data for <u>Embedded Figures Test</u> (Clinical Population Group)	145

CHAPTER I

INTRODUCTION

An individual who seeks relief from psychological trauma, pain or stress may turn to any of several broad areas of discipline, such as the medical profession, religion, philosophy, or psychology. These disciplines all have a broad common goal, although it may be expressed in different terminologies: to help the individual realize a meaningful, more satisfying existence (5, 10, 32, 37). The pressures of our highly technological age and the resultant environmental stress and alienation of individuals make it seem reasonable, if not imperative, that all avenues of psychological relief be explored (10, 15).

There has been some effort to integrate these disciplines, and of particular interest in the present study is the further investigation of Zen Buddhist philosophy and its application to Western psychology. Several prominent psychologists and psychiatrists, most notably Carl Jung (18, 19) and Eric Fromm (10, 11), have studied and applied this ancient Eastern philosophy to their understanding of man, including his present alienation and unrealized potentialities. Other psychotherapists such as Deane Shapiro (41, 42, 43, 44) and Richard Schuster (37) are beginning to

explore the practical application of the Zen procedure of formal meditation (zazen).

Although exploration of such a subjective and unorthodox system as Zen seems exceedingly difficult to the Western, analytical, scientific mind (32), many psychologists and psychiatrists (5, 8, 43, 50) and the American Psychiatric Society (51) are urging further exploration and further research into Eastern psychologies and their possible application to Western psychology. P. Carrington (6, 7), Robert Ornstein (31), S. Chang (8), D. Goleman (13), Robert Walsh (42), and Deane Shapiro (41, 42, 43, 44) are presently actively engaged in the study of Zen and other Eastern psychologies and the implications for consciousness and behavioral change associated with the practice of these disciplines. Ornstein, in his book Psychology of Consciousness, discusses the intriguing possibilities of such study:

We are now for the first time in a position to begin seriously dealing with a psychology which can: speak of a "transcendence" of time as we know it; encompass a rational mentation; use exercises for control of the "autonomic" nervous system; develop techniques for entering a state of "void" or "no mind" and employ procedures for inducing communication which is "para-normal" according to our ordinary conception of what is possible for man. (31, p. 96)

Throughout its history the practice of Zen has been espoused as a road or path towards self-realization, ecstasy, or freedom from human pain and suffering (24). Although philosophical inquiry as to the therapeutic value and potential of Zen has been extensive, experimental investigation

of psychological change associated with Zen practice is a recent occurrence (41).

The attempt to isolate, for purposes of research, psychological changes associated with the practice of a Zen meditation procedure seems to be an appropriate starting point for scientific investigation.

Statement of the Problem

This study investigated the effect of a Zen meditation procedure (zazen) on selected personality and psychotherapeutic variables.

Purpose of the Study

The purposes of this study were

1. To determine the effect of a Zen meditation procedure (zazen) on the following personality variables:
 - A. time-competence--extent to which the individual is present or past and future orientated (experiences present reality)
 - B. inner-direction--extent to which the individual is guided by an internal valuing system (independent from external pressures) or other directed (dependent on external support)
 - C. internal vs. external locus of control--extent to which the individual feels in control of his life (internal) rather than luck or chance (external) forces

- D. field independence vs. field dependence--extent to which the individual is able to concentrate on relevant stimuli to the exclusion of irrelevant stimuli
2. To determine whether the Zen meditation procedure (zazen) of concentrating or focusing attention on the breath is the important variable in producing meditation effects rather than posture alone;
 3. To investigate the subjective, inner experience of the meditator during zazen, including changes in (and kinds of) emotional states, thoughts and bodily sensations;
 4. To add to the body of knowledge of the effects of meditation practice. If the results of the study are favorable, they will suggest a useful technique for counselors and psychotherapists.

Hypotheses

This study tested the following set of hypotheses.

I. Following the treatment period, individuals in the student population experimental group will exhibit significantly greater positive change than individuals in the placebo group and the control group with respect to the following dependent variables:

- A. time-competence--fewer thoughts about the past or future, more present oriented, as measured by the Personal Orientation Inventory

- B. inner-direction--a more internal valuing system as measured by the Personal Orientation Inventory
- C. locus of control--a more internal perception of locus of control as measured by Rotter's Internal vs. External Locus of Control Scale

II. Following the treatment period, individuals in the clinical population experimental group will exhibit significantly greater positive change than individuals in the control group with respect to the following dependent variables:

- A. time-competence--fewer thoughts about the past or future, more present oriented, as measured by the Personal Orientation Inventory.
- B. inner-direction--a more internal valuing system as measured by the Personal Orientation Inventory
- C. locus of control--a more internal perception of locus of control as measured by Rotter's Internal vs. External Locus of Control Scale
- D. field independence vs. field dependence--a more field independent orientation as measured by Witkin's Embedded Figures Test

Definition of Terms

1. Zen Meditation or zazen, as used in this study, refers to the practice of contemplation and focused attention on the breath, to the exclusion of evaluative thinking, as well as a formal seated posture.

2. Zen, as used in this study, is defined as "An abbreviation of the Japanese word 'zenna,' the process of concentration and absorption by which the mind is tranquilized and brought to 'one-pointedness.' As a Mahayana Buddhist sect, Zen is a religious spiritual ritual whose teachings and disciplines are directed toward self-realization" (20, p. 351).

3. Focused attention or one-pointedness, as used in this study, refers to concentration on inhalation and exhalation of the breath during meditation so that all evaluative and discriminative thoughts cease to exist (43).

4. Satori, enlightenment or self-realization, as used in this study, is defined by Suzuki as

an intuitive looking into the nature of things in contradistinction to the analytical or logical understanding of it. Practically, it means the unfolding of a new world hitherto unperceived in the confusion of a dualistically trained mind. Or we may say that with satori our entire surroundings are viewed from quite an unexpected angle of perception. . . . Satori can be had only through our once personally experiencing it. (2, p. 84)

The chief characteristics of satori, presented by Suzuki (2), are as follows:

- 1) irrationality
- 2) intuitive insight
- 3) authoritativeness
- 4) affirmation
- 5) sense of beyond
- 6) impersonal tone

7) feeling of exaltation

8) momentariness--an abrupt experience opening up in one moment

5. Personality, as used in this study, is defined by Allport as ". . . the dynamic organization within the individual of those psychophysical systems that determine his characteristic behavior and thought" (14, p. 5).

6. Internal-external locus of control, as used in this study, refers to an individual's "generalized expectancies" (35) concerning the locus of thought and behavior determinants. That is, whether or not the individual follows internalized values and choice or is motivated externally by environment or social influences.

7. Time-competence, as used in this study, refers to the extent to which an individual is present orientated (experiences reality more in the here and now).

8. Inner-direction, as used in this study, refers to the extent to which an individual is guided by an internal valuing system rather than responding primarily to external pressures.

9. Field independence, as used in this study, refers to an ability to ignore irrelevant stimulus background so that there is increased ability to concentrate on relevant stimuli. Perception is, therefore, "fresher" or less habitual (26).

10. Field dependence, as used in this study, refers to the opposite mode of perceiving from field independence. There is submission to the influence of field, or all stimuli, so that there is inability to keep an item separate from its surroundings (54).

11. Experimental group, as used in this study, designated those individuals who received zazen training as defined above.

12. Placebo group, as used in this study, designated those individuals who received training in zazen posture only.

13. Control group, as used in this study, designated those individuals who received no training.

Background and Significance

Parallels Between East-West Psychology

Since the early 1930's much has been written about the psychotherapeutic value of Zen. Several prominent psychological theorists have drawn parallels between Zen and various psychological concepts. Erich Fromm and Carl Jung were outspoken in their interest in the Zen Buddhist's philosophy and similarities in psychoanalytic theory and practice (5, 11, 19). Fromm equated the Zen goal of enlightenment or satori to the psychoanalytic goals of "making the unconscious, conscious," and "overcoming the subject-object split in perceiving the world" (10, 11). Parallels between

Zen and other psychological theorists, mainly those of William James, Rollo May, R. D. Laing, Carl Rogers and Abraham Maslow, have been presented in the literature (1, 3, 17, 28, 30, 32).

The bridge between Eastern (in this case, Zen) and Western psychology has been further widened by more recent investigations of the meditation process (8, 13, 27, 41, 53). The Zen process of clearing one's mind through meditation has been compared to the control of unconscious thought processes which help to free the individual from early maladaptive behaviors (38). Chang (8) and Goleman (13) equate the results of the meditation process to a therapeutic freeing from past conditioning. The individual, it seems, is no longer as controlled by past conditioning or unconscious processes but functions more fully in a present orientation. Thus, in meditation, according to Goleman (13), a set of healthy mental processes can inhibit an unhealthy set:

In the process of acquiring meditative skills, the meditator seems to reprogram basic patterns of perception and cognition. For example, in developing either meditative concentration or mindfulness, it is essential to inhibit the "unhealthy" factors, all of which produce distractibility. As inhibition of unhealthy factors is inculcated, healthy ones are elicited: meditation entails a simultaneous unlearning of old perceptual/cognitive habits and acquisition of new ones. To the degree that this new pattern becomes an enduring trait, the meditator undergoes a fundamental transformation of his experience of himself and of the world. (13, p. 45)

This focusing of attention on the immediate experience, rather than the past or future, seems to be the essence of Zen practice as well as existential phenomenological psychotherapies for inducing freedom from conditioned psychological trauma (17, 24). This emphasis on the "here and now" quality of existence and the organism's self-regulatory capacity are also characteristic of humanistic, gestalt, and psychoanalytic (existential and Jungian based) therapies as well as Zen (17, 21, 23, 29, 31, 36, 37).

Self Transformation

Perhaps a further review of the changes which are purported to occur with the practice of Zen meditation will be helpful at this point. First of all a total transformation of self, according to Zen authorities (37, 48), is the ultimate change. This transformation of self, through zazen, allows the meditator to experience the "true self," which in Zen is said to go beyond knowledge of the Jungian concept of "collective unconscious" (19), or Freudian "unconscious" and, according to Suzuki (47), leads to a new viewpoint, a "general mental upheaval which destroys the old accumulations of intellection; the awakening of a new sense which will review the old things from a hitherto undreamed-of angle of observation" (2, p. 96). Therefore, it seems the goal of Zen is a complete consciousness change, so that after

obtaining "satori" or "enlightenment" the individual's world is different and yet the same (48).

Sasaki Roshi, a Japanese Zen Master (33), views the two selves in this way: the limited or learned self, the illusory self, is the self studied in psychology and is the self which acquires various forms of neuroses and psychoses, while the "true self" is present at birth and in small children and is lost through life experiences, primarily through interaction with parents and societal conditioning, and can be reexperienced through meditation (34). This "true self," or Buddha or "God self," is not fixed or limited and experiences no separation or subject-object split. The "true self" is complete love and at peace with the individual's existence and the universe. As the Zen student's practice matures and the "true self" is experienced more consistently in everyday situations, the individual's personality is changed to a state of "no personality"; a state of complete harmony or flow of consciousness, so that there is a balance between feeling and knowing and complete spontaneity of appropriate behavior to fit the situation (34). The individual is no longer "trying" to be but "is," responding totally to the immediacy of the situation.

Formal and Informal Meditation

The vehicle or path towards obtaining satori, or realization of "true self," as indicated previously, for the Zen

practitioner is meditation. Zen meditation is of two types, the first being formal meditation (zazen), and the type of meditation being studied experimentally in the present investigation, and the second being a mindfulness meditation which involves a focusing of attention on the immediate, "here and now" situation (8, 9). Both procedures overlap, however. Formal meditation allows a minimum of distraction and maximum of concentration, so that the preconditioned self may more readily emerge to consciousness. Once this change of consciousness is experienced in formal meditation (zazen) one may more readily experience the new consciousness state, with the help of the attitude of mindfulness or "right attitude" (48, 50) in situations where distractions are plentiful (everyday existence) (8, 50).

So, meditation becomes a way of life for the Zen practitioner and a way of being, rather than a technique to briefly change one's consciousness, as in hypnosis or similar trance state, and then back to so-called "reality" (48). Ultimately, according to Suzuki (48) and others (49, 50), the consciousness change becomes complete, there being no difference in consciousness experienced in formal meditation and consciousness experienced while being engaged in everyday activities. Furthermore, when this consciousness change is complete there is no longer any need to focus attention or concentrate, these being merely techniques to arrive at the meditative state of "no self" (52).

Significance of the Study

It is unclear what the effect of formal meditation, alone, will have on a given individual without the attitudinal association most Zen students have towards their meditation practice. However, Zen scholars are the first to point out that it is not the philosophical understanding of Zen which is of most importance but the experience of "true nature" or "no self" during zazen (32, 48). Zen is first and foremost experiential and non-verbal, and recognizes the positive potential in every human being. It is with this understanding that psychotherapists (5, 26, 27, 41) are beginning to study Zen meditation and use it in isolation from an explanation of its origin and philosophy with their patients. The claims of psychological and physical benefit from meditation practice in general cannot be ignored, as Tart (50) has pointed out, by the psychological community merely because its roots are of a religious and philosophical nature. These claims include improved self-concept, increased spontaneity, increased creativity, increased feelings of well-being, reduced anxiety, increased ability to function in the "here and now," more internal orientation to life, increased openness to experience, lowering of blood pressure, increased oxygen supply, improved body image and reduced drug consumption with the practice of meditation (13, 15, 16, 22, 25, 27, 39, 40). These reported changes, as pointed out in the literature and reviewed

in this paper, are similar to changes that occur during successful psychotherapy (8, 10, 13, 38).

What kinds of experiences and changes in consciousness does a novice encounter during a relatively short period of time practicing a formal Zen meditation procedure? Does this meditation procedure produce psychological change? Does material submerge during or as a result of the meditation procedure which can be used in psychotherapy? Can people with severe psychological problems (in this study, symptoms being revealed in the form of drug abuse) find meditation helpful? What part, if any, does meditative posture and expectation for relief play in producing positive results? These are important questions being discussed in present literature pertaining to Zen meditation as well as other meditation procedures (4, 5, 26, 41, 46, 49). This study, with the addition of needed sound research, may contribute partial answers to these questions and point to the possible use of the formal Zen meditation procedure (zazen) by helping professionals.

Delimitations

The delimitations of this study are as follows.

1. Two populations were used for this study. The subjects in the student population were screened volunteers from freshman and sophomore undergraduate psychology and sociology classes. No subjects were included in this group who were currently practicing meditators, or involved in

group or individual counseling or therapy. The second, clinical population, was limited to those volunteers screened from an alcoholic and drug inpatient group in a state psychiatric mental institution. Subjects in this group were screened to exclude individuals exhibiting active psychotic symptoms or organic mental dysfunction (as indicated by initial psychiatric evaluation by staff psychologist) and to exclude practicing meditators.

2. The study included a limited number of personality variables. Those variables investigated were chosen because of their relationship to previously reported changes occurring with Zen meditation practice and because there are measures available for each of these variables.

3. This study did not focus on the study of the religious or philosophical aspects of Zen Buddhism, except when necessary to explain background and significance of the study. The process of Zen meditation and the psychological changes associated with its practice were of primary importance.

Basic Assumptions

The Personal Orientation Inventory, the Internal vs. External Locus of Control Scale and the Embedded Figures Test were assumed to be valid measurement indexes for the purpose of this study. It was assumed that the subjects would respond honestly to the instruments used to measure

personality change and would honor the signed contract of personal commitment. It was further assumed that individuals would practice the meditation procedure in the manner explained by the instructor for the required time period.

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CHAPTER II

REVIEW OF THE LITERATURE

In a review of the literature presented in 1975, Woolfolk (110) cites only fifteen experimental studies done between 1960 and 1975 utilizing an adequate or better research design. All of these studies investigated physiological changes only associated with the practice of meditation, including yogic, transcendental meditation and Zen. In an earlier review of the literature, Lesh (58) cites 109 references between 1948 and 1967 with almost a complete lack of experimentally designed studies. In a more recent review Shapiro (86) offers a critique of meditation studies dealing with psychotherapeutic effects, including altered states of consciousness. A further review published in 1982 (84) compares the physiological and clinical meditation studies with other self-control methods. In these reviews, Shapiro consistently points out methodological problems and suggests ways to tighten future research. These reviews indicate a shift of interest in dealing with the subject of meditation to one of scientific inquiry as well as philosophical inquiry. At any rate, there seems to be a continued interest in meditation, its effects, and possibilities for enhancing psychological and physiological well-being by the growing volume of literature cited in this review.

The review of the literature relevant to the present investigation is presented in five sections: Those references dealing with the (1) History and Development of Zen in American Psychology, (2) Physiological Effects of Zazen and Other Meditation Procedures, (3) Psychological Effects of Zazen and Other Meditation Procedures, (4) Application of Meditation Practice, (5) Other Related Literature.

History and Development of Zen in American Psychology

D. T. Suzuki (5, 95) is perhaps the most renowned and earliest Japanese Zen scholar who attempted to explain Zen thought to Western minds. He is the author of several books and papers presented to the Western reader, including the psychological community. He collaborated with Erich Fromm (31) on a work attempting to synthesize Zen Buddhism and psychoanalysis. Other books offer an introduction to Zen concepts. His book, Introduction to Zen Buddhism (95), gives an overview of the history of Zen and the basic concepts involved in Zen, including enlightenment or satori.

Erich Fromm and Carl Jung were the most outspoken early enthusiasts for the study of Zen by psychotherapists. Erich Fromm's book Zen Buddhism and Psychoanalysis (31) is a landmark reference indicating a new openness to the study of Zen by American psychologists. In a paper written in 1959 on psychoanalysis and Zen Buddhism (30), Fromm states that both Zen and psychoanalysis deal with a theory of the nature of

man and a practice leading to his well-being. He explains why he believes the study of Zen is significant to all students of psychoanalysis, how both systems have an affinity and how they differ. He also attempts to explain the final aim of Zen, enlightenment, in psychological terms. Namely, in psychoanalysis, he explains, this transformation occurs when there is a full recovery of the unconscious to consciousness. Responding to the Zen concepts of direct experiencing and no-thought and the similarities to psychoanalysis he maintains:

More radically than any other system, Zen has recognized that intellect constitutes the danger of becoming a substitute for experience. Zen is a living protest against the assumption that the answer to the problem of human existence can ever be found in thought. Psychoanalysis follows the same path. Its whole method which aims at insight, aims at an insight which is not at all of an intellectual nature, but in its immediacy, totality and suddenness, close to Zen enlightenment. (30, pp. 89, 90)

Carl Jung (47) has been quoted frequently in the literature as voicing his belief in the similarities in his theories and Zen. Jung studied Zen and other Eastern psychologies from seemingly a purely intellectual perspective. As far as is known he did not practice any form of meditation. Perhaps for this reason he believed the Western mind could not incorporate Eastern thought in a broad sense of the word; only very rare individuals (74). However, his writings, by suggesting an interest in Zen and other Eastern psychologies, perhaps provided additional grist for

the mill for others in the mental health field as well as providing a new respectability to the study of what had heretofore been seen as purely esoteric by American psychology. During a conversation with Zen master Hisamatsu (48), Jung discusses the differences in the unconscious, including personal and collective and the "no-mind" of Zen as well as the Jungian concept of "self," which includes the "ego" and "unconscious," and the "self" or "true self" in Zen. According to Hisamatsu, the "true self" in Zen is formless and free from both ego and the unconscious. This exchange in dialogue took place shortly before Jung's death, indicating a life-long attempt to understand Zen and its affinity, if any, with his understanding of man's consciousness.

Jerome Bruner (13) also entertained a conversation with Zen master Hisamatsu. Bruner expressed his interest in Zen to Hisamatsu. Their dialogue focused around the subject of spontaneity from a Zen point of view and a psychological point of view. Hisamatsu maintained there is a big difference in the Zen self and the self discussed in psychology as well as the concept of spontaneity.

Perhaps the writings of Alan Watts should be included in this section. Watts was most influential in creating an interest in Zen during the 60's with the release of several books on Zen, including The Way of Zen (105), The Spirit of Zen (104), and Psychotherapy East and West (102).

However, these books were written to acquaint the general public with Zen more than practitioners of psychotherapy. Other publications were geared more to those in the helping professions (101, 103).

In 1962, Berger (7) presented a paper on "Zen Buddhism, General Psychology and Counseling Psychology" in which he notes the recent development of an interest in Zen by American psychologists Van Dusen and Bruner as well as the neo-freudians Horney, Jung and Fromm. A brief history of Zen, described as a blending of Buddhism, Chinese Taoism and Japanese Zen Buddhism, is given. The Zen concepts deemed most relevant to general and counseling psychology are presented by the author: namely, freedom and openness to experience and no-thought. He further suggests the application of these concepts to the counseling relationship. He does not mention "meditation" as such as a way to develop these concepts, although to those familiar with Zen it is known that the concepts of freedom to experience and no-thought are supposedly a concomitant result of meditative practice or Zen (107). In a later study, Lesh (57) applies Zen meditation (zazen) as a means to develop accurate empathy and openness to experience in counselor trainees. This study will be reviewed in more detail in a forthcoming section.

More recently, Naranjo and Ornstein (67), in their book, On the Psychology of Meditation, attempt to approach various

forms of meditation, including Zen, from a psychological perspective. Commonalities of different meditation systems are presented and a psychological interpretation offered, attempting to link these commonalities with better known psychological concepts. These commonalities, the authors suggest, include turning off of awareness and "deautomatization." D. Goleman (38) disagrees with Naranjo and Ornstein on several points and offers an alternative typology of meditation practice, including Zen, published the following year.

The above citations, although limited in scope, were intended to provide historical reference points and serve as an introduction to the literature which follows.

Physiological Effects of Zazen and Other Meditation Procedures

One of the earliest experimentally sound studies was published in 1969 by Kasamatsu and Hirai entitled "An Electroencephalographic Study of the Zen Meditation (Zazen)" (50). During a sesshin, an intensive week-long meditation experience, the EEG response to repetitive click stimulation was observed in forty-eight Zen priests and followers in order to study alpha blocking. The results showed a constant blocking time or failure to habituate to the click stimulation. Alpha levels were increased, and in the case of Zen priests, an increase in theta waves as well. This study lends support to the concept of a relaxed yet heightened

state of awareness during zazen. Wallace and Benson (99), in their paper on the physiology of meditation, maintain that the failure to habituate while meditating indicates physiological changes unlike those associated with other relaxed states: sleep and hypnosis. From their own studies, the meditative state also produces a reduced oxygen consumption, slowed heartbeat, and an EEG pattern of slow alpha waves with occasional theta wave activity.

In another paper, "The Relaxation Response," later extended into a book entitled The Relaxation Response, Herbert Benson (6) cites Zen meditation, in addition to other methods (progressive relaxation, yoga, autogenic training), as a technique that may elicit the "relaxation response." This response, according to Benson, is beneficial in combatting stress, since there is a generalized decrease in sympathetic nervous system activity (decreased heart rate, respiratory rate, slow alpha waves) and an increase in parasympathetic activity. Again Benson asserts these physiological changes to be distinctly different from the physiological changes noted during quiet sitting and sleep. Whether or not physiological changes associated with meditation are different from those obtained during hypnosis is a controversial issue, however.

Delmonte (22) suggests that those forms of meditation which do not require rigid discipline but rather encourage a receptive and passive attitude, namely Transcendental

Meditation, may have something in common with relaxation hypnosis. The author points to the difference between the disciplined concentration as in Zen meditation and the "gentle contemplation" on a mantra, as in T. M. The author trained thirty-six novice subjects in a mantra meditation based on T. M., then administered the Barber's Suggestibility Scale during both meditation and rest. The results showed a general trend that meditation was associated with higher suggestibility than was rest.

However, Malec and Sippelle (61) studied a Zen meditation exercise (counting breaths) under various demand conditions in order to determine what effect, if any, suggestion of outcome plays in meditation. Forty male undergraduates were assigned to one of four groups. Three groups were instructed to meditate for fifteen minutes after viewing a videotape demonstrating the Zen "counting breaths" exercise, followed by suggestion of a relaxation outcome, arousal outcome and no specific outcome. A control group was asked to "just sit there." A fifteen-minute baseline period preceded treatment and a fifteen-minute recovery followed treatment. Physiological data collected for each period included heart and respiration rates, electromyogram (EMG), and galvanic skin response. In addition, subjects completed the Mehrabian-Russell mood scale after each period and wrote a verbal description of how they felt after the treatment period. The results showed the meditation exercise produced

lowered muscle tension and respiration rate independent of type of demand. Neither physiological change nor self-report was related to varying conditions of demand.

