The material below provides five table summaries of Meditation Research in the following areas: (from Meditation self-regulation Strategy and Altered States of Consciousness. Figure Two suggests how those areas of research may be linked to the five step model of meditation research

Table One. Studies on Fears and Phobia, Stress, and Tension Management

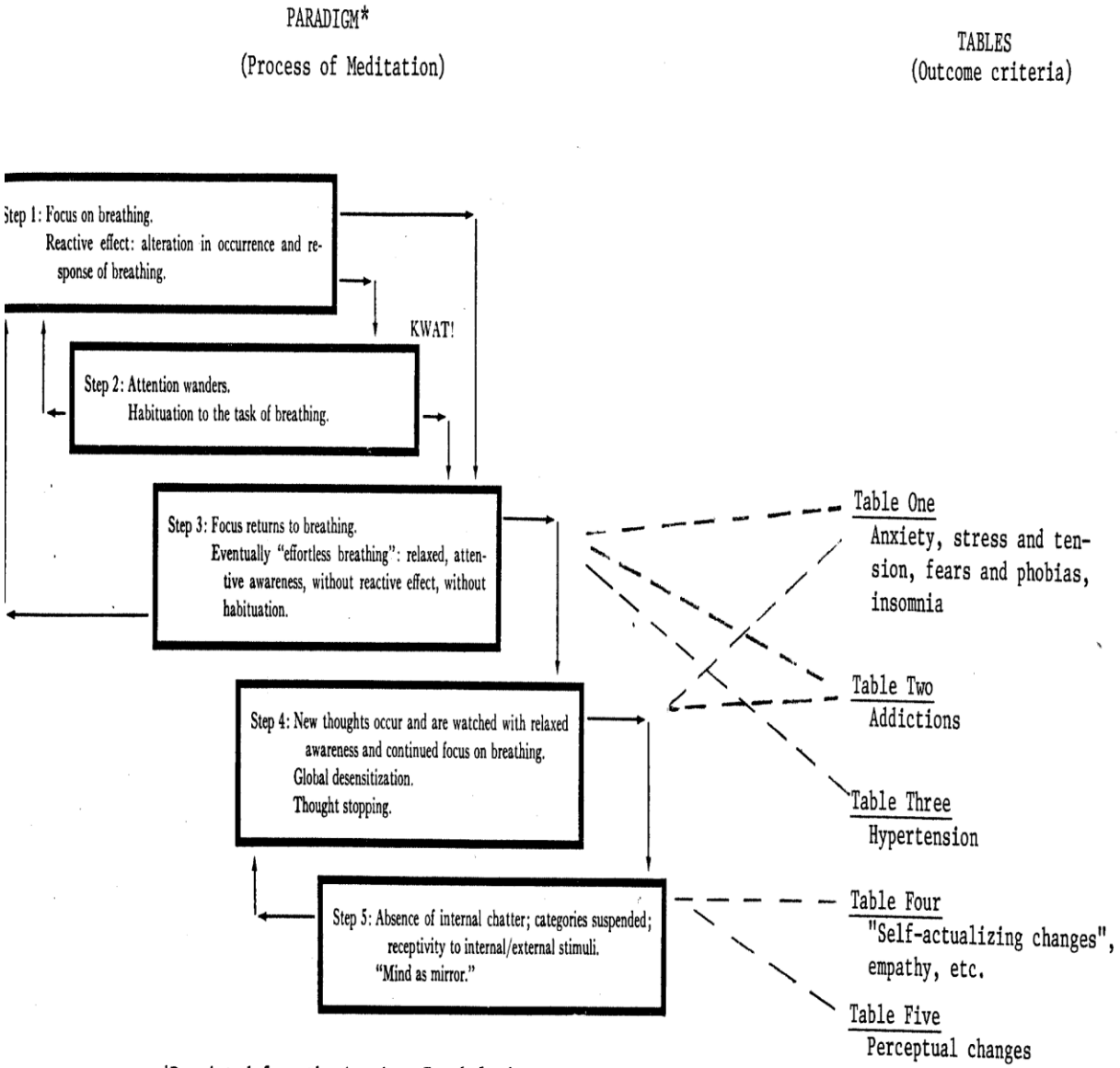
Table Two: Studies of Addictions

Table Three: Studies of Hypertension

Table Four: Subjective and other changes within and following meditation

Table Five: Studies on Attention and Perception

Figure Two: Possible Relationship Between the Different Steps of Meditation and Subsequent Behavioral and Attitude Changes



