

## ABSTRACT

Title of Dissertation: Meditation, Flow, and Heavy Social Alcohol Use among College Students

Timothy Lewis Francis, Doctor of Philosophy, 1992

Dissertation directed by: Dr. Seppo E. Iso-Ahola, Professor, Department of Recreation, University of Maryland

The basis for this study was an experiment designed to explore the effectiveness of various meditation practices and choice and combination of such, regardless of focus, in achieving more drug-free flow experiences, longer periods of meditation adherence, and decreases in heavy social alcohol use among college students. The study also examined the hypothesis that higher frequencies of reported flow in meditation were associated with lower levels of reported alcohol use and higher frequencies of post-training meditation practice, regardless of meditation focus. The interaction of several critical intervening variables not comprehensively addressed in previous studies on meditation and substance abuse, including experimental expectancy and demand, previous alcohol use, hypnotic susceptibility, and personality was checked and controlled for in this experiment.

After receiving basic meditation training, 53 subjects with drinking rates typical of heavy social alcohol users were randomly assigned to one of four meditation groups or to a control group. Three groups practiced only one of three foci--object focused, visualization, or mindfulness. The fourth group chose their meditation foci each day from any of the above three types. The fifth (control) group practiced an attention placebo activity.

Four weeks of daily diaries following meditation were used to determine the level of the dependent variables--frequency of flow and amount of alcohol use. Subjects then reported post-required meditation frequency and alcohol use through four weekly phone interviews. MANOVA, ANOVA, and zero-order correlations were employed to analyze the relationships between the variables.

No one specific meditation focus nor having choice and combination of foci, was indicated to result in significantly more flow, less alcohol use, or longer meditation adherence. There was a slight indication that higher frequencies of flow were related to higher frequencies of meditation practice, but no indication that more flow was related to less alcohol use. These results should be interpreted with caution for several reasons, including the short meditation training and practice period, low reliability and validity of subject reports, and problems associated with large variations in drinking rates. Future research on these issues should refine training and testing methods so that better treatment methods can be found.



**MEDITATION, FLOW, AND HEAVY SOCIAL ALCOHOL USE AMONG  
COLLEGE STUDENTS**

by

Timothy Lewis Francis

A Dissertation submitted to the Faculty of the Graduate School  
of The University of Maryland in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy  
1992

CI  
MD  
DEPT. OF RECREATION

Advisory Committee:

Professor Seppo Iso-Ahola, Chairman/Advisor  
Professor Viki Annand  
Professor Charles Dotson  
Professor Jerold Greenberg  
Professor Ellen Drogin

### Dedication

Thanks to the higher power, including my parents, siblings, Helen and Floyd, friends, professors, subjects, and the communities.

## Table of Contents

<u>Section</u>	<u>Page</u>
List of Tables .....	v
CHAPTER I. INTRODUCTION .....	1
Meditation As a Consistent Flow Producer .....	3
Definitions .....	6
Limitations and Delimitations .....	8
CHAPTER II. REVIEW OF THE LITERATURE .....	11
Alcohol Misuse and Treatment .....	12
Alternatives Treatment .....	14
Flow Technology in Alternatives Treatment .....	16
Flow and Meditation Types in Alternatives Treatment .....	20
Meditation As Substance Misuse Treatment .....	23
Summary and Implications for the Present Study .....	35
CHAPTER III: METHODOLOGY .....	37
Operational Procedures .....	37
Experimental Design and Variables .....	39
Measures .....	43
Statistical Analysis .....	48
Reliability and Validity of Collected Data and Measures .....	52
CHAPTER IV: RESULTS .....	59
Expectancy and Demand, Personality, and Previous Alcohol Use .....	59
Results of Hypotheses Tests .....	60
Supplemental Findings .....	63
CHAPTER V: SUMMARY AND CONCLUSIONS .....	64
Discussion .....	66
APPENDIX .....	84
A. Residence Hall Flyer .....	85
B. Psych 100 and Non-Psych 100 Sign-up Sheets .....	86
C. Preliminary Telephone Screen .....	87
D. Letter to selected subjects .....	88
E. Background Questionnaire .....	89
F. Consent Form .....	90
G. Mini-Mult .....	91
H. Daily Diary before Meditation Training .....	93
I. Training Dialogue .....	94

	iv
J. Meditation Instructions . . . . .	96
K. Harvard Group Scale for Hypnotic Susceptibility . . . . .	99
L. Harvard Group Scale (answer sheet) . . . . .	100
M. Daily Diary after Meditation Training . . . . .	106
REFERENCES . . . . .	84



## List of Tables

<u>Number</u>	<u>page</u>
Table 1. Matching Needs of Misusers with Flow and Meditation . . . . .	17
Table 2. Skills in Meditation Types . . . . .	22
Table 3. Selected Studies on Meditation and Substance Misuse . . . . .	32
Table 4. Mean, Standard Deviation, and Reliability of Major Dependent Variables . . . . .	53
Table 5. Correlations Among Monthly Totals . . . . .	55
Table 6. Correlations Among Weekly Totals . . . . .	56
Table 7. Reliability in Measures of Psychological States . . . . .	58
Table 8. Group Differences in Pre-Training Variables . . . . .	60
Table 9. Group Differences in Alcohol Use, Flow, and Meditation Adherence . . .	61

## CHAPTER I. INTRODUCTION

Despite increased preventive and treatment efforts, drug and alcohol misuse continues to inflict great damage on personal and social welfare in the United States (U.S. Department of Education [DOE], 1987). The national cost of misuse is estimated at more than \$144.1 billion per year (Rice, Kelmoni, Miller, & Duameyev, 1990).

Common symptoms of drug and alcohol misuse among college students include lowered academic performance, arrest for disorderly conduct or driving while intoxicated, and attempted suicide (Rivinus, 1987). A 1990 University of Maryland Health Center survey (Thombs, 1990) found that 22% of all students at the university had behaviors indicative of alcoholism.

The ineffectiveness of multi-million dollar efforts to curtail the supply of drugs or punish people who use drugs points to overpowering biopsychosocial demands for drugs (Anderson & Van Atta, 1989; Skirrow & Sawka, 1987). Yet most preventive and rehabilitative attempts to lessen demand through drug education, self-esteem improvement programs, self-help groups, and psychotherapy also have had little influence (Hubbard, Marsden, Raskal, Harwood, Cavanaugh, & Ginszburg, 1989; DOE, 1987). The inability of people who misuse substances to manage stress and find adequate enjoyment without using drugs may often frustrate these efforts (Iso-Ahola & Crowley, 1991; Julien, 1987; Vaillant, 1983). The intent of this study is to test the

effectiveness of an alternative leisure activity--meditation--that has shown promise in helping people who misuse substances.

The general "alternatives" (or substitutive) treatment strategy is to encourage people who misuse to participate in non-drug activities that help them cope and/or obtain enjoyable states, thus reducing reliance on drugs used to achieve the same effects (Cohen, 1972; Glasser, 1976; Julien, 1987). Evidence supports the proposition that persons with more successful recovery rates have more and better means of coping and/or achieving enjoyable states (Peri, 1985; Shiffman, Peak, Maltese, Rapkin, & Jarvik, 1985; Vaillant, 1983). Unfortunately, many alternatives programs (Cook, Lawrence, Morse, & Rowhl, 1984; Moskowitz, Malvin, Schaiffer, & Schaps, 1983; Swisher & Hu, 1983) have limited effectiveness because of what appeared to be inadequate treatment supports, insufficient consideration of individual stage of drug use, and lack of programming that encouraged satisfying leisure experiences, such as the state of "flow" or optimal experience (Csikszentmihalyi, 1975).

Theoretical and empirical evidence indicates that encouraging common "flow-producing" components and activities may consistently result in highly enjoyable experiences, personal growth, and improved social functioning (Francis, 1991). Because meditation has been found particularly conducive to achieving flow states, its use in treatment may help people who misuse to substitutively attain the desired and needed experiences that drugs previously provided (Csikszentmihalyi & Csikszentmihalyi, 1988).



### **Meditation As a Consistent Flow Producer**

Iso-Ahola (1988) and Bullock, McGuire, and Barch (1984) report that more research is needed to evaluate and improve therapeutic recreation (TR) treatment with specific populations. This study will hopefully be used to assist populations with substance misuse problems by testing methods of improving meditation as a flow-producing TR treatment tool and by exploring the relationship between flow, alcohol misuse, and meditation adherence.

The practice of meditation forms similar to Benson's (1975) have resulted in flow-like states, including positive moods (Pekala, 1987), decreased anxiety and increased self-actualization (Delmonte, 1987), reduced self-blame, decreased stress-related illness, and increased self-identity (Carrington, 1987). Although studies do not seem to have addressed meditation as a satisfying leisure activity, this benefit seems probable in light of its positive psychological effects.

In the most comprehensive and recent collection of meditation research, West (1987) and several other prominent researchers (Carrington, 1987; Delmonte, 1987; Pekala, 1987; Shapiro, 1987) concluded that additional research was needed to investigate the relationships among types of meditation, levels of subjective experiences, and corresponding clinical effects. Individual differences, subject expectations, ability to be hypnotized, and previous drug use patterns are also critical variables research has not yet fully addressed (Shapiro, 1987).

Studies on college students with heavy social alcohol use (Marlatt, Pagano, Rose, & Marques, 1984; Meyers & Ramsey, 1975; Murphy, Pagano, & Marlatt, 1986)



found that meditation helps reduce alcohol use by about 50%, but only when students meditated an average of at least five times per week. In addition, the students stopped meditating almost immediately upon completing the required study. Perhaps they found the meditation experience unrewarding or unenjoyable. Thus, methods to increase the flow and other perceived benefits of practice need to be developed.

The studies did not analyze different types of meditation and subjective states meditators experienced. Better individual matches of the different skills used in the three major types of meditation (Smith, 1987) might have created more adherence and enjoyment of flow-like experiences (Csikszentmihalyi & Csikszentmihalyi, 1988; Oldridge, 1982; Wankel, 1985). In addition, because choice and intrinsic motivation may be other motivators of flow (Csikszentmihalyi & Csikszentmihalyi, 1988) and exercise adherence (Thompson & Wankel, 1980), allowing meditators to choose which meditation they use may increase their flow experiences and adherence in meditation practice, no matter which type they select.

This experiment investigated the effectiveness of different meditation techniques and of using a choice and combination of techniques in producing more flow, decreasing alcohol use, and increasing meditation practice adherence. The study also explored whether the amount of flow was related to the amount of alcohol use and level of adherence to meditation practice. Such investigation may help to improve treatment alternatives for alcohol misuse among the college population. Further, the research examined the general and therapeutic worth of some basic qualities of leisure found in meditation practice, including relaxation, choice, intrinsic motivation, lack of

evaluation, and optimal arousal (Shaw, 1985). The hypotheses tested were as follows:

1. Subjects using one type of meditation foci report:

- a) higher frequencies of flow in meditation,
- b) higher frequencies of meditation practice after the required training period,  
and
- c) lower levels of alcohol use than subjects using other meditation foci.

2. Subjects using a choice and combination of meditational foci, regardless of which they chose, report:

- a) higher frequencies of flow in meditation,
- b) higher frequencies of meditation practice after the required training period,  
and
- c) lower levels of alcohol use than subjects using one meditation foci.

3. Subjects reporting more flow in meditation practice, regardless of which meditation foci they use, experience:

- a) higher frequencies of meditation practice after the required training period  
and
- b) less alcohol use than groups having less flow.

## Definitions

### Alcohol Misuse

Many critical variations may occur in the pattern or stage of alcohol use and the system of the individual, family, community, work, and leisure life. Therefore, Steinglass, Bennett, Wolin, and Reiss (1987) suggested that an open, flexible and holistic definition be used for theoretical analysis and treatment design. In this study, the expression "alcohol misuse" refers to any use of alcohol resulting in harm to the user or others (Steinglass et al., 1987). Subjects were selected for having drinking levels at least that of "heavy social alcohol users." Consuming over 11 drinks per week, this group was considered at risk to engage in more severe usage patterns (Cahalan & Room, 1974). Cahalan and Room defined "heavy alcohol use" as drinking more than 30 drinks per week. College students with heavy social alcohol use and heavy alcohol use behaviors were used in this study, thus replicating the population used in several previous studies on alcohol and meditation (see Table 3 in Chapter 2).

### Flow

Flow has been described as a state of optimal psychological arousal in which persons were reported to experience focused concentration, heightened self-esteem, feelings of balanced arousal, altered sense of time, loss of self-awareness, intrinsic rewards, and satisfaction (Csikszentmihalyi & Csikszentmihalyi, 1988). Flow has been indicated to often result from intrinsically motivated participation in activities in which the individual's challenges and skills were above average for the activities.



Extrinsically motivated participation in activities performed far below or above potential individual skill and challenge levels may lead to boredom and anxiety, two major causes of substance misuse. The state of flow has also been found to correspond to a set of psychological states or a quality of experience, which includes high cognitive efficiency, activation, affect, self-esteem, and intrinsic motivation (Csikszentmihalyi, 1975).

### Meditation

Shapiro (1982) defines meditation as a "family of techniques which have in common a conscious attempt to focus attention in a non-analytical and non-judgmental way and an attempt not to dwell on discursive, ruminating thought" (p. 268).

Benson's (1975) model (termed "object focused" for the purposes of this paper) incorporates the basic components purportedly underlying the various Eastern and Western meditative practices, including Transcendental Meditation and Carrington and Effron's (1979) clinically standardized form. Its characteristics include:

- 1) a quiet environment, free of discontinuous stimulation or distraction.
- 2) an attentional focus, such as the repetition of any peace-producing word (e.g., "one"), sound, or phrase silently to oneself with eyes closed, or less commonly, fixed gazing at some object in the environment; either device may be integrated with one's natural breathing cycle to eliminate externally oriented distractions;
- 3) a passive attitude, including disregarding distracting intrusions and not worrying about correct performance of the technique or occurrence of distracting thoughts; and



4) a comfortable position; in general, sitting with as little muscular tension as possible and less commonly, kneeling or sitting in a cross-legged lotus position. Lying down may promote falling asleep.

Several other forms of meditation are similar except in their object of attentional focus. One major variation, mindfulness, asks for dispassionate, conscious focus on anything that comes to mind. Another, visualization, has the meditator create and maintain a visual image, usually of a calming or meaningful scene (West, 1987). Although visualization (also called imagery) may be classified as a different general technique than meditation (Girdano, Everly, & Dusek, 1989), several researchers regard it as a type of meditation (Krystal & Zweben, 1988; Shapiro, 1982; West, 1987). This may be because of the relaxing preparation and non-demanding focus of attention common to most meditation and visualization practices (Shapiro, 1982).

### **Limitations and Delimitations**

Large variations among subjects, their flow experiences, and their drinking practices may have hindered the implementation of a effective meditation treatment research program. As mentioned previously, alternatives treatment should be recognized as only part of and dependent on a larger treatment and support focus (i.e., individual and family counseling, drug education, community improvement).

Experiences and methods of achieving flow may have varied in safety, effectiveness, cause, duration, consistency, intensity, and frequency. Furthermore, flow-encouraging conditions often require complex skills and abilities. More skillful

accomplishment of these conditions may yield more flow (Csikszentmihalyi & Csikszentmihalyi, 1988). The characteristics of misusers (low self-esteem, inadequate stress management, and low leisure satisfaction) seem inherently opposed to meeting the flow conditions. These needs may demand intensive address through counseling or other therapy before flow can be achieved.

Several delimitations may have existed in this study, including the possibility of weakened benefits from shorter- than-optimal periods of supervised meditation training. Subjects may have also needed more supervision to help them deal with the various difficulties of meditation practice and get the benefits from lengthened practice (see review of literature). Also, because subjects were paid to participate, their meditation practice during training was likely to be more externally motivated, thus negatively influencing their adherence to practice and the amount of flow they experienced. Another concern was that post- treatment data collection was one month, less than the 18- month period generally considered a critical period for relapse (Hunt, Barnett, & Branch, 1974). In addition, the use of self-report questionnaires may have had limited validity. Finally, using university students limited generalizing the results to a wider population. Additional cautions and limitations about treatment and research are noted in the next chapter.

Several conditions address these delimitations. Randomly assigning subjects to groups should have helped control large variations among the groups. Pretests were conducted to help control and check for some potentially intervening critical differences among groups, such as personality, hypnotic susceptibility, and previous

alcohol levels. Subjects were also polled at repeated intervals to help ensure more valid reports. Finally, the use of a largely homogeneous subject pool may provide more specific directions for treatment options with this specific population.

## CHAPTER II. REVIEW OF THE LITERATURE

The intent of this study was to incorporate flow theory in designing a meditation/alternatives program for alcohol misuse among a college population. Flow-producing/enhancing components, such as offering a choice and different types of meditation to meet individual intrinsic needs, may help a meditation program address misusers' low adherence to meditation treatment programs, low self-esteem, inadequate stress management, and unsatisfying leisure experiences. A decrease in alcohol use may also occur. The relationship among levels of flow, levels of alcohol use, and exercise adherence, regardless of meditation type used was also investigated. It was hoped that the results would provide verification of the general and therapeutic worth of some basic qualities of leisure found in meditation practice, including relaxation, choice, intrinsic motivation, lack of evaluation, and optimal arousal (Shaw, 1985). This chapter contains a review of studies related to (a) alcohol misuse and treatment, (b) alternatives treatment for alcohol misuse, (c) incorporating flow techniques in alternatives treatment, (d) flow and meditation types in alternatives treatment, and (e) meditation as substance misuse treatment.

The last section is the most extensive because it is most congruent to the current study. This section contains three major parts. The first contains reviews of qualitative studies on the subject, the second contains reviews of studies to establish criteria for conducting improved experimental research on the subject, and the third



part contains reviews experimental research that meets most of these guidelines and provides more specific guidelines for the present study.

### **Alcohol Misuse and Treatment**

Alcohol misuse has been the focus of the latest experiments on meditation and substance misuse (Marlatt et al., 1984; Murphy et al., 1986; O'Connell, 1988; Peniston & Kulkosky, 1989). This experiment elaborates on the subject, design, and findings of these experiments.

Niremberg and Maisto (1987) suggested that individuals prone to addictive or compulsive behavior, including gambling, overeating, and misuse of various drugs, respond comparably to similar treatment methods. In a ten-year nationwide study of more than 10,000 subjects in various treatment programs, various treatments for the misuse of alcohol and other drugs (i.e., legal, prescription, and illicit) were shown to be equally effective, with treatment time the differentiating factor (Hubbard et al., 1989). The effectiveness of meditation in treating misuse of various drugs has also been equally successful, regardless of the drug used (Meyers & Ramsey, 1975; Brautigam, 1977). The following general review of the literature examines drug and alcohol misuse interchangeably because of their similar etiological and treatment patterns and effectiveness.

Illustrating the complexities involved in the etiology of substance misuse, Lettieri (1985) designated 47 associated stressors. Some of these were common causal factors relating to the present study, including the drive for euphoria, low self-esteem,

ineffective stress management, and leisure dissatisfaction. Other factors included the biochemical structure and effect of drugs themselves, genetic influences (Julien, 1987), family factors (Steinglass et al., 1987), and various personality and social forces (Vaillant, 1983). After conducting a classic ten-year study of 583 subjects with alcoholism, Vaillant concluded that it was unclear what one cause could be implicated.

Partly because of this large variation in causes of misuse, preventive and treatment efforts ameliorating drug and alcohol misuse continue to be relatively ineffective. As noted in the introduction, the million dollar efforts to curtail the supply of drugs or to punish drug use seem to have little effect on the psychosocial demand for drugs. Anderson and Van Atta (1989) reported that money spent for illegal drugs totaled more than \$230 million in 1988 while prevention and treatment costs totaled around \$30 million. Furthermore, most preventive and rehabilitative attempts to lessen demand (i.e. drug education, self-esteem improvement programs, self-help groups, and psychotherapy) also have severely limited influence (Hubbard et al., 1989; DOE, 1987). Treatment efforts have often been frustrated by substance misusers' inability to manage stress, find adequate self-esteem, and obtain enjoyment effectively without using drugs (Iso-Ahola & Crowley, 1991; Julien, 1987; Vaillant, 1983).

The drive for euphoria has been found to be a prevalent precursor of drug misuse (Vaillant, 1983; Zuckerman, 1986). Drug-induced euphoria is described as "feelings of elation and extreme well-being or a state without worries or fears" (O'Brien & Cohen, 1984, p. 100), a general state of "optimism and well-being, often

accompanied by heightened motor activity" (Nelson, Pearson, Sayers, & Glynn, 1982, p. 39), or freedom from boredom (Julien, 1987). Other descriptions include relaxation, peacefulness, enhanced sensitivity, floating sensations, self-confidence, heightened mental powers, or an attitude of invulnerability (English & English, 1958; Weller & Halikas, 1983).

Related to the euphoria-drive causal theory is that many people who potentially and currently misused scored high in sensation-seeking characteristics (Zuckerman, 1986). These include a strong need to escape from boredom or low arousal; a high need for stimulation and complex sensation; a willingness to engage in risk, thrill, and adventure; need for novelty; ego-centrism; and disinhibition (Zuckerman & Neeb, 1980).

Other characteristics of misusers are an inability to manage daily stress (or extremes of boredom or anxiety) (Gottheil, Druley, Pashko, & Weinstein, 1987; Nirenberg & Maisto, 1987); inadequate self-esteem, self-concept, or self-efficacy (Blau, Gillespie, Felner, & Evans, 1988; Vaillant, 1983); and high leisure dissatisfaction and boredom (Iso-Ahola & Crowley, 1991). These characteristics seem integrally related to the descriptions of euphoria and may be components of the same compulsive drive. People who misuse may perceive drug-induced euphoria as the only dependable way to alleviate these deficit characteristics.



### **Alternatives Treatment**

To help resolve the needs of people who misuse and possibly decrease reliance on drugs, substitutive or alternative participation in non-drug leisure activities has been suggested (Cohen, 1972; Glasser, 1976; Julien, 1987; Iso-Ahola, 1990). The strategy is to encourage participation in non-drug activities that help misusers cope and obtain enjoyable states, reducing reliance on drugs used for the same effects (see Cohen, 1972; Glasser, 1976; Julien, 1987).

Evidence supports this approach. In a ten-year follow-up study of 583 subjects, Vaillant (1983) found that the largest percentage (67%) of securely recovered abusers (at least five years) used alternatives (or substitutive) activities to cope or improve moods. Other experiments showed that recovering persons using larger repertoires of coping behaviors experienced longer periods of abstinence than those with fewer coping behaviors or those using willpower alone (Peri, 1985; Shiffman et al., 1985).

Unfortunately, many alternatives programs showed limited effectiveness. Effective substitution may have been an insurmountable unsafe goal when intra-individual, familial, educational, counseling, and community supports were insufficient. When substitution in a supportive treatment system was possible, major problems seemed to exist in programming. First, techniques for stress management and for experiencing satisfying leisure seemed inadequately addressed in published descriptions of alternatives programming (Cook et al., 1984; Moskowitz et al., 1983). Potentially substitutive "flow" structures or techniques were not reported to be used for achieving consistent, comparable, and satisfying experiences. Second, the



biopsychosocial effects of drug addiction seemed insufficiently considered. Some programs encouraged random participation in common non-drug recreation activities as diversionary or group-support building efforts.