In another study comparing physiological changes associated with relaxation hypnosis and meditation, Morse, Martin, and Furst (66) compared the physiological measures of respiratory rate, pulse rate, blood pressure, skin resistance, EEG alpha activity, and EMG (frontalis, temporal, parietal, and occipital), between relaxation hypnosis, Transcendental Meditation, and simple-word meditation. T. M. meditation and relaxation hypnosis showed significantly better relaxation responses than the alert state. However, there were no significant differences between these self-regulation techniques.

Woolfolk (110) compared physiological meditation studies from the disciplines of yoga, Zen, and transcendental meditation. His evaluation of these studies showed the studies of Zen and Transcendental Meditation to be more consistent and experimental in design. The majority of these studies, the author maintains, show meditation to be a wakeful state accompanied by a lowering of cortical and autonomic arousal.

Y. Akishige (2) reviewed psychophysiological studies on Zen meditation conducted at Komazawa University in Japan. According to the author, these studies show the physiological state of "samadhi" during zazen as a balanced, stable,

bodily condition, a lowered metabolism, relief in tension of the brain and muscles, and an excited vegetative nervous system. On psychological tests, the Zen monks studied showed a reduced discrepancy in the "ideal self" and the "real self" before and after a sesshin experience (intensive, week-long meditation).

Kyoko Akishige (1) investigated the physiological effects of zazen on three children over a four-year period. Data on the respiration and EEG changes while doing zazen were collected once a year for four consecutive years from 1974 to 1977 on a school boy (age seven) and girl (age eight) and a five-year-old boy. The children were trained to do zazen by their father, a Zen teacher, and practiced zazen at weekly meditation sessions at their home. The results for the two boys revealed changes in respiration rate (lowered) and EEG (increased alpha--some theta) similar to changes of the respiration rate of Zen priests. However, the girl showed an increase in theta only. The author concludes, ". . . it may be said that if zazen is performed for a short period of time, a child older than five years of age can be subjected to zazen, but it is still questionable whether or not the effect on a child is similar to that in an adult" (1, p. 456).

Davidson, Goleman, and Schwartz (19) conducted a study designed to explore the differences in trait anxiety and attentional absorption in non-meditators and short- and

long-term meditators. The results indicated decreased trait anxiety and increased capacity to attend in both the short- and long-term meditators when compared to non-meditators. The authors conclude their results to be consistent with other physiological data, indicating meditation is associated with decrements in autonomic arousal and increased cortical responsivity.

Domitor (25), in his doctoral dissertation, conducted a study on changes in visual perception with a Zen meditation group and anti-meditation group and a control group, using controls for expectancy of relief. Seventy-two subjects were randomly assigned to three groups: (1) Zen meditation, (2) anti-meditation, and (3) wait group. Subjects were pre- and posttested with the Holtzman Inkblot Test and the Embedded Figures Test after a five-day training program. The control group was given no training but was pre- and posttested on the same measures. Both the meditation and anti-meditation group were manipulated for expectancy for change. The results showed meditation to be no more successful in producing change than the other two groups. However, the Zen group subjects reported subjective experiences different from the anti-meditation group.

Cauthen and Prymak (16) investigated the differences in the physiological effects of relaxation training and meditation in both experienced and non-experienced meditators. The two most experienced groups of meditators showed decreases in heart rate during meditation and the relaxation

group showed a decrease after relaxing. There was no significant change in skin conduction or respiration rate for the meditation or relaxation groups.

According to a recent review of the literature, Shapiro (84) indicated current studies (1977-1979) show no difference in physiological measures between meditation and other self-regulation strategies (progressive relaxation and hypnosis). However, the meditation technique studied was Transcendental Meditation, and with the exception of Cauthen and Prymak's study (16) with beginning meditators over a short period of time (1 hour-two weeks) (100).

Jevning and O'Halloran (46) maintain that current findings do not reflect unique physiological response patterns in meditators because we do not have physiological measures sensitive enough to find out the unique aspects of meditation compared with other self-regulation strategies. Also, beginning practitioners, it was noted, may not have anything like the dramatic physiological changes of advanced meditators.

In one of the few longitudinally designed studies, Jevning (45) obtained physiological data from a group of Transcendental Meditation practitioners over a five-year period. The results showed that practice of T.M. for three to five years is correlated with acute decline of adrenocortical activity. Since increased adrenocortical hormone blood levels are correlates of both acute and chronic

stress, the author suggests that T.M. practice may be effective in alleviating physiological bodily symptoms associated with stress.

In summary, research lends support, although not yet conclusive, that the meditative state is associated with physiological changes different from other states, namely sleep, hypnosis, and, depending upon the meditation technique studied, relaxation. These changes include a decrease in oxygen consumption, lowered heartbeat, and an increase in slow alpha waves with occasional theta. Non-habituation as well as an increase of slow alpha waves indicates that the physiological meditative state produces a relaxed, yet wakeful, heightened state of alertness.

Psychological Effects of Zen and Other Meditation Procedures

For the purpose of organization, the references under this section will be divided into the following sub-categories: (1) anxiety and stress reduction, (2) self-concept, (3) locus of control, (4) perceptual functioning, (5) personality, (6) effect on drug abuse, and (7) related references. There is, needless to say, some overlapping between sub-categories in that several studies investigate more than one variable. Such studies are categorized, most often, under the general heading of personality.

Anxiety and Stress Reduction

A study attempting to determine the effect of stress reactivity in experienced T.M. meditators (two years) and non-meditators was done by D. Goleman and G. Schwartz (41) in 1976. Two hypotheses were presented: (1) subjects in the meditation condition would display less autonomic arousal and experience less subjective anxiety in response to a film stressor than subjects in a relaxation condition, and (2) experienced meditators would have autonomic response patterns and personality traits more consistent with expected meditation state effects. Sixty paid participants, thirty experienced meditators who had practiced T.M. for at least two years and thirty non-meditators interested in meditation, were shown a stressful film. The results showed meditators to exhibit larger anticipatory arousal yet faster recovery or habituation to stress than non-meditators. The authors point out that the defensive reaction becomes maladaptive when it is maintained after the threat has passed, indicating a healthier response to stress by the meditation group. The authors also conclude that on self-report measures, meditation proved more effective than simple relaxation in reducing poststressor anxiety.

Several studies have investigated the effect of anxiety reduction by the Transcendental Meditation procedure. J. Smith (92) measured the effect of T.M. on anxiety reduction with controls for the expectation of relief. Four

groups were studied: (1) Transcendental Meditation, (2) sitting without meditation, (3) Transcendental Meditation-like exercise, (4) antithesis to meditation group. In addition, all groups were given a different rationale for the efficacy of the assigned treatment. Improvement occurred within all groups but there was no difference between groups. The author concludes that expectation of relief contributed much to the effectiveness of all treatments.

In another investigation on T.M. and anxiety reduction, Dillbeck (23) found T.M. to be more significantly effective in reducing anxiety level than a comparable control group (merely sitting quietly twice daily). There was no control for expectancy of change.

Alan Berkowitz (9) presented a doctoral dissertation on the effect of T.M. on trait anxiety and self-esteem. Forty subjects in two T.M. experimental groups and a control group (n=19) were pre- and posttested on the Tennessee Self-Concept Scale and the State-Trait Anxiety Inventory. The results indicated a substantial decrease in feelings of tension and anxiety in mildly and moderately anxious adults soon after beginning to meditate (5 weeks--2 months). There was no significant change in the self-concepts of the experimental groups nor the control group, although after three months results approached significance in the meditation groups.

In another doctoral dissertation, Fabrick (27) compared the effectiveness of systematic desensitization, cognitive modification, and a T.M.-like mantra meditation on the reduction of test anxiety. Twenty-one students designated test anxious by high scores on the Test Anxiety Scale were assigned to one of three treatment groups. Treatment consisted of two sessions, one and a half hours long, spaced one week apart. Between sessions students were told to practice their technique at home daily. Students were posttested one week after the second treatment session. Dependent measures were the Test Anxiety Scale, Swinn Test Anxiety Behavior Scale, IPAT Anxiety Scale, pre-examination heart rate, and a non-standardized posttreatment questionnaire. The results showed all three treatments significantly reduced test anxiety and general anxiety as measured by the dependent variables. However, on the Test Anxiety Scale, the meditation group showed significant lower test anxiety than the other two groups and greater reduction in heart rate.

A study examining the effect of T.M. and muscle relaxation on trait anxiety, maladjustment, and locus of control, was done by Zuroff and Schwartz in 1978 (113). Sixty undergraduate volunteers were randomly assigned to one of three groups (T.M., muscle relaxation, no treatment). Measurements were taken pre and post for personality changes on the Rotter Locus of Control Scale, Social Desirability Scale, and Rotter's Incomplete Sentences Test. Pulse rate

was recorded during eighteen-minute testing periods immediately after the training period. The Adjective Check List scale of anxiety was completed by all subjects each week. The S-R Inventory of Anxiousness was administered on four occasions. In addition, a behavioral index of trait anxiety, the Behavioral Anxiety Measure, was administered both pre- and posttest. Subjects also provided a weekly report of the number of times they had meditated or relaxed. The treatment group attended two group lectures of one hour each, one hour of individual instruction, and three more one-hour group meetings over a four-week period. Individuals were also instructed to practice their technique at home for twenty minutes twice each day. The results showed a decrease in meditator's trait anxiety as measured by the S-R Inventory. No other measurements yielded significant results.

In 1979, Boswell and Murray (11) studied the effects of a mantra meditation on both self-report and physiological measures of anxiety when compared with a placebo control, a progressive-relaxation control, and a non-treatment control. Forty male and forty female undergraduates were randomly assigned to the four treatment conditions. Experimental subjects (T.M.-like mantra meditation) were presented taped instructions. Meditation was practiced at home for fifteen minutes twice a day for two weeks. Subjects in the anti-meditation group walked actively and concentrated

on problems for the same time period. Subjects in the relaxation group received instruction on standard progressive-relaxation via tapes and were instructed to practice at home for the same time period. Results show an overall reduction in trait anxiety but no difference between groups. Findings were similar for the physiological measurements.

In a more recent study, Throll (96) compared the psychological effects of Transcendental Meditation and progressive relaxation. Thirty-nine subjects were administered (1) Eysenck Personality Inventory (PI), measuring Neuroticism-Stability, Extraversion-Introversion and Psychoticism; (2) State-Trait Anxiety Inventory; and (3) two questionnaires on health, drug use, and regularity of practice before learning Transcendental Meditation or Progressive Relaxation. All subjects were again posttested immediately after learning either technique and again five, ten, and fifteen weeks later. The results indicated that the T.M. group demonstrated more significant improvement than the progressive relaxation group in Neuroticism-Stability, Extraversion-Introversion, State-Trait Anxiety, drug use, and improved physical health. There was no difference between groups at pretest. A possible explanation for the more pronounced results for meditators was the greater amount of time they reportedly spent on their technique, plus the reported boredom of the progressive relaxation group. Furthermore, these findings, according to the authors,

are in opposition to the findings of other researchers, which suggest that extraneous variables may be responsible for positive results associated with meditation practice. In Tholl's study the experimenter was more involved with the progressive relaxation group, whereas the T.M. organization taught the meditation group.

Self-Concept

Two doctoral dissertations completed in 1974 and 1975 compared the effects of Transcendental Meditation on the self-concept as measured by the Tennessee Self-Concept Scale. After a period of three months Willis (109) found a significant difference on nine subscales for the T.M. group when compared to a control group. The results of a similar study by Valois (97) indicate a significant change towards improved self-concept by the T.M. meditators on two variables: Self-Criticism and Total Positive.

In 1977, T. Kongtawing (54) also studied the change in self-concept after "vipassana" meditation. Forty college students were randomly assigned to an experimental group (vispasana meditation) and a control group. All were pre- and post-tested after two months on the Tennessee Self-Concept Scale. The results showed significantly greater positive change in the self-concepts of the meditation group than the control group.

In a comparative study designed to investigate the difference in the self-concept of experienced T.M. meditators

and a comparable group of non-meditators, Nystul and Garde (69) reported meditators to have significantly more positive self-concepts on seven of the twenty-nine test scores of the Tennessee Self-Concept Scale.

Locus of Control

Peter DiNardo (24) studied the differences in attention during a meditative task correlated with scores on Rotter's Locus of Control Scale. He hypothesized that individuals scoring as internals on Rotter's scale would have greater ability to maintain attention and would report fewer intrusions than those individuals scoring as externals during a meditative task involving focused attention. Subjects were twenty undergraduates enrolled in an introductory psychology course. After completing the Locus of Control Scale, subjects were given taped instructions. Each subject focused his attention on an actual stimulus (candle flame) and an imagined stimulus (visualization of candle flame) for a ten-minute test trial for each stimulus. Subjects also recorded intruding thoughts by pressing a hand-held counter. Results indicated that internals reported significantly fewer intrusions than externals, and fewer intrusions occurred with the actual stimulus.

Perceptual Functioning

Deikman (21) presented a psychological theory of meditation based on the deautomatization of perception. His

theory suggests that meditation results in an inhibition of abstraction and an intensification of perception. In likening the meditation experience to the psychological deautomatization of perception, he does not see the process as a regression. Rather, he explains deautomatization as an undoing, allowing for a more advanced kind of experience.

In 1973 Luing (60) compared the effects of training in external and internal concentration on two counseling behaviors. Training in a Zen breath meditation exercise increased awareness of verbal and nonverbal cues in a counseling situation and increased the ability to concentrate on specified material. Training in external concentration brought about significant gains in the other internal concentration.

In one of the few studies investigating the effect of meditation on children, Linden (59) investigated the relationship between the practice of a Zen-like breath meditation by school children and their levels of field dependence-independence, test anxiety, and reading achievement. According to the author, since meditation practice "trains the individual to focus his attention on an object or process and to resist distraction from other sources of stimulation . . . meditation practice may be expected to enhance field independence" (59, p. 139). Furthermore, he suggests that meditation also trains the individual to relax by teaching him to stay in the present so meditation may be expected to

decrease test anxiety. A group of third grade school children were tested on the Embedded Figures Test, an anxiety measure, and a reading achievement test after learning and practicing meditation for approximately four months. The meditation group significantly increased field independence and lowered test anxiety when compared with two other control groups. There was no change in the reading scores, perhaps, suggests the author, because the children tested already scored in the high range on this measurement. The author concludes, "the results confirm that children can be taught this discipline and apparently with beneficial results" (59, p. 142).

Pelletier (71) investigated the effects of T.M. practice on autokinetic perception and field independence-field dependence with beginning T.M. meditators. Ten men and ten women were given the Autokinetic Test, the Embedded Figures test and the Rod and Frame test prior to and after three months of T.M. practice. A comparable control group sat quietly for the same time period, twenty minutes a day for three months, and were pre- and posttested on the same measurements. The meditation subjects showed significantly more field independence and increased ego distance on all measures when compared to the control group. The author concluded:

Since deployment of attention is the critical factor in determining performance on these perceptual tasks and since it is the expressed goal of

meditation to achieve an inward, focused attention, it is suggested that these observed differences can be attributed to an alteration in the individual's deployment of attention due to meditative practice. (p. 1033)

In a more recent investigation, Goldman and Domitor (37) studied the effects of Zen meditation on anxiety reduction and perceptual functioning while including controls for expectation of relief. One half of the subjects were enrolled in an introductory psychology course and one half were student volunteers. Subjects were randomly assigned to three treatment groups (Zen meditation, anti-meditation, and no-treatment group). All subjects were pre- and post-tested on the Internal-External Locus of Control Scale, State-Trait Anxiety Inventory, the Epstein-Finz Manifest Anxiety Scale, the Holtzman Inkblot Test and the Embedded Figures Test. In addition, a daily meditation log was completed after each treatment session for the Zen meditation and anti-meditation group to record experiences as well as the effectiveness, enjoyability, and difficulty of the exercise. Subjective experiences of altered states of consciousness, relaxation, pleasantness, and ease of concentration were also recorded after the final treatment session. Both experimental groups received taped instructions, including a rationale for the efficacy of each procedure, and practiced the procedure for a twenty-minute period for five days. The results showed that subjects in the Zen meditation group reported significantly more altered

states of consciousness than did the anti-meditation group and significantly greater relaxation as reported from the daily meditation log. The anti-meditation group reported significantly less difficulty, more effectiveness, and greater ease in concentration, reflecting, according to the authors, the structured character of their task. The volunteers experienced more altered states of consciousness in the Zen meditation procedure, whereas other subjects performed worse over time. There was a significant pre-post reduction in anxiety for all groups but no significant effects of treatment on locus of control. There was also no improvement on the perceptual measures.

In an early investigation, Maupin (63) studied individual differences in response to a Zen meditation training with respect to the individual's dependence on ego functioning. Personality factors were the independent variables and response to meditation the dependent variable. Subjects were taught to concentrate on the breath while sitting in chairs. Forty-five-minute practice sessions, followed by a short interview, were conducted each weekday for a two-week period. Personality factors measured on pre-test and posttest included receptive attention, concentration, breadth of attention deployment, tolerance for unrealistic experience and capacity for adaptive regression. Measurement indexes included the forward portion of the digit span subtest of the Wechsler Intelligence Scale

(measuring attention), the Wells and Ruesch continuous additions test, and Schasinger's scanning control test (measuring concentration and attentional focussing). In addition, an analysis was made of the Rorschach (measuring tolerance for unrealistic experience), visual imagery during free association, and Holt's scoring for primary process on Rorschach (measuring capacity for adaptive regression). Results showed no significant relationship between meditation and attention. The Rorschach measure of tolerance for unrealistic experience was positively correlated with response to meditation. Finally, both the Rorschach measure of degree of primary-process thinking as well as visual imagery during free association were positively correlated with response to meditation.

Kubose (56) experimentally investigated whether mental concentration or focusing attention in Zen meditation, rather than the act of physically sitting still, was the important factor on a measure of perceptual performance, creativity, and the POI. Twenty-seven psychology students were given the POI, Mednick's Remote Associates Test (RAT) for Creativity and Witkin's Embedded Figures Test. Subjects were divided into three groups: a Zen breath-counting meditation group, a control quiet-sitting group, and a non-treatment control group. All subjects in the meditation group and the quiet-sitting group sat cross-legged on the floor fifteen minutes a day for three weeks. Pulse rates

were obtained at the beginning and end of each session. Questionnaires were given all subjects at the end of the fifth, tenth, and fifteenth sessions to determine the kinds of intruding thoughts and for written reports of any sensory experiences. On the eleventh session subjects sat for five minutes and were administered the Mednick's RAT. On the fourteenth session subjects sat for five minutes and were administered Witkin's Embedded Figures Test. The results showed the meditators to have lower pulse rates and better performance on the Embedded Figures Test than the two control groups. There was no change on the POI for any of the three groups. The author concluded that "meditation could be said to improve one's ability to concentrate his attention" (26, p. 9). These results are in contrast to those obtained earlier by Maupin (63).

Personality Change and Meditation

This section reviews those studies using primarily self-report measures of personality change. To date, most of these studies have investigated the practice of Transcendental Meditation. Several such studies, indicating positive results, were done between 1972 and 1976.

Seeman and Nidich (78) investigated the influence of T.M. on self-actualization. The authors reported significantly greater self-actualization for the T.M. practitioners when compared to a control group as measured by the

POI. In a similar study, Penner (72) also found a significant change on the POI after subjects completed a course in T.M. Ferguson and Gowan (28) reported a change in the direction towards improved mental health in thirty-one novice meditators after completing a T.M. course. A group of sixteen long-time T.M. meditators were also compared with the novice meditators. Subjects were administered the Northridge Developmental Scale, the Cattel Anxiety Scale, and the Spielberger State-Trait Anxiety Scale. After six and a half weeks of regular meditation practice significant change was reported for the two experimental groups. No significant change occurred in the control group. The authors concluded:

The test results suggest that the regular practice of T.M. for as short a period as six weeks, appears to reduce anxiety, depression, and neurotic levels, and to increase self-actualization among an interested volunteer group of university students. (28, pp. 58, 59)

Scores also indicated long-term meditators have a more developed state of psychological health over those practicing T.M. for a shorter period.

J. Shapiro (88), in a doctoral dissertation completed in 1975, also reported highly significant change in the direction of greater self-actualization as measured by the NDS after four months of T.M. practice, as well as significant anxiety reduction. In addition, he examined effect, if any, of preliminary expectations and regularity of practice.

Results showed no significant correlations observed to be positive between preliminary expectations and changes on criterion measures. There was a significant positive correlation between regularity of practice and change in self-actualization. No control or placebo group was included in the study. In a similar dissertation completed in 1977, Scott (77) reported significant psychological change in a group of T.M. meditators after two months practice during a T.M. course. The personality measurement used was the POI. However, she found there to be a significant correlation between subject's degree of expectation and amount of change reported on the POI. No control or placebo group was included in the study.

Shecter (89) included a control group in his study of the effect of T.M. practice and a group presented philosophy of T.M. but no practical meditation. High school students were pre- and posttested on the Jackson Personality Inventory and the Match Problems Test. Results showed meditating students to significantly increase their performance on tests of intellectual performance, creativity, complexity, energy level, innovation, self-esteem and tolerance, and decreased anxiety and conformity. No change was indicated for the other groups.

Hjelle (44) compared experienced T.M. meditators and novices on certain anxiety, internal-external control and

self-actualization measures. Fifteen experienced meditators and twenty-one beginning meditators were given the Bendig Anxiety Scale, Rotter's Locus of Control Scale and Shostrom's POI. Results showed experienced meditators to be significantly less anxious and more internally controlled than beginning meditators and significantly more self-actualized on seven of Shostrom's twelve subscales. The author claims these findings refute methodological criticisms that previous findings of increased psychological health suggest a conscious desire on the part of meditators to show changes in personality as well as expectancy for relief.

Jonathan Smith (91) compared subjects who dropped out of T.M. practice with those who continued for the six-month period. Forty-nine anxious college students were included in the experimental (T.M.) group and fifty-one in the control group. Both groups were given rationale for expectation of relief and the same instruction for meditative posture. Both groups were pre- and posttested on the POI, State-Trait Anxiety Scale, the IPAT Neuroticism Scale, the Tennessee Self-Concept Scale, Epstein-Finz Manifest Anxiety Scale, and the Marlowe-Crowne Social Desirability Scale. In an earlier report (92) it was found that although there was positive change in both groups, there was no difference between groups. In this study the authors hypothesized that those that continue with T.M. at pretest would be

less anxious, less disturbed, less withdrawn but more self-critical than dropouts. Their hypothesis was confirmed. Dropouts had extremely high psychoticism scores and low self-criticism scores. Continuation with T.M. correlated significantly with a low degree of psychoticism and a high degree of self-criticism. The author also gives the following characteristics of those who continued in T.M.: "they tended to be emotionally cool, detached, unconventional, interested in art, theory, basic beliefs, and spiritual matters" (91, p. 278). In addition, persons benefiting from the placebo control group were "shrewd, astute, calculating, and ambitious" (91, p. 278).

Another study investigating the personality profiles of meditators was done by Stek and Bass (93). Two groups of interested students attending a T.M. lecture were compared with two groups of introductory psychology students, one group attending the lecture out of interest, and another because of a course requirement (total n=108). All groups were given the Internal-External Locus of Control Scale and the POI. The results showed no difference in any of the groups. The authors conclude: "Therefore, it seems unwarranted to assume that among college students, persons interested in meditation are either more self-actualized or more neurotic than the average person" (93, p. 1022).

However, in one other study examining the personality profiles of T.M. meditators, Williams (108) found

beginning meditators to display abnormal personality profiles on Eysenck's PEN (psychoticism, extraversion, and neuroticism) Inventory, but for those who continued with regular practice, normalization occurred. Williams also gives a review of T.M. research and personality change through 1976.

One of the few studies done comparing the effect on personality by two different meditative techniques was presented as a doctoral dissertation completed in 1973 by Blanz (10). Two groups of novice meditators, ten in each group, were randomly assigned to receive instruction in either Zoto Zen meditation or mantra yoga meditation. Subjects were pre- and posttested on the POI, Tennessee Self-Concept, and the anxiety level subtest of the Omnibus Personality Inventory. Following instruction, subjects meditated daily for ten weeks, keeping a daily log of experiences. Results lend support to the position that meditative techniques yield similar personality changes. The study also gives tentative support for positive change produced by the two meditative groups taken together.

A more recent study comparing the effects of two different meditative techniques, as well as personality characteristics of beginning meditators, was done by Fling, Thomas, and Gallaher (29). The authors compared a restricted awareness meditation (Carrington's Clinically Standardized Meditation), which is similar to T.M., and an expanded awareness type of meditation (Fehmi's Open Focus) with a quiet

sitting group and wait list control. Expectancy of benefit was measured before assignment to groups for possible correlation with practice time and outcome. The treatment period was eight weeks for all groups. All subjects were pre- and posttested on Rotter's Internal-External Locus of Control Scale, Spielberger's State-Trait Anxiety Inventory, and the Myers-Briggs Type Indicator. The results were as follows.

1. All groups except the wait list control decreased significantly on Spielberger's Trait Anxiety.

2. All groups became more non-significantly more internal on Rotter's Locus of Control.

3. On the Myers-Briggs Type Indicator, volunteers were more introverted than extraverted, intuitive than sensing, feeling than thinking, and perceiving than judging.

4. All groups became more intuitive, approaching significance for the Clinically Standardized Meditation group only.

5. The Open Focus meditation group became significantly more extraverted than the other groups.

6. Practice time correlated with anxiety reduction for the combined treatment groups.

7. Growth motivation correlated more with practice time and outcome than with either new experience motivation or expectancy of benefit.

In a doctoral dissertation completed in 1976, Weiner (106) studied the effect of Ananda Marga mantra meditation and progressive relaxation training on self-actualization, state-trait anxiety, and frontalis muscle tension. A significant reduction in anxiety was reported for both the meditation and relaxation groups when compared to a control group. However, there was no change in self-actualization measured by the POI.

In summary, the above research, although inconclusive, does lend support that the practice of various meditation techniques is associated with positive personality change as measured by self-report indices of personality.

Meditation and Drug Abuse

The most notable research on the correlation of drug abuse, including alcohol consumption and the use of marijuana, was conducted by Shafii. Shafii (80, 81) reported a significant decline in both alcohol and marijuana use in those practicing T.M. from a period of three months to over two years in follow-up questionnaire studies. The longer an individual practiced meditation the more the probability he or she would stop using either alcohol or marijuana. In reference to marijuana intake, the author reported that 92 per cent of the meditators who had practiced T.M. for more than two years had significantly decreased their use of marijuana and 77 per cent had totally stopped.

Related References

In a well-known book, The Three Pillars of Zen, Philip Kapleau (49) gives a description of the technique of zazen, or Zen meditation. In addition, many subjective accounts of transformation or the enlightenment experience are presented by individuals after intensive zazen practice. Kapleau offers this statement concerning personality change and the practice of zazen:

Eventually zazen leads to a transformation of personality and character. Dryness, rigidity, and self-centeredness give way to flowing warmth, resiliency, and compassion, while self-indulgence and fear are transmuted into self-mastery and courage. (49, p. 54)

In his doctoral dissertation completed in 1975, Sam Kirshner (52) investigated psychological change associated with Zen meditation. Using a descriptive design, Kirshner interviewed ten long-term (nine months-five years) Zen meditators. Most of the individuals, all males between the ages of twenty-five to thirty years, stated they began to practice zazen because of various emotional problems. According to the author, these positive changes occurred in the meditators:

- 1) more intimacy, less fearful of people
- 2) more positive self-concept
- 3) reduction or abstinence from drug intake (smoking, alcohol)
- 4) more energy, more relaxed, fewer mood fluctuations

5) more conscious of diet, exercise, and posture

Three recent papers concerning meditation and psychoanalytic concepts will be included here. In his doctoral dissertation completed in 1977, Moles (65) studied Zen meditation and regression in service of the ego. Naive subjects were randomly assigned to one of three groups: (1) zazen, sitting focusing attention on breathing thirty minutes each weekday for four weeks, (2) quiet-sitting group for the same time period, who were not asked to alter their normal mode of attention, and (3) a control group that received pre- and posttests only. Measurements included a free association test (to assess amount of visual imagery), the Holtzman Inkblot Test (to assess reality testing, sense of reality of self and the world, impulse control, adaptive regression, thought processes and defensive functioning), and the POI (to assess integrative functioning). An evaluation of subjective daily responses to the treatment assigned was recorded to determine subject's depth of reaction to meditation or quiet sitting. A pretest adaptive regression score was computed for all subjects (measure of ego strength). According to the author, zazen led to a movement away from a normal conceptual-verbal mode of psychic functioning to one characterized as a passive-receptive mode based on visual imagery. No other significant changes were reported.

Another study, by Phillip Faber (26), investigated meditation and archetypal context of nocturnal dreams. Faber compared dreams of seven experienced, long-term yoga meditators with a matched control, nonmeditator group on frequency, recall, and depth of archetypal content. The author contended that frequency and recall of archetypal dream content is correlated with psychological adjustment. Furthermore, dreams of a more archetypal quality indicate less repression, a merging of conscious and unconscious material, and a positive growth of the personality. The author concluded that the dreams of the meditators contained significantly more archetypal elements which reflected universal, moral themes than did those of the nonmeditators. The dreams of nonmeditators were characterized by personal and everyday issues. The meditators were also better able to recall and report their dreams than the control group.

In his paper, "The Double Orientation of the Ego in the Practice of Zen," Victor Krynicki (55) explored the psychodynamic changes that occur during Zen practice, focusing on the union and separation of self and object. The main points presented by the author are summarized as follows.

- 1) Unresolved separation anxiety is one of the factors seen consistently in the background of serious Zen aspirants.
- 2) The meditation effort produces both an extreme psychophysiological relaxation and concomitant ego regression

which evokes primitive memories and primitive transference reactions.

3) As the regression deepens these phenomena disappear, leaving the meditator in a state of preverbal symbiotic union with others and the world; with a further breakdown of structures into free-flowing sensations, "enlightenment" occurs.

4) However, the meditator maintains a "double orientation." Despite attention to the inner world during zazen, EEG studies indicate no loss of attention to external stimuli during zazen.

5) The experience of oneness appears to greatly shift the psychodynamic balance towards the loss of self-object boundaries; separation anxiety appears to be resolved by the ability to reawaken, during each meditation, the feeling of timeless unity.

The experience of oneness can eventually be lost if Zen practice does not continue. The author contends: "However, with continued zazen, the meditator acquires, in effect, the ability to soothe and ameliorate his separation anxiety by repeatedly regaining the experience of oneness" (55, p. 247). Krynicki sees this phenomenon as the greatest difference between psychoanalysis and Zen practice:

While the goal of psychoanalysis or psychoanalytic psychotherapy is to eventually rebuild structures so that merging is no longer needed or desired, the goal of Zen practice is to be able, almost at will, to enter the world of oneness. (55, p. 247)

Application of Meditation Practice

This section of the review of the literature will be divided into the following three sub-categories: (1) Meditation as Therapy and Adjunct to Psychotherapy, (2) Application of Meditation in Psychiatric Facilities, and (3) Meditation in the Treatment of Alcoholism.

Meditation as Therapy and Adjunct to Psychotherapy

One of the earliest and most noted attempts to present a rationale for the use of Zen in psychotherapy as well as a description of case studies using Zen meditation in therapy was Kondo's (53) article published in the Chicago Review in 1958. In this article Kondo explains how sitting helps the therapeutic process as well as how the use of Zen techniques differs from more traditional psychotherapeutic techniques. He expresses a basic difference between Zen and other more analytic techniques in that Zen gives a direct experience of the "real self." For instance, the author asserts that Horney explained analytically the illusionary self and the importance of allowing the real self to grow, whereas Zen gives us the direct experience. According to the author, Zen helps the person become aware of his fundamental resourcefulness, his real self, his Buddha-nature, his inborn freedom and security. Zen, furthermore, intends to bring us to this self-realization through sitting. Kondo described the initial reaction of his patients to Zen

meditation as one of irritability and feelings of desperation. Initially they complained that the method was ineffective and only led to an intensification of their symptoms. Kondo offered the following explanation for the initial negativism by his patients to sitting:

They feel frustrated because they can not follow their usual pattern of scattering their energy, which they take to be natural activity but which actually is an escape mechanism to avoid facing their problem. . . . Because they hate to see the problem they hate the way they are brought to see it--that is why they think the method is ineffective. (53, p. 62).

Kondo maintained, however, that as his patients continued to sit fifteen minutes a day, at first unconsciously, they began to change. The changes which appeared most noticeably to the therapist included

- 1) more intensive concentration in working on problems in the therapeutic session (more concentration of psychic energy and availability)
- 2) dreams show a more constructive picture
- 3) posture begins to show more stability

Shafii (79) advocated further the use of meditation as an adjunct to psychotherapy. According to the author, meditation produces "a state of active passivity and creative quiescence or controlled regression, during which traumas of early childhood are re-experienced and mastered" (p. 364). The author presented a case history in which meditation (a Zen-like breath meditation) helps free the patient from earlier repetitive, maladaptive behaviors.

Hirai (43) summarized the following physiological changes during Zen meditation as a result of research conducted in Japan.

1) The mental state, according to electrophysiological data, shows the following pattern:

- a. The level of the cerebral excitatory state is gradually lowered in a way that is different from sleep.
- b. The concentration of mind in Zen meditation is superficially similar to the hypnotic trance. However, there are differences in the electroencephalographic findings between the two.
- c. In Zen meditation, outer or inner stimuli are not neglected but precisely perceived. It has been clearly shown that there is almost no habituation in EEG responses to stimulation in studies of meditating Zen monks. Such a state of mind is described as a relaxed awakening with steady responsiveness (13, p. 45).

2) Results of respiratory function show lower energy metabolism than the basic rate.

The possibilities of using Zen meditation in conjunction with psychotherapy were discussed. Research was cited which indicated an increase of the alpha component on the EEG with a reduction in symptoms of anxiety neurosis. It was

postulated that the "healing process of neurotics is based on the recovering from an excessive cortical, excitatory state, which seems to occur in the patient's brain, to a normal level" (43, p. 130). The author contended that this process has a similarity to that of Zen meditation as far as EEG changes are concerned. Hirai concluded that "Zen meditation is closely connected with the healing process, especially with its underlying physiological changes in the functioning of the brain in the course of psychotherapy" (43, p. 132).

Zamami and Okada (112) applied a form of Zen therapy (including concentration on the breath) to two cases of anxiety neuroses, as well as two clinically diagnosed cases of schizophrenia, with successful results. The measurements used included psychiatric interviews, personality measures, patient self-reports, and physiological measures.

Mikulas (64) offered a philosophical rationale for the use of meditation as a therapeutic tool when combined with behavior therapy. The author discussed the advantages of the integration of the two psychologies (Buddhism and behaviorism), as well as the practice of meditation, by the psychotherapist.

A psychological interpretation of the T.M. process was presented by Auila and Nummela (4). The process was likened to systematic desensitization, although meditation is viewed as more powerful, in that the meditator achieves

a high level of awareness as indicated by brain wave patterns. Thus, according to the authors, thoughts of a usually anxiety or fear-provoking nature are reconditioned when experienced in this secure psychophysiological mood. For these reasons the authors concluded that meditation should become one of the "basic tools of the helping professions" (4, p. 842).

In a similar vein, Carpenter (14) advocated the use of meditation in the psychotherapeutic situation. The author maintained meditation training can be helpful in

- 1) Producing insight into habitual and self-defeating response patterns
- 2) Breaking the obsessive hold of the individual's thoughts on his behavior by detaching affect from them, retraining attention (in specific stimulus), and desensitizing painful thoughts
- 3) Conditioning sympathetic nervous system by reducing arousing stimuli and training posture

Deane Shapiro (82) investigated behavioral and attitudinal changes resulting from a Zen experience workshop and Zen meditation. The author presented the following possible psychological effects of Zen meditation as a rationale for inclusion as an intervention strategy.

- 1) It helps the individual relax.
- 2) It provides a desensitization effect concerning fears and problems which would help the individual feel

in control.

- 3) It produces an "opening up" effect, learning awareness of internal (thought, images) as well as external phenomena without labeling and categorizing--helps the individual be more open to events and relate to people in their wholeness without labeling.
- 4) It teaches an individual to stay in the here and now.
- 5) It enables an individual to feel more creative.
- 6) It enables an individual to make more positive self-statements.

A baseline of nine behaviors was recorded for the experimental group for two weeks. These behaviors included positive self-statements, negative self-statements, feelings of creativity, feelings of self-control, feelings of anxiety, becoming angry, noting things in nature, relating to only part of a person, and not being in the here and now. After the Zen weekend workshop the meditation group meditated twice a day for three weeks, recording the nine behaviors. A control group recorded the nine behaviors for the five weeks with no intervention. All subjects were pre- and posttested on the Osgood Scale, Rotter's Locus of Control Scale, and a Hypnotic Susceptibility Scale. The results showed eight of the nine individual variables moved in the hypothesized direction and two achieved significance: feelings of creativity and relating to only one part of a person for the Zen meditation group. No change occurred in the control group.

In addition to the above reference, Deane Shapiro has presented a number of investigations (83, 85, 87), dating from 1976 to the present writing, of Zen meditation and its application to various clinical situations. Several of his studies are still in press at the time of this review. One study investigated Zen meditation combined with a behavioral self-control procedure in a case of generalized anxiety (85). Treatment included both formal and informal meditation (concentration on the breath when feeling anxious) and using a wrist counter to record the number of anxious thoughts or feelings. There was a significant decrease in feelings of anxiety after three weeks. Shapiro further suggests guidelines for using Eastern and Western strategies for intervention in psychotherapy.

In another reference Shapiro and a co-author, Zifferblatt (87), compared the self-control techniques of Zen Buddhism (formal and informal meditation) from the western psychological framework of social learning theory. Differences and similarities between the two approaches were discussed and a behavioral analysis of the process of Zen meditation was given. A five-step process of formal Zen breath meditation, according to the authors, was outlined as follows.

Step 1. Focus on breathing. Reactive effect: alteration in occurrence and response of breathing.

Step 2. Attention wanders.

Habituation to the task of breathing.

Step 3. Focus returns to breathing.

Eventually "effortless breathing": relaxed, attentive awareness, without reactive effect, without habituation.

Step 4. New thoughts occur and are watched with relaxed awareness and continued focus on breathing.

Global desensitization.

Thought stopping.

Step 5. Absence of internal chatter; categories suspended; receptivity to internal-external stimuli.

"Mind as mirror" (87, p. 521).

The clinical implications for combining both informal and formal meditation with behavioral self-control techniques were discussed. Five aspects of formal meditation were presented, which, according to the authors, might help complement and facilitate behavioral self-control skills.

These aspects included;

- 1) Learning to desensitize oneself and reduce covert chatter and images may help the individual become more alert to stressful situations at other times and better able to observe internal and external cues throughout the day
- 2) Practice in noticing when attention wanders from the breath may help one be more able to discriminate

a stimulus as soon as it occurs and break maladaptive behavioral patterns;

- 3) Cognitive set. Meditation provides the individual a fixed time during the day when calmness and self-control are experienced, thus aiding in giving the person a perception of self as being in control of his or her own behavior;
- 4) The ability to obtain an "empty mind" or absence of preprogrammed thoughts and images may be important in certain counseling settings, interpersonal relationships, and certain clinical areas dealing with hypertension, stress, obesity, and migraine;
- 5) Since the individual learns to observe all thoughts, worries, etc., in a more relaxed, detached way during meditation, it is hypothesized that after meditation the individual is better able to observe self in a detached way.

Thus, the self-evaluation threat is reduced. In conclusion, the authors expressed their belief in the clinical usefulness of continued exploration of the applied inter-relatedness between Eastern disciplines and Western psychology.

In 1978, Shapiro and a co-author, Giber (86), offered a review and critique of important meditation literature pertaining to psychotherapy and consciousness change. The authors divided the meditation literature into two categories:

(1) meditation used as a self-control strategy for clinical problems (specifically drug abuse, stress management, treatment of fears and phobias), and (2) meditation used to induce altered states of consciousness. Under the first category seven studies were reviewed promising meditation to prevent or rehabilitate drug abuse. However, in every case a number of methodological problems were cited which make these results unreliable. Of the seven studies indicating a reduction in blood pressure with meditation practice, the authors pointed to the unclear nature of exactly what procedure is causing the treatment outcome. The authors' evaluations of those studies concerned with the reduction of fears and phobias and stress management suggested that "meditation may be a promising clinical intervention technique for stress-related dependent variables" (86, p. 296). The authors also cited general agreement from the literature that meditation produces a state of relaxation. In the second half of the review the research of Maupin and Deikman, who studied the subjective experiences associated with meditation, was evaluated. The authors acknowledged the heuristic value of these studies, but they also pointed out the difficulty of obtaining concurrent validity from subjects' self-reports. In addition, guidelines were listed for future research.

In another reference, Shapiro (83) gave a brief summary of more detailed instructions for a training package

combining formal and informal Zen meditation with behavioral self-control strategies for the benefit of other clinicians and researchers.

In an experimental investigation of the effect of meditation training as a treatment for insomnia, Woolfolk (111) assigned four subjects each, all with highly debilitating insomnia, to three treatment groups. The experimental group was taught a meditative technique incorporating a combination of Zen and Yoga. The subjects, while reclining, repeated the words "in" and "out" while inhaling and exhaling for thirty minutes twice a day. The second group, a progressive relaxation group, was taught an abbreviated Jacobson method involving relaxation of various muscle groups. The third group, a control group, kept records of sleep patterns only. A sleep questionnaire was completed each morning for all subjects. There were four weekly one-hour group sessions with therapists to teach the two techniques. The results showed significant superiority over the control group for latency of onset and difficulty in falling asleep. However, there was no difference between groups.

Sururt, D. Shapiro, and Good (94) compared three procedures for the reduction of blood pressure in hypertension patients. The procedures included (1) biofeedback for simultaneous reductions in systolic blood pressure and heart rate, (2) biofeedback for reductions in integrated forearm

and frontalis muscle relaxation, and (3) T.M.-like meditation based on Benson's relaxation response procedure. After eight training sessions and a six-week followup, all methods moderately lowered blood pressure, but there was no significant differences between groups. However, the authors concluded that "because of its inherent simplicity, however, the meditation relaxation procedure could be seen to have an advantage over other methods" (94, p. 262). It is unclear from the article whether the meditation procedure used was designed to produce a heightened state of awareness, or was more similar to relaxation techniques only.

Application of Meditation Procedures in Psychiatric Treatment Facilities

Girodo (35) compared the effectiveness of yoga meditation and flooding in the treatment of anxiety neurosis at an inpatient psychiatric hospital. Nine patients diagnosed as anxiety neurotic with length of illness varying between five and seven months were included in the meditation group. They were encouraged to practice meditation twice a day every day in a seated position, repeating the word "rama." Before beginning the meditation they were administered the Anxiety Symptom Questionnaire. They were seen once a week thereafter, asked to describe their experiences and again completed the questionnaire. Five patients showed marked

decrease in anxiety on the questionnaires after eight sessions. Others were taught Wolpe's relaxation technique and, while relaxed, asked to imagine the worst thing that could happen in a variety of interpersonal situations (flooding). These scenes were rehearsed in fantasy until the patient could imagine them without feeling anxious. The author concluded that meditation proved more beneficial for patients with a short-term history of illness and flooding to be more effective for those with a long history of illness.

Glueck and Stroebel (36) compared autogenic relaxation training, alpha biofeedback, and T.M. with psychiatric patients. The patients dropped out of the autogenic group after four weeks, the authors contend, because of boredom. The biofeedback group was terminated because of the adverse effects, including a high degree of anxiety and frustration to the patients involved. So, unfortunately no control group was available for comparison. However, the attrition rate was only 6 per cent for the T.M. group, and when compared with the hospital's general population at dismissal, the T.M. group was significantly more improved on standard hospital staff evaluation procedures. The T.M. group met once a week with a T.M. instructor and practiced T.M. individually twenty minutes twice a day. In addition, in order to minimize the distress many people feel during the early stages of meditation, the instructor daily checked

the progress of each individual for the first three weeks. The project lasted for sixteen weeks. The authors expressed the positive effect of T.M. as part of the treatment program in the following way:

In our experience, the most appropriate technique to use with psychiatric patients, in an attempt to produce an increase in the generalized relaxation response, appears to be a mantra-type passive meditation, T.M. This technique was learned readily by our psychiatric patients. It appeared to hold their interest over a considerable period of time, in contrast to autogenic training and alpha EEG biofeedback training. It also appears to add a significant positive therapeutic dimension to the overall hospital treatment program. (36, p. 320)

The beneficial effects of meditation practice in conjunction with psychotherapy were also discussed. The authors reported that during meditation, thoughts and ideas may appear that are ordinarily repressed, such as intense hostile-aggressive drives, murderous impulses, and occasionally libidinal ideation. However, the authors were impressed that during meditation the intense emotional effect that ordinarily accompanies this ideation, when obtained during free association, was markedly reduced or almost absent. The physiological findings included

- 1) increase in skin resistance (GSR)
- 2) consistent change in EEG record--more alpha wave production--and, more importantly, the appearance of rather unique patterns of alpha wave production that "appear to involve the entire dominant hemisphere

within a few minutes of starting to meditate, and that spread quite rapidly to the opposite hemisphere."

(36, p. 310)

The authors speculated that during meditation, the limbic-system activities are diminished, permitting transmission of signals between hemispheres, particularly to the non-dominant hemispheres, where presumably repressed memories are stored.

Gersten (33) described the use of a meditation technique to aid in the healing of a hospitalized patient's decubitus ulcers and other stigma of multiple sclerosis and psychological symptoms of depression in the context of ongoing psychotherapy. After seven months of no improvement, Dr. Gersten had the patient practice a relaxation meditation exercise for a fifteen-minute period, three times a day. The following techniques were used: (1) relaxation of muscles, (2) focused attention on the breath, and (3) shifting attention to wound sites, concentrating on them and visualizing them healing. There was a marked improvement in both physical and emotional symptoms while the patient was meditating. The author discussed the inability to give any conclusive evidence as to the contribution of the meditation technique to the overall improvement of the patient. He did offer this opinion:

I believe that meditation was probably a significant factor in the healing process because (1) success followed an ABA pattern--active treatment

associated with healing, discontinuation of treatment associated with a relapse, and reinstatement of treatment followed by resumption of healing, and (2) meditation was the only new variable in a long treatment course. (33, p. 599)

G. Deatherage (20) investigated the use of a set of mindfulness meditation techniques with short-term (two to twelve weeks) psychiatric patients in a clinical setting. Deatherage combined a client-centered approach with the goal to "know your mental processes" with mindfulness, which the author defines as developing "bare attention" (registering events without mental evaluation). In Zen, mindfulness is referred to as informal meditation, whereas formal meditation is called zazen, or "sitting." As indicated previously, both meditation practices are considered necessary in Zen practice. To date, with the exception of Shapiro's studies, this study is one of the few attempts to investigate informal meditation. Deatherage does seem to combine the two meditations, however, in his description of the techniques used. First of all, the patient is required to sit for a few minutes and observe the breath, becoming aware of the kinds of disrupting thoughts (present, past, future). According to Deatherage, this formal meditation helps the patient identify the "watcher-self," which is calm, strong, a neutral watcher of the melodrama. Patients were further encouraged to get in touch with the watcher-self throughout the day when feeling anxious or upset and then label thoughts and emotions more objectively

from this different perspective. The author presented case studies in which these techniques eliminated anxiety attacks and depression. In one such case Deatheridge concluded that although thoughts did not decrease about the past, the way those thoughts affected the patient changed in a more positive way. These techniques were used primarily in addition to group psychotherapy.

Schuster (76) investigated the use of meditation practice in a rehabilitative center for court-referred, drug-related crimes. The population tended to be black or Puerto Rican males, seventeen or eighteen years old. The goals listed for extended meditation practice included: (1) developing more awareness of the here and now, (2) beginning to look inward for happiness, (3) developing patience and equanimity, and (4) increasing control over the mind away from conditioned responses. Out of 110-200 residents, over a period of seven months, twenty residents voluntarily became involved, resulting in a group of nine with three present at all sessions. The final group came from a ward in which the author was most closely involved. The group meditated three times a week in the author's office and individually alone each day for fifteen minutes. A discussion followed each group session. The meditation taught was a Buddhist Anapana technique, involving a mindfulness of the breath. The author described the subjective findings. At first, the individuals found it difficult to control

their minds. When their minds became quiet they felt new things and these feelings often caused amazement and fright.