In a national pilot study of alternatives programming, Stein, Swisher, Hu, and McDonnell (1984) discovered that alternatives participation in self-selected recreational activities resulted in increased drug use. Cook et al. (1984) found some success in an alternatives activity program coupled with social skills training, but did not distinguish the extent to which or what specific activities had any effect. Similarly, Swisher and Hu (1983) found that participation in intellectual, sport, and religious activities led to less substance use than vocational, passive entertainment, and social pursuits. Barnes and Olson's (1977) survey found that high school students participated most in social, physical, and risk taking activities as non-drug alternatives to induce positive states, while personal contemplation was most chosen to reduce negative moods. However, they did not access the direct relationship to levels of drug use. In summary, none of the reported alternatives programs or studies fully addressed the critical needs of misusers, incorporated flow technology in treatment, or demonstrated effectiveness of a specific activity.

### **Flow Technology in Alternatives Treatment**

Misusers' desired and needed experiences of elevated euphoria, stress management, self-esteem, and leisure satisfaction may be obtained in flow and meditational experiences. Table 1 summarizes how several of the misusers' common

Table 1. Matching Needs of Misusers with Flow and Meditation

Personality/Needs	The "High"	Flow	Meditation
inability to manage daily stress	relaxation, no worries or fears, invulnerability	relaxation, harmonious and continuous exchange with the environment	increased relaxation and calmness, decreased anxiety
inadequate self-esteem	heightened self-concept, extreme well-being, optimism	increased self-esteem and skill	increased self-actualization, reduced self-blame
leisure dissatisfaction	freedom from boredom, peacefulness, enjoyment	enjoyment and satisfaction	deeply felt positive mood
sensation seeking	elation, more motor activity, enhanced sensitivity, floating sensations, more mental powers	timelessness, pleasant fear and risk taking, integration, creativity	absorption, alteration or intensification of consciousness, transcendence of space and time

personality needs and quality of the desired high are similar to flow and meditational states. For example, under personality/needs, the inability to manage stress is listed. Similar qualities or states are listed for the high, flow states, and meditation. Flow was described in several experimental studies of several populations (see Csikszentmihalyi & Csikszentmihalyi, 1988) as increased enjoyment, timelessness, self-esteem, relaxation, satisfaction, pleasant fear and risk-taking, integration, increased level of skill, harmonious and continuous exchange with the environment, and creativity. Similar states were described in studies of play (Ellis, 1973), optimal arousal (Iso-

Ahola, 1990), peak experience (Maslow, 1970), peak performance (Privette & Landsman, 1983), altered states of consciousness (Ornstein, 1977), and ecstatic religious experience (Hollis, 1968).

Particular conditions and activities were consistently associated with reaching these states. The following list describes conditions and related guidelines suggested in studies of flow (Csikszentmihalyi & Csikszentmihalyi, 1988; Ellis & Witt, 1983), peak performance (Allen, 1988), and peak experience (Gordon, 1985).

1. Choose intrinsically motivated activities: minimize extrinsic rewards or make such rewards intrinsic by internalizing them through personal choice and values clarification, encourage trust in personal choices, minimize focus on outcomes, and explore individual levels of enjoyment from various activities.
2. Facilitate creative discovery and exploration: encourage autonomy, experimentation, problem solving, curiosity, and non-judgmental attitudes.
3. Make individual choices toward reasonable risks and growth: improve self-confidence, self-knowledge, social/individual differentiation, and realistic goal setting, and choose activities with gently increasing complexity and skill integration.



4. Become fully concentrated and absorbed in activity: improve internal powers of concentration, arousal control, and intrinsic motivation; and eliminate excess stimuli from the field of awareness.
5. Set up and recognize successes through immediate and constant feedback from the environment: choose and structure activities that facilitate clear, concrete, and immediately realizable goal attainment.
6. Become free of self-conscious fears and tensions: improve spontaneity, trust of internal and external forces or a higher spiritual power, flexibility, and the ability to live in the present, encourage alternative cycles of self-growth and mastery, followed by a release of tension and control.

Supporting the inherent worth of these conditions, reviews of empirical literature by Deci and Ryan (1987) and Iso-Ahola (1990) concluded that intrinsic motivation, choice, and perceived competence in skill level were key components of satisfying, enjoyable, and therapeutic experiences. Furthermore, experiments on exercise adherence (Oldridge, 1982; Wankel, 1985) found that individuals who had activity choices and activities that matched individual skill levels experienced more enjoyment and exercise adherence.

In addition to meeting these conditions, participation in certain leisure activities may be more conducive to flow states. Although participants may inwardly or



outwardly structure other activities to better achieve flow, the literature suggests that the following leisure activities may be most effective: arts and hobbies (Massimini & Carli, 1988); intense prayer or ritual (Perez-Ricon & Ayala-Guizar, 1981); **meditation**, imagery, or yoga (Shapiro, 1982); musical activities (Csikszentmihalyi, 1975); sexual activity (Sato, 1988); vigorous exercise (Dishman, 1985); and wilderness stress/challenge activities (Reser & Scherl, 1988).

The common characteristics of these activities indicates how certain ones may effectively incorporate and teach flow-producing conditions, thus resulting in more flow. The activities: 1) involve active rather than passive participation; 2) are largely within participants' choice and control, with low potential for interruptions of external players and conditions; 3) allow for increasing or decreasing tension, complexity, challenge, exploration, and creativity; 4) supply fairly direct, frequent, and individualized feedback, and 5) provide several choices of techniques to better meet individual differences and needs.

### **Flow and Meditation Types in Alternatives Treatment**

Pekala (1987) reviewed several studies indicating that states similar to flow were achieved through various types of meditation. Consistent descriptions of flow-like states included increased relaxation, calmness, and absorption; alteration or intensification of consciousness; deeply felt positive mood; and transcendence of space and time. However, Pekala found major methodological inadequacies in all studies, including the neglect of control for hypnotic susceptibility and experimental demand.

As the present study's further review on the relationship between meditation and substance misuse indicates, individuals may better use different meditation types to obtain flow-like experiences and general clinical effects, depending on their personality and substance misuse history.

In view of such evidence, West (1987) concluded that more research was needed to investigate the relationships of specific meditation types and levels of flow achieved. Such investigation seems promising, particularly since different levels of skills (critical to flow experience) may lead to successful practice of different meditation types. Consistent with this, Smith (1987) conjectured that visualization, object-focused, and mindfulness meditations require respectively increasing skill levels in focusing attention and controlling emotional involvement. Because achieving flow may require intrinsic motivation and an ideal matching of skill and challenge, persons seeking more flow should probably use a type of meditation most suited to their personal needs and skills. Table 2 summarizes the different attentional and cognitive-emotional skills used in the practice of each meditation type.

Visualization meditation, which requires primary process thought, creating and focusing on pleasant images, is believed to result in increased creativity and calmed, rejuvenated states (Shapiro, 1982). Because of the focus on pleasant imagery, little emotional control may be called for (Smith, 1987). However, if subjects allow disturbing imagery or intruding thoughts to appear or have difficulty creating images, their experience may not be satisfying (Krystal & Zweben, 1988). Greenfield (1977) found tentative evidence that heavy drug users were more calm using visualization

Table 2. Skills in Meditation Types

Skill	Visualization	Object-focused	Mindfulness
<b>Attentional focus</b>	pleasant image or field	single relaxing object or word	anything that comes to mind
<b>Cognitive-emotional control of focus</b>	creative imaging, positive attribution, requesting guidance	repeat mentally with each exhalation, maintain relaxed, passive attitude	dispassionate awareness, open to all stimuli
<b>Cognitive-emotional processing of intrusions</b>	gently returning to original focus	gently returning to original focus (same as visualization)	accept as new focus

than when using the other two meditation types.

Object-focused meditation calls for fixed, peaceful concentration on a single thought or object. This repetition and control may lead to increased concentration, exclusion of stressful stimuli and negative thoughts, increased self-control, more intrinsically motivated behavior, more clear and logical thinking, more tranquility, and strengthened ego. However, the monotony of repetition and the sometimes difficult process of ignoring unwanted thoughts may reduce experiences similar to flow (Delmonte, 1987).

Mindfulness meditation calls for dispassionate awareness of anything present in consciousness. Mindfulness is thought to result in increased self-identity, letting go of control, increased inner direction, awareness of inner feelings, cultivated detachment, lowered reactivity, the training of the consciousness, merging of the self with the world, the ability to stay in the present life situation, and to sustain congruence (West,



1987). Greenfield (1977) tentatively found that heavy users were least calm using this practice as compared with other techniques.

Summarizing Table 2, each type of meditation asks for the user to practice different skills in concentrating on different attentional foci, cognitive-emotional processing of the foci, and cognitive-emotional processing of external or intruding thoughts and/or emotions. Individuals with various needs and skills using the different types may subsequently vary in potential for experiences of flow. Furthermore, practicing any type may teach misusers various skills (i.e., concentration, relaxation, active participation) to achieve flow, cope with pressures in everyday life, or both.

### **Meditation As Substance Misuse Treatment**

The following review of the literature on meditation and substance abuse first is a discussion of non-experimental/qualitative studies followed by an exploration of criteria for conducting needed experimental research on this subject. This is followed by a review of studies with experimental designs that have met many of the essential criteria and provided a base for the design of the present study.

#### **Qualitative Studies**

As noted previously, substance misuse has many kinds of biopsychosocial roots or stressors stemming from sources such as self, peers, work, school, family, or biochemical addiction. Since meditation has been considered a general tonic for stress (Girdano et al., 1989), it may be considered as a flexibly useful management technique



against many of these stressors as well as a flow-producer. Delmonte (1985) concludes, "It may be that meditation offers an alternative to 'psychedelic' drugs for those seeking new experiential horizons, and to tranquilizers, for those with elevated anxiety/arousal levels" (p. 46). Thus, a review of studies on meditation's ameliorative ability toward substance abuse may also include those relating meditation to secondary or primary causes of substance misuse.

As mentioned previously, meditation has been indicated to result in positive moods, decreased anxiety, increased self-actualization, reduced self-blame, decreased stress-related illnesses, and increased self-identity. These improvements may answer the needs of substance abusers previously reviewed, including sensation-seeking tendencies; inability to manage daily stress (or extremes of boredom or anxiety); inadequate self-esteem, self-concept, or self-efficacy; high leisure dissatisfaction; and boredom. Carrington and Efron (1979) reported the following concerning their meditation treatment of psychiatric patients:

In many [of the meditation patients] there was tension reduction, a lessening of anxiety and disappearance of inappropriate startle responses. The decrease in overreaction to frustration can be quite dramatic and can markedly improve interpersonal relationships. We noticed also an improvement in such psychosomatic conditions as tension headaches, with increased physical stamina, or a lessened need for daytime naps, and increasing productivity. (p. 43)

Ballou (1974), studying 64 inmates in a meditation program at a Minnesota state maximum security prison, found evidence of (a) better understanding and communication with self and others, (b) less loneliness and depression and more sociability; (c) a 200 percent increase in participation in sports, educational, and other

voluntary activities; (d) more effective participation in drug dependency classes, (e) sharp decreases in the use of all nonprescription and prescription drugs, (f) better physical health, and (g) fewer days of illness after starting the program. Reviewing the literature on meditation with students, Dillbeck (1985) cited several studies indicating meditation's positive effect on intelligence and learning.

Meditation has been commonly used for religious purposes. Oxford's English Dictionary defines meditation as a focus on God; a Latin root of meditate is "to Cure." Umoto (1982) suggests that fostering a healing theological climate may prevent mental health problems. Tart (1989) proposes that meditation may be useful for persons in reaching a subjective state of Nirvana on earth, described as:

No matter how assailed, anger need not arise.  
 No matter what the pleasure, compulsive longing need not arise.  
 No matter what the circumstance, a feeling of limitation need not arise.  
 (p.253)

Amoateng and Bahr (1986) found higher religious involvement significantly correlated with lower reported drug and alcohol intake among 17,000 high school students. The researchers controlled for parental education, parental presence, and parental employment status. Religious involvement was measured by frequency of attendance at religious services and the reported value of religion in one's life. However, parental and relative substance abuse and other psychosocial factors may have been responsible for variation of both primary variables.

Other non-experimental studies have more directly examined the relationship of meditation to substance use. Ganguli (1985) found that 230 Canadians practicing

meditation in India decreased drug use. However, their reduction in drug use may have been related to the influence of their exotic surroundings, peer group, and meditation leader.

Winqvist (1976), Dhanaraj (1974), Benson and Wallace (1972), Albert and McNeece (1974), Shafii (1975), and Shafii, Lavelly, and Jaffe (1974) conducted extensive surveys indicating a significant reduction of all drug use after meditation. However, the studies suffered methodological weaknesses noted by Marcus (1976), including the following: a) all subjects were currently practicing the meditation technique, excluding from analysis those who had stopped, b) subjects had a higher than average educational level and may have been highly motivated to improve themselves, and c) prospective participants were sometimes required to abstain from recreational drug use before meditation instruction. Delmonte (1985) also noted that the studies used questionably matched or nonexistent attention placebo control groups, did not control for expectation of benefit, and used retrospective substance use reports.

In summary, the apparent weaknesses of the non-experimental studies reviewed thus far point out the need for experimental studies to test the relationships between meditation and substance misuse. The next sections contain (a) a review of criteria for such experiments, (b) a review of studies having met most of these criteria, and (c) related suggestions for the present experiment.



### Criteria for Studies on Meditation and Substance Abuse

The limitations of the above research illustrate the complex nature of studying meditation and substance misuse. In response, the literature suggesting evaluative review criteria for the present specific research on substance misuse and meditation was synthesized to form the following criteria list. The critical criteria are underlined, while details are added in the text.

Quantitative Basis. Quantitative studies have been preferred to theoretical writings because they may demonstrate primary, controlled, and inferential evidence of effectiveness (Iso-Ahola, 1988).

Selection and Control of Variables. Studies should be objective, comprehensive, and theoretically and empirically based, with clearly defined hypotheses and operations. Several potentially interacting variables should be considered, such as meditation adherence, past meditation experience, subjective experience of meditation, performance ability, personality, demand characteristics, and prior substance use.

Hunt et al. (1974) reported that most relapses of substance misuse occur within 18 months of treatment. Since several studies have indicated that meditation decreased substance use only as long as the meditation continued (Delmonte, 1985; Klajner, Harman, Sobell, 1984; Murphy et al., 1986), treatment of at least 18 months seems necessary to have a lasting effect throughout this critical period.

Thus, factors influencing meditation adherence should be considered. The type of meditation selected may be important. Studies by Rohsenow, Smith, and Johnson (1985), and Murphy et al. (1986) suggest that group meditation may powerfully



motivate adherence. Kabat-Zinn, Lipworth, and Burney's study (1985) demonstrated that 70% of patients adhered closely to mindfulness meditation (focus on any appearing mental phenomenon) practice at 15 months follow-up. Delmonte's (1984) study of Transcendental Meditation (focus on a meaningless sound) had a 37% dropout rate after seven months and a 54% dropout rate after two years. Pekala (1987) suggested that different types of meditation may result in different subjective experiences, which may influence both adherence, effectiveness, or both.

Personality and individual differences may also affect meditation adherence and effectiveness. Higher adherence to and more benefits from meditation correlated with higher levels of extraversion, repression, age, expectations, low self-esteem, perceived improvement (Delmonte, 1988), absorbed attention (Warrenburg & Pagano, 1982-83), sense of responsibility (Smith, 1987), resting alpha, low intrusion count (level of reaction to outside disturbances), high cognitive rather than somatic anxiety, openness to inner and outer experience (Smith, 1978), and amount of meditation experience (Bradley & McCann, 1981). Conversely, higher introversion, neuroticism, sensitization, suggestibility, and perceived symptoms of illness were associated with low adherence and less benefit (Delmonte, 1988). Corby, Roth, Zarcone, and Kopell (1978) found that they had higher activation levels during meditation, possibly indicating that experienced meditators found more enjoyment in their meditations. Of course, enjoyment may result in greater adherence (Wankel, 1985).

Pekala (1987) noted that **hypnotic susceptibility** seemed to be a key personality variable in meditative ability. This trait indicated absorbed attention, low

intrusion, concentration, suggestibility, and tolerance for unusual states and phenomena (Greenfield, 1977).

Variable use of different parts (e.g. posture, breathing, object of focus) and types (e.g. focus on object, cognition, or field visualization) of meditation with respect to individual and personality differences may influence adherence as well as level of use (Shapiro, 1982). For instance, a highly compulsive individual with low tolerance for boredom may respond better to a calming scene rather than to repeating a meaningless word. Klajner et al. (1984) stressed that since individuals use drugs for different reasons (e.g., to control stress, seek sensation, or avoid problems), introducing individually prescribed forms of meditation that excite, relax, or satisfy differently may be of variable benefit to adherence and effectiveness.

Previous drug use may also influence adherence, meditation ability, and its effects. The toxic later stages of addiction (see Johnson, 1986) may bring depression, dulled sensations, impaired intelligence, and bodily damage. At this stage the person who misuses may find it difficult to enjoy and receive benefit from meditation. Persons at beginning or later stages of addiction may need more arousing or sedative types of meditation, respectively (Zuckerman & Neeb, 1980). Users at latter stages of addiction who recognize their problem may also be more motivated to reduce use through meditation or other means.

Selection and Control of Subjects and Setting. Studies should have an appropriate number of subjects to reflect significant effect (Shapiro, 1982), random sampling of appropriate subjects (Carlson, 1984), matched or placebo controls

(Mannell, 1983), and natural setting (Carlson, 1984; Reynolds & O'Morrow, 1985).

Because substance misuse has many causes, treatment often involves milieu or multivariate programs (Hubbard et al., 1989; DOE, 1987). The influence of external interventions coinciding with meditation should be controlled as much as possible. Many variables may be controlled through use of randomization and control groups.

Choice of instruments/operationalization. Assessments and tests should have high reliability, validity, subject-instrument compatibility/usability, social personality orientation (Carlson, 1984), match of subject attention span, and other cognitive abilities. Pre- and post-tests are generally recommended. Retrospective reports about drug use before treatment have been considered inaccurate (Delmonte, 1985), particularly because of certain mental characteristics of misuse (such as denial and mental deterioration).

Analysis and Results. Analysis should be clearly stated, logically address the hypotheses of study, and accurately reflect the data collected with appropriate statistics (Reynolds & O'Morrow, 1985).

Ethics. Subjects of interventions should not be harmed or prohibited from getting benefits of recreation (Reynolds & O'Morrow, 1985). Shapiro's (1982) review summarized several possible adverse effects and contraindications of meditation. His recommendations for managing these effects include providing supervision for borderline psychotic or psychotic patients to aid with potentially dangerous psychological material that comes up while meditating. In addition, individuals with depression, high somatic orientations, external locus of control, or clinical problems



(e.g. migraine headaches) may be safer with no meditation or particular kinds of meditation that better accommodate these conditions. For all populations, careful instruction, training, and follow-up are needed to help meditators deal with unpleasant experiences that may occur, including occasional dizziness and feelings of dissociation, anxiety, boredom, confusion, depression, and restlessness. Finally, social skills and assertiveness training were recommended in addition to meditation practice for those who may use meditation to avoid or withdraw from difficult situations.

### A Review of Studies Meeting the Essential Criteria

The following discussion summarizes the eight studies (Table 3) found on meditation and substance abuse that met most of the criteria discussed above: quantitative analysis, pre- and post-test treatment design, randomly selected subjects and control groups, validated test instruments (including *in vivo* alcohol use reports), and ethical treatment of subjects. Since the studies uniformly met the basic criteria, these criteria were not reported in Table 3. Included were, however, a brief subject description, type of drugs studied, control for intervening variables (see key below table for more detail), meditation type, treatment duration, significant immediate and long-term drug use reduction, and miscellaneous comments.

Because of the studies' similarity in design and noted specifics on the table, the studies are not described here individually. They are discussed, instead, as a group with respect to the criteria so that the focus is on criterion-related needs for the present and future experimental designs.

Table 3. Selected Studies on Meditation and Substance Misuse

Source	Subjects	Drug Use Studied	Variable Control	Meditation Type, Duration	Reduced Use During Treatment?	Follow-Up Time, Reduced Use?	Comments
Meyers & Ramsey (1975)	90 college-age adult users	any use	1,4,6,7	TM, 8 weeks	yes	4 mos., yes	
Brautigam (1977)	20 juvenile users	any use	1,6,7	TM, 8 weeks	yes	2 yr., yes	Pre-treatment abstinence required
Zuroff & Schwartz (1978)	60 college freshmen	any use	1,4,6	TM, 9 weeks	no	9 wks., no	Pre-treatment abstinence required
Marlatt et al. (1984)	44 college-age heavy social users	heavy social alcohol	1,4,6,7	Benson 6 weeks	48%/month	7 wks., no	
Rohsenow et al. (1985)	40 college-age heavy drinkers	heavy drinking	6,7	Benson 3 weeks	25%/month	6 mos., no	
Murphy et al. (1986)	60 college-age heavy social drinkers	heavy social alcohol	1,4,6,7	Carrington 8 weeks	60%/month	6 wks., no	
O'Connell (1988)	69 recovering alcoholics	recovering alcoholism	1,5,6,7	Benson 4 weeks	90% subjects had 3 mos. abstinence	6 mos., yes	
Peniston & Kulkosky (1989)	30 recovering alcoholics	recovering alcoholism	1,2,3,5,6,7	Breathing & Biofeedback, 4 weeks	80% subjects had 6 mos. abstinence	13 mos., yes	Laboratory setting

**Drug use** - Drug type and level of use studied.

**Variable control** - The following were controlled: 1 = subject meditation experience, 2= subjective experience during meditation, 3 = hypnotic susceptibility, 4 = demand and expectancy, 5 = prior stage of drug use, 6 = simultaneous treatments, 7 = non-retrospective reports used.

**Reduced use?** - Indicates percentage of reduced daily use by end of monitored treatment period.

**Follow-up use?** - Indicates length of follow-up period and reduced use at end of period.

The experimental studies found clearly stated the hypothesis concerning the relationship between the major variables of meditation and substance misuse. Many of the studies, however, did not appear to check for homogeneity among groups on some of the potentially important intervening variable; control for these may have actually resulted in greater effects. Yet some effectiveness of meditation was indicated because of the studies' basically sound experimental designs; that is using control groups and random selection of subjects.

Only one study (Brautigam, 1977) included long term follow-up of drug use (over 2 years), although Peniston and Kulkosky (1989) followed up for 13 months. No studies assessed subjects who continued meditation practice throughout the critical period of 18 months (Hunt et al., 1974)

The studies uniformly examined the use of object-focused meditation, similar to Benson's method, among the drug-using population. None of the studies examined the interaction of the variables surrounding the quality of practice of meditation, and different kinds and forms of meditation. Future studies should build on the main-effect experimental models by discovering effective interactions between two or more interventions.

All but Brautigam (1977) and Rohsenow et al. (1985) controlled for simultaneous treatments, such as social skills training or other stress management training. All studies, except Rohsenow et al. (1985), eliminated subjects with previous meditation experience.



Subjects in studies by Zuroff and Schwartz (1978) and Brautigam (1977) were asked to abstain from drugs two weeks and five days, respectively before beginning the meditation treatment. If the subjects did abstain from drug use for the requested period, it probably affected the results.