He summarized the results as follows:

Very often they began to seek me out for discussions about the mind; they began to "open up" in therapy, becoming more introspective and insightful; sometimes they even began to "catch" their previous patterned behavior and began to develop new ways of dealing with the world. As these things began to happen, residents tend to look forward to our meditation sessions, often checking with me to make sure that I don't forget. (76, p. 168)

The author discussed some of the problems he encountered, including a lack of privacy for meditation, and the residents' lack of any internal motivation to change. He recommended that facilities be physically equipped for meditation practice and that the staff should view meditation practice in a neutral if not a positive way for the most beneficial results. He also provided a thorough rationale for the use of meditation practice, its objectives, and compatibility with an existential-analytic orientation to therapy.

Meditation and the Treatment of Alcoholism

Parker (70) investigated the usefulness of relaxation techniques, including meditation, as strategies for coping with anxiety for individuals diagnosed as alcoholics. Thirty male subjects were randomly assigned to one of three treatment groups: (1) progressive relaxation, (2) meditation (Beary and Benson), and (3) a quiet rest control group. All three groups met collectively for the first fifteen

minutes to hear a rationale for the use of relaxation as a strategy for coping with anxiety, then dispersed to three separate groups to practice their relaxation technique as instructed by tape recorder. Each group met three times a week for three weeks and were encouraged to practice the relaxation procedure on their own between sessions. The following measures were taken on a weekly basis:

- 1) state anxiety portion of the State-Trait Anxiety Inventory
- 2) blood pressure
- 3) heart rate
- 4) GSR

The results showed less anxiety reported for all groups on state anxiety scores and no significant effects on heart rate and spontaneous GSR's. The progressive relaxation training and meditation training groups showed significant decreases in blood pressure, while control subjects showed a significant increase in blood pressures as they approached the point of discharge. The authors pointed out the therapeutic potential of such techniques to be considerable since "the level of anxiety at the point of discharge from an inpatient substance abuse program may be related to rehabilitation success rates" (70, p. 127).

In a similar study, Gilbert and Parker (34) compared the effects of progressive relaxation training and meditation

training (Beary and Benson) in mood state profiles with alcoholics. Thirty male alcoholic inpatients at a Veterans' Administration hospital were randomly assigned to one of three treatment groups: progressive relaxation group, meditation group, and a quiet rest group. Subjects were pre- and posttested on the McNair, Lorr and Droppelman Profile of Mood States. Results showed that meditating subjects became less tense and slightly less fatigued, while progressive relaxation resulted in a decrease in depression and trend toward increased vigor.

Nuernberger (68), in his doctoral dissertation completed in 1977, investigated the use of meditation as a therapeutic tool in the treatment of alcoholism. One hundred and forty-three male patients at a Veterans' hospital were given the POI, Tellegen's Personality Inventory, and Eysenck's Questionnaire (EPI). The meditation experimental group received two morning taped instructions for twenty minutes and practiced in the afternoon for fifteen minutes without instructions, as well as attended two thirty-minute lectures on meditation. The control group I, in addition to the above, attended two thirty-minute lectures on psychological health. Control II had no contact. Results indicated no significant differences on personality scales. Control I and the experimental group showed significant improvements in self-actualization as

measured by the POI. All groups showed significant change on the EPI Neuroticism Scale.

Other Related Literature

The following review of the literature will be divided into these categories: (1) meditation and consciousness, (2) Eastern and Western psychologies--similarities and differences, (3) meditation and the psychotherapist, (4) related material, and (5) suggestions for research.

Meditation and Consciousness

In 1971, Goleman (40) presented his theory of meditation and consciousness. Goleman proposed that meditation practice may ultimately induce a fifth state of consciousness. He made the following proposals concerning the changes that occur as a result of meditation practice.

- 1) Meditation can accomplish the same type of behavior change as does systematic desensitization and
 - a) change will be less immediate with meditation than with desensitization
 - b) change will be more global with meditation than with desensitization,
- 2) Meditation will reduce symptoms arising from anxiety in psychiatric disorders, especially "anxiety neurosis."
- 3) Post-meditation performance in learning tasks will be significantly improved over pre-meditation performance.

- 4) Post-meditation performance in perceptual tasks will be significantly improved over pre-meditation performance.
- 5) Persons who have meditated extensively, compared to non-meditating controls, should be more accurate in perception of others.
- 6) Persons who have meditated extensively, compared to non-meditating controls, should have less discrepancy between the real and the ideal self.
- 7) Meditators will have more energy and need less sleep compared to their energy and sleep levels before beginning to meditate.
- 8) Several years of meditation will produce deep-level personality changes in the direction of "mental health."
- 9) Several years of meditation will produce changes in musculature and posture in the direction of improvement.
- 10) Meditators will tend to be more resistant to stress-induced fatigue than will non-meditators.
- 11) A fifth state of consciousness exists, which is a fusion of the fourth (meditative) state with the waking, sleeping, and dreaming states but has properties distinct from the first four states.
- 12) People in the fifth state do not tend to habituate in daily experience during the waking state.

- 13) People in the fifth state will experience in meditation minimal unstressing and preponderant pure awareness: unstressing will be derivative "day-residue" from activities prior to the meditation session.
- 14) People in the fifth state have lucid dreams as a regular occurrence.
- 15) People in the fifth state will tend to have an absence of psychopathology and of "metapathology."
- 16) People in the fifth state will function on the level of metaneeds and B-cognition (Maslow's concepts).

This fifth state corresponds to what Maslow described as transcending self-actualizers in his Theory Z (40, p. 22).

Goleman further maintained:

It may be that the metapathologies (as Maslow calls them: cynicism, disintegration, boredom, hopelessness, hatred, black and white thinking, insecurity, selfishness, confusion, conflict, depression, uneasiness) are all symptomatic of "meditation-deprivation." (40, p. 22)

Goleman likened his fifth state person as one who has attained "true sanity" as described by R. D. Laing:

True sanity entails in one way or another the dissolution of the normal ego, that false self completely adjusted to our alienated social reality . . . and the eventual re-establishment of a new kind of ego functioning, the ego now being the servant of the divine, and no longer the the betrayer. (40, p. 24)

R. Berkman (8) discussed the similar principles of Zen and general semantics, in particular, the concept that reality is different from the symbol it stands for. The

author considered the Zen methods of zazen, koan practice, and mondo, and he associated their primary functions as getting to the non-verbal levels of experience, a "no-thought" consciousness state.

In another paper, Goleman (39) examined the system presented in the ancient teachings known as Abhidharma, a classic Buddhist text, and related these teachings to consciousness change produced in formal and informal (mindfulness) meditation. Furthermore, the author contended that every Eastern meditation system now being taught in the West (Zen, T.M.) maintains similar assumptions about human psychology derived from the same source: classical Buddhism. By examining this psychologic system on its own terms, the author hoped to understand better what may be applicable to Western psychology. A summary of his conclusions will follow. According to Goleman, the basic practice for attaining a purely healthy mental state is meditation. Meditation, he asserted, requires an effort to maintain an "attentional set." Two basic meditation strategies include:

- 1) concentration--one-pointed attention to a single percept
- 2) insight--full awareness or mindfulness of any and all contents of awareness

In the process of acquiring these skills, unhealthy factors, as presented in the Abhidharma (delusion, false view, shamelessness, and remorselessness, egoism, perplexity, agitation

and worry, greed and envy, aversion, and clinging to unhealthy states) distract the meditator and thus are inhibited. Healthy factors come to predominate in the natural course of things with further meditation practice. Healthy factors indicated in the Abhidharma include insight, mindfulness, modesty and discretion, rectitude or correct judgment, confidence, nonattachment, nonaversion, impartiality, composure, buoyancy, pliancy, efficiency and proficiency. Therefore, according to Goleman, meditation is a process involving a "simultaneous unlearning of old perceptual/cognitive habits and the acquisition of new ones" . . . and "to the degree that this new pattern becomes an enduring trait, the meditator undergoes a fundamental transformation of his experience of himself and of the world" (39, p. 45).

The attentional retraining involved in meditation, mainly the ability to hold a specific object of awareness, while inhibiting any contrary perceptions, thoughts, or intrusions, can produce the meditation-specific altered states called jhana or samadhi. These states are characterized, says Goleman, by the total exclusion from awareness of normal sensation, percepts, or cognitive activity, and accompanied by bliss and rapture. However, this meditative-specific experience produces no lasting change, according to the Abhidharma. Another attentional strategy is needed called "mindfulness." As stated earlier, mindfulness requires facing each experience as though it were

occurring for the first time. The net effect, says Goleman, is a "deconditioning of habitual response patterns" (39, p. 46). Furthermore, the "flow state" described by Csikzentmihalyi is seen by Goleman to be a possible benefit of meditation. A summary of Csikzentmihalyi's article will be forthcoming. As for the clinical application of meditation, Goleman asserted that most likely meditation can be best used to provide a general psychologic pattern of positive mental states rather than as a response to a specific problem. The author maintained that meditation may also improve health through the neurophysiologic process. In his own research, reviewed earlier, he found that meditators in a stress situation produced a psychophysiologic pattern indicating "increased motoric readiness to respond, heightened global arousal in anticipation of the stressor but more rapid limbic inhibition in recovering from confrontation, accompanied by more positive affect and lower situational anxiety throughout the situation" (39), p. 50). Goleman maintained that this neurophysiologic pattern is in contrast to Benson's view that meditation creates a "relaxation response" marked by diffused low arousal. Goleman further asserts: "I suspect that what transfers to normal waking activity from meditation practice is not simply a relaxed state, but in addition the capacity for focused attention, which is the basic skill acquired in meditation" (39, p. 50).

The author makes further speculations concerning meditation and its application to psychotherapy. Goleman maintained that aspects of meditation are already incorporated into Gestalt therapy, psychosynthesis, autogenic training, and morita therapy. Because of the results obtained from his research, Goleman believes meditation may prove a useful adjunct to any psychotherapy as a stress therapy, since the recovery phase of stress confrontation may be the key to chronic anxiety symptoms. In addition, the author maintained meditation may also offer a way to global self-desensitization of whatever is on one's mind. Thus, in free association following meditation, the patient could more easily allow painful material to emerge and could more easily tolerate this material, providing access to the unconscious. And finally, "A therapy of the future may integrate techniques from both approaches [psychotherapy and meditation] possibly producing a change in the whole person more thoroughgoing and more potent than either in isolation" (39, p. 53).

J. Welwood (107) reexamined views on meditation and the unconscious and offered his interpretation. The author noted several flaws in Western depth-psychology's interpretation of meditation when meditation is likened to Jungian "collective unconsciousness." The author examined the limitations of the present notion of "unconscious" as being inadequate to describe the meditation experience. Welwood

maintained that since research shows the meditator obtains a heightened state of awareness, the misperception that the meditator withdraws into an inner state, separating him- or herself from the outside world, should be dispelled. The author further maintained that meditation can lead to therapeutic-like insights.

By watching thoughts go by, one comes to understand one's own strategies, tendencies, and self-deceptions. Diffuse attention allows things swept under the rug to emerge and be acknowledged. There is something very powerful about this neutral observation of thoughts, without either indulging or suppressing them. (107, p. 15)

Welwood seems to be expressing the same view as Goleman when he indicated that meditation brings about a realization of our conditioned way of being. The author further asserted that the clinical implications for the use of meditation and psychotherapy are promising. What is most unconscious in man, according to Welwood, is his pre-personal relatedness to all things. Resistance, repression, and defenses can be seen as ways of armoring ourselves against this relatedness. Through meditation, the author contended, the notion of our separate self is also dispelled and the sense of relatedness is again allowed to emerge.

In 1978, Suk Chang (17) presented a paper on the psychology of consciousness and the role of meditation in the exploration of consciousness. A summary of the main points in the paper will be presented here. The author contended there are two meanings of consciousness: faculty and content.

Thus far, according to Chang, psychology has concerned itself with content only, thus limiting our understanding of the human psyche. The author contends that the study of meditation allows for exploration of both meanings of consciousness, especially "pure consciousness," consciousness without thinking or content. Two kinds of meditation are discussed, and according to the author, both lead to the same goal: lucid consciousness. These two kinds of meditation include:

- 1) concentrative meditation--focus on a mantra, the breath, etc. One's mind is cleansed of all irrelevancies, and
- 2) free meditation--koan study, morita therapy, sesshin. Mental content is fully and completely developed.

According to Chang, this lucid consciousness results in resolution of the neurotic structure within, clearing one's consciousness, and the acquisition of a lucid mind through which the world and "self" can be seen, undistorted, directly and clearly. In the author's words concerning the effects of meditation, "in meditation that changeable mental content--historically accumulated mental artefacts--is periodically cleansed in order to obtain a lucid consciousness" (17, p. 110). The author also discussed the importance of will or motivation in meditation practice rather than technique. In addition, the following

definition of meditation is offered by Chang:

Meditation is an experiential examination of two selves: the acquired, changeable, and idiosyncratic versus the innate, unchanging, and universal. One self is the transient content of consciousness, and the other, the faculty of consciousness. (17, p. 112)

In 1977, Erika Fromm (32) reviewed papers on altered states of consciousness. The author reviewed the altered states papers by Fisher, meditation research by Brown, the experimental studies on meditation by Goleman and Davidson, Krippner's research concerning psychedelic drugs and creativity, and Sacerdotes' use of hypnosis with his patients. These papers were compared and contrasted with her own paper dealing with a psychoanalytic theory for altered states of consciousness.

Walsh (100) attempted to provide a relatively non-technical review of the evolution and state of the "art of empirical research in meditation" (100, p. 161). Psychological as well as physiological studies were reviewed as well as suggestions for future research. The author presented a further possibility for the effects of meditation which is likened to the process of "dehypnosis."

Walsh maintained:

Such a process in which the state of consciousness is altered and perception is distorted by thoughts without the individual's recognition of these effects is essentially one of hypnosis. From this perspective our usual state of consciousness can be seen as a hypnotized state and advanced meditation can be seen as a process of dehypnosis. This is most

apparent in practices such as Buddhist insight meditation where refinement of perception results in a progressive disidentification from increasingly subtle layers of thought. (100, p. 169)

The author further stressed the early stage of development of empirical meditation research and the problem of not having appropriate measuring devices. It was stated that:

Many conclusions are tentative, and as yet relatively little can be said about the relationship between the shifts in consciousness and perception which are the goals of meditation and the variables which readily lend themselves to Western empirical measures. (100, p. 170)

Eastern and Western Psychologies Similarities and Differences

Several authors not included in this section have drawn parallels between Eastern and Western psychologies but because of other, more prominent issues, were reviewed under a different section. The reader is referred, in particular, to works by Erich Fromm.

In an earlier paper, Ames (3) discussed the similarities and differences in Zen thought and William James. According to the author, James had the Zen sense that immediate experience is most important. Ames further discussed the experiential rebirth described by James and Zen.

Elmer and Alice Green (42) presented an outline of the relationship of the various eastern pre-Columbian religions, psychism, parapsychology, hypnosis, brain-wave feedback, yoga, drugs, meditation, symbols, siddhis, and chakras to

behavioristic, psychoanalytic, and humanistic psychology. Meditation is cited as being one way to obtain transpersonal awareness. Other ways include, according to the authors, psychedelic drugs, yoga, and Buddhism.

J. Radford (73) reviewed those attempts to integrate Zen concepts with Western psychology. The author cites the psychological research by Berger, Maupin, and Lesh as the most recent investigators at the time of his review into Zen concepts and psychotherapy. The author contends that Zen itself is a variety of psychology and cites similarities in Zen and other psychological therapies, including existential psychotherapy, Gestalt therapy, psychoanalysis, and the Japanese Morita therapy. Radford argues against the importance of the scientific vs. the nonscientific nature of Zen, as well as the scientific vs. nonscientific importance of the study of psychology. The author contends that all forms of psychotherapy are, more or less effectively, doing the same thing numerous forms of religion have always done: "give meaning, coherence, and purpose to life" (73, p. 65).

Sallis (75) attempted to relate the goals of humanistic psychotherapy, specifically self-actualization, to the theoretical concepts of meditation. Four characteristics of self-actualizers taken from Maslow's book, The Farther Reaches of Human Nature, were compared to meditation theory and research. The author contends that meditation philosophy

(more specifically Zen) and Maslow share a similar view of human nature whereby man is endowed with the potentials for perfection but is prevented from expression of this potential because of social conditioning and fears. In conclusion, it is suggested that meditation is quite compatible with Maslow's description of the goals of self-actualization and may be used by those pursuing that aim or those engaged in facilitating the search of others.

Meditation and the Psychotherapist

Keefe (51) presented a rationale for meditation practice by the psychotherapist. The author outlined three main products of meditation facilitative to therapeutic behavior and interpersonal functioning:

- 1) enhanced awareness of one's own feelings
- 2) increased ability to hold complex cognitive processes in abeyance to enhance perception
- 3) enhanced capacity to maintain a focus of attention and awareness upon present events--in other words, to be in the here and now.

The author contends that contemporary phenomenological psychologies and psychotherapies have a parallel in the meditative traditions of the East. A comparison is made between Maslow's concepts of "being cognition" and S. Jourard's "transcendent perception" to the Zen description of "bare attention" (temporarily suspending thought,

verbal and visual), various schools of psychotherapy arising from an existential base, as well as specific approaches to conjoint therapy which emphasize the capacity to be in the moment with the patient or client.

Related Papers and Research

In 1970, Lesh (57) provided a historical landmark in meditation research with his study on Zen meditation and the development of empathy in counselors. A summary of his research, including findings and conclusions, will follow. A group of counselor trainees practiced meditation for thirty minutes, as a group, each weekday for four weeks. A Zen breath meditation was practiced: counting one on exhalation, two on inhalation, up to ten counts then repeating. After each session, subjects recorded their experience on a 4 x 6 card. At the end of four weeks all the sessions were rated by three judges according to a scale similar to Maupin's (63). The subjective experiences scored ranged from "0" (difficulty in concentration) to "X" (satori, great emotional experience). In addition, subjects were pre- and posttested on an Affective Sensitivity Scale Test to measure empathy, an Experience Inquiry (Fitzgerald) measuring adaptive regression by tapping subject's openness to inner and outer experience, and the POI to measure the individual's degree of self-actualization. The results confirmed the hypothesis that zazen practice

is an effective means of increasing empathy. Also, the hypothesis was confirmed that response to meditation is positively correlated with openness to experience. The hypothesis that individual scores in openness to experience are positively correlated with individual scores in Affective Sensitivity was also confirmed. A detailed description of the subjective experiences occurring during zazen is also given by the author.

The "flow" experience has been indicated by Goleman to be one of the experiences associated with meditation. Csikzentmihalyi (18) presented his concept of the flow experience in 1975. In his paper, the author indeed compared the flow state to the meditative state experienced in Zen as well as religious ecstasy, creative experiences and various play experiences. The flow experience, described by the author, includes feelings of total involvement, self-forgetfulness, intrinsic reward, not cognizant of outcome or reward, relaxation, concentration, ability matched demand of the activity, freedom from worry or anxiety about failure, unambiguous feedback, and enjoyability.

Suggestions for Research

Roshi Shimano and D. Douglas (90) attempted to add to the understanding of potential research in Zen by explaining the Zen concepts of meditation and enlightenment. Possible sources of research were suggested by the authors:

- 1) practice of zazen and the effects on daily life
- 2) general life change initiated by enlightenment
- 3) effect on mental processes (mayko, hallucinatory perceptual projections, for example)
- 4) joriki--build-up of energy seen after several days of intensive meditation
- 5) relationship between physiological and psychological manifestations of the states of samadhi

The authors advocated zazen practice for psychiatrists. In addition, it was suggested that research be carried out only by those practicing Zen meditation themselves to avoid misinterpretation of findings. According to the authors:

To properly investigate these phenomena, the observer should be experienced enough in Zen meditation to be able to recognize and correlate his objective findings with the subject's inner experience, rather than simply "explaining" it on the basis of a pre-existing theory. (90, p. 1302)

In a paper presented in 1977, Daniel Brown (12) attempted to identify the most important variables in meditation which lend themselves to empirical research. The three kinds of variables included (1) nonspecific variables, common to all meditation practice, (2) specific variables, limited to certain meditation practices, and (3) time-dependent variables, changing with meditation practice. The author presented several suggestions for research hypotheses based on these variables.

In summary, this review has attempted to cover several different lines of inquiry concerning meditation practice

with particular emphasis on Zen meditation or zazen. Depending upon the individual interests of the various authors, meditation has been viewed from several perspectives, including (1) a technique to facilitate positive psychological and physiological change, (2) a relaxation technique, (3) a method for reducing or eliminating drug consumption, and (4) a means unto itself for transcending ordinary consciousness. It seems that empirical research in this field, as well as philosophical and descriptive papers, are increasing up to the present.

As Walsh (100) has indicated, the psychological study of Zen meditation, as well as other meditative practices, is now in the pioneering stage of inquiry. The implications for further study into the possible applications of Eastern meditative disciplines to Western psychology are promising as well as exciting.

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CHAPTER III

METHODS AND PROCEDURES

This chapter provides a description of (1) the procedures involved in the selection of the subjects, (2) the instrumentations utilized, (3) the experimental design of the study, (4) the method of experimenter rotation, (5) the procedures involved for data collection, and (6) the statistical procedures employed to analyze the data.

Description of Subjects

Two different populations were utilized in this study: a college student group and a clinical group. To obtain student subjects, an announcement was read, asking for student volunteers to participate in the study, in the undergraduate psychology and sociology classes and one philosophy class in a metropolitan community college. Students were told the study involved the investigation of various methods used to reduce stress and increase self-control of internal states. No further explanation was provided. Extra credit was given for participation in the experiment, but participation in the study was strictly voluntary. Each volunteer was asked to fill out a questionnaire (Appendix A) for screening purposes. Those students who were practicing meditation or who were receiving psychotherapy, individual or group, were

excluded from the study in order to minimize extraneous variables.

In order to provide sufficient data for this investigation, a minimum number of ten subjects was considered necessary for each of the three groups. Of the sixty volunteers in the student group, forty-six completed the personality inventories and were deemed acceptable subjects for this study. Students were randomly assigned, where possible, to three treatment groups: experimental, placebo control, and control. Originally there were sixteen subjects in the experimental group, fifteen in the placebo group, and fifteen in the control group, but six students were moved to a different group because of conflicting schedules. The student population included thirty-one females and fifteen males. For each group, eleven females and five males were included in the experimental (meditation) group, nine females and six males in the placebo group (posture only), eleven females and four males in the control group.

The mean age for the experimental group was 28.4. The youngest member was eighteen and the oldest fifty-six. The mean age for the placebo group was 29.93, with the youngest member being seventeen and the oldest fifty-two. The mean age for the control group was 28.42, with the oldest member aged forty-six and the youngest nineteen.

At the initial session each subject in the experimental and placebo groups was asked to sign a contract (Appendix B)

pledging agreement to practice the procedures as instructed for the eight-week treatment period. A total of twenty-four subjects completed the study: ten in the experimental group, six in the placebo group, and eight in the control group.

Subjects selected for the clinical population group were volunteers from an inpatient group receiving treatment in the alcoholic and drug unit at a Texas state mental hospital. An introductory twenty-minute lecture was given to incoming patients at their regular orientation meeting on five consecutive days to five new groups of patients. A copy of this lecture appears in Appendix I. Possible benefits from meditation were introduced, including the idea of meditation as a "natural high," meditation and reduced alcohol and drug consumption, as well as meditation as a method to help relieve stress. The necessity for further study in this area was also stressed. A questionnaire (Appendix A) was given each interested patient in order to screen out those practicing meditation. Further screening involved the elimination of patients with active psychotic symptoms, impaired mental faculties, or organicity as diagnosed and reported by the staff psychiatrist.

A minimum number of ten subjects in each of the two groups was determined to be an adequate number to obtain sufficient data for this investigation. A total number of forty-five subjects volunteered, and from this group thirty-seven met the requirements for participation in the study and

completed the pretest measurements. The experimental or treatment group (meditation) was composed of nineteen patients: three females and sixteen males. The control group was composed of eighteen patients: four females and fourteen males. The mean age for the experimental group was 29.84, the youngest being twenty and oldest forty-three. The mean age for the control group was 32.3, the youngest being twenty and the oldest forty-nine.

All patients included in the study were self-admitted except for two court appointees in the experimental group and three in the control group. In the experimental group, ten subjects were admitted for alcoholic-related problems, four for drugs only (primarily cocaine and speed), and five for a combination of alcohol and drug-related problems. In the control group twelve subjects were admitted for alcoholic-related problems, none for drugs only, and six for a combination of alcohol and drug-related problems.

Two individuals participated in the meditation group but were not included in the study because of an inability to complete the personality inventories.

At the initial session, individuals in the experimental group were asked to sign a contractual agreement (Appendix C) to practice the procedure as instructed for the four- to five-week period. At this particular institution the usual length of time as an inpatient is five weeks, but according to the unit director there is a high drop-out rate. A total number

of seventeen subjects completed the study, eight in the experimental and nine in the control group.

Instrumentation

For this study, the Personal Orientation Inventory (POI), developed by Shostrom (30), was used to measure personality variables based on Maslow's humanistic model of personality development. This inventory is designed to measure healthy personality characteristics based on Maslow's concept of the self-actualizing or more fully functioning individual as opposed to measuring the presence or absence of psychopathology.

There are two main personality variables assessed by the POI: (1) time competence (which indicates the extent to which the individual lives primarily in the present rather than the past or future), and (2) reactivity orientation or inner support (the extent to which an individual is guided by his own internal valuing system as opposed to external pressures). These two personality variables may be related to reported changes associated with various meditation practices. A brief discussion of this relationship will be provided here.

The characteristic of "time competency" may correspond to the reported changes that occur with meditation practice in that the individual begins to experience an "immediate grasp of reality" (8) or experience of no past or future,

which seems to carry over after formal meditation in the form of increased capacity to attend to the immediate situation (10).

The second characteristic measured by the POI, the "inner support" dimension, refers to the extent to which the individual's beliefs and behavior are determined by other individuals and groups (including the expectations and reactions of society, peers, and family) rather than the individual's own internal valuing system. With meditation practice and the experience of the "unconditioned-self" or "preconditioned-self" (10, 18), the individual is shaken into a new trust of his inherent, limitless capacity to change and find answers within rather than without. As Fromm (8) has commented, the individual begins to see the futility of seeking answers outside of himself and, corresponding to the language of the POI, becomes more internal as measured by the "inner support" dimension.

Several researchers have used the POI to study the effects of various meditation practices, primarily with Transcendental Meditation (T.M.). In general, meditators have scored higher on degree of self-actualization, time-competence and inner support than a comparison control group (12, 26). Other studies (19, 20, 25) have shown positive change on the same dimensions when comparing pretest and posttest change after meditation practice for a period of one to three months.

According to a review in Buros' Seventh Mental Measurement Yearbook (4), the content validity of the POI is satisfactory. Shostrom and Knapp (3) report concurrent validity in a study which indicated differentiation between a group of persons entering therapy and a group of persons in advanced stages of psychotherapeutic progress.

Bruce Bloxom (4) states that the POI lacks some desirable properties as an inventory because of an item overlap in its subscales, but if only the two major scales, time competence and inner support, are used (as is the case in this study), this problem is not present.

The reliability coefficients, as reported in the Manual, range from .55 to .85, with .84 being established for the inner support scale. The normative data are based on an undergraduate college student population of 2,007 entering freshmen, as well as selected occupational and clinical groups.

Rotter's Internal-External Locus of Control Scale (I-E Scale) (22) was also used in this study. It was designed to measure the "generalized expectancies" an individual has in relation to control over life situations (whether or not he believes rewards come from his own behavior and thought or from external sources) as well as the extent the individual feels that luck or chance rather than his own thoughts and behavior determine what happens to him (22).

The reported attitude change measured by the POI and associated with meditation practice also corresponds to the I-E Scale on the dimensions of internality vs. externality. With the experience of the "preconditioned self" during meditation and the resulting strengthening of inherent capacities, the individual may also begin to realize his or her own responsibility for causing present unhappiness, rather than placing the blame on fate, luck, or another person. In other words, although the individual may not be able to control all external phenomena, it may be possible to control one's internal response(29), which in Zen terminology indicates a state of increasing non-attachment (32).

In research using Rotter's scale, meditators have been found to be more internally controlled than a matched control group (12).

Researchers investigating the internality vs. externality of alcoholics have reported varying findings (2). For the purposes of this study, those findings which indicate that alcoholics are more externally controlled than normals (7, 11, 16) will be used as the rationale for including this instrument for the alcoholic group.

The I-E Scale consists of a twenty-nine-item, forced-choice questionnaire. Six of these items are "fillers," the other twenty-three offer choices between internal and external belief statements. The total score is computed simply by summing the number of internal beliefs endorsed.

Several factor analyses reported by Rotter support the assumption of unidimensionality of the I-E Scale, and numerous laboratory and survey studies give evidence for its construct validity (22).

The original sample population was composed of 200 male and 200 female university undergraduate psychology students. For this group an internal consistency reliability coefficient of .70 was reported. Retest reliability for the same group ranged from .60 for males to .83 for females, and for the control group it was .72 (n=60).

Witkin's Embedded Figures Test (EFT) consists of twenty-four complex colored figures, each containing one of eight simple figures. The test is administered by presenting a card on which a complex figure appears to a subject for fifteen seconds, after which the subject is asked to describe it. Then a card containing the simple figure embedded in the complex figure is shown for ten seconds. The complex figure is again presented and the subject is asked to find the simple figure and outline it with a pencil. The subject has five minutes in which to respond before a failure is recorded and the next card presented. The score on each item is the time taken to find the embedded figure (5).

In Buros' Sixth Mental Measurement Yearbook, the reviews by H. Gough and Leona Tyler are quite favorable. Gough states that the reliability coefficients, whether by the odd-even, test-retest, or analysis of variance method, are

excellent, the median coefficients in ten studies being .905 (5).

As to the theoretical rationale supporting the test, Gough again states that one of the most attractive features of the test is its firm anchoring in a systematic context of theory and empirical evidence (5). The EFT, according to Witkin (35) measures field independence, cognitive style, and an analytical vs. global perceptual mode. His studies indicate individuals who are "field-dependent" tend to be characterized by "passivity in dealing with the environment; by lack of self-esteem and by the possession of a relatively primitive, undifferentiated body image," while people who are "field-independent" in perception tend to have personalities characterized by "activity and independence in relation to the environment; by close communication with and better control of their own impulses; and by relatively high self-esteem and more differentiated, mature body image" (35, p. 495).

The EFT has been used in at least one study investigating Zen meditation procedures with significant results. Kubose (14) reported that naive student meditators found the embedded figures more quickly after three weeks of meditation practice than a matched control group.

Studies done by Witkin (35), Rhodes (21), Alexander (1), and Bergman (3) indicate that alcoholics as a group are more field-dependent than a matched non-alcoholic group. As

stated earlier, increased capacity to attend seems to be an outcome of meditation practice (14). Therefore, meditation practice may prove particularly useful with alcoholics in helping them learn to filter out extraneous stimuli from the environment so that attention may be given to relevant stimuli (develop field independency). The EFT seems particularly appropriate to use with the alcoholic patient group.

For the purposes of this study, the short form (33) (presentation of the first twelve figures only) was used, and each card was presented in random order.

The Self-Monitoring Questionnaire (Appendix H)

This questionnaire was developed by the experimenter and is similar to ones developed by Kubose(14) and Shapiro (28). The questionnaire attempts to measure the kind and degree of intruding thoughts, feelings, and sensory experiences of the individual while meditating.

According to Welwood (34) and others (6, 15, 24, 27) the meditator frequently experiences insights into his or her past which may be therapeutic in nature. For this reason, question six was included in the questionnaire. Furthermore, the literature also reports meditators may experience non-ordinary bodily sensations, including altered states of consciousness (9, 13, 17, 34). Therefore, questions seven and eight were included in the questionnaire.

Procedure for Collecting Data

For the student group, an initial reassessment meeting was held with the students and the experimenter one week immediately prior to the first training session. This meeting was held in a classroom at the community college. Interested students were requested to fill out the information sheet for screening purposes. At this time they were given limited information concerning the nature of the study: that they would be trained in one or more stress reducing procedures leading to increased self-control of internal states. They were advised not to discuss these procedures and their experiences with others participating in the study during the treatment period and were required to sign a contractual agreement with the experimenter. All individuals were informed that they were participating in a research project, that their participation was strictly voluntary, although extra course credit would be given for their participation. It was stressed that further information could not be given until after the experiment to avoid contamination of results, but after completion of the training period a full explanation would be given to interested individuals.

All individuals were given a brief explanation of the personality measurements, as well as the assurance of confidentiality of results. They were told that after the completion of the experiment, including completion of the

same measurements in eight weeks, the experimenter would be available to discuss the information obtained from these measurements in a private conference with interested individuals. Six individuals in the experimental group, three in the placebo group, and three in the control group requested and received this information after completion of the study. Individuals were asked to report to the group testing room at the college testing center the following day to complete the personality inventories. The following inventories were used to obtain the pretest data: the Personal Orientation Inventory and the Internal-External Locus of Control Scale.

At the initial training session an explanation of the self-monitoring questionnaire was given. Individuals in the experimental and placebo groups were instructed to fill out the questionnaire at the end of each session, both with the group and after each individual session. Questionnaires obtained from individual sessions were to be turned in weekly, at the first group session, to the experimenter. No explanation was given concerning the category of "auditory" or "visual" experiences on the questionnaire, in order to avoid the possible "suggestion" of such experiences. It was felt by the experimenter that if such experiences occurred (seeing a bright light, colors, musical sounds, voices, for example), such phenomena would be dramatically apparent to the subject as an experience to record on the questionnaire.

Such phenomena are frequently reported to occur by practicing meditators (13, 18). Care was taken, therefore, to give no indication of possible inner experiences of consciousness change with the practice of the procedure.

Acceptable individuals were randomly assigned, within the limitations of scheduling requirements, to one of three groups: (1) experimental or meditation group, (2) placebo or posture only group, and (3) control or no-treatment group.

The posttest treatment data was obtained between the seventh and eighth week. Individuals came to the testing center and completed the same personality inventories used for the pretest data: the Personal Orientation Inventory and the Internal-External Locus of Control Scale. These inventories were filled out in the group testing room.

For the clinical group, the week following the introductory lecture and the day before the initial session all interested patients met as a group to complete the pretest measurements: the Personal Orientation Inventory and the Internal-External Locus of Control Scale. A brief explanation was given concerning the nature of a personality "test": that the measurement would give a general picture of certain personality characteristics, as well as the confidentiality of results. All patients were informed that they were participating in a research project and that their participation was strictly voluntary. Each patient signed an Informed Consent

form (Appendix D) required by the hospital. In addition, any relevant questions were answered before subjects signed the Informed Consent form. It was explained that no information concerning results from the personality measurements could be given until after completion of the study, but after completion of the study any patient desiring information concerning results from the personality measurements could receive this information during a private consultation with the experimenter.

The post-treatment data were gathered between the fourth and fifth week of the investigation. Patients again met as a group and completed the same two personality measurements: the Personal Orientation Inventory and the Internal-External Locus of Control Scale. Both the pretesting and posttesting were done at the group counseling room at the alcohol and drug unit at the Texas State Mental Hospital.

The Witkin Embedded Figures Test was given during the final week to all participants except two, who did not show up for the test. Patients were scheduled individually and administered the EFT by the experimenter.

At the first group session an explanation of the self-report questionnaire was given. This questionnaire was designed to obtain additional information concerning each individual's subjective experience while meditating and to observe these experiences over the treatment period. As in

the student group, care was taken to avoid the possible suggestion of non-ordinary experiences.

Following the completion of the study each patient in the experimental group was seen individually to answer any questions and to give an overall evaluation of the results obtained from the personality inventories, the EFT, and the self-report questionnaires. Three patients from the control group requested and received information concerning the pretest and posttest measures.

Rotation of Leaders

For the student group, the experimenter rotated monitoring of the groups with another individual, an advanced doctoral student in clinical counseling, trained by the experimenter in the procedure used for the study. Because there were two sessions each week for both groups, each leader met once a week with each group, the experimental and placebo groups respectively. The doctoral student assisting the experimenter did not know which group was the experimental and which the placebo group. He was instructed to give no instructions to subjects other than correcting posture and specifically to give no instructions concerning control of the breath or thought processes. The initial instruction (the first three sessions during the first week) for both the experimental and placebo groups was given by the experimenter, but thereafter the experimenter rotated with the other group leader.

For the clinical group, following the initial session, which was led by the experimenter, the experimenter rotated group leadership with two other individuals trained by the experimenter in the Zen meditation procedure used. This rotation occurred on a regular schedule, the experimenter meeting with the group for two evenings during the week and two afternoons during the week. The other two leaders met with the group one afternoon a week and one evening, respectively. These individuals, both male, were staff members employed at the alcoholic and drug unit of the hospital. One leader was employed as a social worker and the other as a staff psychologist. These group leaders received instruction in one session by the experimenter and attended the initial session with the experimental group. Since their function was primarily that of monitoring the group, an in-depth knowledge of the Zen procedure used was not considered necessary. Any unusual occurrence or question was reported to the experimenter and dealt with individually outside of the group session.

The experimenter was trained in the Zen meditation procedure used in the study by advanced meditation students at a Zen meditation center under the supervision and guidance of a Japanese Rinzai Zen Master, Joshu Sasaki Roshi (23).

Description of Treatment Conditions

In the student group, the subjects were randomly assigned, within the limitations of conflicting schedules, to one of

three groups: (1) experimental, (2) placebo control, or (3) control.

At the initial group meeting, subjects in both the experimental and placebo groups were instructed not to discuss their experiences with other participants and were asked to sign a contractual agreement to this effect. They were also asked to sign a contractual agreement to participate in the manner instructed for the prescribed time period.

Subjects in the clinical group were randomly assigned to one of two groups: (1) experimental or (2) control.

At the initial group meeting, subjects were asked to sign a contractual statement agreeing not to discuss their experiences with other subjects and to perform the procedure as instructed for the specified time period.

Experimental Condition

Subjects in the experimental group for both the student and clinical population groups received instruction in a specific formal meditation procedure from the Rinzai Zen tradition called zazen. This specific procedure, initially, requires a concentrated effort of focusing one's attention on the breath and a specific bodily posture.

Student group.--During the first session with the experimental group the experimenter demonstrated the posture and explained the method of focusing attention on the breath. A detailed description of this instruction is given in Appendix E.

In addition to the explanation of the Zen meditation procedure to be followed, subjects were also given an explanation of the Self-Monitoring Questionnaire, as described previously. They were instructed to practice the meditation procedure every day and record the day and time on the questionnaire to be turned in each week to the experimenter. This initial session lasted approximately forty-five minutes, and each session thereafter lasted thirty minutes. Following the initial session, the experimenter met with the group the next two consecutive days. During these sessions, posture was observed and corrected as needed and questions answered concerning focused attention on the breath. For the first three sessions a ten-minute time period was deemed sufficient for holding the meditation posture. Subsequent group sessions, held twice weekly, were monitored by the rotating instructors. The time for holding the meditation posture was lengthened five minutes each week until a total time of thirty minutes was reached, at the beginning of the fifth week. Further instruction was limited to correcting posture, reminding subjects to focus on the breath, and repeating when necessary the initial instructions.

All group sessions were held in a classroom during the afternoon, twice weekly. The room used was carpeted, the desks cleared away, and the blinds nearly drawn to minimize distraction. Subjects were asked to bring a cushion and wear

comfortable clothing for the meditation sessions. In addition, subjects were instructed to meditate on their own for twenty to thirty minutes a day and record subjective experiences on the self-monitoring questionnaire.

Clinical group.--Essentially, the instruction for the patients serving as experimental subjects received the same instruction as the student experimental group. At the initial group session patients received instruction in zazen, the formal Zen meditation procedure, both focusing attention on the breath and the formal posture. However, due to the physical condition of some patients, an option was given in the posture used: the regular formal cross-legged posture or sitting in a chair. A detailed description of these instructions are given in Appendix G.

The meditation sessions were held each weekday for five weeks. Due to scheduling problems, two groups were formed, one meeting in the afternoon and the other in the evening with the exception of Fridays. On Fridays both groups met together in the afternoon. With the exception of an occasional sitting outside on warm days, both groups were held in the same room, the quietest one available in the hospital unit. The room was carpeted, cleared of furniture with the exception of a few straight-backed chairs. Incense was burned and a candle lit during the meditation session. Patients were asked to wear comfortable clothing and to bring a pillow to each session.

For the first three group sessions the meditation posture was held for ten minutes, but the next three sessions were extended to fifteen minutes. By the end of the second week at the seventh group session, the time was increased to twenty minutes. It was increased to thirty minutes during the third week or the eleventh group session.

Questions concerning personal experiences were handled individually outside of the group to avoid possible suggestion of such experiences to other patients.

Patients were further requested to meditate on their own for fifteen minutes each morning as well as on weekends. The date and time of day were recorded on the Self-Monitoring Questionnaire, as well as subjective experiences while meditating. In order to collect data and attempt to ascertain whether or not subjects were doing the meditation exercise, questionnaires were turned in each Monday to the experimenter.

Instruction following the initial session involved observation and correction of posture as needed, reiteration of instructions for focusing attention on the breath, and encouragement. For this group, more encouragement was necessary to maintain interest and participation than for the student population groups. Encouragement took the form of short statements by the instructor such as, "You are doing well," "Don't give up, the first week is the hardest," "Sit in a chair or come out of the posture if too painful but keep

focusing attention on the breath," "What you are going through is similar to what others experience--it will pass," "Don't worry about what you look like," "Don't be too hard on yourself," "Accept whatever you are feeling--don't try to change it--just keep focusing on the breath," "Anything you experience comes from within you."

The treatment period lasted for approximately five weeks with a total of twenty-five group sessions.

Placebo Condition

Student group only.--The same format was followed for the placebo group as the student experimental group. The essential difference was the absence of instruction to focus attention on the breath. Quite the contrary, subjects were instructed not to control their thoughts in any way, but to allow them to occur in a normal manner. A detailed description of instructions are given in Appendix F. Instruction in formal zazen posture was given during the initial group session by the experimenter and posture observed and corrected during the next two consecutive daily group sessions. Group sessions were held twice weekly thereafter, monitored by the rotating instructors. Further instruction was confined to reiteration of initial instruction and correction of posture. Subjects were instructed to practice the procedure each day for twenty to thirty minutes during the eight-week training

period and to record on the questionnaire the time and day as well as subjective experiences while sitting.

The placebo group met twice weekly in the same classroom as the experimental group but on alternate days. The room was cleared of furniture and dimly lit. Participants were asked to wear comfortable clothing and to bring a cushion to each session.

Control Condition

Student and clinical groups.--Subjects in this group were given the same measurements on the same date as the experimental and placebo groups but received no treatment.

Treatment of Data

The research hypotheses were converted to the null hypotheses for statistical treatment of the data. Data obtained from pretests and posttests on all measures (for hypotheses I and II, A, B, and C) were treated statistically for significance of differences between group means, using analysis of covariance. The covariate measure in each analysis was the pretest score for each of the measures. For the above measures, the F-ratio was computed for the comparison of mean scores of the experimental and control groups. For hypothesis II-D, data obtained from posttest measures were treated statistically for significance of differences between group means, using a one-tailed t -test for correlated means.

The chi-square test of independence was used to determine whether frequency of responses obtained from question four on the Self-Monitoring Questionnaire differed significantly for the experimental and control groups. Pretest and post-test responses on question five of the Self-Monitoring Questionnaire were treated statistically for significance of difference between means using a two-tailed t -test for correlated means. The .05 significance level was required for rejection of the null hypothesis for all statistical analyses. All statistical computations were completed at the North Texas State University Computing Center.

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CHAPTER IV

RESULTS AND DISCUSSION

The main purpose of this investigation was to determine whether certain personality variables could be changed as a result of Zen meditation training and practice, and if so, in the case of the student population group, to isolate the variable producing the change. The findings of this investigation are presented, analyzed, and discussed in this chapter. The data are examined as they relate to each hypothesis. Additional statistical and subjective data are also presented.

Results

For testing purposes the research hypotheses stated in Chapter I were restated in the null form. Null Hypothesis I-A was: Following the treatment period, individuals in the student population experimental group will not exhibit significantly greater positive change (present orientation) as measured by the time-competence (T-C) dimension of the Personal Orientation Inventory (POI), than individuals in the placebo group and the control group.

The means, adjusted means, and standard deviations for the experimental, placebo, and control groups' scores on the time-competence (T-C) dimension on the POI are shown in Table I.

TABLE I
 MEANS AND STANDARD DEVIATIONS ON THE
PERSONAL ORIENTATION INVENTORY
TIME-COMPETENCE SCORES
 (STUDENT POPULATION GROUPS)

Group	N	Means			Standard Deviations	
		Pre-test	Post-test	Adjusted	Pre-test	Post-test
Experimental	10	17.1250	18.8000	18.8300	2.4732	2.2010
Placebo	6	16.7333	17.6667	17.9900	2.4919	3.1411
Control	8	18.2000	18.5000	18.2300	2.4842	1.6903

This table shows that the experimental group pretest mean T-C score was 17.1250, with a posttest T-C mean score of 18.8000. The placebo group's pretest mean score on the T-C dimension was 16.7333 and a posttest T-C mean score of 17.6667. The control group's T-C pretest mean score was 18.2000 with a posttest mean score of 18.5000. Pretest and posttest T-C score standard deviations for the experimental group were 2.4732 and 2.2010. The placebo group pretest and posttest T-C score standard deviations were 2.4919 and 3.1411. The pretest and posttest T-C score standard deviations for the control group were 2.4842 and 1.6903. The adjusted mean of the experimental group scores was 18.8300. The placebo and control group scores adjusted means were 17.9900 and 18.2300 respectively.

The results of the analysis of covariance for the scores of the three groups on the T-C dimension of the POI are presented in Table II. The F-value of .463 did not attain the .05 level of significance; therefore, Null Hypothesis I-A is retained.

TABLE II

ANALYSIS OF COVARIANCE DATA FOR T-C SCORES ON
THE PERSONAL ORIENTATION INVENTORY
(STUDENT POPULATION GROUPS)

Source of Variance	Sum of Squares	df	Mean Square	F	P
Between	3.047	2	1.523	0.463	0.636
Within	65.831	21	3.292		
Total	68.878	23	. . . . .	. . . . .	. . . . .

Null Hypothesis I-B is stated as follows: Following the treatment period, individuals in the student population experimental group will not exhibit significantly greater positive change (internal valuing system), as measured by the Inner-Direction (I-D) dimension of the Personal Orientation Inventory than individuals in the placebo and control groups.

The pretest and posttest means, adjusted means, and standard deviations for the three groups' I-D scores on the POI are presented in Table III.

The pretest mean for the experimental group I-D score on the POI was 85.8750, with a posttest I-D mean of 89.4000.

TABLE III
 MEANS AND STANDARD DEVIATIONS FOR
PERSONAL ORIENTATION INVENTORY
TIME-COMPETENCE SCORES
 (STUDENT POPULATION GROUPS)

Group	N	Means			Standard Deviations	
		Pre-test	Post-test	Adjusted	Pre-test	Post-test
Experimental	10	85.8750	89.4000	88.7900	8.2047	12.2493
Placebo	6	82.7333	85.3333	87.2800	12.9806	14.3759
Control	8	88.0000	86.5000	85.8100	8.0623	7.1714

The placebo group I-D score pretest mean was 82.7333 and the posttest mean 85.3333. The pretest and posttest means for the control group were 88.000 and 86.5000, respectively. The adjusted mean of the experimental group scores was 88.7900. The placebo group adjusted mean score was 87.2800 and the control group adjusted mean score 85.8100. The standard deviations of the experimental group pretest and posttest I-D scores on the POI were 8.2047 and 12.2493, respectively. The pretest and posttest I-D score standard deviations for the placebo group were 12.9806 and 14.3759. The standard deviations for the control group were 8.0623 and 7.1714.

The analysis of covariance data for the I-D scores on the POI are presented in Table IV. The obtained F-value

TABLE IV

ANALYSIS OF COVARIANCE DATA FOR I-D SCORES ON
 THE PERSONAL ORIENTATION INVENTORY
 (STUDENT POPULATION GROUPS)

Source of Variance	Sum of Squares	df	Mean Square	F	P
Between	39.711	2	19.856	.384	.686
Within	1033.437	21	51.672		
Total	1073.148	23	. . . . .	. . . . .	. . . . .

of .384 is not significant at the .05 level. The Null Hypothesis I-B is retained.

Null Hypothesis I-C states: Following the treatment period, individuals in the student population experimental group will not exhibit significantly greater positive change (internal locus of control), as measured by the Internal-External Locus of Control Scale (I-E), than individuals in the placebo group and the control group.