Most studies validated self-report questionnaires to measure drug intake or personality changes. For example, alcohol intake was measured by the Drinking Habits Questionnaire (Cahalan, Cisin, & Crossley, 1969) to initially select subjects, and the Volume Variability Index (Cahalan & Room, 1974) was used to more accurately select high-volume drinkers. Rotter's (1966) Locus of Control scale, and the MMPI-168 (Overall & Gomez-Mont, 1974) were used to measure personality traits. The use of self-reports may have had limitations because of subject denial and lying. Yet the reports still showed some validity and may have been the only practical means to measure these variables (Sobell & Sobell, 1978). All but Zuroff and Schwartz (1978) used non-retrospective drug use reports.

Although the studies may have found less potential effectiveness of meditation because of the noted deficits in control of some potentially important intervening variables, all studies but Zuroff and Schwartz (1978) found that meditation significantly reduced drug use. A possible explanation for Zuroff and Schwartz's results may be that they used retrospective reports that may not have revealed the exact extent of drug use before meditation. The study also used the youngest college population of all studies, 17 years old, without significantly high drug use. Little room for improvement may have caused the null finding instead of the effectiveness of

meditation. Consistent with this, Delmonte (1988) indicated that younger populations may have the lowest chance of success in meditation practice. Finally, subjects were obligated to complete the study or forfeit a \$10 deposit.

In general, none of the subjects seemed or were reported to be harmed or denied opportunities for recreative experiences. All of the studies used pre-treatment measures for psychological health and implemented thorough meditation instructions. Counselors were available if any problems arose.

### **Summary and Implications for the Present Study**

Noting the subtleties and complexities involved in studying meditation, West (1987) wrote, "Conducting research on meditation involves conducting research on a method of research..." (p. 209). Refined research is needed concerning TR alternatives treatment for substance misuse, a continuing international dilemma (Iso-Ahola, 1988).

Some well-constructed basic studies by Marlatt et al. (1984), Meyers and Ramsey (1975), and Murphy et al. (1986) found that one type of meditation--object-focused--reduced alcohol use among problem users, but only for as long as meditation continued at a certain rate. Unfortunately, most subjects stopped practicing soon after the experiment, perhaps because the use of only one type of meditation bored the subjects. No attempt was made to solicit subjective experience. Peniston and Kulkosky (1989) and O'Connell (1988) found a significant reduction in relapse rates and daily alcohol use after 13 and six months, respectively, but did not control for concurrent treatment effects or use of different types of meditations. Thus, no alcohol

misuse and meditation research has comprehensively investigated the potentially important relationships among the variables of types of meditation, choice of such (regardless of type used), subjective experience for these options, meditation adherence, and alcohol use.

While all potentially intervening variables may not be studied at once, at least some potentially important ones can be controlled and checked through random sampling of subjects and various pre-tests to further ensure control. In this study, these variables include personality, hypnotic susceptibility, and experimental expectancy and demand, all noted by Pekala (1987) and Greenfield (1977) as strong influences on meditative states. Further, for the purposes of this study, only subjects demonstrating heavy social alcohol use and normal overall mental health were selected.

To build on the findings of the basically sound designs of several previously mentioned studies, a similar population--college students--was chosen. Earlier mentioned findings noted the high rate of drinking and related symptoms among this group. They were also found to drink significantly less as a result of self-monitoring of drinking programs, similar to the present study's, than of behavioral self-management and alcohol education programs (Garvin, Alcorn, & Faulkner, 1990). Finally, several studies noted the need for improved treatment approaches in universities (Hickenbottom, Bissonette, O'Shea, 1987; O'Connell & Patterson, 1989; Kraft, 1988).



## CHAPTER III: METHODOLOGY

The intent of this study was to investigate the effectiveness of using various meditation foci and choice of such, regardless of focus, in achieving more alternative drug-free flow experiences, longer periods of meditation adherence, and decreases in alcohol use. Relationships between levels of flow, alcohol use, and meditation adherence, regardless of meditation focus were also explored. The experimental design for this study was chosen to control for the interaction of several critical intervening variables not comprehensively addressed in previous studies on meditation and substance abuse. These variables included levels of previous alcohol use, experimental expectancy and demand, hypnotic susceptibility, and personality.

### **Operational Procedures**

#### Subject Procurement

College students at the University of Maryland, College Park, of both sexes, ages 18-24, were solicited by classified ads in the school newspaper, fliers, and sign-up sheets (Appendix A and B) distributed to Psych 100 and non-100 psychology students, Physical Education activity classes, local bars, and resident dorms (January 21-February 15, 1992). The experimenter called respondents to screen them for alcohol use levels (Appendix C). All students received confidentiality disclaimers, and if not selected, were told why (i.e., they had no deficits of concern but didn't have

appropriate characteristics for this experiment). Selected students were sent a letter explaining the program procedures and containing informed consent forms, background questionnaires, diaries, and the Mini Mult (Appendix D-H).

### Subject Selection

The experimenter used initial phone screens, returned questionnaires, and diaries to select students with (a) little or no meditation experience [acceptable practice was "unsystematic, short-lived, typically tried a few times, sporadically or for less than a month, and generally initiated by reading or contact with friends who meditated rather than by formal instruction"(Greenfield, 1977, p. 14)]; (b) an average of five or more drinks per week [total subject average was expected to be more than 11, designated by Cahalan & Room (1974) as heavy social drinkers]; and (c) overall mental stability (as indicated by having no more than three clinical scale t-scores over 70 on the MMPI (Freidman, 1990)).

### Subject Description

Of 430 initially screened students, 125 reported that they consumed at least five drinks per week and had no formal meditation experience. Of the 125 subjects invited to participate, 85 (66%) completed and returned the background questionnaires. Of these, 76 completed the initial training session, and 54 completed the study. One subject drank far more drinks (110) than the rest of the group (next highest was 45 drinks, average was 13.5 drinks) during the first week of training, was considered

inappropriately matched to the sample population, and was subsequently dropped from the analysis.

The visualization group had 10 subjects (2 females), object focus had 12 (3 females), mindfulness had 10 (2 females), choice and combination had 12 (4 females), and the control group had 9 (2 females). No subjects chose to continue filling out questionnaires after the required four weeks, although 47 reportedly continued to meditate an average of 2.3 times per week after the required training period. Of the 53 subjects, 25% were female. Average age was 20.4 years.

The average reported alcohol use per week before training, 15.4 drinks per week per student, was above the average of 11, which designates heavy social drinking (Cahalan & Room, 1974). The range of average drinking levels was five to 85 drinks per week. The ratio of those with heavy social drinking characteristics to the total potential subjects (29%) was similar to the reported ratio (22%) of the student body indicated to have alcoholic characteristics in a 1990 University of Maryland Health Center survey (Thombs, 1990).

### **Experimental Design and Variables**

For the first hypothesis, the independent variable was the meditation focus: Three of the five randomly assigned groups practiced only one of three foci--object focused, visualization, or mindfulness. For the second hypothesis the independent variable was having choice or combination of such, regardless of foci, so that the fourth group chose their meditation focus daily from any of the above three types.



The fifth (control) group practiced an attention placebo activity (to do any non-work activity they wanted) for the same period and, as the others, answered similar questions related to the variables. The dependent variables for the first two hypotheses were flow frequency during training, meditation frequency after required training, and amounts of alcohol use during and after required training. The third hypothesis to be explored was the relationship between the reported frequencies of flow and levels of alcohol use and continued meditation practice after the required period. Correlations between these variables were analyzed for all individuals, regardless of group.

For control of potential intervening variables, measures of previous alcohol use, hypnotic susceptibility, and personality were obtained from initial screening phone calls, background questionnaires, daily self-reports, and a personality test. The general experimental design for testing all of the hypotheses is notated below:

O R X1 O x o  
 O R X2 O x o  
 O R X3 O x o  
 O R X4 O x o  
 O R     O x o

Observations (O) were taken by an initial phone screen, written self-reports, tests for hypnotic susceptibility and personality, and weekly totals from two weeks of daily subject self-reports of alcohol use during the meditation practice period. The experimenter gave a general meditation training and randomly assigned subjects (R) to the three meditation foci, choice and combination, or control groups. Subjects completed four weeks of keeping required diaries and practicing different meditation foci (X1-3) or choice and combination of such (X4); the control group completed

diaries after their "free choice" period. Meditation practice and diaries were then made optional (x) for four weeks. Subjects reported weekly levels of meditation and alcohol use by phone (o) for four weeks.

### Training, Testing, and Randomization

Selected subjects were invited to attend a seminar given in the recreation room of a residence hall during the week of March 1, 1992. The experimenter gave generic instructions by tape (Appendix I) and verbally answered questions about the basic meditation technique (common to all types), common problems of practice and adherence, and filling out and returning questionnaires. A poster outlining the general meditation instructions (Appendix J) and corresponding sequentially to the tape was placed in front of the subjects, and written copies of the instructions were handed out for home use.

At the designated time during the course of the taped dialogue, the experimenter administered the Harvard Group Scale for Hypnotic Susceptibility (Shor & Orne, 1962) (see Appendix K & L), collected results, and randomly assigned equivalent numbers of packets of each of the five types of meditation instructions (three with one of three foci, one with choice of all three, and one with the placebo meditation) to all subjects. Included in each packet were four weeks of daily diaries (see Appendix M). After subjects practiced meditation for two weeks, the experimenter (who didn't know the subject's meditation type) called each student and asked the following questions to ascertain adherence and problems concerning the

practice. If subjects had problems, the experimenter generally followed the instructions to answer the questions:

1. How are your meditations going?
2. Are you having any problems?
3. Are you following the general instructions?
4. Are you completing the diaries and do you know where to turn them in?
5. Did you meditate yesterday or today?

After four weeks of required meditation (March 28), the experimenter called students once weekly for four additional weeks, asked the same diary questions (how many times they went to movies, had alcoholic drinks, etc.) from the background questionnaire, and requested the number of times they meditated. All individuals received feedback from the experimenter concerning the change in their quality of life and drinking rates following this period (after April 30).

### Ethics

Subjects were guaranteed protection from criminal or administrative prosecution in the initial information letter. Alias identification names and assigned numbers were used on all self-reports of alcohol use. The experimenter screened subjects with potential risks of psychological damage and/or those exhibiting severe psychotic symptoms (Shapiro, 1982) using scores on the Mini-Mult. Subjects in the control and single meditation groups were offered all meditation instructions after the follow-up period.



### Overview/Timeline of Experiment

- A. Subject procurement and selection, pre-training baseline period (January 22-February 15): Preliminary Telephone Screen, Introductory letter, Consent form, Daily journal of alcohol consumption (Daily Diary), demand and expectancy (Background Questionnaire), mental health screen (MMPI-168).
- B. Training seminars, meditation assignment (March 1-7) and meditation practice phase (March 7-April 4): taped instruction, administration of Harvard Group Scale of Hypnotic Susceptibility-Form A, random assignment of equal numbers of meditation type instructions, journal (Daily Diary) distribution.
- C. Optional practice (follow-up and adherence) period (April 4- April 30): Phone follow ups, subjects advised of results.

### **Measures**

#### Expectancy, Demand, and Alcohol Use

Four questions from the Background Questionnaire (Appendix F) solicited subjects' experimental expectancy and demand (Marlatt et al., 1984): (a) What do you think is the specific purpose of this study? (b) How, specifically, do you think you will benefit from participation in this study? (c) On what basis do you think you will be selected for participation in this study? (d) What results do you think the researchers hope to find? Written answers were coded according to nominal response categories reflecting subjects' expectations about experimental effects on either: alcohol use, stress levels, flow, other, or various combinations of these.

Soliciting accurate, reliable drinking rates required special attention, since drinking patterns among individuals may have varied greatly over time, and use of self-reports may have had some limitations as a result of potential subject denial and lying. Sobell and Sobell (1978) concluded, however, that self-reports have shown some validity and may be the only practical, natural measure for this variable. To help address self-report accuracy, an average weekly level of pre-training drinking was obtained by taking an average of three different types of subject self-reports: (a) subjects' initial phone-reported estimates of their weekly average number of drinks (one beer, wine, or cocktail equals one drink) for the past year, (b) subjects' written reports on the Background Questionnaire concerning their number of drinks for the previous week, and (c) subjects' average weekly pre-training drinks reported on daily self-reports. All of these were disguised with requests for similar reports on other common daily events (e.g., number of times exercised, recreated, worked, went to class). During the four weeks of meditation training, subjects reported their drinking levels each day. After training, four weekly phone calls requested subjects' drinking levels with questions identical to their daily diaries.

#### Personality and Hypnotic Susceptibility

A shortened (from the MMPI) screening test for psychiatric stability and personality, the Mini-Mult (see Appendix G) (Kincannon, 1968) consists of statistically selected items representing the content clusters of the 11 standard validity and clinical scales of the standard MMPI. The test requires about 20 minutes to

complete and can be scored easily using a conversion table Kincannon developed.

After repeated tests of the standard and Mini-Mult forms to patients at a psychiatric hospital, the Mini-Mult only had a nine percent loss in reliability and 14 percent loss in scoring correspondence across all clinical scales. Faschingbauer and Newark (1978) reported that although the test may be inaccurate for more specific clinical diagnoses, its use as a general screening tool for college students was adequate.

Subjects with t-scores above 70 on three or more clinical scales were generally considered worthy of caution and further investigation (Friedman, 1990). Subjects receiving such scores were asked if they were feeling generally depressed, if they were in therapy or if they were on psychotropic drugs. If the answer to any one question was yes, subjects were told not to participate for safety purposes unless their therapist gave approval for participation.

The Harvard Group Scale of Hypnotic Susceptibility (Shor & Orne, 1962) was chosen as a short (one-hour), group- administered test of hypnotic susceptibility (see Appendix K and L). The scale was adapted from an individual test--the Stanford Hypnotic Susceptibility Scale (Weitzechoffer & Higgard, 1959). The Harvard scale demonstrated identical conceptual congruence and three-year reliability correlations (76-85% stability) on all scales of the Stanford scale and was indicated to be reliable for English-as-second-language populations (Lawrence & Perry, 1982).



### Daily Quality of Meditation

Subjects completed the Daily Diary (see Appendix M), reporting the number of times of and quality of meditation with respect to quality of experience and flow. As noted above, the experimenter called subjects after two weeks of meditation practice to discuss possible problems and check consistent practice and form completion.

### Flow

Subjects completed Experience Sampling Forms (ESF) imbedded in the Daily Diary (Appendix M) immediately after daily meditations to measure flow and corresponding psychological states in the meditation. A study by LeFevre (1988) suggested that flow could be indicated when subjects reported higher than average scores for the week on the two ten-point Likert scales ("low" to "high") for perceived skills and challenges in the meditation. When this occurred, subjects scored one count toward their scores for total flow frequency.

Higher quality of experience was reported as significantly correlating with flow states (LeFevre, 1988). Quality of experience was measured on the Experience Sampling Form (ESF) by groups of items (scales) measuring various psychological states: cognitive efficiency (ability and ease of concentration, self-consciousness), motivation (personal involvement; importance of activity to self, others, and personal goals; wish to be doing activity rather than something else), self-esteem (feeling good about self, in control, living up to self- and others' expectations, satisfied with accomplishment), affect (happy, cheerful, sociable, proud, relaxed), and activation

(alert, strong, active, excited). LeFevre (1988) reported that measures of the various psychological states correlated significantly ( $p < .01$  for all) with reported frequencies of flow: For motivation,  $r = .20$ ; for cognitive efficiency,  $r = .38$ ; for activation,  $r = .43$ , and for affect,  $r = .23$ . In addition, Wells (1988) found a significant correlation between flow and self-esteem ( $r = .36$ ,  $p < .05$ ). Responses for the ESF items for self-esteem correlated with responses on the Rosenberg Self-Esteem scale ( $r = .62$ ,  $p < .05$ ) (Wells, 1988).

As an additional measure of states similar to the flow experience and a test of the validity of the above measure, scores of the psychological states were averaged to ascertain individuals' consolidated "quality of experience" scores for each week and the month of training. This score came from the summed mean response score for affect, cognitive efficiency, activation, motivation, and self-esteem. It was expected that this score should have correlated highly with the score for flow frequency and could be used interchangeably with flow frequency as a dependent variable representing a similar state.

Ecological validity was demonstrated as the reports were completed within moment and context of experience, by physical, mental and emotional awareness, and motivation (Csikszentmihalyi & Larson, 1987). While the ESF has shown differentiated scores between subjects with bulimia and subjects without bulimia (Johnson & Larson, 1982), validity has not been established for substance misusers.

Some stability was found in the reports of psychological states: none of the averaged individual mean responses on the scales measuring these states showed a

significant change from the beginning of the week to the end for adolescents and adults (Freeman, Larson, & Csikszentmihalyi, 1986). Correlations between two scores for the week were .77 ( $p < .001$ ) for affect and .62 ( $p < .001$ ) for activation. Stability of responses over two years for adolescents ranged from  $r = .45$  for concentration and active, to  $r = .75$  for control. For internal consistency over the course of a week, alpha coefficients for affect were .57, .48 for activation (Freeman et al. 1986), and .94 for self-esteem (Wells, 1988). These were deemed acceptable for measures computed from only four or five items (Csikszentmihalyi & Larson, 1987).

### Statistical Analysis

#### Check for Equivalence on Personality, Hypnotizability, Alcohol Use

From the review of meditation/alcohol literature, the experimenter concluded that several variables other than meditation type could influence the quality of experience in meditation. Even though meditation types were randomly assigned, equivalence among the five groups on some critical variables was tested to ensure experimental control. One-way ANOVAs were used to test for equivalence of pre-training means between groups on personality from scores on each clinical scale of the Mini Mult, hypnotic susceptibility from scores on the Harvard Test, and pre-training alcohol use.

With respect to experimental expectancy and demand (see also previous section under Measures), subjects provided nominal responses about their expectations of change related to the dependent variables (i.e., stress-related behaviors, alcohol use,



flow frequency, or meditation frequency). A Chi square analysis was utilized to study equivalence of expectancy and demand between the groups on these responses.

#### Relationships between the meditation foci and the dependent variables

Various studies reviewed in Chapter 2 indicated that meditation frequency, flow frequency, and alcohol use may be interrelated. For example, increased alcohol consumption may result in lower amounts of flow experienced during meditation and lower meditation adherence (also see Table 1). Because of the possible relationships between the main dependent variables, MANOVA was performed to make analyses more parsimonious, sensitive, and powerful.

Furthermore, alcohol use, meditation adherence, and flow frequency may vary not only by meditation type and choice and combination of such, but also as a result of time in training and repeated testing. Therefore, training levels of alcohol and flow, as well as post-training levels of alcohol and meditation frequency, were tested (a) with MANOVA for monthly totals and (b) with repeated measures MANOVA using totals of each week. Statistical analysis took place in the following steps:

1. MANOVA with the independent variable (types of meditation) and the dependent variables ( total alcohol and total flow levels in training).

2. Repeated measures MANOVA with the independent variables (type of meditation and repeated measures) and the dependent variables (weekly flow frequency and weekly alcohol levels in training).
3. MANOVA with the independent variable (types of meditation) and the dependent variables (total alcohol and total flow levels after training).
4. Repeated measures MANOVA with independent variables (type of meditation and repeated measures) and the dependent variables (weekly flow frequency and weekly alcohol levels after training).

If statistical significance ( $p < .05$ ) was found in the above analyses, one-way ANOVAs followed by Scheffe's post hoc test were employed to specify significant differences in the dependent variables for each variable condition.

To test the basic assumptions for use of MANOVA, the levels of flow and meditation frequency and alcohol use were checked for homogeneity of variance among groups using Box's M. Winer (1972) noted that significant differences in findings between groups were robust to differences in homogeneity and small differences in numbers of subjects. However, a lack of homogeneity may partially explain why significant differences were not found. In this case, an attempt was made to achieve homogeneity among the subject scores by transforming variable scores to their square root or logarithm (Winer, 1972).

### Relationships between flow, alcohol use, and adherence

Pearson product moment correlations were calculated between weekly and monthly totals of flow, alcohol use, and meditation frequency for all individuals, regardless of group, as a way to test the third hypothesis. For example, correlations were computed between the total times in flow reported during week 1 in training and the total numbers of drinks in the same and other weeks. Because of the small numbers of subjects and variables not controlled through experimental design, these findings were noted with caution.

### Tests for Validity and Reliability

According to several studies in Optimal Experience (Csikszentmihalyi & Csikszentmihalyi, 1988), separate and consolidated scores for the psychological states (cognitive efficiency, self-esteem, activation, affect, and motivation) should have correlated highly with flow frequency (see the above review of measures of flow). In other words, if the measure of flow was valid, then frequencies of flow should have correlated highly with levels of the psychological states and their consolidated score. Thus, zero-order correlations were performed to test this relationship.

For measures of internal consistency and stability, Cronbach's alpha, alpha coefficients, and Pearsons' correlations were computed for various subject reports (similar to methods used by Csikszentmihalyi & Larson, 1987). Chronbach's alphas were calculated among the set of items measuring each state daily (on the ESF). Pearson's correlations were calculated between scores on each psychological state on



different days of the week to detect stability of scores. Stability of scores was also tested by alpha coefficients computed among weekly means for each psychological state over the training period. The single-item, single-time score for Hypnotic Susceptibility was deemed inappropriate for reliability computation.

### **Reliability and Validity of Collected Data and Measures**

As a preliminary reliability test, subjects were called once after at least two weeks of meditating to see if they were successfully adhering to the daily meditation program and completing their diaries. All subjects reported that they had meditated within the past 24 hours and had completed questionnaires. Most subjects reported that their meditations were going fine. Only three subjects reported that their meditations had lost their initial appeal and that they were losing interest in meditating. These three subjects continued the program with no further reported problems after they were reminded of the benefits of meditation (reduced stress, improved quality of life) and to follow the given instructions (Appendix J) recommending that they find a personally pleasing focus or activity appropriate to their assigned program.

Table 4 reports reliability alphas for subject reports on the major variables tested. The alpha coefficient computed among the four subject scores of previous alcohol use (weekly estimate of previous year, estimate of previous week, and two totals from two weeks of daily diaries) was .74. Alpha coefficients for reports of total alcohol use across the training month and for total alcohol use after training were .79

Table 4. Mean, Standard Deviation, and Reliability of Major Dependent Variables

Variables	Means						SD						Alpha	Alpha If Item Deleted
	Total Sample	Vis	Object	Mind	Choice	Control	Total Sample	Vis	Object	Mind	Choice	Control		
Previous Alcohol (ALC) Use	15.38	10.65	15.08	14.95	20.89	14.19	8.86	5.18	6.97	11.24	10.66	6.26	.74	
ALC in Training(Wk1)	13.25	9.50	14.17	12.50	20.70	10.78	10.09	8.03	11.55	9.64	15.71	31.15		.69
ALC2	16.75	10.10	22.33	13.90	21.25	13.88	16.15	7.50	22.40	11.12	13.54	20.88		.78
ALC3	12.17	11.60	14.41	13.70	10.75	8.89	9.62	11.46	10.96	9.43	6.97	10.69		.61
ALC4	12.88	6.90	13.33	15.50	18.33	7.33	11.01	4.67	10.87	9.86	14.98	7.81		.72
Total ALC in Training	54.62	38.10	64.25	55.50	68.25	40.89	38.89	23.72	40.75	28.31	34.97	60.17	.79	
ALC after Training(Wk1)	13.18	9.10	14.75	17.75	17.76	10.33	15.91	7.91	9.56	21.80	23.20	12.75		.48
ALC2	18.19	10.20	16.50	27.50	21.08	15.11	21.02	9.45	27.16	24.14	23.20	11.28		.48
ALC3	8.68	5.10	9.50	8.10	9.75	10.67	9.72	5.32	8.87	12.34	7.89	12.46		.45
ALC4	11.44	7.70	12.33	14.10	18.90	11.74	9.45	5.38	11.86	15.18	12.93	9.82		.61
Total ALC(after)	51.81	32.10	49.08	67.10	61.83	47.00	45.38	17.58	49.36	61.10	47.53	36.90	.61	
FLOW in Training(Wk1)	1.70	1.70	1.41	2.10	2.00	1.22	.99	.82	1.12	1.23	.86	.87		.38
FLOW2	1.62	1.10	1.91	2.10	1.50	1.44	1.30	1.37	.87	1.57	1.13	1.69		.40
FLOW3	1.49	1.50	1.50	1.30	1.75	1.33	1.17	1.37	1.19	.63	1.32	1.17		.41
FLOW4	1.74	2.10	1.92	.90	2.16	1.44	1.14	.82	.86	.52	1.36	1.04		.42
Total FLOW	6.55	6.40	6.75	6.40	7.42	5.44	2.77	3.04	2.42	2.32	2.97	2.42	.33	
MED after Training(Wk1)	2.52	2.30	2.50	2.30	2.33	3.33	2.50	2.71	2.53	2.45	2.58	2.62		.72
MED2	2.24	1.70	2.83	1.80	2.08	2.78	2.24	2.54	2.60	1.55	2.27	2.27		.60
MED3	2.07	1.70	2.08	1.40	2.08	3.22	2.27	2.31	2.50	1.35	2.27	2.77		.63
MED4	2.36	2.40	2.83	1.30	2.08	3.22	2.35	2.55	2.36	1.64	2.36	2.85		.84
Total MED	9.21	8.10	10.24	6.80	8.58	12.56	8.00	9.04	6.25	4.18	7.90	8.91	.77	
Quality of Experience(Wk1)	4.93	5.12	4.75	4.72	4.81	5.28	.69	.25	.76	.66	.71	.80	.78	.85
QEWK2	4.81	5.25	4.79	4.61	4.65	4.75	.68	.50	.75	.79	.44	.78	.84	.83
QEWK3	5.16	5.29	5.08	5.26	4.83	5.36	1.02	.68	1.00	1.02	1.07	1.30	.88	.78
QEWK4	5.46	4.97	4.91	4.88	5.18	5.07	1.00	.53	1.04	.82	1.15	1.67	.90	.82
QETT	19.97	21.12	19.30	19.51	19.17	20.58	10.26	1.35	2.76	2.31	2.42	2.90	.87	
QE (ESF items)													.90	

### KEY to Table 4

**PREALC:** average pre-training alcohol per week

**ALC1,2,3,4:** number of drinks per week during required meditation period

**Total ALC:** total drinks over the required meditation period

**ALC (After):** drinks per week after the required meditation period

**FLOW1,2,3,4:** number of times in flow per week during required meditation period

**TTFLOW:** total time in flow over the required meditation period

**MED1,2,3,4:** meditations per week after the required meditation period

**Quality of Experience WK1,2,3,4:** average scores of each weeks' motivation, activation, affect, self-esteem, and cognitive efficiency per week:

$(\text{motwk1} + \text{actwk1} + \text{aftwk1} + \text{slfwk1} + \text{cogwk1}) / 5 = \text{QEWK1}$

**QETT:** totaled weekly quality of experience for the entire training period

**QE:** all ESF items measuring various psychological states

and .61, respectively. Correlations between these main three alcohol measures ranged from .51 to .71 ( $p < .01$ )(Table 5).

Alpha coefficients were low (.33) for reports of daily flow across the total training period and high (.77) for reports contributing to total meditation frequency (Table 4). Cronbach's alpha was high (.90) for reports on items on the ESF contributing to the total quality of experience score (Table 4). Alpha coefficients were also fairly high (.77) for subjects' daily quality of experience scores across the training period. Correlations between weekly and total measures of flow, meditation, and total quality of experience followed similar trends (Tables 5 & 6).

Reports on some scales for single psychological states (e.g. self-esteem) seemed reliable, while others did not (see Table 7). Cronbach's alphas were strong among items for scales measuring affect (.67) and self-esteem (.69) but weak for scales measuring motivation (.41), activation (.53), and cognitive efficiency (.50). On



Table 5. Correlations Among Monthly Totals

	PREALC	TTFLOW	TTALC	TPTALC	TPTmed	TTmot	TTact	TTaft	TTslf	TTcog
Total FLOW Freq. in Training	.00(.99)									
Total ALC in Training	.71**	-.10(.45)								
Total ALC after Training	.70**	.01(.96)	.51**							
Total MED Freq. after Training	-.17(.23)	.27*	-.28*	-.00(.97)						
Total Motivation	-.00(.98)	.08(.57)	-.018(.89)	-.22(.12)	.17(.20)					
Total Activation	.12(.39)	.04(.79)	.00(.97)	.01(.90)	-.03(.80)	.24(.08)				
Total Affect	.04(.74)	-.12(.39)	.04(.76)	-.04(.75)	.07(.61)	.31*	.72**			
Total Self- Esteem	.03(.81)	-.05(.74)	-.02(.90)	-.22(.10)	-.06(.69)	.62**	.32*	.46**		
Total Cognitive Efficiency	-.09(.48)	-.16(.24)	-.06(.67)	-.13(.34)	-.05(.69)	.62**	.40**	.42**	.55**	
Total Quality of Experience	-.01(.94)	-.06(.69)	-.02(.88)	-.17(.20)	.06(.68)	.79**	.63**	.70**	.81**	.82**

Note: \* =  $p < .05$ , \*\* =  $p < .01$ , ( ) denotes  $p$  values greater than .05.

Table 6. Correlations Among Weekly Totals

	TALC1	TALC2	TALC3	TALC4	Flow 1	Flow 2	Flow 3	Flow 4	Med 1	Med 2	Med 3
ALC in Training (Wk 1)											
ALC in Training (Wk2)	.22(.10)										
ALC in Training (Wk3)	.17(.23)	.58**									
ALC in Training (Wk4)	.27*	.52**	.58**								
FLOW Freq. in Training (Wk1), QEWK1	-.03(.81) .14(.30)	.39** .09(.51)	-.15(.27) .03(.83)	.02(.90) -.09(.50)	-.09(.50)	-.02(.90)	-.07(.61)	.02(.90)			
FLOW Freq. in Training (Wk2), QEWK2	-.18(.20) -.02(.90)	-.04(.74) -.06(.66)	-.00(.97) -.25(.07)	.14(.31) .22(.12)	.21(.11) .22(.12)	-.07(.62)	-.09(.51)	.04(.77)			
FLOW Freq. in Training (Wk3), QEWK3	-.01(.93) .03(.85)	-.05(.67) .03(.83)	-.15(.29) .02(.90)	-.04(.75) -.01(.96)	-.02(.88) -.01(.96)	.37** -.13(.35)	-.00(.98)	.00(.96)			
FLOW Freq. in Training (Wk4), QEWK4	.06(.65) -.10(.46)	-.10(.46) -.03(.85)	-.09(.52) -.20(.15)	-.11(.43) -.09(.50)	.28(.03) -.09(.50)	.11(.43) -.09(.52)	.26* .13(.31)	-.12(.39)			
MED Freq. after training (Wk1), QEWK1	-.22(.10)	-.12(.37)	-.31(.03)	-.07(.63)	.13(.34) .08(.56)	-.08(.58) .16(.26)	.14(.31) -.15(.25)	.16(.24) .07(.62)			
MED Freq. after training (Wk2), QEWK2	-.12(.37)	-.09(.49)	-.22(.11)	-.17(.22)	.22(.11) .09(.48)	-.01(.92) .15(.29)	.03(.83) -.11(.43)	.36** -.15(.91)	.62**		
MED Freq. after training (Wk3), QEWK3	-.15(.03)	-.16(.24)	-.17(.22)	-.24(.08)	.07(.57) .20(.14)	-.02(.87) -.02(.90)	.07(.61) -.04(.80)	.28* .00(.98)	.45**	.76**	
MED Freq. after training (Wk4), QEWK4	-.17(.20)	-.16(.24)	-.23(.10)	-.31*	.04(.76) .26(.06)	-.03(.83) .02(.85)	.13(.33) -.03(.81)	.39** .03(.78)	.48**	.77**	.78**

Note: \* =  $p < .05$ , \*\* =  $p < .01$ , ( ) denotes  $p$  values greater than .05.

the self-esteem scale, the question, "Were you living up to the expectations of others?" was deleted, the standardized alpha for the scale would elevate by .27. This exception, along with all other single item data was not reported in the tables. On the latter mentioned three scales, no one item had a major impact on the standardized alpha for the scale.

Alpha coefficients for averaged daily scores on each psychological state scale across the week and for the entire training month, in Table 7, seem fairly stable; most ranged from .65 to .91. High alphas were found for the challenge (.87) and skill (.92) scores across the training month. Low alphas were found for the affect (.42) and activation (.44) scales across week 2 of training (Spring Break). Correlations between averaged psychological state scores from one day of the week to the next generally improved as training continued (see "r" in Table 7).

Higher reported frequencies of flow did not correspond to higher reported levels of other psychological states (affect, self-esteem, motivation, activation, and cognitive efficiency) measured on the Experience Sampling Form. Similarly, consolidated quality of experience scores did not correlate highly with frequencies of flow. Among one another, most of the various psychological states correlated highly, with  $r$  ranging from .28 ( $p = .08$ ) to .72 ( $p < .01$ ) (Tables 5 & 6). However, the correlation between the measures of total quality of experience (QETT) and the total flow frequency in training (TTFLOW) was low,  $r = -.06$  ( $p < .69$ ). Correlations between totals for the other psychological states and flow were also low, with  $r$  ranging from  $-.16$  ( $p < .24$ ) to  $r = .08$  ( $p < .57$ ).



Table 7. Reliability in Measures of Psychological States

Psychological States	Means	SD	ALPHA	r(p)	ALPHA if item Deleted
Motivation(WK1)	5.22	1.08	.65	.32*	.88
Motivation(WK2)	5.19	1.10	.79		.83
Motivation(WK3)	5.61	1.08	.87	.44**	.80
Motivation(WK4)	5.58	1.20	.88		.84
Total Motivation Items	21.61	3.84	.88		.71
			.41		
Activation(WK1)	4.26	.65	.47	.02(.86)	.65
Activation(WK2)	4.01	.74	.44		.42
Activation(WK3)	4.35	.92	.75	.43**	.63
Activation(WK4)	4.21	1.07	.49		.75
Total Activation Items	16.83	2.43	.64		.80
			.53		
Affect(WK1)	4.56	.62	.62	-.03(.84)	.71
Affect(WK2)	4.10	.65	.42		.44
Affect(WK3)	4.38	.82	.80	.52**	.66
Affect(WK4)	4.23	1.08	.74		.71
Total Affect Items	17.27	3.59	.76		.73
			.67		
Self-Esteem(WK1)	4.97	1.29	.75	.58**	.87
Self-Esteem(WK2)	4.97	1.47	.70		.86
Self-Esteem(WK3)	5.26	1.43	.86	.61**	.83
Self-Esteem(WK4)	5.18	1.58	.81		.84
Total Self-Esteem Items	20.39	5.31	.89		.70
			.69		
Cog. Efficiency(WK1)	5.25	.996	.82	.21(.12)	.94
Cog. Efficiency(WK2)	5.38	1.09	.79		.86
Cog. Efficiency(WK3)	5.73	1.17	.89	.48**	.84
Cog. Efficiency(WK4)	5.73	1.15	.84		.85
Total Cog. Efficiency Items	22.08	3.68	.91		.70
			.50		
Challenge Skill	4.89	1.15	.87		
	5.18	1.29	.92		

**Key:**

r = correlation between scores for the state between the first and forth days of the noted week.

\* =  $p < .05$ , \*\* =  $p < .01$ .

Items = all items for specific scales for psychological states on daily experience sampling form.

ALPHA = Chonbach's Alpha were tabulated among responses across week or month (i.e., Total Activation) and among items of the psychological scale.

## CHAPTER IV: RESULTS

The results of an experiment designed to test the effectiveness of various meditation foci and of using a choice and combination of such, regardless of type, in achieving more alternative drug-free flow experiences, longer periods of meditation adherence, and decreases in alcohol use are presented in this chapter. The chapter also contains results of the explorations of relationships between levels of flow, alcohol use, and meditation adherence (frequency), regardless of meditation type. Levels of previous alcohol use, experimental expectancy and demand, hypnotic susceptibility, and personality were checked and controlled for. In summary, this chapter first reports the results of the tests for differences between groups on potentially intervening variables and then on the results of hypotheses testing.

### **Expectancy and Demand, Personality, and Previous Alcohol Use**

Chi-square tests revealed no significant differences between groups for responses to the questions soliciting subjects' experimental expectancy and demand (Q8-Q11, Table 8). Results of one-way ANOVAs for group scores on each of the clinical scales on the Mini-Mult show no significant differences between groups for any clinical scale. One subject scored over 70 on three t-scores of various trait scales (over what is generally considered safe), but was given permission by her therapist to participate.

Table 8. Group Differences in Pre-Training Variables

Variables	Tests	(D.F.)	F	p	SS bw	MS bw	SS wn	MS wn
PREALC	One-way ANOVA	(4,48)	2.09	.10	604.38	151.09	4376.95	72.43
Hypnotic Susceptibility	"	(4,48)	.24	.91	5.24	1.31	257.89	5.37
F (Confusion)	"	(4,51)	.52	.72	2.61	63.38	63.37	1.24
L (Lie)	"	(4,19)	.20	.93	.53	.13	12.42	.65
HS1 (Bodily concern)	"	(4,52)	.34	.85	2.35	.59	89.54	1.72
HY3 (Hysteria)	"	(4,30)	.64	.63	13.00	3.25	151.69	5.06
PA6 (Paranoia)	"	(4,15)	.02	.99	.20	.05	26.60	1.77
SC8 (Conformity)	"	(4,28)	.60	.67	19.77	4.94	232.29	8.30
HS (Hypnotic Sus)	"	(4,52)	.24	.91	5.20	1.30	281.04	5.40
Q8 (purpose of study?)	Chi Square	(16)	6.43	.59				
Q9 (how benefit?)	"	(16)	15.5	.46				
Q10 (how selected?)	"	(16)	13.8	.61				
Q11 (researchers' goals?)	"	(16)	13.4	.34				

\*Note: Data for Mini-Mult Scales K (Conversion), P2 (Depression), PD4 (Psychopathology), PT7 (Phobia), and MA9 (Mania) are not included because most subjects had no scores of concern.

Groups did not differ significantly in hypnotic susceptibility,  $F(4,48) = .24$  ( $p > .91$ ). With respect to levels of previous alcohol use, no significant differences among groups were found ( $F(4,48) = 2.09$ ,  $p = .10$ ). No significant differences between groups were found for any of the tested variables, so statistical control for them as covariates in tests of hypotheses was considered inappropriate.

### Results of Hypotheses Tests

MANOVAs were employed to test the influence of the three meditation foci and repeated measures on the dependent variables--alcohol use during and after training, frequency of flow during training, and meditation frequency after training



Table 9. Group Differences in Alcohol Use, Flow, and Meditation Adherence

Dependent Variables (by Group)	Test	(D.F.)	F	p	Value	Box's M	(p)
Total FLOW and Total Alcohol in Training	MANOVA, WILKS	(8,94)	1.23	.29	.81	8.07	(.84)
Total Quality of Experience and Alcohol in training	" "	(8,94)	1.16	.33	.82	12.58	(.49)
Total Alcohol Use and Meditations after training <sup>a</sup>	" "	(8,94)	.74	.65	.88	19.74	(.12)
FLOW in training <sup>a</sup> (WK1,2,3,4)	Repeated Measures MANOVA, WILKS	(12,122)	1.16	.31	.75	77.49	(.01)
Quality of Experience in training (WK1,2,3,4)	" "	(12,122)	1.37	.18	.71	60.89	(.15)
Alcohol Use in training <sup>a</sup> (WK1,2,3,4)	" "	(12,122)	.89	.56	.80	61.54	(.14)
Alcohol Use after training <sup>a</sup> (WK1,2,3,4)	" "	(12,122)	.50	.77	.82	52.53	(.36)
Meditations after training (WK1,2,3,4)	" "	(12,122)	.66	.78	.84	57.96	(.19)
Supplemental Analysis							
Previous Alcohol use to Alcohol use in training (Wk4)	t-test (all subjects)	(52) $t = 2.23, p < .05$					
Alcohol Use in Training(Wk4) to Alcohol Use after Training (Wk4)	"	(52) $t = .54, p < .59$					

<sup>a</sup> denotes that variable scores were transformed by square root to adjust for errors to attain homogeneity of variance.

(Table 9). Table 4 (p. 53) reports the means and standard deviations of these variables.

In preliminary tests for homogeneity of variance among the groups, Box's M revealed no significant differences in total flow, total alcohol in training, or total and weekly Quality of Experience (Table 9). However, the tests revealed significant differences in variance between the groups for total alcohol after training and total

meditation frequency ( $p < .014$ ), for weekly flow ( $p < .013$ ), for weekly alcohol in training ( $p < .014$ ), and for weekly alcohol after training ( $p < .014$ ). After scores were transformed by square root or logarithm, all group scores had homogeneous variance, except for weekly totals of flow in training, perhaps because flow frequency scores for the week were so low ( $M < 2$ ) that transformation by logarithm or square route resulted in no change toward effective transformation.

As Table 9 illustrates, there were no significant differences between groups on any of the scores for dependent variables--by repeated measures MANOVA for weekly scores or for the MANOVA for monthly totals. MANOVAs using the successfully transformed scores showed no significant differences between groups on the dependent variables. Indications about differences in weekly flow between groups could not be ascertained because homogeneity was not accomplished by transformation.

Correlations between reported scores of flow, quality of experience, alcohol use, and meditation frequency indicated little support for the third hypothesis (Tables 5 & 6). There was a significant negative correlation between flow frequency for training week one (FLOW1) and alcohol use for training week 2 (TALC2) ( $r = -.39, p < .01$ ), but none between other weekly or monthly totals for these variables. Correlations between week 4 flow (FLOW4) and three after-training weekly meditation frequencies were all positive and significant, but small [ $r = .36$  ( $p < .01$ );  $.28$  ( $p < .05$ );  $.39$  ( $p < .01$ )]. The relationship between total flow frequency in training (TTFLOW) and total post training meditation (TPTMED) also indicated significance ( $r = .27, p < .05$ ).

There were no significant correlations between Quality of Experience levels and levels of alcohol use and meditation frequency.

### **Supplemental Findings**

There was a negative correlation between total post-training meditation frequency and total training alcohol (TTALC),  $r = -.28$ ,  $p < .05$  (Table 5). However, alcohol levels seemed to have little relationship to levels of flow or psychological states during the training period (i.e., for PREALC/TTFLOW,  $r = .00$ ).

All subjects, regardless of group, reported significant reductions in alcohol used (Table 9, Figures 1 & 2). Alcohol use levels were reduced significantly by the fourth week in training,  $t(52) = 2.22$ ,  $p < .05$ . Furthermore, this level did not change significantly during follow-up,  $t(52) = .54$ ,  $p < .59$ . Levels of alcohol use for all groups seemed to go up uniformly in the second weeks of training, when spring break occurred, and post-training, when Greek week occurred (Figures 1 & 2). Alcohol use uniformly decreased in the final weeks of the post-training period, two weeks from the end of the semester.



## CHAPTER V: SUMMARY AND CONCLUSIONS

This research explored the effectiveness of various meditation practices and choice and combination of such, regardless of type, in achieving more alternative drug-free flow experiences, longer periods of meditation adherence, and decreases in heavy social alcohol use. Relationships between levels of flow, alcohol use, and adherence, regardless of meditation foci, were also investigated. The experimental design controlled and checked for the interaction of several critical intervening variables not comprehensively addressed in previous studies on meditation and substance abuse (see Table 3). These variables included levels of previous alcohol use, experimental expectancy and demand, hypnotic susceptibility, and personality.

### Summary of Procedures

Subjects averaging drinking rates typical of heavy social alcohol users--45 drinks per month (Cahalan & Room, 1974)--were randomly assigned to one of four attentional foci (or meditation types) groups or a control group; the independent variables were the type of meditation focus and choice and combination of such. Three groups practiced only one of three foci--object-focused, visualization, or mindfulness. The fourth group chose their meditation foci daily from any of the three types. The fifth (control) group practiced an attention placebo activity (to do any

relaxed, non-work related activity they wanted) for the same period and, like others, filled out daily diaries related to the dependent variables.

The dependent variables were frequency of flow during training, frequency of meditation after training, and alcohol use during and after training. To check for group equality on potential intervening variables not controlled through random assignment, the experimenter obtained measures of previous alcohol use, hypnotic susceptibility, and personality from initial screening phone calls, background questionnaires, daily self-reports, and the Mini-Mult before training. Subjects then indicated training levels of flow and alcohol use by completing daily diaries, which included experience sampling forms (ESF) and drinking reports, immediately following meditation. Subjects then reported post-training meditation adherence and alcohol use through four weekly phone interviews by the researcher, who did not know the meditation types used by individuals.

After pre-training equivalence among groups was tested, reported training and post-training scores on flow, alcohol use, and post-training meditation frequency from each group were compared. MANOVA and ANOVA tests were employed to analyze the relationships between meditation foci and flow, alcohol use, and meditation adherence, while zero-order correlations tested the relationships between levels of flow, alcohol use, and meditation frequency, regardless of meditation focus.

### Summary of Findings

No clear support was found for the hypotheses. No one meditation focus or having choice and combination of foci, regardless of focus, was indicated to be significantly more effective in producing more flow, less alcohol use, or longer meditation adherence. There was some indication that more flow was related to longer meditation practice adherence, but no indication that more flow was related to less alcohol use.

The results of this study should be interpreted with caution for several reasons, including the short training period, low reliability and validity of subject reports, internal validity in experimental design, and problems with the characteristics of this population (e.g., the strong social motivation to drink and the large variation in drinking behaviors). Future research should refine testing methods with respect to these issues so that more precise conclusions can be reached.

## **Discussion**

### Findings of Tests of Hypothesis

1. Some meditation foci lead to:

- a) higher reported frequencies of flow during the required meditation training period,
- b) higher reported frequencies of meditation practice after the required training period, and
- c) lower levels of alcohol use than other meditation foci.



No groups reported significantly different flow frequencies, meditation frequencies, or alcohol use. The results were the same when the consolidated quality of experience score was used as a dependent variable. Therefore, the hypothesis was rejected. The results did not support Greenfield's (1977) tentative findings that visualization among drug users resulted in more flow-like states than other meditation foci or Pekala's (1987) assertion that the use of different meditation foci may result in different subjective states.