The means, adjusted means, and standard deviations for scores on the I-E scale are presented in Table V. The pretest mean for the experimental group I-E score was 8.8750 and the posttest mean score 8.70. The placebo group pretest I-E mean score was 7.1333, with a posttest I-E mean score of 4.6667. The control group's pretest I-E mean score was 8.20, and the posttest mean score was 9.000. The adjusted

TABLE V
 MEANS AND STANDARD DEVIATIONS FOR
INTERNAL-EXTERNAL LOCUS OF
CONTROL SCALE SCORES
 (STUDENT POPULATION GROUPS)

Group	N	Means			Standard Deviations	
		Pre-test	Post-test	Adjusted	Pre-test	Post-test
Experimental	10	8.8750	8.7000	7.4900	4.1773	4.5717
Placebo	6	7.1333	4.6667	7.2100	2.6150	2.2509
Control	6	8.2000	9.0000	8.4600	3.4476	3.5777

mean score of the experimental group was 7.4900. The placebo and control groups' adjusted mean scores were 7.2100 and 8.4600, respectively. The standard deviations of the pretest and posttest I-E scores for the experimental group were 4.1773 and 4.5717. The placebo group's pretest and posttest I-E score standard deviations were 2.6150 and 2.2509. The control group's pretest and posttest standard deviations were 3.4476 and 3.5777.

The results of the analysis of covariance of the I-E scores of the three groups are presented in Table VI. The F-value of .469 was not significant at the .05 level; therefore, the Null Hypothesis I-C is retained.

Null Hypothesis II-A states: Following the treatment period, individuals in the clinical experimental group will

TABLE VI

ANALYSIS OF COVARIANCE DATA FOR SCORES ON THE
INTERNAL-EXTERNAL LOCUS OF CONTROL SCALE
 (STUDENT POPULATION GROUPS)

Source of Variance	Sum of Squares	df	Mean Square	F	P
Between	5.081	2	2.541	.469	.633
Within	97.415	19	5.412		
Total	102.496	21	. . . .	. . . .	. . . .

not exhibit significantly greater positive change (more present orientation), as measured by the time-competence (T-C) dimension of the Personal Orientation Inventory (POI) than individuals in the control group.

Table VII shows the means, adjusted means, and standard deviations for the groups' T-C scores on the POI. The pretest mean of the experimental group was 12.4734, with a posttest T-C mean score of 14.750. The control group obtained a pretest T-C mean score of 12.1111 and a posttest mean score of 13.3333. The adjusted mean score for the experimental group was 14.0000. The control group's adjusted mean score was 13.3100. The T-C pretest and posttest standard deviation scores by the experimental group were 2.7562 and 3.3274, respectively. The control group's pretest and posttest standard deviation T-C scores were 3.270 and 2.000.

TABLE VII
 MEANS AND STANDARD DEVIATIONS FOR
PERSONAL ORIENTATION INVENTORY
TIME-COMPETENCE SCORES
 (CLINICAL POPULATION GROUPS)

Group	N	Means			Standard Deviations	
		Pre-test	Post-test	Adjusted	Pre-test	Post-test
Experimental	8	12.4737	14.7500	14.0000	2.7562	3.3274
Control	9	12.1111	13.3333	13.3100	3.2700	2.0000

The results of the analysis of covariance of the T-C scores of the POI for the clinical population groups are presented in Table VIII. The F-value of 1.699 is not significant at the .05 level. Null Hypothesis II-A, therefore, is retained.

TABLE VIII
 ANALYSIS OF COVARIANCE DATA FOR T-C SCORES ON
THE PERSONAL ORIENTATION INVENTORY
 (CLINICAL POPULATION GROUPS)

Source of Variance	Sum of Squares	df	Mean Square	F	P
Between	9.070	1	9.070	1.699	.214
Within	74.759	15	5.340		
Total	83.829	16	.....	.....	.....

Null Hypothesis II-B states: Following the treatment period, the individuals in the clinical experimental group will not exhibit significantly greater positive change (inner valuing system), as measured by the Inner-Direction (I-D) dimension of the Personal Orientation Inventory (POI), than individuals in the control group.

The means, adjusted means, and standard deviations for both groups' I-D scores on the POI are presented in Table IX.

TABLE IX
MEANS AND STANDARD DEVIATIONS FOR
PERSONAL ORIENTATION INVENTORY
INNER DIRECTION SCORES
(CLINICAL POPULATION GROUPS)

Group	N	Means			Standard Deviations	
		Pre-test	Post-test	Adjusted	Pre-test	Post-test
Experimental	8	85.8750	89.4000	88.0300	8.2047	12.2493
Control	9	82.7333	85.3333	81.1900	12.9806	14.3759

As shown in Table IX, the experimental group pretest I-D mean score was 85.8750 and the posttest I-D mean score was 89.4000. The pretest I-D mean score for the control group was 82.7333. The control group posttest I-D mean score was 85.3333. The adjusted mean score for the experimental group was 88.0300. The control group's adjusted mean score was 81.1900. The standard deviations of the experimental group

pretest and posttest I-D scores were 8.2047 and 12.2493, respectively. The control group's pretest and posttest I-D score standard deviations were 12.9806 and 14.3759.

The analysis of covariance data for the two groups' I-D scores on the POI are shown in Table X. The obtained F-ratio of 1.762 is not significant at the .05 level. Null Hypothesis II-B is retained.

TABLE X
ANALYSIS OF COVARIANCE DATA FOR I-D SCORES ON
THE PERSONAL ORIENTATION INVENTORY
(CLINICAL POPULATION GROUPS)

Source of Variance	Sum of Squares	df	Mean Square	F	P
Between	179.873	1	179.873	1.762	.206
Within	1429.132	15	102.081		
Total	1609.005	16	. . . . .	. . . . .	. . . . .

Null Hypothesis II-C states: Following the treatment period, the individuals in the clinical experimental group will not exhibit significantly greater positive change (internal locus of control), as measured by the Internal-External Locus of Control Scale (I-E), than individuals in the control group.

Means, adjusted means, and standard deviations for both groups' scores on the I-E locus of control scale are presented in Table XI.

TABLE XI
 MEANS AND STANDARD DEVIATIONS FOR INTERNAL-
 EXTERNAL LOCUS OF CONTROL SCALE
 (CLINICAL POPULATION GROUPS)

Group	N	Means			Standard Deviations	
		Pre-test	Post-test	Adjusted	Pre-test	Post-test
Experimental	8	12.1053	9.5000	8.4000	4.4708	4.9281
Control	9	10.0000	9.6667	10.6500	3.8195	3.8730

The pretest I-E mean score for the experimental group was 12.1053, with a posttest I-E mean score of 9.5000. The pretest I-E mean score obtained by the control group was 10.000. The posttest I-E mean score was 9.6667 for the control group. Adjusted mean scores for the experimental group and the control group were 8.4000 and 10.6500 respectively. The experimental group's I-E pretest and posttest standard deviation scores were 4.4708 and 4.9281. The standard deviations of the control group I-E pretest and posttest scores were 3.8105 and 3.8730, respectively.

The analysis of covariance data for the two groups' I-E scores are presented in Table XII. The F-ratio of 1.653, as shown in Table XII, is not significant at the .05 level. Null Hypothesis II-C is retained.

Null Hypothesis II-D states: Following the treatment period, the individuals in the clinical experimental group

TABLE XII

ANALYSIS OF COVARIANCE DATA FOR INTERNAL-
EXTERNAL LOCUS OF CONTROL SCALE
(CLINICAL POPULATION GROUPS)

Source of Variance	Sum of Squares	df	Mean Square	F	P
Between	18.747	1	18.747	1.653	.219
Within	158.820	15	11.344		
Total	177.567	16	. . . .	. . . .	. . . .

will not exhibit significantly greater positive change (field-independence), as measured by the Embedded Figures Test, than individuals in the control group.

The means and standard deviations of the experimental and control groups' scores on the Embedded Figures Test (EFT) are presented in Table XIII. The experimental mean score was

TABLE XIII

MEANS AND STANDARD DEVIATIONS ON THE
EMBEDDED FIGURES TEST
(CLINICAL POPULATION GROUP)

Group	N	Means	Standard Deviations
Experimental	8	33.7500	13.941
Control	8	148.3875	159.212

33.7500 and the control group mean score was 148.3875. The standard deviation scores for the experimental group and the control group were 13.041 and 159.212, respectively.

The results of the one-tailed t -test, comparing the two groups' mean scores on the EFT are presented in Table XIV.

TABLE XIV
ONE-TAILED t -TEST DATA FOR EMBEDDED FIGURES TEST
(Clinical Population Group)

Group	Means	Mean Difference	df	t -value	P	
					two-tailed	one-tailed
Experimental	33.7500	114.6375	14	-2.03	.062	.03
Control	148.6375					

The obtained t -value of -2.03 shown in Table XIV attained the .05 level of significance; therefore, Null Hypothesis II-C is rejected, and the originally stated hypothesis is retained. However, because there was no pretest comparison, and the standard deviations are so different, retention of the originally stated hypothesis may not be justified.

The analysis of covariance data clearly indicates no significant differences between the experimental groups and the control groups for either the student population or

the clinical population on the three personality variable measures: time-competence, inner-direction, and internal locus of control. Examination of the means of the pretest and posttest scores for the two personality variable measures time-competence and inner-direction for both population groups reveals increases for all groups in the direction predicted for the experimental group. However, these increases were not significant. One exception is the personality variable time-competence for the student population group. There was a decrease for the control group with respect to this variable. Examination of the means of the pretest and posttest scores for the personality variable measure internal-locus of control for the student population group (Table V) indicates a decrease from the predicted direction for the experimental group and the placebo group and a nonsignificant increase for the control group. Pretest and posttest mean scores for the personality variable measure internal-locus of control for the clinical population group (Table XI) reveals decreases from the predicted direction for both groups. On the personality variable measure field-independence, the t -test data in Table XIV tentatively indicate a significant difference between the experimental group and the control group in the direction predicted for the experimental group. However, because of the lack of pretest data and the large difference in the variability of the two groups' scores, the t -test value may not be valid.

Upon examination of chi-square data comparing frequencies obtained each day by the experimental and placebo groups on the self-monitoring questionnaire, it was seen that no significant differences occurred within or between groups on the first four questions. The fifth question was treated statistically, using a two-tailed t -test for correlated means (clinical experimental group and student experimental group). A two-tailed t -test for uncorrelated means was also used in order to compare the student population experimental and placebo groups' mean scores at posttest. The clinical population group data, obtained from the first and last weeks of treatment were converted to mean scores and treated as pretest and posttest measures, respectively. Examination of the t -test pretest and posttest scores for the clinical experimental group on the questionnaire showed a significant gain at the .05 level of significance on the subjective experience of joy ($t = -2.38$, $p = .049$) and a significant decrease at the .05 level of significance on the experience of anger ($t = 2.65$, $p = .033$). No other significant differences were obtained for question five at the .05 level of significance for the clinical population group.

For the student population groups, frequencies of responses obtained from the first two weeks and the last two weeks of treatment on the fifth question of the self-monitoring questionnaire were converted to mean scores and treated as pretest and posttest measures, respectively. Upon examination of the t -test pretest and posttest mean

scores for the student experimental group, it was shown that significant gains occurred at the .05 level of significance on experiential feelings of love ($t = -2.22$, $p = .056$), joy ($t = -2.65$, $p = .027$), and peace ($t = -2.66$, $p = .026$), and significant reductions in experiential feelings of tension ($t = 5.53$, $p = .000$), and frustration ($t = 2.18$, $p = .057$). The t -test revealed no significant differences from pretest to posttest for the student placebo group. The t -test data comparing the student experimental group with the placebo group revealed a significant difference at the .05 level of significance on both pretest ($t = 2.26$, $p = .040$) and posttest ($t = 4.54$, $p = .000$) mean scores, indicating increased experiential feelings of peace for the experimental group. No other significant differences were found for the student population group on question five of the self-monitoring questionnaire.

Subjective remarks for the student and clinical experimental group and the student placebo group on questions six, seven, and eight on the self-monitoring questionnaire were not treated statistically. However, the comments have been categorized according to experiences cited previously in the literature. Examples of comments made to questions six, seven, and eight were transcribed verbatim from the questionnaire and grouped together under the following categories: personal problems and situations dealing with the past, present or future; relating past and future;

situations to the present; relaxation; pleasant feelings; heightened awareness; detachment; no-thought; bodily sensations; auditory and visual sensations; and altered states of consciousness. In addition, examples of comments indicating unpleasant feelings were grouped together under a single heading.

Examples of comments made on questions six, seven, and eight of the self-monitoring questionnaire from the student and clinical experimental groups are as follows:

I. Personal problems and situations dealing with the past, present, or future:

"Insights were being able to let out my feelings with ease and looking at the past more clearly."

"Just observed quietly my present situation."

"Uptight about test tomorrow."

"Past experience when I was young came to mind, especially when I was a boy growing up. (pleasant experiences.)"

"I am feeling the tension of this morning leaving. I am feeling emotions of self-worth. I'm more content with myself as I feel, not as others may think of me."

"I am feeling much less confused. My feelings are low-keyed and seem to fit in place."

II. Relating past and future situations to the present:

"Realized present would continue and was there. Still too much into past. Could see I dwelled on it."

"Had an experience in which I couldn't keep my mind from wandering into a particular past experience. I tried to shake it, but tried to let it flow and feel better about it. At the end I started feeling relaxed, unoccupied and a detachment from my problems."

"What I have done in my past to cause problems today."

III. Relaxation:

"Just very relaxed about things."

"Went to sleep."

"Almost like a relaxing sleep with no dreams."

IV. Pleasant feelings:

"Very relaxed and happy."

"The same detached feeling, only I felt real good about the way I was feeling. A sort of excitement and giggly tendency like I had discovered something unique."

"Had a warm feeling."

"Felt peaceful."

"Felt really good afterwards."

"Bubbly and excitement as tho I was about to burst over of joy."

"I felt peaceful and energetic or consisting of flowing energy."

"Yes, my body felt drained of its tension. Felt good."

"Sort of like my muscles just let go, freed, etc."

"Lightness, quietness, overall peacefulness."

"Felt great, got rid of my headache."

"I had some deep religious feelings and felt close to my Creator. I really felt I was being looked after."

"No, my mind was just in a state of wonder!"

V. Heightened awareness:

"I am becoming more aware of my being."

"My hearing became very sensitive to sound, very acute."

"Hearing very, very clear, only sound did not register."

VI. Detachment:

"No, my feeling was blank, detached, peace, but a kind of nothingness. Felt good."

"Experienced a rather unusual feeling of emotive withdrawal. Removed and discarded petty human emotions and saw beyond silly emoto-rationalizations. This is startin' to really work!"

"No. Managing to further 'remove' myself. I love it."

"The things and actions that bothered me today didn't seem as such a big deal."

"I am feeling weightlessness. Very content and sense of relief. . . . I've been tense all day, but now don't seem to be nearly as concerned with the things that bothered me before. My mind feels free from clutter."

VII. No-thought:

"No, just felt clearheaded."

"At the beginning I used to always think something, now my head is pretty clear when I start."

"No, but: seemed unusually able to focus on present experience and avoid interpretation."

"This entire meditation period was blank--no thoughts, patterns or words."

"Same emotion at the beginning and end. Void in between."

VIII. Bodily sensations:

Lightness:

"Felt more at ease. Body felt light, as if my problems and worries were off my shoulders."

"Felt light as a bubble."

"A feeling of detachment from my body, as if it were not there. Light, airy, suspended."

"Weightlessness."

"Body seemed very light."

"Felt light and elongated."

"Felt like I was on a cloud."

Floating

"Lightheaded, semi-floating."

"Floating sense following tension."

"Felt like floating, body not mine."

"Floating, air blowing, warm to cool."

"Felt sort of like I was floating."

Tingling

"Tingling."

"My body tingled at first and then it was like it didn't exist. Light feeling."

"I felt a kind of tingling sensation."

Numbness

"Yes, at times a sort of numbness all over my body."

"Numbness and a sense of drawing up."

Swaying

"I felt a swaying motion of the body."

Lightheadedness

"Lightheadedness, relaxation."

"Lightheaded."

Expansion and contraction

"A sinking sensation, floating apart and contraction again."

"Expansion, up, out."

"Trembling within, working outward, fragmented feeling like I was going to burst open."

"Some trembling with fear, then an expanding type and some shrinking feeling."

Breath

"Breathing slower."

"Breathless, dizziness."

"Amusement at my breath; it played games with me. When I had fallen into long, slow breath, it would do a jig and play tricks with me."

IX. Auditory and visual sensations:

Visual

"Visual. When breathing in and out I would see lightness and then darkness."

"When breathing in: the darkness would become light."

"Light when inhaling--dark while exhaling."

"Retinal images, brightness."

"Visual flashes of bright light."

"Flashes of light, bursts; occasionally couple of blipps or something of that nature. Can't explain."

"I felt very bright lights were flashing in front of my closed eyes."

"Visual area, gold carpet, turns white and all thoughts disappear."

"White area became an ocean; I became slightly nauseated and ended meditation in 20 minutes."

"Complete whiteness."

"Eyes--everything went black. My eyes were open. Fear."

"Brightness, aware of sounds around me."

"Yes. Vividly saw myself visiting with a close friend and recalling the conversation."

"Visual. When I was a boy, just a flash."

"Twice I saw myself (face). Face to face??"

"Visual picture of past of certain people and places."

"Face was staring back at me as if it was only a foot away."

"Visual. Long hall heading to door. Dark hall, white door with window."

"Yes. Long corridor, semi-dark, many doors, some open, listening, walking, never ending."

"Sunlight over hill. At top looking into revine, long procession of priests in white robes. One carrying a large cross, very, very bright. Feeling of Christ coming back."

"Image of couple by a tree; also the picture of the beach by the ocean. Then I saw the image of someone in a coffin."

Auditory

"Song going on in my head."

"Noises outside blocked out--not conscious of it."

"Humming in the ears."

"I heard tones again and got kinda excited. If I thought about hearing them they went away."

"An absence of sound."

"The quiet became very noisy at times."

"The silence became a sound I can't understand."

X. Altered states of consciousness:

"No, but: I'm starting to feel like I 'retreat' into meditation, as tho I move into another phase or state wherein I am 'less' of this world and 'more' of something else. There is nothing specific which makes me feel this way, it's more like 8th sense telling me it happens."

"Out of body experience." (No other comments were made, so it is hard to tell whether or not this experience indicated an altered consciousness state.)

"Far Freaking Fat Freddie Out!! This is incredible. I am writing this several hours late, but, WOW. I always thought but I never knew? I always knew but I never thought. I have been meditating off and on w/ my friend, and today we worked together. We blew the roof off! The paralysis in my hands and arms became charged with electricity. All concept of time was gone, only the present was there. The immediate experience was tantamount! Beyond this point, words fail to express the intensity of the experience. I could say lots of things. I felt 'the energy of the universe,' we 'touched thoughts,' etc., etc., but no description is accurate save to say it was 'indiscribable.' What can I say? Thank you very much."

In addition, examples of apparent non-pleasant feelings or experiences are as follows:

"Tension in my back."

"Pain"

"Uncomfortable"

"Tension in the muscles in my neck/shoulder area. Couldn't release the tense feeling."

"Yes, was very tense and nervous and was sweating."

"Felt heavy from depression."

"Felt upset, frustrated."

"Tension"

"Nausea"

"Fear"

"Breathless, dizziness."

" . . . Then I saw the image of someone in a coffin."

"Felt light at first; then heavy. The longer I thought, very heavy after 20-30 minutes."

"Body heaviness."

"Paralysis in hands and arms."

"Trembling with fear." Bodily trembling associated with fear has been reported to occur prior to many "enlightenment" experiences, as well as feelings of intense sadness (5). Experiences of an apparent negative or unpleasant quality; therefore, may be indicative of progress towards deepening or expanding the meditative state.

Furthermore, one individual reported that the meditation session reduced his headache. Two other individuals in the experimental groups reported their headaches disappeared after meditation. One fifty-six year old individual with high blood pressure reported a significant reduction in blood pressure after meditating, as well as the disappearance of her headache. She reported:

I had a headache this evening. Had my blood pressure checked. The reading was 130/96. An hour later, after meditating, I noticed the headache was gone. A re-check showed 126/84. (This was significant; I rarely have headaches, only when the diastolic pressure is 90 or higher and can only bring it down with medication or sleep.) This entire meditation period was blank--no thoughts, patterns or words."

For the student placebo group subjective comments from the self-monitoring questionnaire were limited to remarks indicating sleep, drowsiness, tiredness, body tingling,

pain, tension, relaxation, and with one individual, a feeling of relaxation and happiness.

Examples of student comments from the placebo group are as follows:

"Sleepy."

"Tired, relaxed, body tingles."

"Go to sleep."

"Pain."

"Sleepy. I always get sleepy doing this meditation."

"Happy, relaxed."

Discussion

Hypothesis I-C predicted that the student experimental group individuals would report greater change toward an internal locus of control than either the placebo or control group individuals. This hypothesis was rejected. These findings support previous research conducted by Zuroff and Schwartz (17) and Shapiro (13) and are inconsistent with results obtained by Hjella (4).

Hypotheses II-A and B predicted that the clinical experimental group individuals would demonstrate significantly greater positive change on the personality variables time-competence and inner-direction than control group individuals. These hypotheses were not confirmed. These findings are in contrast with Nuernberger's study (9)

reporting change towards increased self-actualization in a similar population group.

Hypothesis II-C, which predicted that the clinical experimental group individuals would report significantly greater positive change toward increased internal locus of control than the control group individuals, was rejected. No previous research has been reported which investigated this specific variable in relation to meditation practice with a similar population group.

Hypothesis II-D predicted that the clinical experimental group individuals, following the treatment period, would exhibit significantly higher field independence than the control group individuals. This hypothesis was tentatively accepted. This finding is congruent with those reported by Kubose (6), although the population group investigated was not comparable to the alcoholic and drug inpatient group used in this study.

Data obtained from the first four questions of the self-monitoring questionnaire failed to reveal any significant differences between groups. Statistical data obtained from question five of the questionnaire did reveal significant changes in both experimental groups. The student experimental group individuals reported more feelings of "love," "joy," and "peace" during the last one to two weeks of treatment and reduction in tension

and frustration. Clinical experimental group individuals reported significantly more feelings of "joy" and a significant reduction in the feeling of "anger." There were no significant changes reported on question five of the self-monitoring questionnaire for the student placebo group individuals. Data obtained between groups showed the student experimental group individuals to have experienced significantly more feelings of "peace" compared with placebo group individuals. However, there was also a significant difference between groups at pretest (the first one to two weeks of treatment) on the subjective experience of this emotion. These findings are similar to those reported by Maupin (8) in his early investigation of the subjective experiences of meditators. However, no controls were included in Maupin's study.

Statistical data were not obtained for questions six, seven, and eight of the self-monitoring questionnaire. However, the subjective experiences reported in these questions appeared to be quite different between the student experimental and placebo group individuals. Similar findings have been reported by Domitor (2) and Goldman(3). The placebo group individuals, with the exception of feelings of relaxation, reported no experiences previously cited in the literature as indicative of the meditative state, whereas experimental group individuals reported such experiences.

In summary, this investigation failed to provide evidence of significant effects of Zen meditation training and practice, as defined in this study, on three of the four selected personality variables. Evidence was found supporting a significant effect of Zen meditation training and practice on the personality variable field independence. Evidence was also found supporting a significant in-state effect of Zen meditation training and practice on the subjective experience of increased joy, peace, love and decreased anger, tension, and frustration.

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CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Meditation practice has been investigated by the therapeutic community as a means to improve psychological and physical health as well as a method for exploration of consciousness (1, 11). Zen meditation (zazen) was the particular meditative procedure investigated in this study. Probably because of the difficulty in investigating the internal phenomena and changes reported to occur during and after meditation practice, experimentally designed studies have become more predominant only during the past decade (12). The researchers in these studies have been unable to establish any definite conclusions, with conflicting findings occurring upon replication of research. Experimental studies, as indicated by Shapiro (10), lend support to the notion that meditation practice may be effective in reducing stress-related symptoms. Other descriptive studies (2, 4, 8, 9) suggest that meditation practice may be effective as an adjunct to psychotherapy by (1) helping the patient become more open to the unconscious and more detached and less anxious in exploration of repressed material, and (2) helping the patient function more in the here and now. Still others (6, 7, 10) advocate further investigation of meditation

practice and its effect on drug abuse patients, and as a means towards exploration of altered states of consciousness. In the area of the effect of meditation practice on psychological change, profile studies of long-term meditators reveal more internal, self-actualized individuals than standardized norms (3). Kubose (5), in an experimental study, reported significantly greater change toward field independence after a short, four-week-long meditation treatment period.