Several explanations may account for the results, particularly reliability and validity issues, to be discussed later. Furthermore, before data transformation, groups had significant differences in homogeneity of variance in levels of the dependent variables by week. If these levels were more homogeneous, more significant or clear findings may have resulted.

The dependent variables may have also varied less as a result of different types of the meditation than by interactions with meditators' personality or situational differences, which in past research (Delmonte, 1987) have been shown to influence subjective experiences. Perhaps other factors, such as social support and intrinsic motivation, overrode the influence of meditation foci. Meditators may also have needed more time and learning in general and specific (by type) meditation training to have enough flow experiences or meditation experience in general that could, in turn, have a stronger impact, by type, on the dependent variables (Smith, 1987). In addition, the commonly practiced acts of relaxing and filling out the diaries may have had a powerful therapeutic effect, similar to flow or meditation. More research on

these possible interactions seems called for.

2. Subjects using a choice and combination of meditational foci, regardless of which they chose, report:

- a) more flow during practice,
- b) more meditation practice after the required period, and
- c) decreased levels of alcohol use than subjects using one foci without choice.

No significant differences in flow (or quality of experience), alcohol use, and meditation adherence were found for the choice and combination group. Therefore, the hypothesis was rejected. The finding did not support Csikszentmihalyi and Csikszentmihalyi's (1988) conclusion that having control over choices positively influenced flow, Wankel's (1985) conclusion that choice and variety improved exercise adherence, and Shiffman and his colleagues' (1985) finding that knowing more techniques was effective in reducing substance use. Other possible explanations that deserve further study are noted above under the first hypothesis.

3. Subjects experiencing more flow in meditation practice report:

- a) less alcohol use and
- b) more adherence to meditation practice after the required period than subjects experiencing less flow.

Little support was shown for the hypothesis that more flow (or quality of experience) may be related to decreased alcohol use and increased meditation adherence (see Tables 5 & 6). The most support was shown for the relationship between flow and meditation frequency, although the correlation values were fairly low (i.e.,  $r = .29$ ) and not replicated with quality of experience-related correlation scores. These findings did not strongly support the idea of alternatives training modes suggested by Iso-Ahola (1990), Julien (1987), Vaillant (1983), Glasser (1976), and the need to incorporate "flow technology" in such training (Francis, 1991). However, the above-mentioned explanations for the lack of support for the first hypothesis may apply here as well.

Other explanations for the lack of relationship may be equally valid. Possible reasons for subjects generally decreasing meditation beyond the required period, regardless of their subjective experience in meditation, may be many and hard to distinguish. Subjects may have slowed meditation frequencies because (a) the pressures and anxieties of college life (Rivinus, 1987) may have taken priority, particularly around the end of the semester; (b) drinking interfered with the discipline to meditate or the meditative/ flow-producing abilities that made the experience enjoyable and adherable (Wankel, 1985); (c) the results or benefits of meditation were hard to distinguish; (d) group support was absent (Rohsenow et al., 1985); (e) subjects participated mostly for money or credit and stopped practice as soon as the required time was up; (f) subjects were not cognizant of and unmotivated to solve their possible



drinking problem; or (g) the training period and methods were inadequate, leading to insufficient flow to ensure adherence.

Although all the above reasons were possible, the first reason was exclusively stated by those who dropped out of the study before completing it. Apparently, the pre-meditation training--which reminded subjects that grades, relaxation, and mood levels could be increased, had little comparative motivating effect. Perhaps subjects did not perceive that the effects of meditation were dramatic enough to warrant continued practice. Or perhaps the nonsignificant results were a product of the inconsistent reports of psychological states (to be discussed below). In any case, more research is called for.

### Reliability

Reliability of subjects' reports on the various measures was inconsistent. In some cases, reliability was similar to the low level of reliability found in previous studies (see Chapter III). The fairly stable reports for alcohol use supported Sobell and Sobell's (1978) conclusion that self-reports of alcohol use were fairly reliable. However, subjects may have reported consistently while not reporting accurately or honestly (see next section on validity). Alpha coefficients for reported meditation frequency demonstrated strong consistency (.77).

Reports of flow were inconsistent across days, weeks, and months. This was partially expected because reported frequencies of flow were low. The average number of flow experiences per person was fewer than two per seven meditations

(see Table 4). This meant that more than half the reports contained no reports of flow.

However, there were some questions about the validity of the measures of flow, possibly related to the high reliability of scores from which flow was operationalized. Reports of challenge and skill across the entire training period, used to ascertain flow occurrence, had high alphas (.87, .92). Since flow was only counted when skills and challenges were scored above average for that week, higher consistencies of scores for skills and challenge, no matter what their subjective level was to the subject, may have resulted in less computed reports of flow than actually occurred for each subject. For example, if a subject scored the highest possible rating on the Likert scales for challenge and skill every day of a week, he or she would be computed as having no flow for that week because these scores were not above average for that week.

The alphas for quality of experience (the consolidated score of all psychological states on the ESF used in this experiment as a second measure of flow states) were fairly high for inter-item, weekly, and total training reports (see Table 4). With more items on the ESF (30) than the individual states and the high correlations between scores for the individual states (see Table 5) making up the consolidated measure, high reliability was expected. Perhaps this measure was a more reliable and valid indicator of flow states than the one previously discussed.

Subjects' daily scores reflecting psychological states (motivation, affect, activation, cognitive efficiency, self-esteem), noted in past research to be related to

flow, were inconsistent. The inter-item and re-test reliability of self-reports for self-esteem and affect were fairly high. However, the low reliability of reported scores for items measuring the other psychological states--motivation, activation and cognitive efficacy--casts some doubt on any conclusions regarding the hypotheses. Perhaps related, the inter-item reliability reports were conspicuously absent in several previous studies on flow (see Csikszentmihalyi & Csikszentmihalyi, 1988), which points to the need for future investigations.

More specifically, daily reports on the scales measuring activation, cognitive efficiency, and motivation had low inter-item reliability scores; alphas were .53 and below. This possibly reflected some ambivalence toward participation in the study. The subjects may have had little intrinsic motivation toward filling out the forms, finishing the study more for the money and class credits. Subjects could have simply gone quickly down the ESF without reflecting on each item. However, the fairly high inter-item reliability for self-esteem and affect contradicts this notion. Perhaps the scales measuring the other three states were unreliable for consistent subjective judgments of these particular states while meditating. Subjects may have been unclear about their internal feeling states while meditating so that training about the ESF and these states may be useful before actual participation in the study.

For the self-esteem scale, the question, "Were you living up to the expectations of others?", seems to throw the standardized alpha off greatly--around .27 units. This could reflect subjects' ambivalence about what was expected and by whom (i.e., self, peers, or experimenter) while participating in the meditation study. This could also



help explain the inconsistent scores for items measuring motivation, some of which similarly asked how important the activity was to others and the self. The ambivalence may also contribute toward lower flow frequency.

Correlations between scores on two different days of the week for activation ( $r = .43$ ) and affect ( $r = .52$ ) were lower than those found by Freeman et al. (1986), which were .77 and .62, respectively. However, there was a rising trend in the scores from the first to third week (see Table 5). Alpha coefficient ranges found for affect and activation across every day of the week (.42 -.91) were comparable to those found by Freeman and his colleagues (1986) (.48-.58). Affect and activation had much lower reliability alphas for week two (.44 and .42), than for other weeks and for other psychological states. This could reflect the occurrence of spring break, during which affect and activation levels may have been influenced by higher drinking levels among some students. However, drinking should have also affected related alphas for self-esteem, cognitive efficiency, and motivation, which were fairly high (.62-.91). The low alphas could also have reflected the small number of items (4-7) measuring each psychological state (Csikszentmihalyi & Larson, 1987) or the expectation that psychological states would change on a daily basis. However, for self-esteem, this study's total training period alpha (.89) was similar to that found by Wells (1988), .94.

In summary, the inconsistent alpha scores for inter-item reliability on the reports about various psychological states experienced in meditation made it difficult to draw conclusions about the relationships between meditation types, choice and combination of such, alcohol use, and meditation adherence. The presence of these

inconsistencies points to the need for more investigation and modification of the testing methods.

### Validity

Validity was a major concern with respect to the measures of the major variables and the experimental design. As mentioned above, subjects may have reported drinking consistently but not necessarily accurately.

Some experimental provisions may have added some validity to the reports. The average age of subjects, 20.4, was under the legal drinking age, but they still chose to report drinking, probably encouraged by the guarantee of confidentiality. Furthermore, drinking levels were not an explicit subject of this study, so subjects may not have been consciously concerned about reporting drinking rates.

Nevertheless, subjects may have been less apt to admit actual high levels of drinking because of the negative moral, social, or health implications (Hickenbottom et al., 1987). This may have been particularly true when subjects were repeatedly asked to face and report their drinking rates, causing them to reflect on their own habits and their implications. Subjects may also have reported consistently for simplicity and ease. Further studies are needed to address these issues.

With respect to the reports of meditation frequency, subjects' honesty must be questioned. Subjects were taught several general benefits of meditation (e.g., health, stress-reduction) in the training session. However, subjects may have had little motivation to actually perform the meditations for several reasons: they were paid to

practice meditation rather than volunteering; they could falsely report meditating because they were not constantly observed; and they had not been told that their alcohol use was high, so that they may not have recognized the need to meditate.

Furthermore, subjects who meditated did not experience significantly different reductions in alcohol use than the control group, countering the results of previous studies with similar experimental designs and meditation training programs (Marlatt et al. 1984; Murphy et al., 1986; Rohsenow et al. 1985). This may mean that (a) subjects in the present study did not meditate, but experienced similar reduced alcohol use from experimental effect or the diaries; (b) the preliminary general training in stress reduction to all subjects was equally effective or ineffective among control and training groups; or (c) that the control group's time spent doing any non-work activity was as effective as meditation. As West (1987) concluded, further study on methods of meditation study is indicated to investigate these uncertainties.

Also noted in the aforementioned section on reliability, reports of flow were inconsistent. This may have been related to the questionable validity of LeFevre's (1988) method for calculating flow, as noted in the previous section on reliability.

Further casting doubt on the validity of this study's experimental design, correlations between flow frequency and the supposedly corresponding psychological states (self-esteem, cognitive efficiency, affect, activation, motivation, and quality of experience) were almost non-existent. For example,  $r = .06$  ( $p < .69$ ) for the correlation between total quality of experience and total flow (see Tables 6 & 7). This pattern indicated little support for the relatively simple method used for



operationalization of flow or else for the use of this measuring tool in the present experimental context.

According to a study by LeFevre (1988), this measure of flow correlated significantly with the subjective states it is supposed to reflect (see Chapter III, Flow). Perhaps measures of flow would be more valid and reliable if measured by reports of above average quality of experience or challenge and skill for a month, rather than a week.

Other cautions about the validity of measuring flow in the context of this experimental design seem needed. First, how does this study's non-random measurement of flow in a single activity--meditation--compare with methods and contexts used in previous studies of flow? The ESF and Experience Sampling Method (ESM) were first developed by Csikszentmihalyi (1975) and later validated by Csikszentmihalyi and Larson (1987) to randomly measure the quality of experience (including flow) in various activities throughout the day. In these and other studies, subjects' experience in meditation was sampled randomly, along with experiences in other activities. This study regularly sampled subjects' experience in a single, repeated, and paid-for activity in relatively similar surroundings (time, place, and social circumstance). Thus, the use of the experience sampling form with a different experience sampling method may solicit different results that deserve caution in interpretation and further study.

The low correlations found between quality of experience indicators and flow frequency indicate other issues of validity. Meditators may not be able to accurately

judge if their skills and challenges are higher from day to day when comparing their experience in meditation. They could say that their challenges seemed higher on one day when external or internal distractions from their meditation were high, but perhaps the same distractions or challenges did not seem as high when their skill level was high on another day. Can meditators make accurate judgments about their level of skills or challenges when all feedback about these experiences is within their minds and variously interrelated?

Alternatively, perhaps various levels of skills and challenges, not just above average ones, can produce flow in meditation. The process of meditation--including relaxing and focusing--may require average or less than average skill to reach a flow-like state. Flow may also be differently gained and experienced in activities that offer dominantly external feedback or less relaxing effects. In addition, meditating subjects may be unclear about the feedback within their minds so that less flow can occur (Csikszentmihalyi, 1975) or be reported. In summary, perhaps this study's measure of flow is too simplistic or invalid when used for exclusively internal feedback and for non-random activities.

With respect to other aspects of experimental design, several potential threats to internal validity were not strictly controlled, although random assignment should have controlled for many of them. First, after training, subjects were unsuccessfully called several times, with messages left, to collect completed diaries and post-training results. Thus, more subjects in one group may have been reminded and motivated to

meditate than subjects in other groups, unevenly influencing the resulting meditation frequencies.

Second, the conditions under which subjects meditated and their quality of concentration was not fully monitored under laboratory conditions, so that subsequent changes in dependent variables may have been unaccounted for. For example, the daily diaries (Appendix M) only solicited information about subjects' "best mood" in meditation, not their moods throughout the meditation's course. Some subjects may have had more flow throughout each meditation; some may have experienced more extreme anxiety. More time in anxiety or flow states is likely to result in more powerful changes in the dependent variables than the momentary moods reported in this experiment.

Furthermore, the college semester ended just two weeks after the termination of subjects' required participation in the experiment. School pressures (e.g., exams and projects) may have influenced stress levels, with corresponding changes in alcohol use, flow, and meditation adherence. This influence is not addressed in similar previous studies with college populations (Marlatt et al., 1984; Murphy et al., 1986; Rohsenow et al., 1985).

In summary, several important issues of reliability and validity were evident, as discussed in the above two sections, particularly with respect to experimental measures and methods for controlling alcohol use, flow, and meditation frequency. These issues must lend caution to interpretations of results.



### Implications

Little support was found for the hypotheses, but some directions and cautions emerged for research on alternative treatments for alcohol misuse incorporating flow theory and meditation training. The results of this study's tests of hypotheses should be interpreted with caution because of several issues, including a possible short training period, the inconsistent reliability and validity of subject reports, issues of internal validity in experimental design, and problems with the characteristics of the population. Future research should refine testing methods with respect to these issues, so that more precise directions for therapeutic recreation treatment can be reached.

Cautions are needed concerning the reported effectiveness of this study's meditation training in producing more flow, meditation adherence, and decreases in alcohol use. First, ideal interactions or matches of training, personality, external and internal circumstances, and meditation type may all be key to experiencing flow in meditation (see Chapter 2). More meditation testing and subsequent training/treatment that specifically adjusts for each of these variables may be worthwhile. Second, the training and practice period for this experiment was brief when considering studies that have demonstrated that length of practice may be critical to subjective experiences in meditation (West, 1987). Finally, the experimenter or therapist may wish to provide more feedback to subjects about their competence or skill in meditating than was provided in this study. This may be helpful toward increasing adherence and flow experiences.

People with alcohol problems may benefit more by using longer and more individualized meditation training and practice. However, large and long-term treatment programs with newly meditating college students may be impractical due to dropout rates shown in this and other similar studies and other circumstances affecting meditation practice.

In addition, the low inter-item reliability on scales of activation, motivation and cognitive efficiency may point to the need for better measuring tools. But it also may point to the need for better awareness and clarification of these feeling states among alcohol users, to improve communication and increased knowledge about the effects of alcohol.

This study also indicated that alternatives programs may need to go beyond the simple substitution of general recreational activities or reckless implementation of stress management techniques to help replace the drug high or meet needs of misusers. The few significant differences found in this training program may indicate that several factors, such as personality, social support, or previous alcohol use may overshadow the effects of meditation types or levels of flow experienced. Of course, treatment programs with admitted misusers may have fundamentally different implications. Other related research may wish to consider the implications of gender differences.

One other treatment-related concern is that subjects' low reported incidence of flow per week ( $M < 2$ ) using meditation may partially explain why drinkers generally choose to resort to alcohol for more consistent highs than to choose using alternative-

drug-free methods. Therapists may need to point out to clients, if verified in future research, that although fewer "highs" may be solicited through meditative practices, a higher overall quality of life may be gained with less alcohol use in combination with meditation practice. However, in this study, with this population and activity, there was little correlation between the flow or quality of experience and alcohol levels (see Tables 5 & 6), possibly suggesting one of the reasons why alcohol use is so addictive; that is, that the negative effects of alcohol use are hard to subjectively detect (at least in the early stages of use) or justify treating. More research seems needed to refine alternatives treatment programs.

#### Recommendations for Future Research

Some of the difficulties that may be found in the study of flow, alcohol misuse, and meditation among college students were noted. Unreliable reports, along with the lack of reports on inter-item reliability in previous studies on flow (Csikszentmihalyi & Csikszentmihalyi, 1988), call for more investigation and development of flow-methodology in future studies. More control of reported drinking rates, actual time in flow or anxiety states, longer training, and follow-up periods may be needed. Future research may also be needed to study more equal and larger samples of subjects with more similar levels of drinking (only heavy social drinkers or only heavy drinkers).

Although the random assignment of groups should control for some differences in variation, larger and more controlled studies of this nature for this population and others seem advised. Peniston and Kulkosky (1989) performed a similarly sized,



laboratory-controlled experiment, effectively using biofeedback and meditation with recovering alcoholics. However, performing a similar laboratory experiment with college students who have not admitted a drinking problem may be impractical and unnatural.

A comparison of flow levels of drinkers in everyday life and in particular activities before, during and after training seem indicated for improved training about different personalities and the flow-related properties of alcohol. For example, subjects seeing that their levels of flow and quality of experience in everyday-life while drinking were lower than while not drinking after training may be persuaded to begin or continue training. Time in training, rather than training modality, seems to be the best indicator of treatment success (Hubbard et al., 1989).

Another possibility for research is to explore the relationship of hardy or autotelic personalities to meditation and drinking. Do these types have more ability to control drinking or experience more flow while meditating, or do they even need to meditate?

What is the power of keeping diaries? Just completing the diaries and relaxing may have reduced alcohol use greatly, but the reduction may have been the result of participation in this study, which was advertised as testing "stress-reducing" techniques. Alternatively, was just taking time to do any non-work activity enough to significantly reduce alcohol use?

Subject motivation and subject reliability seem important to address in future studies. Perhaps future studies should include control of group support, which could

override the influence of flow or meditation on drinking levels. A Social Desirability Scale (Smith, 1967) may be useful to determine whether subjects are apt to give answers they think are socially acceptable. Spurts of elevated drinking during spring break and Greek Week may also influence the overall results. Paying subjects may influence their intrinsic motivation. An analysis of subjects who dropped out or did not participate may be helpful, a study of only subjects who specifically wanted to change their drinking behaviors.

The experience sampling form and method seem in need of more testing with various populations, activities, and settings. Perhaps with meditation, subjects are unclear about how they feel, or they simply feel different during different times, so that their reports lack consistency. Research is still needed to explore other kinds of meditation, such as different visualizations, which may be more conducive to accurate reporting or increased flow experiences.

The data collected in this study may provide helpful present and future information toward the refined study of flow, alcohol misuse, and meditation, but even more extensive studies and analyses seem needed. The challenge seems promising, but large.

## APPENDIX



A. Residence Hall Flyer

ARE YOU STRESSED?  
DO YOU WANT  
RELAXATION,  
BETTER GRADES,  
MORE SELF-CONTROL,  
HIGHER SELF-ESTEEM?

MEDITATION FOR STRESS AND PLEASURE MANAGEMENT

This convenient, UM supervised meditation program teaches students ways to manage stress, improve grades and improve their quality of life. The six week, home-practiced, self-guided **program plus a \$25 honorarium** is given to students in exchange for completing the course and research forms. Components of the course, beginning February '92, include preliminary screening, a two-hour on-campus training session, daily 15 minute relaxing in-home meditations, and completion of daily diaries (only two minutes each to complete). **A total commitment of only 15 hours is needed!** Interested students must call quickly for more information and initial screening: Tim Francis (UM Doctoral Candidate), - 422-8010.

B. Psych 100 and Non-Psych 100 Sign-up Sheets

**MEDITATION and FLOW (HRS # 40F91)**  
**FOR STRESS AND PLEASURE MANAGEMENT**

This convenient meditation program teaches students ways to relax, gain self-control, get better grades and improve their quality of life. The six week, self-guided **program plus a \$20 honorarium** is given to students in exchange for completing the course and research forms. Components of the course, beginning February '92, include preliminary screening, one two-hour on-campus training session, daily 15 minute relaxing at-home meditations, and completion of daily diaries (only two minutes each to complete). **A total commitment of only about 15 hours is needed.** Psych 100 students will be given a \$20 honorarium for non-credit time and 5 credits only upon completion of the entire course. Interested students must sign-up or call quickly for initial screening and/or more information: Tim Francis, M.S. - 422-8010

NAME	PHONE NUMBER	BEST TIME TO BE CALLED
------	--------------	------------------------

### C. Preliminary Telephone Screen

"Hello, this is Tim Francis, from the meditation and stress management program. I need to request some information about your lifestyle to see if you are an appropriate subject for this experiment. **I am not looking for people with so-called perfect health or perfect health habits so please be honest and accurate.** If you are not accepted, it will not mean that you have a deficit that you should be concerned about. Do you understand that your replies are confidential and freely given?  (wait for answer)  (If yes) Please reply honestly and accurately the appropriate number of times you practice each of the following behaviors in an average week. For example, if you usually smoke an average of five cigarettes per week, you would reply "5". Take your time in answering.

- a.  Movies per week
- b.  Go swimming
- c.  Remember a dream
- d.  Alcoholic drinks per week
- e.  Speak with friends
- f.  Cigarettes per week
- g.  Forget something
- h.  Exercise
- i.  Go to work
- j.  Classes per week
- k.  Make a non-food purchase

Do you have previous formal meditation experience?"

If scores on alcohol use are over 11 and subjects have no formal meditation experience, subjects are told, "Based on your answers, you may be accepted for the course, but we remind you that in order to be accepted and receive the \$25 or \$20 honorarium, and/or class credit, you must agree to complete the entire course, barring emergency. If you agree, you may be mailed or can pick up information packets in the Recreation department office 8:30 to 4:30 in the Health and Human performance building/North Gym, Rm 2367. Begin the packet immediately and turn it in to the same place within three weeks. You will then be called about when to attend the meditation training seminar.

If alcohol use is not over 11 and subjects have previous formal meditation experience, subjects are thanked and told that they are not appropriate for the experiment, again, not because of the presence of any deficit of concern.)



D. Letter to selected subjects

"Dear \_\_\_\_\_,

Thank you for your interest in the meditation program and study. There are a great number of techniques of meditation. Both the traditional literature and current scientific findings document the benefits of various forms of practice. They also suggest that certain methods are especially suited for particular personality styles. The research project in which you may participate will focus on the subjective experiences of meditation, and upon how different people respond to different meditation methods. Participants will be trained to meditate using one of three methods. All methods have been shown to result in pleasant feelings and benefit users. The following is a brief overview of the program.

Interested participants must first fill out the enclosed brief personality and background inventories and then complete short daily diary checklists for 2 weeks (all are confidential). These must be mailed or returned in to the Department of Recreation (Rm 2367, HHP) within three weeks (February 21).

Participants will then attend a two hour training seminar explaining the program, reviewing the research requirements, and taking a test of hypnotic susceptibility to help measure meditation ability. This test is standardized, safe, and completely under your personal control. After training, you will need to practice a relaxing meditation (Fifteen minutes per sitting) and fill out daily diaries (two minutes) every day for at least four weeks, for a total time commitment of about 15 hours (considered a minimum amount to see improvements). The program plus honorarium (and/or credit) is offered in exchange for completion of questionnaires for dissertation research at the University of Maryland (all included within the 15 hour time commitment).

You now need to complete and return the enclosed questioners--Mini-Mult and general background questionnaire, subject consent form, and then daily diary (for two weeks). Please fill out the forms accurately and return them within the next three weeks). You will be contacted almost immediately upon returning the questionnaires and diaries to be given the place and time of the meditation seminar. Please be assured that your participation in this researched and refined meditation program can be of enormous personal and social benefit.

Sincerely,

Tim L. Francis, Doctoral Candidate  
Recreation Department  
Health and Human Performance Building

E. Background Questionnaire

1. Alias name (your choice): \_\_\_\_\_ Experiment  
 No.(given): \_\_\_\_\_ Phone: \_\_\_\_\_
2. Age: \_\_\_\_\_ Birthdate: \_\_\_\_\_ Sex: \_\_\_\_\_
3. Name two possible evenings during your usual school week (M-F) which would be most convenient to meet for the two hour meditation training seminar.
4. How many months, at any time of your life, have you practiced meditation for at least 3 times weekly?
- \_\_\_ Less than 1  
 \_\_\_ 1-3 months  
 \_\_\_ 3-6 months  
 \_\_\_ more than 6 months
5. List books or individuals (i.e., teachers, religious leaders) you have found helpful in meditation practice.
6. Please fill in the appropriate number of times you practiced the given behavior in the past week. For example, if you had 5 cigarettes, put "5".
- a. \_\_\_ Saw a movie  
 b. \_\_\_ Went swimming  
 c. \_\_\_ Remembered a dream  
 d. \_\_\_ Had an alcoholic drink  
 e. \_\_\_ Spoke with a friend  
 f. \_\_\_ Had a cigarette  
 g. \_\_\_ Forgot something  
 h. \_\_\_ Exercised  
 i. \_\_\_ Went to work  
 j. \_\_\_ Went to class  
 k. \_\_\_ Made a purchase
8. What do you think is the specific purpose of this study?
9. How, specifically, do you think you will benefit from participation in this study?
10. On what basis do you think you will be selected for participation in this study?
11. What results do you think the researchers hope to find?

(Please return this form within three weeks with your completed Consent form, Mini-mult and (2) Diaries to the recreation department where you received this packet)



F. Consent Form

UNIVERSITY OF MARYLAND  
Department of Recreation  
CONSENT FORM FOR HUMAN SUBJECTS

Description

Subject's name (Please Print or Type): \_\_\_\_\_

Project Title: Meditation and Flow

Project Director/researcher's Name: Timothy L. Francis

Both the traditional literature and current scientific findings document the benefits of various forms of meditation practice, including increased stress management, heightened self-esteem and increases in general well-being. The findings also suggest that certain methods are especially suited for particular personality styles. The research which you may participate in will focus on the subjective experience of meditation, and upon how different people respond to different meditation methods. People will be trained to meditate using one of several methods distributed randomly. All types have been shown to result in the above-mentioned benefits to users. No risks should be experienced, unless inaccurate background information is provided. The following is a brief overview of the program:

Participants first fill out the consent form, personality and background inventories, and then complete daily dairy checklists (all enclosed) for 2 weeks. These must be turned in within three weeks time of receiving them. Participant will then attend a two hour seminar explaining the program and reviewing the research requirements. They then practice meditation daily for 15 minutes and fill out journal checklists everyday for six weeks, for a total time commitment of about 15 hours (considered a minimum amount to see the benefits). Subjects are paid \$25 (or \$20 plus research credit) in exchange for completing and submitting the anonymous questionnaires for dissertation research (all included within the 15 hour time commitment).

Certification

I fully understand the program or activity in which I am being asked to participate and the procedures which will be performed. I have had an adequate chance to ask questions and understand that I may ask additional question any time while the study is in progress.

I understand that I am participating in this activity of my own free will and I am free to withdraw my consent and discontinue my participation at any time while the study is in progress.

This is to certify that I agree to participate in the program or activity under the direction of the researcher named above.

\_\_\_\_\_ Date

\_\_\_\_\_  
Signature of the Subject

Please return this form with the others within three weeks to the Recreation Office.



### G. Mini-Mult

Please fill in an "A" for True or a "B" for false on the enclosed answer sheet. Please answer AS THEY APPLY TO YOU MOST OF THE TIME. PLEASE ANSWER ALL THE QUESTIONS.

1. I have a good appetite.
2. I wake up fresh and rested most mornings.
3. My daily life is full of things that keep me interested.
4. I work under a great deal of tension.
5. Once in a while, I think of things too bad to talk about.
6. I am very seldom troubled by constipation.
7. At times I have very much wanted to leave home.
8. At times I have fits of laughing and crying that I cannot control.
9. I am troubled by attacks of nausea and vomiting.
10. No one seems to understand me.
11. At times I feel like swearing.
12. I have nightmares every few nights.
13. I find it hard to keep my mind on a task or a job.
14. I have had very peculiar and strange experiences.
15. If people had not had it in for me, I would have been much more successful.
16. During one period when I was a youngster, I engaged in petty thievery.
17. I have had periods of days, weeks, or months when I couldn't take care of things because I couldn't "get going."
18. My sleep is fitful and disturbed.
19. When I am with people I am bothered by hearing very queer things.
20. I am liked by most people who know me.
21. I have often had to take orders from someone who did not know as much as I did.
22. I wish I could be as happy as others seem to be.
23. I think a great many people exaggerate their misfortunes to gain the sympathy and help of others.
24. I get angry sometimes.
25. I am certainly lacking in self-confidence.
26. I have little or no trouble with my muscles twitching or jumping.
27. Much of the time I feel as if I have done something wrong or evil.
28. I am happy most of the time.
29. Some people are so bossy that I feel like doing the opposite of what they request, even though I know they are right.
30. I believe I am being plotted against.
31. Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it.
32. I have a great deal of stomach trouble.
33. Often I can't understand why I have been so cross and grouchy.
34. At times my thoughts have raced ahead faster than I could speak them.
35. I believe that my home life is as pleasant as that of most people I know.
36. I certainly feel useless at times.
37. During the past few years I have been well most of the time.
38. I have had periods in which I carried on activities without knowing later what I had been doing.
39. I feel that I have been punished without cause.
40. I have never felt better in my life than I do now.
41. What others think of me does not bother me.
42. My memory seems to be all right.
43. I find it hard to talk when I meet new people.
44. I feel weak all over much of the time.
45. I have very few headaches.

46. I have had no difficulty in keeping my balance in walking.
47. I do not like everyone I know.
48. There are people who are trying to steal my thoughts and ideas.
49. I wish I were not so shy.
50. I believe my sins are unpardonable.
51. I frequently find myself worrying about something.
52. My parents have often objected to the kind of people I went around with.
53. I gossip a little at times.
54. At times I feel that I can make up my mind with great ease.
55. I hardly ever notice my heart pounding and I am seldom short of breath.
56. I get mad easily and than get over it soon.
57. I have periods of such great restlessness that I cannot sit long in a chair.
58. My parents and family find more fault with me than they should.
59. No one much cares what happens to me.
60. I do not blame a person for taking advantage of someone who lays himself open to it.
61. At times I am All full of energy.
62. My eyesight is as good as it has been for years.
63. I do not often notice my ears ringing or buzzing.
64. At one or more times in my life I felt that someone was making me do things by hypnotizing me.
65. I have periods in which I feel unusually cheerful.
66. Even when I am with people I feel lonely much of the time.
67. I think nearly everyone would tell a lie to keep out of trouble.
68. I am more sensitive than most other people.
69. At periods my mind seems to work more slowly than usual.
70. People often disappoint me.
71. I have used alcohol excessively.

Please return this form with the others within three weeks to the Recreation Office.

### H. Daily Diary before Meditation Training

1. Alias name (your choice):

Experiment No.(given):

Dates:

For each day of the week, please fill in the appropriate number for the amount of times you practiced each particular behavior in the past 24 hours. For example, if you had five cigarettes, put "5".

#### Monday

- a. \_\_\_ Saw a movie
- b. \_\_\_ Went swimming
- c. \_\_\_ Remembered a dream
- d. \_\_\_ Had an alcoholic drink
- e. \_\_\_ Spoke with a friend
- f. \_\_\_ Had a cigarette
- g. \_\_\_ Forgot something
- h. \_\_\_ Exercised
- i. \_\_\_ Went to work
- j. \_\_\_ Went to class
- k. \_\_\_ Made a purchase

#### Tuesday

- a. \_\_\_ Saw a movie
- b. \_\_\_ Went swimming
- c. \_\_\_ Remembered a dream
- d. \_\_\_ Had an alcoholic drink
- e. \_\_\_ Spoke with a friend
- f. \_\_\_ Had a cigarette
- g. \_\_\_ Forgot something
- h. \_\_\_ Exercised
- i. \_\_\_ Went to work
- j. \_\_\_ Went to class
- k. \_\_\_ Made a purchase

#### Wednesday

- a. \_\_\_ Saw a movie
- b. \_\_\_ Went swimming
- c. \_\_\_ Remembered a dream
- d. \_\_\_ Had an alcoholic drink
- e. \_\_\_ Spoke with a friend
- f. \_\_\_ Had a cigarette
- g. \_\_\_ Forgot something
- h. \_\_\_ Exercised
- i. \_\_\_ Went to work
- j. \_\_\_ Went to class
- k. \_\_\_ Made a purchase

#### Thursday

- a. \_\_\_ Saw a movie
- b. \_\_\_ Went swimming
- c. \_\_\_ Remembered a dream
- d. \_\_\_ Had an alcoholic drink
- e. \_\_\_ Spoke with a friend
- f. \_\_\_ Had a cigarette
- g. \_\_\_ Forgot something
- h. \_\_\_ Exercised
- i. \_\_\_ Went to work
- j. \_\_\_ Went to class
- k. \_\_\_ Made a purchase

#### Friday

- a. \_\_\_ Saw a movie
- b. \_\_\_ Went swimming
- c. \_\_\_ Remembered a dream
- d. \_\_\_ Had an alcoholic drink
- e. \_\_\_ Spoke with a friend
- f. \_\_\_ Had a cigarette
- g. \_\_\_ Forgot something
- h. \_\_\_ Exercised
- i. \_\_\_ Went to work
- j. \_\_\_ Went to class
- k. \_\_\_ Made a purchase

#### Saturday

- a. \_\_\_ Saw a movie
- b. \_\_\_ Went swimming
- c. \_\_\_ Remembered a dream
- d. \_\_\_ Had an alcoholic drink
- e. \_\_\_ Spoke with a friend
- f. \_\_\_ Had a cigarette
- g. \_\_\_ Forgot something
- h. \_\_\_ Exercised
- i. \_\_\_ Went to work
- j. \_\_\_ Went to class
- k. \_\_\_ Made a purchase

#### Sunday

- a. \_\_\_ Saw a movie
- b. \_\_\_ Went swimming
- c. \_\_\_ Remembered a dream
- d. \_\_\_ Had an alcoholic drink
- e. \_\_\_ Spoke with a friend
- f. \_\_\_ Had a cigarette
- g. \_\_\_ Forgot something
- h. \_\_\_ Exercised
- i. \_\_\_ Went to work
- j. \_\_\_ Went to class
- k. \_\_\_ Made a purchase

Please fill out one for each of two weeks and return with Background Questionnaire, Consent form, and Mini-Mult.



## I. Training Dialogue

"Sorry about the tape. I pre-recorded the training message so that it would go to you and other training sessions in a standard, known form. The purpose of this session is to give you details about procedures to be used in the research and to begin the training itself. There will be time for questions after the recording. This tape will introduce you to the basics of meditation and procedures for the study, but each of you will practice a slightly different form. Each has been shown to evoke improved quality of life in practitioners. For instance, in a study of over 600,000 medical insurance recipients, meditators have 87.3% lower admissions for heart disease, 55% lower for cancer, 87% lower for diseases of the nervous system and 65% lower outpatient visits.

At the end of this tape, I will give each of you a packet containing instructions for one of the various meditation techniques and two weeks worth of daily diaries to be completed and turned in at the recreation office or your groups representative. Your second two weeks of diaries will be issued when you turn the first packet. If you decide to continue practice after the required four weeks, you will be given another four weeks worth of diaries. The diary must be filled out immediately after each daily meditation. It will only take about two minutes. **This period of reflection upon how the meditation went for you each day will motivate continued practice, increase your sensitivity to changes, and help integrate your learning.** The diary is also essential for your training in that it is the primary channel for communicating your experiences, problems, and questions. Furthermore, the daily reports of your meditation experience are also vital data for this research project that aims to improve the quality of individuals' lives.

Certain limitations are imposed upon us for the sake of experimental rigor. For instance, I cannot, until after eight weeks, tell you about the research design or what exactly I am seeking to learn, beyond what I have already told you. At the end of the eight weeks I will share my impressions with you of your individual experience.

A second example of an experimental constraint is that I will not be able to give you individual "Progress Reports" during the training. But this is consistent with the attitude it is useful to establish for your own meditation, of letting your inner teacher--your own experience become more and more your guide. However, it will be important for there to be an open channel between us in case you are having difficulties completing the program. If you have an emotional or mental difficulty during meditation, which happens rarely, please use the health center (314-8184) or counseling center (Arnie Medvine [314-7661]) on campus.

I am laying down one rule that I would like you to hold to very firmly. Please do not talk to one another, or any one other than myself about the meditation techniques or your experiences while meditating. This is very important for two reasons. First, talking about the experience unnecessarily drains away its effectiveness. There is a good reason for you to be open about your experience with me, through the diary, but outer talk will tend to dilute the experience. Some curiosity about the experience of others in the experiment is natural, but see if you can be involved in your own experience non-comparatively. You may tell anyone not involved in the experiment who asks, that you would rather talk to them when the training is complete and tell them why.  
(Pause)

Let me talk a bit about the attitude with which you approach meditation. You are not required to believe in any particular set of dogmas, religious beliefs or tenets. Your own experience will be your teacher here. However, without an attitude or posture of mind appropriate for its practice, no meditation will be effective. While the description of a particular meditation technique may be relatively easy, the



mental state to which it takes aim is subtle, and the approach to the practice of meditation equally subtle.

Try to relinquish as much as possible, specific ideas you have formed about meditation and your expectations of what should happen as you meditate. To many people, these become barriers. It will be good to take, whenever possible, a relaxed and non-striving posture towards the work that you will be doing, letting the regular practice, as much as possible, take care of itself. Don't worry about your progress, but if you do worry, accept even this with dispassion--you can get caught up in striving not to strive!

(pause)

As an experiential lesson and experimental control, we will first complete a simple meditation test. (Subjects administered Harvard Group Scale)

"Many people feel that meditation first thing in the morning is ideal--just sit up and meditate when you first wake up. But, you will discover yourself what the best time is for you to meditate. Do not meditate directly after meals or when you are especially hungry, tired or so forth. Select a time and place where you will have as few other daily activities, a corner of your room for instance, where nothing else happens. Simply being in such a place may evoke a mood conducive to meditation.

Many of you may note how closely psychological and physical relaxation are related. Being quite in body and mind go hand in hand. Deeper relaxation of the one helps to further the calmness of the other. So, by successive approximation, paying attention to what is going on with an even acceptance of whatever is going on, body helps mind, mind helps body. I am emphasizing this to allow you to relate to usually frustrating situations from a new angle: For example, when your roommate slams the door, you may think your meditation is jarred. Certainly your organism responds, but what happens after that response may be a feeling of frustration when your concentration is broken. Perhaps you feel discouraged that you are distracted or that your being still hasn't adjusted. In all cases, allow these feelings to be there, experience them, **but then move back to your pleasant focus**, realizing that the distraction might have actually woken you up from spacing out, and helped you come back into focus. **The practice of going back to your focus, can help you practice relaxation in similar circumstances throughout the day.** To sum up the mental attitude for meditation; 1) become relaxed while remaining alert 2) cope with diverse feeling states by being consciously aware, relaxing, and going back to your pleasant focus of meditation 3) watch for subtle and progressive changes in daily life.

(pause)

When you receive your particular meditation instructions, **feel free to record the instructions on tape and use music and stretching to help you relax.** This may make the experience more relaxing and enjoyable. **Remember that you must meditate seven days per week, for 15 minutes each session to get significant benefits.** If you have a watch or clock you may put it within easy view to help gauge the time at first. You may now turn in your meditation test, pick up your specifically assigned, confidential meditation instructions and your diaries. Remember to drop off and pick up your daily diaries every two weeks.

Finally, one of the more difficult challenges of meditation is to practice consistently. A few reminders are important here: 1) tell yourself how critical meditation is to your health, intelligence and happiness, 2) make the practice enjoyable by flexibly finding a focus which brings you satisfying feelings 3) remember that the changes due to consistent meditation practice are subtle, yet powerful, and hard to see in the period of one month. Thank you and good meditating."



### J. Meditation Instructions (Choice and Combination Group)

Each day, choose one of the below listed meditations, visualization, object focused, or mindfulness, and:

1. **Remember potential subtle benefits** of meditation (better health, grades, self and stress control, concentration, self-esteem, lowered anxiety)
2. **Practice consistently and continuously** (seven days per week) and keep confidential diary of quality and experience of meditation and effects
3. Use the health center, 314-8184, or counseling center (Arnie Medvine, 314-7661) for any mental or emotional problems experienced
4. **Do not discuss the experiment** except through diaries
5. **Use correct physical and mental posture**
  - stretch and use music to make the experience enjoyable
  - practice regularity, non-striving attitude for pleasant meditation experience
  - same place, same time, seven days per week, at least 15 minutes
  - erect, but comfortable physical posture
  - become relaxed while remaining alert
  - gently return to pleasant focus to cope with diverse feeling states
  - remain pleasantly alert while relaxing deeply
  - gently return to foci when aware of losing concentration
  - watch for subtle and progressive changes in daily life
6. **Turn in and pick up diary packets every other Monday** for four weeks, 8:30 to 4:30, in the Department of Recreation, Rm 2367, Health and Human Performance building. At the end of four weeks (March 31), if you decide to continue the program, continue to complete and turn in your diaries for four more weeks (until April 28).
7. You will be called twice during the program to check progress and then after April 19 to be given results.
8. **Face your problems directly** in everyday life with your practiced meditative perspective

### Specific Meditation Instructions:

Visualization (Krystal & Zweben, 1988). "Choose a safe serene environment that will set the tone for meditation. Sit in a chair or couch or on a soft surface on the ground, spine erect and feet on the floor uncrossed, or on the floor with spine erect and legs crossed, or lie down flat on the floor or couch, covered with a blanket and blindfold, if desired.

Close your eyes and transfer your attention from outside stimuli to the breath. Breathe deeply, relax all your muscles, beginning at your feet and progressing up to your face. Keep them deeply relaxed and remind yourself to continue doing so for the remainder of the session. Let go, do not try too hard and let your vision, symbol or picture come to mind. When distracting thoughts occur, continue to gently bring your mind back to your original focus.

Create in your mind's eye a shower of golden light coming from a place high above. If you have trouble seeing the shower, think, feel, experience, or intend to imagine this vision. It is not necessary to have clear visual images--the intention that the vision be there is sufficient, though practice does help to train the mind's eye. Pay attention to the source of the shower and ask to be shown a symbol resting there that represents your own higher power. Continue to breathe deeply and relax and now let go. Do not try too hard and let the symbol come to mind -- any symbol at all, sacred or mundane, the first symbol that comes to mind.

You have come to appeal to the higher power or consciousness for guidance, help, or healing. Alternate terms for the higher power can be used, such as higher consciousness, life force, inner, innate or higher wisdom, higher guidance, universal consciousness, divine essence, god, depending on your frame of reference and belief system. Symbols often noted are the sun, moon, stars (heavenly bodies), a flower or plant or leaf, light, a dove or other bird, Jesus, Buddha, or other sacred figure, the cross, five



or six pointed star, or pyramid, angels, the ocean, woods, forest or other natural scenes, and altar, church or temple.

Stay in the presence of the symbol, asking for the guidance and help needed with you four major areas of life: the physical (health, environment, money, addiction), the emotional (mood swings, negative emotions, emptiness, desires, attachments, relationships), the mental (career, self discipline, will power, memory), and the spiritual (inspiration, guidance, self-realization, growth).

Take as much time as needed to take inventory and ask for help. If you are in touch with a void or pain, breath in deeply and directly from your symbol what you need to work through the emotion and fill the void in a new way. When through, leave the symbol there in the inner space and bring the focus of attention back to your body. You can return to the symbol at any time to ask for guidance and work through emotion.

The next step involves the creation of a safe inner field of action, natural territory, or inner space, which is essential for all living beings and acts as a protection from unwanted projections, interferences by people, or the pull of the unwanted objects of desire. Create around you in your mind's eye a circle of golden light on the ground. A circle is a universal symbol for wholeness, completion, perfection (being perfect geometric form), eternity (having no beginning and no end), god (or the higher power), oneness with god (or inner unity), harmony, containment, and protection. Give your unconscious mind a very powerful message in its own language of symbols: the message that you want to feel safe and protected as well as centered, balanced, whole, peaceful, and in touch with the eternal. The edges of the circle can be lifted up like an accordion to create an impermeable cylinder, open at the top, or a wall, fence, or mote around the circle if you feel particularly anxious.

Focus on the sunlight if daytime or on the moonlight if nighttime and, taking very deep breaths, to breath in the light, noticing as it comes in through the nostrils; then to direct the light, which will follow the attention, to the various parts of the body where tension, emptiness, despair, or void is experienced, such as the neck and shoulders, jaws, solar plexus. Finally the light is directed throughout the entire body for complete relaxation or energization. The sunlight is a symbol of maturation, rhythm, yin qualities, creation, fertility, and regeneration. The moonlight has four functions "to relax, to cleanse or purify, to heal and to re-energize or regenerate." As the light is directed through the body to any dark or empty areas on the inhalation, you may feel the warming, relaxing effects of the light; on the exhalation you may breathe out the tension and negative emotion. The entire body is full of light and relaxed, with your individual cells lighting up and radiating light in and around the body in a white or golden aura.

Visualize a tree at your back. Ask your symbol of your higher power to show you which tree is right for you, as you visualize the bark, branches, leaves, shape, in fine detail. Lean your back against the tree where you can rest the full weight of your body, your responsibilities, your problems or issues, and decisions against the sturdy trunk. It is so deeply rooted that it can support you completely and fully. Breath in from the tree and through your spine courage, strength, tolerance, patience, persistence, steadfastness, and forbearance in the face of your difficulties. Breath in these qualities until you feel full, supported and ready to continue. Feel connected to the earth in the here and now, and secure, while focused on an inner world within the mind. The tree symbolizes the impersonal self, which bridges heaven and earth, the solar father, and earth mother.

Direct your attention back into your body, to the relaxation in the body, and to the body's position and weight on the floor. Finally, open your eyes when ready, bringing the sense of relaxation with you and expecting to see the results of your requests in your everyday life."