The basic problem of the present investigation was to determine the effectiveness of Zen meditation training and practice on specific personality variables, including time-competence (functioning in the here and now), inner-direction and internal-external locus of control (internal valuing system) and field independence vs. field dependence. In addition, the subjective experiences of each individual were examined in the form of a self-monitoring questionnaire after each meditation or placebo meditation session.

It was hypothesized that following the treatment period experimental group individuals would exhibit significantly greater positive change on time-competence, inner-direction, and internal-locus of control than the placebo or control group individuals. It was further hypothesized that clinical experimental group individuals would exhibit a significantly greater degree of field independence than control group individuals.

The population groups for this study consisted of college student volunteers and inpatient volunteers from an alcoholic and drug unit at a state mental hospital. Statistical data from both population groups were treated independently from each other. None of these individuals had had any previous exposure to formal Zen meditation training procedures. The individuals in the student population groups were randomly assigned to either the experimental meditation group, the placebo posture-only meditation group, or a control group. The individuals in the clinical population group were randomly assigned to either the experimental group or the control group. Twenty-two individuals withdrew from the student population groups, leaving twenty-four individuals, ten in the experimental group, six in the placebo group, and eight in the control group, who completed the study. Seventeen individuals withdrew from the clinical population group, leaving eight in the experimental group and nine in the control group who completed the study.

Individuals in both student treatment conditions, following initial instruction, participated in two weekly thirty-minute group meditation sessions over a period of eight weeks. In addition, individuals were encouraged to meditate on their own each day for thirty minutes. Both groups were exposed to the same verbal instructions concerning zazen posture and limited verbal information concerning meditation practice. The

experimental group, however, in contrast to the placebo group, received instruction on focusing attention on the breath, as well as on other zazen procedures for obtaining a state of no-thought (allowing thoughts to pass through consciousness without evaluation). The placebo group individuals were instructed not to control their thoughts, but to allow thoughts to flow naturally. Individuals in the control group received no treatment.

All individuals in the student population groups were administered pretests of the Personal Orientation Inventory and the Internal-External Locus of Control Scale during the week prior to the first group sessions. Posttests of these instruments were administered after eight weeks of training. Individuals in the treatment groups, in addition to the above self-report measures, answered questions on a self-monitoring questionnaire following each meditation session.

Individuals in the clinical experimental condition participated in five weekly, thirty-minute, group meditation sessions over a period of approximately five weeks. Each individual was encouraged to meditate on his or her own for fifteen minutes every day in addition to the group meditation session. Experimental-group individuals received instruction in zazen posture, focused attention on the breath, and non-evaluation of thoughts while meditating. A verbal presentation giving information concerning meditation practice was

given prior to the first training session. The control group individuals received no treatment other than that received as part of the treatment format at the hospital.

Individuals in the clinical experimental and control groups were pretested on the Personal Orientation Inventory and the Internal-External Locus of Control Scale prior to the first group training session. Posttests of these instruments were administered after approximately five weeks of training. A perceptual personality measure, the Embedded Figures Test, was administered to both groups during the last week of treatment. Individuals in the treatment group also answered questions on the self-monitoring questionnaire following each meditation session.

Data obtained from the pretests and posttests on the two self-report measures were treated statistically for significance of difference between means, using analysis of covariance. Data obtained from the posttreatment perceptual measure for the clinical population groups were treated statistically for significance of difference between means using a one-tailed t -test for correlated means. The first four questions of the self-monitoring questionnaire were treated statistically for significance of difference between frequencies using a chi-square test for independent samples. Pretest and posttest responses on question five of the self-monitoring questionnaire were treated statistically for significance of difference between means using a two-tailed

t-test for correlated means. A significance level of .05 was required for rejection of the null hypothesis for all computations and to ascertain significant changes on the self-monitoring questionnaire. Questions six, seven, and eight on the self-monitoring questionnaire were not treated statistically. However, examples of responses to these questions were included for subjective examination.

Statistical analysis of the data did not support the first three hypotheses. The hypotheses that the experimental group individuals would exhibit significantly greater positive change on time-competence, inner-direction, and internal locus of control than the placebo or control group individuals was rejected. However, statistical analysis of the data did support the fourth hypothesis (II-D) for the clinical population groups. The hypothesis that clinical experimental group individuals would demonstrate significantly greater levels of field independence than control group individuals was accepted. Chi-square data failed to indicate any significant differences between groups on the first four questions of the self-monitoring questionnaire. A t-test of the data for question five revealed significant findings for both experimental groups. The student experimental group individuals, while meditating, experienced significantly greater feelings of joy, love, and peace from pretest to posttest and significant reductions in tension and frustration. A significant

increase in the feeling of joy was reported for the clinical experimental group as well as a significant reduction in the feeling of anger. An examination of the subjective comments from questions six, seven, and eight on the self-monitoring questionnaire seemed to indicate extensive differences between experimental group individuals and placebo group individuals on reported subjective experiences.

Conclusions

1. Zen meditation (zazen) training and practice, as used in this study, was not found to be effective in facilitating changes in such specific personality variables as self-reported time-competence, inner-direction, and internal locus of control.

2. Zen meditation training and practice, as used in this study, may be effective in facilitating changes toward increased field independence.

3. Zen meditation training and practice, as used in this study, seems to produce meditation-specific changes toward increased positive feelings, including those of joy, love, and peace, and decreased feelings of tension, frustration, and anger.

4. Zen meditation training and practice, as used in this study, seems to be more effective in producing subjective experiences indicative of a meditative state (detachment,

no-thought, pleasant experiences, altered states of consciousness) than zazen posture-only training and practice.

Recommendations

The following recommendations for further research are offered on the basis of findings of this study:

1. In further research, the personality measures used in this investigation, the Personal Orientation Inventory and the Internal-External Locus of Control Scale, should be replaced with instruments more capable of measuring the subtle changes which may occur with Zen meditation practice.
2. In further research, a pretest measuring field independence and field dependence should be added to the basic design of this study. The inclusion of the pretest measure would indicate any significant differences between groups prior to treatment. However, the treatment time would need to be extended for a longer period to avoid contamination of results due to the practice effect inherent in this measure.
3. In further research, a rating scale should be devised rating subjective experiences associated with the meditative state. Responses could then be judged independently by trained raters, so that differences between and within groups could be reported statistically.

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APPENDIXES

APPENDIX A

Personal Data Questionnaire

Name:

Age:

Sex:

Educational level:

Occupation:

Marital status:

Children:

Have you ever read books or attended lectures, seminars,
etc. on meditation?

If yes, to what extent?

Have you ever practiced meditation?

If yes, for how long?

Are you now attending group or individual counseling sessions?

If yes, please explain:

APPENDIX B

Personal Commitment Contract

I, _____, commit myself to the practice of the self-control procedure taught by the instructor for the specified period each day (30 minutes each day) for the next eight weeks. I further agree not to discuss my experience with other participants until after the eight-week period.

Signed _____

Date _____

Witness _____

APPENDIX C

Personal Commitment Contract

I, _____, commit myself to the practice of the meditation procedure taught by the instructor for the specified period each day (15 minutes in the morning and 30 minutes as a group each weekday) for the next five weeks. I further agree not to discuss my experience with other patients until after the five-week period.

Signed _____

Date _____

Witness _____

APPENDIX D

Consent Form for Release of Records
of
Alcohol and Drug Abuse Patients

I authorize the _____
(Name of facility)

to release information which would identify:

(Name of patient)

Specifically, this information is: (Description of information to be disclosed):

This information will be disclosed to _____
(Receiving Agency (Agencies))
in the following manner and for the following purposes: (Full description of use to be made of patient identifying information)

This consent is subject to revocation at any time except to the extent that action has been taken in reliance thereon. This consent will expire on:

_____ Date _____

APPENDIX E

Instructions for Zen Meditation Group
Student Population

You will be participating in a research project which will investigate a self-control procedure called meditation. It is important that you commit yourself to the practice of this procedure every day for a thirty-minute period during the next eight weeks. Find a quiet place for the practice of the procedure where you can be free from distractions or interruptions, and if possible practice the procedure at the same time and place each day.

(Experimenter and subject sit on the floor and these instructions are given by the experimenter):

Sit cross-legged on the floor with a cushion for support. Keep your back straight, head forward and chin straight, eyes downward. Your hands will be held in the following position: right hand almost resting on the lap, palm upward, and left hand, palm upward, placed on top of the right palm. The tips of the thumbs are lightly touching so that an oval is formed by the palms and thumbs. The arms are held freely, slightly away from the body. Pull your abdomen in and your diaphragm region up. (Experimenter/instructor demonstrates.) Continue to hold this posture throughout the thirty-minute session.

After obtaining the correct posture, focus your attention on your breath. Breathe normally and attend to your

breath as it passes through the nostrils on inhalation and follow the breath all the way through to the end of the exhalation, paying attention to the brief pause before the next inhalation begins. Flare the nostrils and breathe normally, not trying to control the breath, merely attending to it fully. When thoughts enter awareness, let them pass through without evaluating or judging the content of such thoughts, simply return to full attention on the breath.*

After the meditation session, record the date, time, and fill out the questionnaire pertaining to any sensations, thoughts or feelings which may have occurred during the experience, and turn this record in to the experimenter weekly.

* The instructions for concentrating or focusing attention on the breath will be repeated at the beginning of each group meditation session.

APPENDIX F

Instructions for Zazen Posture-Only Group
Student Population

You will be participating in a research project which will investigate a self-control procedure called meditation. It is important that you commit yourself to the practice of this procedure every day, for a thirty-minute period, for the next eight weeks. Find a quiet place for the practice of the procedure where you can be free from distractions or interruptions.

(Experimenter and subject sit on the floor and these instructions are given by the experimenter):

Sit cross-legged on the floor with a cushion for support. Keep your back straight, head forward, and chin straight, eyes downward. Your hands will be held in the following position: right hand almost resting on the lap, palm upward, and left hand, palm upward, placed on top of the right palm. The tips of the thumbs are lightly touching so that an oval is formed by the palms and thumbs. The arms are held freely, slightly away from the body. *Now that you are sitting correctly, relax your body as much as possible and pull your abdomen in and your diaphragm region up.

*The instructions from here to the end of this paragraph were repeated at the beginning of each group session.

Continue to hold this posture the thirty minutes. Do not try to control your thoughts. This is very important. Let your thoughts come naturally as you normally do.

After the session, record the date, time, and fill out the questionnaire pertaining to any sensations, thoughts, or feelings which may have occurred during the experience, and turn the questionnaire in weekly to the experimenter.

APPENDIX G

Instructions for Zen Meditation Group
Clinical Population

During the next five weeks you will be learning to meditate. Meditation has proven helpful in reducing anxiety and producing a more relaxed state of being. Although the procedure will take only forty-five minutes a day (fifteen minutes in the morning on your own, and thirty minutes in the afternoon each weekday meditating as a group), it is very important, if meditation is to be effective, that you practice this procedure faithfully every day in the manner to be explained. Try to meditate upon arising each morning (before breakfast) for fifteen minutes. Perhaps you can remove the pillow from your bed and sit on the floor beside your bed or find another quiet spot, if possible. At the end of the fifteen minutes, record any thoughts, feelings, or sensations on the questionnaire, as well as the time and date of your meditation session. These should be turned in to the instructor each Monday at the group meditation session in the afternoon, and the same questionnaire should be filled out after the afternoon session. The afternoon meditation session will last thirty minutes. (All participants will be asked at this point to sit on the floor with the experimenter.)

In meditation, two things are very important; posture and attention to the breath. Please do not feel self-conscious or embarrassed if you have trouble with the posture. In the beginning, especially, or if you have had knee injuries you may want to sit in a chair rather than the cross-legged position. The most important aspect of meditation, however, is what goes on within yourself; the posture is simply an aid to center the body in a firm, dignified position so that you can more fully attend to the breath.

(Proceed to instruction of correct posture.)

Sit cross-legged on the floor with a cushion for support. Keep your back straight, head forward, and chin straight, with eyes downward. You may close your eyes if you wish. Your hands will be held in the following position: right hand almost resting on the lap, palm upward, and left hand, palm upward, placed on top of the right palm. The tips of the thumbs are lightly touching so that an oval is formed by the palms and thumbs. The arms are held freely, slightly away from the body. Pull your abdomen in and your diaphragm region up. Continue to hold this posture throughout the thirty-minute session.

(Instruction on focused attention on the breath.)

After obtaining the correct posture, focus your attention on your breath. Attend to your breath as it passes through the nostrils on inhalation and follow the breath all

the way through to the end of the exhalation, paying attention to the brief pause before the next inhalation begins. Flare the nostrils, and breathe normally, not trying to control the breath, merely attending to it fully. When thoughts enter awareness, let them pass through without evaluating or judging the content of such thoughts, simply return to full attention on the breath. Allow yourself to have this time to get in touch with your inner self, and simply be here now.*

*The instructions for focused attention on the breath will be repeated at the beginning of each group meditation session.

APPENDIX H

Self-Monitoring Questionnaire

Name _____

Date _____

Time of Day _____

Please circle the best response with regard to the meditation session just experienced:

1. To what extent were your thoughts, if any, concerned with past events or experiences?

always frequently occasionally hardly ever never

2. To what extent were your thoughts, if any, concerned with future or possible events and situations?

always frequently occasionally hardly ever never

3. To what extent were your thoughts, if any, focused on the present?

always frequently occasionally hardly ever never

4. To what extent did you experience emotion or feelings during the meditation session?

always frequently occasionally hardly ever never

5. If emotion or feeling was present, circle the emotion or emotions most closely approximating your experience:

love
irritation
sadness
tension
fear

peace
anger
frustration
boredom
other _____

6. Did you experience any insights into your present, past, or future situation? If so please explain.*

APPENDIX I

Introductory Lecture--Clinical Population Groups

(This lecture was held in the dining hall to incoming patients at their second orientation meeting.)

The staff and I are beginning a new program at the hospital in which we would like to give you the opportunity to participate. Participation is voluntary and in addition to other therapeutic activities which are mandatory during your stay here. We are giving you the opportunity to learn a self-control procedure called meditation. The first question you may ask yourself is, "What can meditation do for me?" Well, we know what meditation has done for us, since the staff members involved in this program, and myself, meditate. We know what many other meditators say, but we aren't sure what may be possible for people like yourselves who have a drug problem. So this program is also a research project I am involved in to try to find out whether or not meditation may benefit alcohol and drug patients.

So what may be therapeutic about meditating?

Relaxation--research has proven meditation to be very effective in helping to promote a relaxed state. The EEG (brain wave patterns) slow down during meditation, yet the pattern is different from sleep. If you are meditating correctly, you feel very relaxed during the session and afterwards.

Insight--there is also the theory, especially among certain psychiatrists, that meditating is useful while undergoing psychological therapy. You may ask, "How is that possible? All you do is sit still and do nothing for half an hour a day?" Well, it is amazing what emerges from within when one sits still in a position which discourages sleep. These psychiatrists say thoughts may arise from one's past or present which may bring insight or awareness into the problems being worked on in therapy. Now, you may be saying to yourself, but I came here to learn to stop drinking or taking cocaine or some other drug--that brings us to another reason we think meditation could be beneficial for you.

Natural high--other research shows that most people who meditate show a sharp decrease in their amount of alcohol and drug intake. There seems to be a correlation between the regularity of time spent meditating and the reduction or complete abstinence of drugs. The theory as to why meditating individuals significantly reduce or completely stop drug consumption is that meditation may produce a "natural high." Meditation, then, may take the place of the "high" sought after by some individuals taking drugs.

We cannot guarantee that meditation will be beneficial to you but we feel it is certainly worth trying. For

meditation to help, the procedure must be practiced every day (twice a day if possible), so discipline and effort are required, especially in the beginning. However, Dr. _____/Mr. _____ and myself will be available to help you through any difficulties you may experience in the beginning. We would like those of you who are interested in practicing meditation during your stay here to please fill out the questionnaire being passed around now. We will meet as a group for half an hour each weekday. Since most of you will be here only five weeks, we will begin at the first of next week. We would like to have some measure of the changes which may occur with your practice of the meditation procedure, so we are asking you to give an hour or so now and before you leave the hospital to fill out two questionnaires. These questionnaires reveal basic personality characteristics. Any information obtained about you from these questionnaires will be kept confidential. If you would like to have an evaluation of the information obtained from these questionnaires, I will be available to go over them with you privately before you leave the hospital. You might find this information interesting and perhaps helpful in your own self-understanding. In addition, you will be asked to take a perceptual test, which will be given individually during the fifth week of meditation practice. This will take approximately half an hour to complete.

Some of you who have expressed an interest in being in the meditation group will be chosen to take the questionnaires and perceptual test only.

It is important, for the study to have meaning, that we have a comparison group. However, for your time given in completing the questionnaires I will explain the results to you in a private session before you leave the hospital. In addition, if you would like to learn the meditation procedure, I will teach you the procedure after receiving the second set of questionnaires.

You have been very patient. Are there any questions?

APPENDIX J

Student Recruitment Statement

(Read out loud by participating psychology instructors to psychology classes and posted in psychology classroom bulletin boards.)

We are seeking student volunteers interested in participating in a research project investigating self-control procedures which may promote relaxation and awareness of internal states. The project will last approximately eight weeks and will require a commitment of half an hour a day. Partial course credit will be granted for participation in the project. Your instructor will explain the amount of credit granted.

If interested, please sign below. You will be contacted within the next few days.

Name

Telephone

Instructor

APPENDIX K

Transcription of Comments on Self-Monitoring Questionnaire

Student Experimental Group

Question 6. Did you experience any insights into your present, past, or future situation?

Date

3801, female, age 38

4-10 I remembered being on an operating table, being aware, but not wanting to speak, maybe unable to communicate and enjoying my serenity.

3901, female, age 20

3-11 Insights of not being able to accept the past. But realizing it is the way it is.

3-14 Insights were being able to let out my feelings with ease and looking at the past more clearly.

3-27 Emotions were mixed. Insights of the past very clear and of the present; well, they will be better.

3-28 Insight focused on present relationship--Pressures-- I could see or sense that things would be rocky. I could see that the relationship has a lot of things to settle and that he would be stubborn. He is.

4-2 Insight that my boyfriend was happy and all right. I have nothing to worry about. He is at peace. I am angry. Angry because he was away from me. Love and miss him. I know and feel that.

4-10 Realized present would continue and was there. Still too much into past. Could see I dwelled on it.

4-13 Insight--that I will be happy. Pictured myself with a bright attitude and smiling w/ positive outlook.

4-20 Insight--could see that I am taken for granted and that some friends will not pay up what they owe me.

4-21 Insight--could see that I do want to go thru with my plans in the future and that I am unhappy and feel bonded by someone who doesn't want me to go thru w/ my plans.

Date4001, female, age 25

- 3-14 Centering in on realistic feelings
- 3-15 Some future planning
- 3-18 Future planning
- 4-10 Present situations
- 4-11 Future planning
- 4-17 Present problems
- 4-20 Future planning
- 4-22 Future planning
- 5-2 Present problems

4101, female, age 21

- 3-7 Felt good except a bit irritated by the outside noises. Became aware that I need to handle some present problems w/ more calmness.
- 3-10 Not much, just very relaxed about things.
- 3-14 Not much, just relaxed peaceful thought.
- 3-17 Once the kids I work with flashed in my mind and I felt good about the progress I had made and knew I needed to concentrate more on communicating w/ them on their level.
- 3-18 Kept thinking about a problem w/ one of my kids, couldn't seem to get it off my mind. But did decide how I was going to handle the parent.
- 3-27 Had an experience in which I couldn't keep my mind from wandering into a particular past experience. I tried to shake it, but let it flow and to feel better about it. At the end I started feeling relaxed, unoccupied and a detachment from my problems.

Date

- 4-1 Just observed quietly my present situation.
- 4-2 No, my feeling was blank, detached, peace, but a kind of nothingness. Felt good.
- 4-7 I felt peaceful and energetic or consisting of flowing energy.
- 4-10 I began to compare myself now as to a year ago. Not much emotion. Just a little thought.
- 4-20 No, just felt clearheaded.
- 4-21 At the beginning I used to always think something, now my head is pretty clear when I start.
- 4-28 I thought about my education and felt a bit of impatience, but it floated away, realizing things take time. Always feel total rationally when I meditate.

4401, female age 21

- 4-21 No, my mind was just in a state of wonder
- 4-29 None, everything is fine
- 5-4 None, everything will work out. Brief thoughts

4501, male, page 23

- 3-14 Yes, sort of, but non-specifically. I just feel better about it.
- 3-30 I feel like I may have, but I'm not sure what I learned.
- 4-1 No. But lots of thinking about the past tonight. Mellow memories bring tears to my eyes. . . .
- 4-4 Did lots of thinking about graduation, etc. Had a hard time clearing my mind.
- 4-16 No, but: I'm starting to feel like I "retreat" into meditation, as tho I move into another phase or state wherein I am "less" of "this world" and "more" something else. There is nothing specific which makes me feel this way, it's more like 8th sense telling me it happens.

Date

- 4-26 No, but: seemed unusually able to focus on present experience and avoid interpretation.
- 5-2 Experienced a rather unusual feeling of emotive withdrawal. Removed and discarded petty human emotions and saw beyond silly emotio-rationalizations. This is startin' to really work!
- 5-3 No. Managing to further "remove" myself. I love it!
- 5-4 I feel like I am letting the experience more and more control itself. I am learning to leave my will at home.
- 5-11 Had too much on my mind. Now I have even more. Unable to get away w/ it this time around. Just graduated and parents and friends all around. Had higher priorities today. But I look forward to the next time.
- 5-21 Far Freaking Fat Freddy out!! This is incredible. I am writing this several hours late, but, WOW, I always thought but I never knew/ I always knew but I never thought. I have been meditating off and on w/ my friend, and today we worked together. We blew the roof off! The paralysis in my hands and arms became charged w/ "electricity." All concept of time was gone, only the present.

4601, female, age 50

- 4-10 Yes, thinking about relationship with a friend that I used to work with, and missing the companionship.

Question 7. Did you experience any bodily sensations?

3801, female, age 38

- 3-10 My husband's breathing became very loud and I found myself trying to breathe with him but it was natural for my intake and output of oxygen to be shorter and faster than his, I became frustrated because I couldn't breathe with him.
- 3-11 I could not stay awake.
- 3-12 My left arm hurts so bad I feel I am my left arm, I feel my blood flow and each muscle throb.

4-11 Fell asleep.

4-25 I have pulled a muscle in my left leg, the pain doesn't bother me very much until I try to practice self-control, then the pain is almost too much.

3901, female, age 20

3-14 Felt more at ease. Body felt light, as if my problems and worries were off my shoulders.

3-21 Felt light as a bubble.

3-25 Felt tense, not at ease at all. Head swayed and I felt as though I was able to stretch any direction.

3-27 Feeling as tho my body was light as cotton--Mind felt released of tension later.

3-28 Felt heavy from depression.

4-13 Bubbly and excitement as tho I was about to burst over of joy.

4-20 Felt upset; frustrated. Couldn't get tension out of my back.

4-28 Felt light at first; then heavy, the longer I thought, very heavy after 2-30 minutes.

4001, female, age 25

3-7 Uncomfortable

3-8 Pain

3-10 Uncomfortable

3-14 Gradual relaxation of muscles

4-10 Tingling sensation

4-17 Tingling

4-20 Tension in my back

5-2 Progressive relaxation in my muscles

Date

5-4 Relaxation

5-7 Relaxation

5-10 Tingling

5-11 Tingling

4101, female, age 21

- 3-9 At first I was concentrating on the position of my hands which seemed uncomfortable and distracting, so I changed position of them to lay them on my knees. I keep having the feeling that my body was a ball of energy. I thought about jogging a few times, which led me to think about smoking cigarettes. When I thought of the cigarettes, my body felt (looked dark and black). Everything else was very peaceful.
- 3-14 My body felt like it was in its own peace. Numbness.
- 4-1 Nothing unusual. Just calm.
- 4-2 Yes, my body felt drained of its tension. Felt good sort of like my muscles just let go, freed, etc.
- 4-10 A sort of numbing sensation in my fingers. I began to think about biological things, then went back to meditating.
- 4-13 Tension in the muscles in my neck/shoulder area. Couldn't release the tense feeling.
- 4-16 A feeling of detachment from my body, as if it were not there. Light airy, suspended.
- 4-17 The same detached feeling, only I felt real good about the way I was feeling. A sort of excitement and giggly tendency like I had discovered something unique.
- 4-20 A kind of tingling sensation, mainly in my fingers.
- 4-25 Tension in some muscles in my back. Could not get into it. (I think that I need to do this definitely at beginning of day rather than at night.)
- 4-28 Just calm.