**Object Focused** (Shapiro, 1982; Benson, Rosner, Marzetta, and Klemchuk, 1974) "Choose a safe serene environment that will set the tone for meditation. Sit in a chair or couch or on a soft surface on the ground, spine erect and feet on the floor uncrossed, or on the floor with spine erect and legs crossed, or lie down flat on the floor or couch, covered with a blanket and blindfold, if desired.

Close your eyes and transfer your attention from outside stimuli to the breath. Breathe deeply, relax

all your muscles, beginning at your feet and progressing up to your face. Keep them deeply relaxed and remind yourself to continue doing so for the remainder of the session.

Breathe through your nose. Become aware of your breathing. As you breathe out, say any word that brings you peace, for example "one," silently to your self. For example, breathe in...out, "one," in...out, "one,"; etc.. Continue for 15 minutes. Occasionally open your eyes and practice later with opened eyes. Do not worry about whether you are successfully achieving a deep level of relaxation. Maintain a passive attitude and permit relaxation to occur at its own pace. Let go and do not try too hard and to keep your object of focus in mind. When distracting thoughts occur, just continue to gently bring your mind back to your original relaxing focus."

**Mindfulness** (Brown, 1980, p. 149) "Choose a safe serene environment that will set the tone for meditation. Sit in a chair or couch or on a soft surface on the ground, spine erect and feet on the floor uncrossed, or on the floor with spine erect and legs crossed, or lie down flat on the floor or couch, covered with a blanket and blindfold, if desired.

Close your eyes and transfer your attention from outside stimuli to the breath. Breathe deeply, relax all your muscles, beginning at your feet and progressing up to your face. Be aware of your breath at the tip of the nostrils or the rise and fall of the abdomen.

Notice any bodily sensations, emotions, thoughts, images memories, perceptions and the pleasant, unpleasant or neutral quality of each moment of experience. Become aware of any of these objects at the exact moment they occur, for as long as they occur in your stream of consciousness. When no other object presents itself to awareness, return attention to your breath.

Attention should be bare, without reaction, evaluation, judgment, selection, comment or any kind of cognitive or emotional elaboration. If any of these types of mental reaction occur over and above mere perception of the object, you may make them, in turn, the object of choiceness awareness. The specific object chosen, is not nearly as important as this quality of detached observation with which it is registered in awareness."



K. Harvard Group Scale for Hypnotic Susceptibility (Shor & Orne, 1962)

Preliminary Remarks by Examiner. In a few minutes I am going to administer a standard procedure for measuring susceptibility to hypnosis. At the end of the standard procedure you yourself will report on what the experience was like in the Response Booklet which has been distributed to you. Note that the booklet is sealed. Do not open the Response Booklet until I specifically tell you to do so at the end of the standard procedure. On the Cover Page of the Response Booklet are spaces for your name, address, and some other general information. Please fill in this information now. Again, please do not open the booklet now. Fill in the information on the Cover Page only. (Allow a minute or two for subjects to record this information.)

Let's talk a while before we start. I want you to be quite at ease, and it may help if I answer a few of your questions first. I am assuming that for some of you this is the first time you are experiencing hypnotism.

(In presenting the following remarks the examiner may find it useful in establishing rapport to elicit some questioning and participation from members of the group. Questions are to be answered by paraphrasing the points made below.)

People experiencing hypnosis for the first time are sometimes a little uneasy because they do not know what the experience will be like, or because they may have a distorted notion of what it is like. It is very natural to be curious about a new experience. Your curiosity will be satisfied before we are through, but you can best get the answers you want by just letting yourself be a part of what goes on, and by not trying to watch the process in detail.

Some people, however, have a tendency to allay their initial uneasiness in a new situation by laughing, giggling or whispering. We must request that you refrain from this type of response for the duration of the procedures here so as not to disrupt the concentration of the individuals around you.

To allow you to feel more fully at ease in the situation, let me reassure you on a few points. First of all, the experience, while a little unusual, may not seem so far removed from ordinary experience as you have been led to expect. Hypnosis is largely a question of your willingness to be receptive and responsive to ideas, and to allow these ideas to act upon you without interference. These ideas we call suggestions.

Second, you will not be asked to do anything that will make you look silly or stupid, or that will prove embarrassing to you. We are here for serious scientific purposes.

Third, and finally, I shall not probe into your personal affairs, so that there will be nothing personal about what you are to do or say during the hypnotic state.

You may wonder why we are doing these experiments. Hypnotism is being used more and more by physicians: for example, by dentists to relieve pain by obstetricians to make childbirth easier, by psychiatrists to reduce anxiety. If we can understand the processes involved, we will know more about the relationship between ideas and action, more about the way in which personality operates. So in participation here you are contributing to scientific knowledge of a kind that can be used to help other human beings. We are trying here merely to understand hypnotism. Probably all people can be hypnotized, but some are much more readily hypnotized than others, even when each of them co-operates. We are studying some of these differences among people.

Have you any questions or comments before we go ahead? (Answer questions by para-phrasing the above points.)

Now please make yourself comfortable in your chair. Clear your lap of books and papers, and prepare to begin. Individuals who wear glasses should keep them on. If, however, you are wearing contact lenses, it might be more comfortable to remove them. (The examiner should also communicate the following if the main procedures are tape recorded.) In a moment I shall turn on the tape recorder.

#### MAIN PROCEDURES

(The following instructions are to be presented verbatim.)

To begin with, I want you to experience how it feels to respond to suggestions when you are



not hypnotized. If you will now please sit up straight in your chair .... Close your eyes and relax; continue, however, to sit up straight. That's right. Eyes closed and sit up straight. Please stay in that position with your eyes closed, while at the same time letting yourself relax. (allow 30" to pass.) Now just remain in the same position and keep your eyes closed. . . .sitting up straight in your chair....with your eyes closed.

In a moment I shall ask you to think of your head falling forward. As you know, thinking of a movement and making a movement are closely related. Soon after you think of your head falling forward you will experience a tendency to make the movement. You may find your head actually falling forward, more and more forward, until your head will fall so far forward that it will hang limply on your neck.

Listen carefully to what I say and think of your head falling forward, drooping forward. Think of your head falling forward, falling forward, more and more forward. Your head is falling forward, falling forward. More and more forward. Your head is falling more and more forward, falling more and more forward. Your head is going forward, drooping down, down, limp and relaxed. Your head is drooping, swaying, falling forward, falling forward, falling, swaying, drooping, limp, relaxed, forward, forward, falling, falling, falling>...Now!

That's fine. Now please sit up and open your eyes. That's right. Sit up and open your eyes. You can see how thinking about a movement produces a tendency to make the movement. You learn to become hypnotized as you bring yourself to give expression to your action tendencies. 'but at this point you have the idea of what it means to accept and act upon suggestions.

Now I want you to seat yourself comfortable and rest your hands in your lap. That's right. Rest your hands in your lap. Now look ~~t=at~~ at your hands and find a spot on either hand and just focus on it. It doesn't matter what spot you choose; just select some spot to focus on. I shall refer to the spot which you have chosen as the target. That's right .. hands relaxed>..look directly at the target. I am about to give you some instructions that will help you to relax and gradually to enter a state of hypnosis. Just relax and make yourself comfortable. I want you to look steadily at the target and while keeping your eyes upon it o listen to what I say. Your ability to be hypnotized depends partly on your willingness to cooperate and partly on your ability aid concentrate upon the target and u-on my works. You have already shown yourself to be cooperative by coming here today, and with your further cooperation I can help you to become hypnotised. You can be hypnotized only if you are willing. I assume that you are willing and that you are doing your best to cooperate by concentrating on the target and listening to my works, letting happen whatever you feel is going to take place. Just let it happen. If you pay close attention to what I tell you, and think of the things I tell you to think about, you can easily experience what it is like to be hypnotized. There is nothing fearful or mysterious about hypnosis. It is a perfectly normal consequence of certain psychological principles. It is merely a state of strong interest in some particular thing. In a sense you are hypnotized whenever you see a good show and forget you are part of the audience, but instead feel you are part of the story. Many people report that becoming hypnotized feels at first like falling asleep, but with the difference that somehow or other they deep hearing my voice as sort of background to whatever other experience they may have. In some ways hypnosis is like sleepwalking; however, hypnosis is also an individual experience and is not just alike for everyone. In a sense the hypnotized person is like a sleepwalker, for he can carry out various and complex activities while remaining hypnotized. All I ask of you is that you keep up your attention and interest and continue to cooperate as you have been cooperation. Nothing will be done that will cause you any embarrassment. Most people find this a very interesting experience.

Just relax. Don't be tense. Keep your eyes on the target. Look at it as steadily as you can. Should your eyes wander away from it, that will be all right . . . just bring your eyes back to it. After a while you may find that the target gets blurry, or perhaps moves about, or again, change color. That is all right. Should you get sleepy, that will be fine, too. Whatever happens, let it happen and keep staring at the



target for a while. There will come a time, however, when your eyes will be so tired, will feel so heavy, that you will be unable to keep them open any longer and they will close, perhaps quite involuntarily. When this happens, just let it take place.

As I continue to talk, you will find that you will become more and more drowsy, but not all people respond at the same rate to what I have to say. Some people's eyes will close before others. When the time comes that your eyes have closed, just let them remain closed. You may find that I shall still give suggestions for your eyes to close. These suggestions will not bother you. They will be for other people. Giving these suggestions to other people will not disturb you but will simply allow you to relax more and more.

You will find that you can relax completely but at the same time sit up comfortable in your chair with little effort. You will be able to shift your position to make yourself comfortable as needed without it disturbing you. Now just allow yourself to relax completely. Relax every muscle of your body. Relax the muscles of your legs . . . Relax the muscles of your hands. . . of your fingers. . . Relax the muscles of your neck, of your chest. . . Relax all the muscles of your body. . . Let yourself be limp, limp, limp. Relax more and more, more and more. Relax completely. Relax completely. Relax completely.

As you relax more and more, a feeling of heaviness perhaps comes over your body. A feeling of heaviness is coming into your legs and your arms . . . into your feet and your hands. . . into your whole body. Your legs feel heavy and limp, heavy and limp . . . Your arms are heavy, heavy . . . Your whole body feels heavy, heavier and heavier. Like lead. Your eyelids feel especially heavy. Heavy and tired. You are beginning to feel drowsy, drowsy and sleepy. Your breathing is becoming slow and regular, slow and regular. You are heavier and heavier, more and more tired and heavy.

Your eyes are tired from staring. The heaviness in your eyelids is increasing. Soon you will not be able to keep your eyes open. Soon your eyes will close of themselves. Your eyelids will be too heavy to keep open. Your eyes are tired from staring. Your eyes are becoming tired from straining. You are becoming increasingly drowsy and sleepy. The strain in your eyes is getting greater and greater, greater and greater. It would be so nice to close your eyes, to relax completely, and just listen sleepily to my voice talking to you. You would to close your eyes and relax completely, relax completely. To will soon reach your limit. The strain will be so great, your eyes will be so tired, your lids will become so heavy, your eyes will close of themselves, close of themselves.

Your eyelids are getting heavy, very heavy. You are relaxed, very relaxed. There is a pleasant feeling of warmth and heaviness all through your body. You are tired and drowsy. Tired and sleepy. Sleepy. Sleepy. Sleepy. Listen only to my voice. Pay attention to nothing else but my voice. Your eyes are getting blurred. You are having difficulty seeing. Your eyes are strained. The strain is getting greater and greater, greater and greater.

Your lids are heavy. Heavy as lead. Getting heavier and heavier, heavier and heavier. They are pushing down, down, down. Your eyelids seem weighted, weighted with lead, heavy as lead. . . Your eyes are blinking, blinking, blinking... closing . . . closing...closing.

Your eyes may have closed by now and if they have not, they would soon close of themselves. But there is no need to strain them more. Even if your eyes have not closed fully as yet, you have concentrated well upon the target, and have become relaxed and drowsy. At this time you may just let your eyes close. That's it, eyes completely closed. Close your eyes now.

You are now comfortably relaxed, but you are going to relax even more, much more. Your eyes are now closed. You will keep your eyes closed until I tell you otherwise, or I tell you to awaken. . . You feel drowsy and sleepy. Just keep listening to my voice. Pay close attention to it. Keep your thoughts on what I am saying--just listen. You are going to get much more drowsy and sleepy. Soon you will be deep asleep but you will continue to hear me. You will not awaken until I tell you to do so. I shall now begin to count. At each count you will feel yourself going down, down, into a deep, comfortable, a deep restful sleep..A sleep in which you will be able to do all sorts of things I ask you to do. One--you are going to go deeply asleep ...Two--down, down into a deep, sound sleep...Three..four more and more, more and more asleep...Five...six...seven...you are sinking, sinking to such things as I



may call to your attention. I would like you to keep on Paying attention to my voice and the things I tell you. . .Eight ...nine...ten...eleven...twelve...deeper and deeper, always deeper asleep...thirteen...fourteen...fifteen...although deep asleep you can clearly hear me. You will always hear me no matter how deeply asleep you may feel yourself to be. . . Sixteen...seventeen...eighteen...deep asleep, fast asleep. Nothing will disturb you. You are going to experience many things that I will tell you to experience . . . Nineteen, twenty. Deep Asleep! You will not awaken until I feel you to do so. You will wish to sleep and will have the experiences I shall presently describe.<sup>46</sup>

As you become even more drowsy and sleepy, it will not disturb you to make yourself comfortable in your chair and put your head in a comfortable position.

Now that you are very relaxed and sleepy, listening without effort to my voice, I am going to help you to learn more about how your thoughts affect your actions in this state. Not all people experience just the same things in this state, and perhaps you will not have all the experiences I will describe to you. That will be all right. But you will have at least some of the experiences and you will find these interesting. You just experience whatever you can. Pay close attention to what I tell you and watch what happens. Just let happen whatever you find is happening, even if it is not what you expect.

Pleas extend your left arm straight out in front of you, up in the air, with the palm of your hand down. Left arm straight out in front of you. . . straight out up in the air, wit the palm of your hand down. that's it. Left arm straight out in front of you. . . palm down. I want you now to pay close attention to this hand, the feelings in it, and what is happening to it. As you pay attention to it you are more aware of it than you have been--you notice whether it is warm or cool, whether thee is a little tingling in it, whether there is a tendency for your fingers to twitch ever so slightly. . . That' right, I what you to pay close attention to this hand because something very interesting is about to happen to it. It is beginning to get heavy . . . heavier and heavier. . .as tough a weight were pulling the hand and the arm down. . . you can picture a weight pulling on it. . . and as it feels heavier ad heavier it begins to move . . . as if something were forcing it down. . . a little bit down. . . more and more down. . . down. . . and as I count it gets heavier and heavier and goes down more and more. . . one, down.. . two down,. . . three, down...four,down more and more down. . . five, down. . .six, down. . .sever. . .eight. . .heavier . . . three, down...four,down more and more down. . . five, down. . .six, down. . .sever. . .eight. . .heavier ad heavier, down and more and more. . . none. . .down. . .ten . . .heavier and heavier. . .down more and more.

That's fine. . .just let your hand now go back to its original resting position and relax. Your hand back to this original resting position and relax. You must have noticed how heavy and tired the arm and hand felt; much more so than it ordinarily would if you were to hold it out that way for a little while; you probably noticed how something seemed to be pulling it down. Nw just relax. . .your hand and arm are quite comfortable again. . .quite comfortable ageing. There. . . just relax. Relax.

## TESTING

Now please take your Response Booklet, break the seal and turn to the second page of the Booklet Do not turn to the third page until I specifically instruct you to do so later. On the second page please write down briefly in your own words a list of the things that happened since you began looking t=at the target. You should not go into much detail here on things that you were asked to do. You will now be given three minutes to write out this information. At the end of three minutes you will be asked a number of more specific questions regarding your experiences. Please complete you list in one more minute. If you have already completed your list, spend the next minute trying to recall if there was anything else which you may have neglected to mention.

All right, now listen carefully to my words. Now you can remember everything. Please turn to page three and write down a list of anything else that you remember now that you did not remember previously. You will be given two minutes more to write out this information.

Now please turn to page four, and answer the questions in the remainder of the booklet Use your own judgement where questions are ambiguous.



L. Harvard Group Scale (answer sheet)

1. Alias name:

Experimental No.:

Phone:

DO NOT OPEN THIS BOOKLET until the examiner specifically instructs you to do so

(Page One)

Please write down now briefly in your own words a list of the things that happened since you began looking at the target. Do not go into detail. Spend three minutes, no longer, in writing your reply.

Please DO NOT TURN THIS PAGE until the examiner specifically instructs you to do so

(Page Two)**PLEASE DO NOT RETURN TO PAGE 2**

On this page write down a list of anything else that you now remember that you did not remember previously. Please do not go into detail. Spend two minutes, no longer, in writing out your reply.

Please DO NOT TURN THIS PAGE until the examiner specifically instructs you to do so

(Page Three)**PLEASE DO NOT RETURN TO EARLIER PAGES****SECTION ON OBJECTIVE, OUTWARD RESPONSES**

Listed below in chronological order are the eleven specific happenings which were suggested to you during the standard hypnotic procedure. We wish you to estimate whether or not you objectively responded to these eleven suggestion, that is, whether or not an onlooker would have observed that you did or did not make certain definite responses by certain specific, pre-defined criteria. In this section we are thus interested in your estimates of your outward behavior and not in what your inner, subjective experience, but in this section refer only to the outward behavioral responses irrespective of what the experience may have been like subjectively.

It is understood that your estimates may in some cases not be as accurate as you might wish them to be and that you might even have to guess. But we want you to make whatever you feel to be your best estimates regardless.

Beneath a description of each of the eleven suggestions are sets of two responses, labeled A and B. Please circle either A or B for each question, whichever you judge to be the more accurate. Please answer every question. Failure to give a definite answer to every question may lead to disqualification of your record.

**I. HEAD FALLING**

You were first told to sit up straight in your chair for 30 seconds and then to think of your head falling forward. would you estimate that an onlooker would have observed that your head fell forward at least two inches during the time you were thinking about it happening?

Circle one:

- A. My head fell forward at least two inches.
- B. My head fell forward less than two

**II. EYE CLOSURE**

You were next told to rest your hands in your lap and pick out a spot on either hand as a target and concentrate on it. You were then told that your eyelids were becoming tired and heavy. Would you estimate that an onlooker would have observed that your eyelids had closed (before the time you were told to close them deliberately)?

- A. My eyelids had closed by then.
- B. My eyelids had not closed by then.

### III. HAND LOWERING (LEFT HAND)

You were next told to extend your left arm straight out and feel it becoming heavy as though a weight were pulling the hand and arm down. Would you estimate that an onlooker would have observed that your hand lowered at least six inches (before the time you were told to let your hand down deliberately)?

- A. My hand had lowered at least six inches by then.
- B. My hand had lowered less than six inches by then.

### IV. ARM IMMOBILIZATION (RIGHT ARM)

You were next told how heavy your right hand and arm felt and then told to try to lift your hand up. Would you estimate that an onlooker would have observed that you did not lift your hand and arm up at least one inch (before you were told to stop trying)?

- A. I did not lift my hand and arm at least one inch by then.
- B. I did lift my hand and arm an inch or more by then.

### V. FINGER LOCK

You were next told to interlock your fingers, told how your fingers would become tightly interlocked, and then told to try to take your hands apart. Would you estimate that an onlooker would have observed that your fingers were incompletely separated (before you were told to stop trying to take them apart)?

- A. My fingers were still incompletely separated by then.
- B. My fingers had completely separated by then.

### VI. ARM RIGIDITY (LEFT)

You were next told to extend your left arm straight out and make a fist, told to notice it becoming stiff, and then told to try to bend it. Would you estimate that an onlooker would have observed that there was less than two inches of arm bending (before you were told to stop trying)?

- A. My arm was bent less than two inches by then.
- B. My arm was bent two or more inches by then.

### VII. MOVING HANDS TOGETHER

You were next told to hold your hands out in front of you about a foot apart and then told to imagine a force pulling your hands together. Would you estimate that an onlooker would have observed that your hands were not over six inches apart (before you were told to return your hands to their resting position)?

- A. My hand were not more than six inches apart by then.
- B. My hands were still more than six inches apart by then.

### VIII. COMMUNICATION INHIBITION

You were next told to think how hard it might be to shake your head to indicate "no", and then told to try. Would you estimate that an onlooker would have observed you to make a recognizable shake of the head "no"? (That is before you were told to stop trying.)

- A. I did not recognizable shake my head "no".
- B. I did recognizably shake my head "no".

### IX. EXPERIENCING OF FLY

You were next told to become aware of the buzzing of a fly which was said to become annoying, and then you were told to shoo it away. Would you estimate that an onlooker would have observed you make any grimacing, any movement, any outward acknowledgement of an effect (regardless of what it was like subjectively)?

- A. I did make some outward acknowledgement.
- B. I did not make any outward acknowledgement.

### X. EYE CATALEPSY

You were next told that your eyelids were so tightly closed that you could not open them, and then you were told to try to do so. Would you estimate that an onlooker would have observed that your eyes remained closed (before you were told to stop trying)?



- A. My eyes remained closed.
- B. My eyes had opened.

#### **XI. POST-HYPNOTIC SUGGESTION (TOUCHING LEFT ANKLE)**

You were next told that after you were awakened you would hear a tapping noise at which time you would reach down and touch your left ankle. You were further informed that you would do this but forget being told to do so. Would you estimate that an onlooker would have observed either that you reached down and touched your left ankle, or that you make any partial movement to do so?

A. I make at least an observable partial movement to touch my left ankle.

B. I did not make even a partial movement to touch my left ankle, which would have been observable.

**YOU MAY NOW REFER TO EARLIER PAGES - BUT PLEASE DO NOT WRITE ANYTHING FURTHER ON THEM**

#### **SECTION ON INNER, SUBJECTIVE EXPERIENCES**

(1) Regarding the suggestion of EXPERIENCING A FLY - how real was it to you? How vividly did you hear and feel it? Did you really believe at the time that it was there? Was there any doubt about its reality?

(2) Regarding the two suggestions of HAND LOWERING (LEFT) and HANDS MOVING TOGETHER - was it subjectively convincing each time that the effect was happening entirely by itself? Was there any feeling either time that you were helping it along?

(3) On the remainder of this page please describe any other of your inner, subjective experiences during the procedure which you feel to be of interest.

**THANK YOU FOR YOUR COOPERATION**



## M. Daily Diary after Meditation Training

Subject alias name and experimental number \_\_\_\_\_.