Date

- 5-2 No--no tension. Clear-headed.
- 5-7 Just a regular feeling of being detached from outside experiences. Calm, unpressured.

4201, female, age 56

- 3-21 Pain
- 3-23 Pain in leg
- 3-24 Painful
- 4-16 Very relaxed
- 4-20 Relaxed
- 4-21 Nauseated
- 4-23 I had a headache this evening--Had my blood pressure checked. The reading was 130/96. An hour later, after meditating, I noticed the headache was gone. A re-check showed 126/84. (This was significant; I rarely have headaches, only when the diastolic pressure is 90 or higher and can only bring it down with medication or sleep.) This entire meditation period was blank--no thoughts, patterns or words.

4401, female, age 21

- 4-9 Tension
- 4-10 Tense
- 4-15 My body was more at ease. I was not as tense
- 4-16 My body was less tense and tired
- 4-17 More relaxed
- 4-18 I was not aware of my body as much as past days
- 4-19 Not much bodily awareness
- 4-20 I felt not connected to my body, it was like it wasn't there at all

Date

- 4-21 My body tingled at first and then it was like it didn't exist. Light feeling
- 4-22 As described 4-21
- 4-23 Described 4-21
- 4-24 Closest to out of body experience (OOBE, I think.)
- 4-25 Relaxed
- 4-26 Relaxed. OOBE. But not going anywhere
- 4-27 Aware of my body, just light
- 4-28 My eyes burned, body relaxed, tingly, OOB with no real experience.
- 4-29 Almost like a relaxing sleep with no dreams
- 5-4 Lightness, quietness, overall peacefulness
- 5-5 Relaxed until the end, then tension in muscles
- 5-6 Tense
- 5-7 Tense and yet a bit relaxed
- 5-8 Relaxed
- 5-9 Relaxed
- 5-10 OOB--relaxed

4501, male, age 23

- 3-20 Retinal images, lightheadness, relaxation
- 3-21 Slight lightheadness
- 3-23 Relaxation, slight lightheadness
- 3-25 Relaxation, body heaviness, some lightheadness. Also feelings of accelerated and/or more fluid (easy thoughts and concentration)
- 3-26 Semi-lightheadness, body heaviness, lost feeling in legs.

Date

- 3-31 Head rolling around some. Very relaxed tonite.
- 4-1 Lightheaded. Also felt like I was made out of syrup. Thick syrup.
- 4-14 Yes. Had to get up after about 10 minutes of meditation to go answer door. When I came back and began meditating I went into a deep state very rapidly. Me thinks that having to be jerked back to reality, briefly but suddenly caused me to drop quickly and deeply back into the pleasant buzz of meditation. 2 or 3 breaths and I was there! I think I'm going to experiment more w/ this technique.
- 4-19 Hands got warm. Unusual. Tired afterwards too.
- 4-20 Lightheadedness
- 4-21 Lightheadedness, relaxation
- 4-22 Lightheaded, semi-floating?
- 4-25 Eyelid theater, lightheaded, semi-floating
- 4-26 The usual lightheaded, eyelid theater.
- 4-28 My arms felt like they could have been very rigid.
- 4-29 The usual lightheaded, retinal circus
- 4-30 Lightheaded, semi-floating, arms rigid
- 5-1 Sleep!
- 5-2 Lots! Usual lighthead and retinal circus. Also semi-paralysis of arms and hands. Not that I couldn't move them, just that I didn't want to.
- 5-3 See previous sensation of arm paralysis persists and tingling.
- 5-4 High! Very! (I like it)
- 5-6 The usual lighthead, semi-floating. No paralysis.

4601, female, age 50

- 3-10 Pain
- 3-13 Foot goes to sleep

Date

- 3-23 Pain in legs
- 3-31 Pain in legs
- 4-2 Eyes heavy, breathing slower
- 4-3 Backache
- 4-7 Comfortable, relaxed
- 4-9 Time passes quickly
- 4-10 Head moves to the left without being aware it is moving.
- 4-17 Relaxed
- 5-1 Able to sit still longer. Foot fell asleep

4701, male, age 40

- 3-12 Pain
- 3-13 Pain
- 3-15 Pain
- 3-23 Pain
- 3-27 Pain
- 3-29 Pain
- 4-1 Uncomfortable
- 4-25 Sleepy

4801, male, age 33

- 3-10 Pain
- 3-12 Pain
- 3-15 Pain
- 3-21 Sleepy

Question 8. Did you experience any auditory or visual sensations?

Date

3801, female, age 38

- 3-8 I felt very bright lights were flashing in front of my closed eyes.
- 3-9 I pictured my head as being a very large queen bee with very large eyes.
- 3-10 Auditory--Husband breathing.
- 4-10 Visual--Pictures from the past.
- 4-12 There were jets flying over the house, they became so loud I couldn't put them out of my mind. I had never heard the sound before.
- 4-16 There was a random beeping tone from outside the house like a transformer it's all I could hear or think about.
- 4-21 My ears are over-sensitive to certain sounds. I hear many baby birds--freshly hatched--their cries are from hunger. This is upsetting me, I feel I must leave some bread for the mother bird. I get irritated at myself for being so concerned.

3901, female, age 20

- 3-14 Visual--of the past--good memories
- 3-27 Visual--of the past and present
- 3-28 Auditory--could hear us talking in my mind--No visual
- 4-10 Visual--of the past
- 4-13 Visual--of being content and happy
- 4-23 No--only thoughts

4001, female, age 25

- 4-17 Humming in the ears

Date

4-20 Popping in my ears

5-20 Humming

4101, female, age 21

3-14 Very quiet

4-2 Flashes of light, bursts; occasionally couple of blipps or something of that nature. Can't explain

4-16 Real quiet--But I had heard a couple of short sounds that resembled music or musical tones.

4-17 I heard tones again and got kinda excited. If I thought about hearing them, they went away.

5-7 An absense of sound.

4201, female, age 56

4-16 Visual area, gold carpet, turns white and all thoughts disappear.

4-18 Visually concentrated on my hands and the word "birth."

4-19 Same as last night

4-20 Same change in vision

4-21 White area became an ocean; I became slightly nauseated and ended meditation in 20 minutes.

4-28 I was very confused when I started this evening--school schedules, shopping, appointments, and bad weather had bothered me all day--but during the meditation period everything was calm. I saw the ocean again and felt that someone was out there, reaching to me. I was sorry when the alarm went off; I wanted to see whoever was there.

5-5 No confusion, but the same scene--the ocean, and another vague entity.

5-7 Same ocean

5-11 Ocean

Date4401, female, age 21

- 3-10 Too tense, darkness, very aware of world.
- 3-14 I had my eyes closed. I could see dots (like when you have your picture taken, using flash bulbs).
- 3-15 I could see dots.
- 3-21 I was aware of what was happening around me. The noises (T.V., etc.).
- 4-1 Visual, outside noises. My eyes were closed, no pictures or events could be seen, only circles of colors.
- 4-12 My eyes were closed. It was like not actually seeing, but experiencing and not really anything.
- 4-13 Described before.
- 4-15 Described 4-12.
- 4-26 Brightness, surrounded by darkness, no noises to interrupt.
- 4-27 Brightness in colored circles, inside the darkness of my eyes being closed. No noises, quietness.
- 4-28 Distant awareness of world around me, quiet inside myself.
- 4-30 Noises in the background of other rooms.
- 5-1 Just relaxing.
- 5-2 Relaxed, nothing. No darkness nor true brightness.
- 5-3 Darkness, surrounded by shadows of darkness.
- 5-4 Lightness, quietness, overall peacefulness.
- 5-5 I can't remember. I slipped into something, but I can't remember anything.
- 5-7 Thought of someone watching. Very aware.
- 5-8 Quiet. Darkness with colored circles.
- 5-9 Brightness, aware of sounds around me.
- 5-10 Bright, spring sounds, birds outdoors.

Date4501, male, age 23

- 3-20 Retinal images, brightness.
- 3-25 Visual flashes of bright light.
- 3-26 Retinal images. Kaleidoscopic type design.
- 3-31 Retinal images but nothing specific.
- 4-1 Retinal images. Changes from very bright to very dim. Perception of rapid motion or acceleration.
- 4-14 Lots of bright flashes and designs on eyelid theater.
- 4-19 Train? Some retinal imagery.
- 4-25 Eyelid theater.
- 4-26 Eyelid theater.
- 4-29 Retinal circus.
- 4-4- Eyelid theater.
- 5-2 Eyelid theater.
- 5-4 Psychedelic retinal circus.
- 5-11 Eyelid theater.

4601, female, age 50

- 4-8 Song going on in my head.
- 4-12 Noises outside blocked out--not conscious of it.

4701, male, age 40

- 4-6 Eyes--everything went black. My eyes were open. Fear.

5101, female, age 41

- 4-15 Yes. Vividly saw myself visiting with a close friend and recalling the conversation.

Additional Comments

Student Experimental Group

Date4601, female, age 50

4-14 Concentration easier. Mind didn't wander as much.

4501, male, age 23

5-4 Why do I have to fill out these serious ?aires when I'm in such a good mood? These answers are true but I feel too good to take this seriously tonite. Bye, R.

5-21 Far Freaking Fat Freddy out!! This is incredible. I am writing this several hours late, but, WOW, I always thought but I never knew/I always knew but I never thought. I have been meditating off and on w/ my friend, and today we worked together. We blew the roof off! The paralysis in my hands and arms became charged w/ "electricity." All concept of time was gone--only the present was there. The immediate experience was tantamount! Beyond this point, words fail to express the intensity of the experience. I could say lots of things. I felt "the energy of the universe," we "touched thoughts," etc., etc., but no description is accurate save to say it was "indescribable." What can I say? Thank-you very much.

5-25 How can I explain these things on paper?

5101, female, age 41

3-17 Difficulty in concentrating

3-23 Some tension remained

4-9 Easy to relax

4-11 Relieved tension in my shoulders

4-14 Difficulty relaxing my leggs and shoulders

4-16 Relaxing helped to relieve my headache

Date

4-18 Relaxed and happy
 4-21 After meditation relaxing was very easy
 4-22 Problems in leggs and neck
 4-24 Very relaxed and happy
 4-25 Easy to relax
 4-26 Very relaxed
 4-28 I was at home alone and very relaxed
 5-6 Relaxing is easier

Student Experimental Group.

Question 5 (other)

3801 sleepy
 pain
 relaxed
 pain
 sleepy
 relaxed
 3901 depression
 4001 relaxed
 4101 excitement
 release of tension
 relaxation
 conflict
 excitement
 calm
 excitement or fascination
 calm, clear feeling
 relaxation
 4201 pain
 very relaxed
 relaxed
 nauseated
 relaxed
 curiosity
 4401 newness, light feeling
 overall light feeling
 like no other feeling: positive
 light feeling
 light feeling
 relaxed

relaxed, soothed
 light, relaxed
 lightness, relaxed, detached
 light, relaxed
 relaxed, light
 out of body experience
 light
 positive, undescribable
 positive, undescribable
 undecided feeling
 aware
 relief of pressure, excited
 relaxed
 4502 relaxed; light, forgotten present but distant awareness
 contentedness, curiosity
 heightened interest in what I was doing
 pleasure
 contentedness, relaxation
 neutral
 happiness
 relaxed, content
 complacency
 ambivalence
 contentment, relief
 relaxation
 melancholia, nostalgia
 anticipation
 tranquility
 calm
 excitement
 lots of pleasant feelings
 contentedness, sleep
 fascination
 intrigue, fascination
 disinterest
 exhilaration, total disbelief
 bliss, exhilaration, bewilderment
 4601 pain
 restless
 comfortable, relaxed
 relaxed
 relaxed
 relaxed
 relaxed
 relaxed
 4701 pain
 pain
 pain
 uncomfortable
 sleepy

5101 pain
tension
relaxed and happy
very relaxed, happy
very relaxed

Student Placebo Group

Question 7

5502, female, age 17

Date

3-10 Sleepy

3-16 Sleepy

3-20 Sleepy, stupid

3-30 Sleepy

3-30 Sleepy

4-2 Tired, relaxed

4-10 Tired, relaxed

4-13 Relaxed

4-15 Relaxed

4-16 Relaxed

4-17 Relaxed

4-22 Tired

4-25 Sleepy

4-26 Tired, relaxed, body tingles

4-30 Sleepy, happy, body tingles

5-2 Sleepy, relaxed

5-4 Go to sleep

5-6 Relaxed

Date

5-7 Happy, relaxed

5-8 Relaxed

5602, male, age 26

4-16 Sleepy

-17 Sleepy

4-28 Sleepy

5902, female, age 40

3-16 Tired

3-23 Tired

3-28 Tired

4-2 Tired. Go to sleep

4-5 Tired. Go to sleep

4-6 Tired.

4-10 Tired, Go to sleep

4-21 Tired, sleepy

4-28 Go to sleep

5-6 Sleepy. I always get sleepy doing this meditation.

6002, male, age 22

3-10 Pain

3-20 Sleepy

4-5 Went to sleep

6102, male, age 22
 Date
 3-12 Uncomfortable
 3-15 Pain

Student Placebo Group

Question 5 (other)

5602 sleepy
 sleepy
 sleepy
 5502 sleepy
 sleepy, stupid
 sleepy
 happy
 sleepy, happy
 feel good
 tired, relaxed
 tired, relaxed
 relaxed
 relaxed
 relaxed
 tired
 sleepy
 tired, relaxed
 relaxed
 sleepy, happy
 sleepy, relaxed
 relaxed
 happy, relaxed
 relaxed
 5702 pain
 5902 tired
 tired
 sleepy
 relaxed
 6102 uncomfortable
 pain
 6202 relaxed
 6402 uncomfortable
 6602 pain
 6702 pain

Experimental Group--Clinical

Question 6. Did you experience any insights into your present past, or future situation?

Date0110, male, age 25

- 3-7 Present--pain
- 3-10 Present--pain
- 3-18 Pain
- 3-23 Present--pain
- 3-27 Pain
- 4-2 I felt content with homelife.
- 4-3 I felt close to God. Religious experience.
- 4-4 The things and actions that bothered me today didn't seem as such a big deal.
- 4-5 Yes, I felt I have control over my present situations, not that these situations were just thrust upon me.
- 4-9 Just how content I was.
- 4-10 I had feelings that my life isn't as complicated as I have felt.

0210, male, age 33

- 3-9 Awareness
- 3-12 No, a little into past.
- 3-29 Thought about old marriage for a few minutes.
- 4-2 Saw myself in Austin for a moment.

0310, male, age 43

- 3-28 Saw some things that happened in the past. Time when I was a boy.
- 4-10 Past experience when I was young came to mind, especially when I was a boy growing up. (pleasant experiences)

0410, male, age 21

- 3-30 A second or two. Thoughts not long at all!

Date

- 3-31 Past; mistakes.
- 4-4 Just not a happy day.
- 4-9 Thinking of what I'm going to do when I get out of here.
- 4-13 What I have done in my past to make problems today.
- 4-14 Thinking of the relationship with girlfriend.
0510, female, age 20
- 3-26 Need to clear up feelings of Mike.
- 4-7 Not anything real precise that I can recall, but a feeling of Mike. A feeling of hate and dismissal of him from my affection.
- 4-23 Yes; it's time I left the hospital. Just a feeling of sureness.
0610, male, age 29
- 3-19 Future. A better place to practice meditation.
0710, male, age 29
- 3-10 Train, once seemed like I was aboard.
- 3-15 Had memories of past that had an emotional awareness on me.
- 4-1 Why I'm in this hospital.
- 4-5 Where I should go to work.
- 4-10 Going to school.
- 4-16 Yes--get revenge.
0810, male, age 20
- 3-15 Yes, kept thinking about my surroundings in Terrell.
- 3-16 Yes, I kept thinking about a girl I talked to on the phone.
- 3-27 Yes, present, lots of noises such as a truck, doors opening and closing.

Date

4-2 Yes, was thinking about where I was going after I'm through with Terrell.

4-10 Present, thinking about how the day was so nice.

4-15 Yes, kept thinking about what is going to happen to me when I go to the other drug center.

1510, male, age 39

3-18 I am becoming more aware of my being.

3-21 Yes, the insights in my present were beautiful and I feel very confident about the future.

3-26 I only experienced the future along with my present situation.

3-29 Optimistic feeling about the future.

Question 7. Did you experience any bodily sensations?

Date

0110, male, age 25

3-7 Painful, shaking.

3-10 Foot going to sleep.

3-18 Shaking and sweat. Tension.

4-1 My legs tingled.

4-4 Weightlessness.

4-5 My tension was decreased.

4-7 Relaxed.

4-8 I was nervous due to concentrating on my posture.

4-11 Very relaxed.

0210, male, age 33

3-9 Felt like I was going to fall forward a few times. Seemed like 15-20 minutes.

3-10 Legs hurt.

Date

- 3-11 Bottom of feet got hot.
- 3-24 Peaceful feeling.
- 3-25 Tired but was in bed with stomach trouble.
- 3-26 Lower part of body got warm.
- 3-27 Got real drowsy from medication. Went to sleep sitting up.
- 4-1 Had a warm feeling.
- 4-2 Felt peaceful.
- 4-4 Felt very relaxed and warm.
- 4-5 Felt very tired even though I wasn't sleepy.

0310, male, age 43

- 3-24 Yes. I experienced sort of a swaying motion of the body.
- 4-2 I felt a swaying motion of the body.
- 4-3 Body seemed very light.
- 4-4 Tension.
- 4-11 Tingling sensation.
- 4-14 I felt a kind of tingling sensation.
- 4-15 A warm feeling.

0410, male, age 21

- 3-30 Pain.
- 3-31 Weightlessness.
- 4-1 Yes. Tension.
- 4-2 Pain.
- 4-4 Pain.
- 4-6 Twitching in legs and arms. No control

Date

4-15 Didn't feel good today, not sure why.

0510, female, age 20

3-19 A sense of sinking. Shaking.

3-21 Again sinking. Some detachment.

3-22 Trembling.

3-24 Trembling within. Working outward, fragmenting feeling, like I was going to burst open.

3-25 Trembling.

3-26 Some trembling with the fear, then an expanding type and some shrinking feeling.

3-28 Numbness and a sense of drawing up.

4-7 A sinking sensation, floating apart and contracting again.

4-10 Felt light and elongated. Hands felt immobile and heavy. Tugging at the back of my eyes and head.

4-13 Floating sense following tension.

4-20 Solidness.

4-30 Trembling arms, tugging between the eyes. Felt like floating, body not mine, hands so solidly bound; especially at the thumbs.

0610, male, age 29

3-19 Overheating in upper part of body.

3-20 Uncomfortable.

3-21 Movement of blood and oxygen through the body.

3-24 Expansion, up, out.

4-2 Sharp pain in back.

4-3 Very comfortable, except for arms and hands moving forward.

4-7 Uncomfortable.

Date

0710, male, age 29

- 3-10 Shaking.
- 4-1 Uncomfortable feeling.
- 4-6 Slight tension or nervous.
- 407 Very relaxed.
- 408 Very relaxed.
- 4-11 Floating, air blowing, warm to cool.
- 4-14 With someone warm, touching, could not see.

1110, female, age 23

- 3-10 Breathless, dizziness.

0810, male, age 20

- 3-16 Yes, trembling.
- 3-21 Yes, I was trembling because of the position I was in.
- 3-23 Some trembling.
- 4-2 Yes, was very tense and nervous and was sweating.
- 4-5 Very tense
- 4-10 No, did feel very comfortable in the position.
- 4-15 Very nervous.

1510, male, age 39

- 3-18 I was able to control my body aches.
- 3-21 I was able to control my muscles to a certain degree.
- 3-26 My body felt very relaxed and calm.
- 3-29 Yes, at times a sort of numbness all over my body.

1610, male, age 40

- 3-20 lightheaded.

Date

1810, male, age 35

- 3-19 Some discomfort in legs and back.
- 3-27 Really relaxed and felt slightly high for a few moments. Felt sort of like I was floating.
- 3-28 Felt like I was on a cloud.

Question 8. Did you experience any auditory or visual sensations?

0210, male, age 33

- 3-9 Ray of light from candle.
- 3-11 Rays of light from candle.
- 3-23 No. Bad night, mind not on it.
- 3-26 Rays of light from candle.
- 4-6 Light from candle. Many rays.

0210, male, age 43

- 3-20 My hearing became very sensitive to sound, very acute.
- 3-24 Yes. Some vision of past event.
- 3-28 Visual. When I was a boy, just a flash.
- 3-31 Visual. When breathing in and out I would see brightness and then darkness.
- 4-10 I saw cloud formations in the sky on a sunny pleasant day.

0510, female, age 20

- 3-26 Not real clear, but a fuzzy type line saying "Mike HIT me."
- 4-7 A short, a very soft whirring right between and back of my ears.
- 4-10 Moments of clear white light.
- 4-11 Like looking thru fog, trying to see something.

Date

4-20 Complete whiteness.

4-25 Clear vision with nothing there to see.

4-30 Clear vision but nothing to see.

0610, male, age 29

3-21 Twice I saw myself (face), FACE TO FACE???

3-24 When breathing in; the darkness would become light.

4-2 Light when inhaling--dark while exhaling.

4-3 Hearing very, very clear, only sounds did not register.

0710, male, age 29

3-10 The train going by.

3-15 Visual picture of past of certain people and places.

3-18 Long hall leading to door. Dark hall, white door with window.

4-3 Picture of something that happened to me when I was a kid.

4-5 Once a restaurant.

4-6 Face was staring back at me as if it was only a foot away.

Too much interference from pool table going, radio, door closing and people talking. Next to impossible to reach out to anything.

4-7 Heard and saw water fountain with colored lights from some rooms with glass window. Nite time, moon and clouds, lite breeze.

4-8 At the lake. Everything green, blue, late, fishing, birds.

4-10 Lots of people around, occasionally a voice I could not make out.

4-11 Air blowing.

4-16 Voice and pictured staff.

Date

- 4-18 Yes, long corridor, semi-dark, many doors, some open, listening, walking, never ending.
- 4-22 Out in country, high hill, sun setting, birds singing.
- 4-25 Sunlight over hill. At top looking into ravine, long procession of priests in white robes. One carrying a large cross, very, very bright. Feeling of Christ coming back.

0810, male, age 20

- 4-2 Keep seeing the other hospital I'm going to.

1110, female, age 23

- 3-19 Image of couple by a tree; also the picture of the beach by the ocean. Then I saw the image of someone in a coffin.

1510, male, age 39

- 3-18 The quiet became very noisy at times.
- 3-21 The silence became a sound I can't understand.
- 3-26 Yes, the sun was in harmony with my body.

Additional Comments

Date

0110, male, age 25

- 4-1 My concentration was quite a bit about this upcoming weekend and did feel less tense than before.
- 4-3 I had some deep religious feelings and felt close to my Creator. I really felt I was being looked after.
- 4-4 I am feeling weightlessness. Very content and sense of relief. I've been tense all day, but now don't seem to be nearly as concerned with the things that bothered me before. My mind feels clear from clutter.
- 4-5 I am feeling the tension of this morning leaving. I am feeling emotions of self worth. I'm much more content with myself as I feel, not as others may think of me.

Date

- 4-8 I was worried about my posture.
- 4-10 I am feeling much less confused. My feelings are low-keyed and seem to feel to fit in place.
- 4-11 My whole body seems relaxed, at ease.

0510, female, age 20

- 4-7 Amusement at my breath; it played games with me. When I had fallen into long, slow breath it would do a jig and startle my attention.
- 4-15 Same emotion at beginning and end. Void in between.

1810, male, age 35

- 3-25 Felt really good afterwards.
- 3-26 After a really fucked up day, I came out feeling very rested and positive.
- 3-28 Felt great, got rid of my headache.

Clinical Experimental Group

Question 5 (other)

- 0110 pain
pain
anxious
religious experience
relief
self-worth
content
relaxed
- 0210 pain
- 0310 calmness
clamness
- 0410 pain
pain
pain
fine
fine
fine
tension
fine
fine

Date

0510 nervousness
desperation, loneliness
contentment, emptiness
strength
amusement
some detachment
anticipation, eagerness
nostalgia
comfortable
hate, contentment
just being
contentment
curiosity, contentment
0610 well-being
0710 guilt
uncomfortable
curiosity
strange, mystic
strangeness
0810 relaxed
1010 nervous
1810 really satisfied

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