Date meditated : \_\_\_/\_\_\_/\_\_\_ Time meditated: \_\_\_\_\_ Time completed this form: \_\_\_\_\_

Type of meditation used:

1. Experience during meditation:

Why were you doing this activity? \_\_\_ I wanted to \_\_\_ I had to \_\_\_ I had nothing else to do

	<i>not at all</i>		<i>somewhat</i>		<i>quite</i>		<i>very</i>			
How well were you concentrating?	0	1	2	3	4	5	6	7	8	9
Was it hard to concentrate?	0	1	2	3	4	5	6	7	8	9
How self-conscious were you?	0	1	2	3	4	5	6	7	8	9
Did you feel good about yourself?	0	1	2	3	4	5	6	7	8	9
Were you in control of the situation?	0	1	2	3	4	5	6	7	8	9
Were you living up to your own expectations?	0	1	2	3	4	5	6	7	8	9
Were you living up to expectations of others?	0	1	2	3	4	5	6	7	8	9

Describe your best mood as you meditated:

	<i>very</i>		<i>quite</i>		<i>some</i>		<i>some</i>		<i>quite</i>		<i>very</i>		
alert	0	o	.	.	.	.	.	.	o	0			drowsy
happy	0	o	.	.	.	.	.	.	o	0			sad
irritable	0	o	.	.	.	.	.	.	o	0			cheerful
strong	0	o	.	.	.	.	.	.	o	0			weak
active	0	o	.	.	.	.	.	.	o	0			passive
lonely	0	o	.	.	.	.	.	.	o	0			sociable
ashamed	0	o	.	.	.	.	.	.	o	0			proud
involved	0	o	.	.	.	.	.	.	o	0			detached
excited	0	o	.	.	.	.	.	.	o	0			bored
closed	0	o	.	.	.	.	.	.	o	0			open
clear	0	o	.	.	.	.	.	.	o	0			confused
tense	0	o	.	.	.	.	.	.	o	0			relaxed
competitive	0	o	.	.	.	.	.	.	o	0			cooperative

Indicate how you felt about your meditation:

Indicate how you felt about your organization.										
	low								high	
Challenges of the meditation	0	1	2	3	4	5	6	7	8	9
Your skills in the activity	0	1	2	3	4	5	6	7	8	9
	not at all								very much	
Was this activity important to you?	0	1	2	3	4	5	6	7	8	9
Was this activity important to others?	0	1	2	3	4	5	6	7	8	9
Were you succeeding at what you were doing?	0	1	2	3	4	5	6	7	8	9
Do you wish you had been doing something else?	0	1	2	3	4	5	6	7	8	9
Were you satisfied with how you were doing?	0	1	2	3	4	5	6	7	8	9
How important was this activity in relation to your overall goals?	0	1	2	3	4	5	6	7	8	9

2. Please fill in the appropriate number for the amount of times you practiced each particular behavior in the past 24 hours. For example, if you had five cigarettes, put "5".

- \_\_\_ Saw a movie
- \_\_\_ Went swimming
- \_\_\_ Remembered a dream
- \_\_\_ Had an alcoholic drink
- \_\_\_ Spoke with a friend
- \_\_\_ Had a cigarette
- \_\_\_ Forgot something
- \_\_\_ Exercised
- \_\_\_ Went to work
- \_\_\_ Went to class
- \_\_\_ Made a purchase

## REFERENCES

- Albert, I., & McNeece, B. (1974). The reported sleep characteristics of meditators and non-meditators. Bulletin of the Psychonomic Society, 3, 73-74.
- Allen, T.W. (1988). The cognitive basis of peak performance: a classroom intervention. Journal of Counseling and Development, 67, 202-204.
- Amoateng, A., & Bahr, S. (1986). Religion, family and adolescent drug use. Sociological Perspectives, 29(1), 53-76.
- Anderson, J., & Van Atta, D. (1989, June 8). The drug war's imbalance of power. The Washington Post, p. C15.
- Ballou, D. (1974, May 6). Transcendental meditation research at Stillwater State Prison. Congressional Record, 120, 62.
- Barnes, C., & Olson, J. (1977). Usage patterns of non-drug alternatives in adolescence. Journal of Drug Education, 7, 359-368.
- Benson, H. (1975). The relaxation response. New York: Morrow.
- Benson, H., & Wallace, R.K. (1972). Decreased drug abuse with Transcendental Meditation; a study of 1,862 subjects. In C. Zarafanetis (Ed.), Drug Abuse: Proceedings of the International Conference (pp. 225-262). Philadelphia: Lea and Febiser.
- Blau, G.M., Gillespie, J.F., Felner, R.D., & Evans, E.G. (1988). Predisposition to drug use in rural adolescents: Preliminary relationships and methodological considerations. Journal of Drug Education, 18, 13-22.
- Bradley, B., & McCann, T. (1981). Autonomic responses to stress and the effect of progressive relaxation, and the experience of relief. Biofeedback and Self Regulation, 6, 235-251.
- Brautigam, E. (1977). Effects of the transcendental meditation program on drug abusers: A prospective study. In D.W. Orme-Johnson & F.T. Farrow (Eds.), Scientific Research on the Transcendental Meditation Program: Collected Papers (Vol. 1). Livingston Manor, NY: MIU Press.
- Bullock, C., McGuire, R., & Barch, E. (1984). Perceived research needs of therapeutic recreators. Therapeutic Recreation Journal, 18(3), 17-21.



- Cahalan, D., Cisin, I., & Crossley, H. (1969). American drinking practices: A national study of drinking behavior and patterns. New Brunswick, NJ: Rutgers Center of Alcohol Studies (Monograph No. 6).
- Cahalan, D., & Room, R. (1974). Problem drinking among American men. New Brunswick, NJ: Rutgers Center of Alcohol Studies (Monograph No. 7).
- Carlson, R. (1984). What's social about social psychology? Where's the person in personality research? Journal of Personality and Social Psychology, 47, 1304-1309.
- Carrington, P. (1987). Managing meditation in clinical practice. In M.A. West (Ed.), The psychology of meditation (pp. 150-172). Oxford: Clarendon.
- Carrington, P., & Effron, H. (1979, June 19). Physicians apply meditation-report physiological benefits. Medical Tribune and Medical News, p. 43.
- Cohen, A.Y. (1972). The journey beyond trips: alternatives to drugs. In D.E. Smith & G.R. Gay (Eds.), Its so good, don't even try it once: Heroin in perspective (pp. 186-197). Englewood Cliffs, NJ: Prentice-Hall.
- Cook, R., Lawrence, H., Morse, C., & Rowhl, J. (1984). An evaluation of the alternatives approach to drug abuse prevention. The International Journal of the Addictions, 19, 796-787.
- Corby, J., Roth, W., Zarcone, & V., Kopell, B. (1978). Psychophysiological correlates of the practice of Tantric yoga meditation. Archives of General Psychiatry, 35, 571-577.
- Csikszentmihalyi, M. (1975) . Beyond boredom and anxiety. San Francisco: Jossey-Bass.
- Csikszentmihalyi, M., & Csikszentmihalyi, I.S. (Eds.) (1988). Optimal experience: Psychological studies of flow in consciousness. Cambridge: Cambridge University Press.
- Csikszentmihalyi, M., & Larson, R. (1987). Validity and reliability of the experience-sampling method. The Journal of Nervous and Mental Disease, 175, 526-536.
- Deci, E., & Ryan, R.M. (1987). The support of autonomy and the control of behavior. Journal of Personality and Social Psychology, 53, 1024-1037.
- Delmonte, M. (1984). Factors influencing the regularity of meditation practice in a clinical population. British Journal of Medical Psychology, 57, 275-278.



- Delmonte, M. (1985). The effects of meditation on drug usage: A literature review. Gedrag Tijdschrift voor Psychologie, 13(2), 36-48.
- Delmonte, M. (1987). Personality and meditation. In M.A. West (Ed.), The psychology of meditation (pp. 118-135). Oxford: Clarendon.
- Delmonte, M. (1988). Personality correlates of meditation practice frequency and dropout an outpatient population. Journal of Behavioral Medicine, 11, 593-597.
- Dhanaraj, V.H. (1974). Influence of Transcendental Meditation and hatha yoga on drug abuse. In D. Kanallekos and J. Lukas (Eds.), The Psychobiology of Transcendental Meditation. San Fransico: Benjamin.
- Dillbeck, M. (1985). Longitudinal effects on the transcendental meditation and TM-Sidhi program on cognitive ability and cognitive style. Perceptual and Motor Skills, 62, 731-738.
- Dishman, R.K. (1985) . Medical psychology in exercise and sport. Medical Clinician of North America, 69, 123-143.
- Ellis, M. J. (1973) . Why people play. Englewood Cliffs, NJ: Prentice-Hall.
- Ellis, G. D., & Witt, P.A. (1983) . Facilitating flow through therapeutic recreation services. Therapeutic Recreation Journal, 17 (2), 6-15.
- English, J., & English, E. (1958) . A comprehensive dictionary of psychological and psychoanalytical terms. New York: David McKay.
- Faschingbauer, R., & Newark, C. (1978). Short forms of MMPI. Lexington, MA: Lexington Books.
- Francis, T. (1991). Revising therapeutic recreation for substance misuse: Incorporating flow technology in alternatives treatment. Therapeutic Recreation Journal, 23(2), 46-53.
- Freeman, M., Larson, R., & Csikszentmihalyi, M. (1986). Immediate experience and its recollection. Merrill Palmer Quarterly, 32, 167-185.
- Friedman, A. (1990). Psychological assessment with the MMPI. Hillsdale, NJ: Lawrence Erlbaum Associates.

- Ganguli, H.G. (1985). Meditation subculture and drug use. Human Relations, 38, 953-962.
- Garvin, R., Alcorn, J., & Faulkner, K. (1990). Behavioral strategies for alcohol abuse prevention with high-risk college males. Journal of Alcohol and Drug Education, 36, 23-34.
- Giannino, S., Graif, R., & , M. (1979). Well-being and the perceived balance between opportunities and capabilities. Paper presented at the 87th Convention of the American Psychiatric Association, New York, NY.
- Girdano, D., Everly, G., & Dusek, D. (1989). Controlling stress and tension. Englewood Cliffs, NJ: Prentice-Hall.
- Glasser, W. (1976). Positive addiction. New York: Harper & Row.
- Gordon, R.D. (1985) . Dimensions of peak communication experiences: An exploratory study. Psychological Reports, 57, 824-826.
- Gottheil, E., Druley, K., Pashko, S., & Weinstein, S.P. (1987). Stress and addiction. New York: Brunner/Mazel.
- Greenfield, T. (1977) Individual differences and mystical experience in response to three forms of meditation. Dissertation Abstracts International, 11B, 5568-B, 764-8437.
- Hickenbottom, J., Bissonette, & O'Shea, R. (1987). Preventive medicine and college alcohol abuse. Journal of American College Health, 36(2), 5-31.
- Hollis, C. (1968). A history of the society of Jesus. London: Weiderfeld and Micolson.
- Hubbard, R.L., Marsden, M.E., Raskal, J.V., Harwood, H.J., Cavanaugh, E.R., & Ginzburg, H.M. (1989). Drug abuse treatment: A national study of effectiveness. Chapel Hill: University of North Carolina.
- Hunt, J., Barnette, L., & Branch, L. (1974). Relapse rates in addiction programs. Journal of Clinical Psychology, 27, 455-456.
- Iso-Ahola, S. E. (1988). Research in therapeutic recreation. Therapeutic Recreation Journal, 17, 23-33.
- Iso-Ahola, S.E. (1990). Motivation for leisure. In E.L. Jackson, & T.L. Burton (Eds.), Understanding leisure and recreation: Mapping the past, charting the future (pp. 245-320). State College, PA: Venture.



- Iso-Ahola, S.E., & Crowley, E.D. (1991). Adolescent substance abuse and leisure boredom. Journal of Leisure Research, 23, 260-271.
- Johnson, C., & Larson, R. (1982). Bulimia: An analysis of moods and behavior. Psychosomatic Medicine, 44, 341-351.
- Johnson, V. (1986). Intervention. Minneapolis: Johnson Institute.
- Julien, R.M. (1987). A primer of drug action. New York: W.H. Freeman.
- Kabat-Zinn, J., Lipworth, L., & Burney, R. (1985). The clinical use of mindfulness meditation for the self-regulation of chronic pain. Journal of Behavioral Medicine, 8, 183-190.
- Kincannon, J.C. (1968). Prediction of the standard MMPI scale scores from 71 items: The Mini Mult. Journal of Consulting and Clinical Psychology, 32, 319-325.
- Klajner, R., Harman, L., & Sobell, M. (1984). Treatment of substance abuse by relaxation training: A review of its rationale, efficacy and mechanisms. Addictive Behaviors, 9, 41-55.
- Kraft, D. (1988). The prevention and treatment of alcohol problems on a college campus. Journal of Alcohol and Drug Education, 34, 37-51.
- Krystal, S., & Zweben, J. (1988). The use of visualization as a means of integrating the spiritual dimension into treatment: A practical guide. Journal of Substance Abuse Treatment, 5, 229-238.
- Lawrence, J., & Perry, C. (1982). Montreal norms for the Harvard Group Scale of Hypnotic Susceptibility: Form A. International Journal of Clinical and Experimental Hypnosis, 30, 167-176.
- LeFevre, J. (1988). Flow and the quality of experience during work and leisure. In M. Csikszentmihalyi & I.S. Csikszentmihalyi (Eds.), Optimal experience: Psychological studies of flow in consciousness (pp. 307-318). Cambridge: Cambridge University.
- Lettieri, D.J. (1985). Drug abuse: A review of explanations and models of explanation. Advances in Alcohol and Substance Abuse, 4 (3-4), 9-40.
- Mannell, R. (1983). Research methods in therapeutic recreation. Therapeutic Recreation Journal, 17, 9-16.



- Marcus, J.B. (1976). The Transcendental Meditation technique: Consciousness expansion as a rehabilitation technique. Journal of Psychedelic Drugs, 7, 169-179.
- Marlatt, G.A., Pagano, R., Rose, D., & Marques, J. (1984). Effect of meditation and relaxation training upon alcohol use in male social drinkers. In D. Shapiro & R. Walsh (Eds.), The science of meditation: Theory, research, and experience (pp. 105-120). New York: Aldine.
- Maslow, A. (1970). Psychology of human potential. New York: Van Adstrand.
- Massimini, C., & Carli, M. (1988). The systematic assessment of flow in daily experience. In T.M. Csikszentmihalyi & I.S. Csikszentmihalyi (Eds.), Optimal experience: Psychological studies of flow in consciousness (pp. 105-120). Cambridge: Cambridge University.
- Meyers, T., & Ramsey, D. (1975). A controlled experimental study of meditation. Proceedings of the Biofeedback Research Society, Sixth Annual Meeting.
- Moskowitz, J., Malvin, J., Schaiffer, G., & Schaps, E.. (1983). Evaluation of a junior high school primary prevention program. Addictive Behaviors, 8, 393-401.
- Murphy, T.J., Pagano, R.R., & Marlatt, G.A. (1986). Lifestyle modification with heavy alcohol drinkers: Effects of aerobic exercise and meditation. Addictive Behaviors, 11, 175-186.
- Nelson, J.E., Pearson, H.W., Sayers, M., & Glynn, T.J. (1982). Research issues 26: Guide to drug abuse research terminology. Washington, DC: Department of Health and Human Services.
- Nirenberg, T.D., & Maisto, S.A. (Eds.). (1987). Developments in the assessment and treatment of addictive behaviors. Norwood, NJ: Ablex.
- O'Brien, R., & Cohen, S. (1984). The encyclopedia of drug abuse. New York: Facts on File.
- O'Connell, D., & Patterson, H. (1989). A survey of current college alcohol abuse programs, attitudes, and training needs. Journal of Alcohol and Drug Education, 34, 61-69.
- O'Connell, J. (1988). Effectiveness of an alcohol relapse prevention program. Dissertation Abstracts, 48(9), 2245-A.

- Oldridge, N. (1982). Compliance and exercise in primary and secondary prevention of coronary heart disease: A review. Preventive Medicine, 11, 56-70.
- Ornstein, R. (1977). The psychology of consciousness. Englewood Cliffs, NJ: Prentice-Hall.
- Overall, J., & Gomez-Mont, F. (1974). MMPI-168 for psychiatric screening. Journal of Educational and Psychological Measurement, 34, 315-319.
- Pekala, R. (1987). The phenomenology of meditation. In M.A. West (Ed.), The psychology of meditation (pp. 59-80). Oxford: Clarendon.
- Peniston, E., & Kulkosky, P. (1989). Alpha-theta brainwave training and b-endorphin levels in alcoholics. Alcoholism: Clinical and Experimental Research, 13, 271-279.
- Perez-Ricon-G., & Ayala-Guizar, P. (1981). Extasis. Psychopatologia, 1, 65-70.
- Peri, M.G. (1985). Self-change strategies for the control of drinking, obesity, and problem drinking. In S. Shiffman & T.A. Wills (Eds.), Coping and substance use (pp. 234-256). New York: Academic.
- Privette, G., & Landsman, T. (1983). Factor analysis of peak performance: The full use of potential. Journal of Personality and Social Psychology, 44, 195-200.
- Reser, J.P., & Scherl, L.M. (1988). Clear and unambiguous feedback: A transactional and motivation analysis of environmental challenge and self-encounter. Journal of Environmental Psychology, 8, 269-286.
- Reynolds, R., & O'Morrow, G. (1985). Problems, issues and concepts in therapeutic recreation. Englewood Cliffs, NJ: Prentice-Hall.
- Rice, D., Kelmoni, S., Miller, L., & Duameyev, S. (Eds.). (1990). Economic costs of alcohol and drug abuse and mental illness: 1985. Rockville, MD: National Clearinghouse for Alcohol and Drug Information (DHHS Publication No. ADM 90-1694).
- Rivinus, T. (1987). Alcohol and drug abuse in college students. Journal of College Student Psychotherapy, 1, 5-31.
- Rohsenow, D., Smith, R., & Johnson, S. (1985). Stress management training as a prevention program for heavy social drinkers: Cognitions, affect, drinking, and individual differences. Addictive Behaviors, 10, 45-54.



- Rotter, J. (1966). Generalized expectancies for internal versus external control reinforcement. Psychological Monographs, 80(1, Whole No. 609).
- Sato, I. (1988). Bosozoku: flow in Japanese Motorcycle gangs. In T.M.Csikszentmihalyi, & I.S. Csikszentmihalyi, (Eds.), Optimal experience: Psychological studies of flow in consciousness (pp. 92-117). Cambridge: Cambridge University.
- Shafii, M. (1975). Meditation and the prevention of alcohol abuse. American Journal of Psychiatry, 132, 942-945.
- Shafii, M., Lavelly, R., & Jaffe, R. (1974). Meditation and marijuana. American Journal of Psychiatry, 131, 60-63.
- Shapiro, D. (1982). Overview: Clinical and physiological comparison of meditation with other self-control strategies. American Journal of Psychiatry, 139, 267-274.
- Shapiro, D. (1987). Implications of psychotherapy research for the study of meditation. In M.A. West (Ed.), The psychology of meditation (pp. 173-190). Oxford: Clarendon.
- Shaw, S. (1985). The meaning of leisure in everyday life. Leisure Sciences, 7, 1-24.
- Shiffman, P., Peak, L., Maltese, J., Rapkin, D., & Jarvik, M.E. (1985). Preventing relapse in ex-smokers. In G.A. Marlatt & J.R. Gordon (Eds.), Relapse prevention: Maintenance strategies in the treatment of addictive behaviors (pp. 97-108). New York: Guilford.
- Shor, R., & Orne, E. (1962). Harvard Group Scale of Hypnotic Susceptibility. Consulting Psychologists, 577 College Ave. Palo Alto, CA. 94036.
- Skirrow, J., & Sawka, E. (1987). Alcohol and drug abuse prevention strategies--An overview. Contemporary Drug Problems, 14, 147-241.
- Smith, J. (1978). Personality correlates of continuation and outcome in meditation and erect sitting control treatments. Journal of Consulting and Clinical Psychology, 44, 279-272.
- Smith, J. (1987). Meditation as psychotherapy: A new look at the evidence. In M.A. West (Ed.), The psychology of meditation (pp. 136-149). Oxford: Clarendon.
- Smith, R. (1967). Explorations in non-conformity. Journal of Social Psychology, 71, 133-150.



- Sobell, L., & Sobell, M. (1978). Validity of self-reports in three populations of alcoholics. Journal of Counseling and Clinical Psychology, 46, 901-907.
- Stein, J., Swisher, J.D., Hu, T., & McDonnell, N. (1984). Cost-effectiveness evaluation of a Channel One program. Journal of Drug Education, 14(3), 251-269.
- Steinglass, P., Bennett, L., Wolin, S., & Reiss, D. (1987). The alcoholic family. New York: Basic Books.
- Swisher, J.D., & Hu, T.W. (1983). Alternatives to drug abuse: Some are and some are not. In: T.J. Glynn, C.G. Leukefeld & J.P. Ludford (Eds.), Preventing adolescent drug abuse: Intervention strategies. Rockville, MD: National Institute on Drug Abuse Research Monograph 47 (DHHS Publication No. ADM 83-1280).
- Tart, C. (1989). Open mind, discriminating mind: Reflections on human possibilities. San Francisco: Harper.
- Thombs, D. (1990). Student opinion survey. College Park: University of Maryland Health Center.
- Thompson, C., & Wankel, L. (1980). The effects of perceived choice upon frequency of exercise behavior. Journal of Applied Social Psychology, 19, 436-443.
- U.S. Department of Education in Conjunction with U.S. Department of Health and Human Services. (1987). Report to the Congress and White House on the nature and effectiveness of federal, state and local drug prevention/education programs. (Report number. DOE Publication No. ADM 94-2235). Washington, DC: National Center for Health Statistics, U.S. Government Printing Office.
- Umoto, Jay M. (1982). Preventative intervention: A convergence of the church and community psychology. Journal of Psychology and Christianity, 1, 12-22.
- Vaillant, G.E. (1983). The natural history of alcoholism. Cambridge, MA: Harvard University.
- Wankel, L. (1985). Personal and situational factors affecting exercise involvement: The importance of enjoyment. Research Quarterly for Exercise and Sport, 56, 275-282.
- Warrenburg, S., & Pagano, R. (1982-83). Meditation and hemispheric specialization: Absorbed attention in long-term adherence. Imagination, Cognition and Personality, 2, 211-229.

- Weitzeckoffer, T., & Higgard, H. (1959). Stanford hypnotic susceptibility scale form A & B. Palo Alto, CA: Consulting Psychologists Press.
- Weller, R.A., & Halikas, J.A. (1983). Change in effects from marijuana: A five to six year study. Journal of Clinical Psychology, 43, 362-365.
- Wells, A. (1988). Variations in self-esteem in the daily life of mothers. In T.M. Csikszentmihalyi & I.S. Csikszentmihalyi, (Eds.), Optimal experience: Psychological studies of flow in consciousness (pp. 212-237). Cambridge: Cambridge University.
- West, M. (1987). The psychology of meditation. Oxford: Clarendon.
- Winer, B. (1972). Statistical principles and experimental design. Second Edition. New York, NY: McGraw-Hill, p. 398.
- Winquist, Thomas. (1976). The effects of the regular practice of Transcendental Meditation on students involved in the regular use of hallucinogenic and hard drugs. Livingston Manor, NY: MIU Press.
- Zuckerman, M. (1986). Sensation seeking and the endogenous deficit theory of drug abuse. Rockville, MD: National Institute on Drug Abuse Research Monograph 87 (DHHS Publication No. ADM 83-1351).
- Zuckerman, M., & Neeb, M. (1980). Demographic influences in sensation seeking and expressions of sensation seeking in religion, smoking and driving habits. Personality Individual Differences, 1, 197-206.
- Zuroff, D., & Schwartz, J. (1978). Effects of transcendental meditation and muscle relaxation on trait anxiety, maladjustment, locus of control, and drug use. Journal of Consulting and Clinical Psychology, 46, 26-37.