*Reprinted from the American Psychologist, Shapiro and Zifferblatt, 1976, p. 521

Table 1. Studies on Fears and Phobias, Stress, and Tension Management

Investigator(s)	Clinical Problem	INDEPENDENT VARIABLE: S's (N; age; sex, prior experience)	INDEPENDENT VARIABLE: Type and Length of Treatment/Training	INDEPENDENT VARIABLE: Frequency of Therapist (E) Contact	DEPENDENT VARIABLE: Subjective Effects	DEPENDENT VARIABLE: Behavioral	DEPENDENT VARIABLE: Physiological	DEPENDENT VARIABLE: Overt, Concurrent (e.g., medical)	DEPENDENT VARIABLE: Follow-up	Type of Design, Quality of Control, Methodological Problems
Boudreau 1972	Case One: fear of enclosed places, examinations, elevators, being alone. Duration of problem: 5 years.	N=1, 18 yrs., male, not stated specifically: "adept at TM"	Systematic desensitization and massed desens. first (3 days x 3 hrs.); then since no improvement: Transcendental Mediation (one month). TM practiced both non-contingently and contingent upon imagining phobic scenes	Sys. dens. and massed desens. done with tape recorder	Self-reported tension decrease	Avoidance behavior had disappeared.	None	None	None	N=1 case report, an in-vivo assessment pre and post of fears would have been useful.
	Case Two: excessive perspiration. Duration of problem: 35 years.	N=1, 40 yrs., female, took summer course in Yoga	intervention #1. Relaxation practice w/paired anxiety/arousing imagery (6 months) provided partial symptom alleviation. Intervention #2: Yoga practice (3 mos. x ½ hr. daily) plus additional practice during tense moments.	Not stated	Not reported	None	None	Daily Perspiration: mild/excessive. Intervention #1: mild perspiration decreased from 12 hrs. to 5 hrs. on average; excessive from 3 to 1 hr. Intervention #2: excessive disappeared; mild is below 1 hr. per day.	6 months: perspiration maintained at below 1 hr. daily	N=1 case report, relative effects of relaxation and Yoga not clear. Operationalizing of mild and excessive prespiration good and follow-up admirable.
French and Tupin 1974	Case One: esophagitis. Duration of problem: 20 years.	N=1, 65 yrs., male, not stated	3 phases: (1) slowed breathing and (2) muscle relaxation followed by (3) focusing on pleasant images. (In this case for 10-15 min.)	Not stated	Self-reported decrease in pain and relief of sleep disturbance	None	None	None	Patient reported successful use of method for 6 months	N=1, within subj. case report, pre and post ratings of pain severity and sleep disturbance would have been useful.
	Case Two: severe pain due to bullet wounds, anxiety and depression during 3 mos. hospitalization, poor eating, weight loss.	N=1, 22 yrs., male, not stated	Same method as above (in this case, used for 30 min. according to patient self report)	Not stated	Self-report of improved ability to manage pain and sleep, also improvement in general mood and eating.	None	None	None	None	Same as above
	Case Three: widely disseminated oatcell carcinoma of the lung, sleep disturbance, pain, relief through narcotic use.	N=1, 53 yrs., male, not stated	Same method as above	Not stated	Found focusing technique "frightening and distressing", used only muscle relaxation, if pain controlled by relaxation, patient could sleep without use of hypnotic.	None	None	None	None	Same as above
	Case Four: referred for psychiatric sucs.; panic, neurotic fear of heart attack, used 120 mg. diazepam per day, severe sleep disturbance.	N=1, 50 yrs., male, not stated	Same method as above	Not stated	Used method to monitor heart beat and control fear of heart attack, however, fear resumed after other patient's died of myocardial infarction, patient returned to use of technique 10 min./daily for "relaxing"; no soporific effect.	None	None	None	None	Pre and post ratings of fear would have been useful.
	Case Five: hospitalized for chronic back pain.	N=1, 45 yrs., male, failed at hypnotic induction	Same method as above	Not stated	Method unsuccessful in inducing relaxation, subsequent surgery revealed herniated disc at l4-5.	None	None	None	None	Case report.
Vahia, et al 1972-1973	Psychoneurosis and psychosomatic disorders that failed to respond to conventional treatment.	Stage One: N=165 Stage Two: N=37 Stage Three: treatment: N=21, controls: N=18; age range for all S's 15-50 yrs., experience not stated	Nine year study. Stage One: psychophysiologic therapy based on concepts of Patanjali (yoga); (1) postures, (2) breathing exercises, (3) withdrawal from senses, (4) concentration on object, (5) identification with object) practiced one hr., 6 days/week for 6 weeks. Stage Two: treatment compared with controls receives similar pseudotreatment with "superficial" postures, breathing exercises, and no interpretation or insight for steps 3-5 practiced one hr. each weekday for 4-6 weeks.	Not stated	Stage One: blind clinical assessment at 3 and 6 weeks for target relief symptom (final) 70% of patients rated for anxiety depression, hysteria and bronchial asthma showed improvement. Stage Two: patients self-reported intrusive thoughts during treatment. Taylor's Anxiety Rating Scale given pretreatment, and at 3 and 6 weeks showed greater and consistent anxiety reduction for treatment group. MMPI and	Self-reported increase in work efficiency on the job and objective global improvement reported by patient's as friends, spouse, other relations, and colleagues.	None	Bronchial asthma assessed	None	Double blind used, stage two groups matched for age, sex, diagnosis and duration of illness. Same therapist used for total treatment and pseudotreatment introducing possible experimenter effect (Smith, 1975).

Investigator(s)	Clinical Problem	S's (N; age; sex, prior experience)	Type and Length of Treatment/Training	Frequency of Therapist (E) Contact	Subjective Effects	Behavioral	Physiological	Overt, Concurrent (e.g., medical)	Follow-up	Type of Design, Quality of Control, Methodological Problems
(Vahia et al., 1972-1973 continued)			both groups given placebo tablets, support and reassurance. Stage Three: treatment compared with controls using anxiolytic and antidepressant drugs (e.g. Amitriptyline and chlordiazepoxide).		Rorschach tests given pre- and post-treatment, 73% of S's in total therapy showed improvement of at least 50% on basis of clinical assessment; while 42% of S's in "pseudo-treatment" showed significant improvement. MMPI showed greater overall improvement for total therapy group. Those who showed greater ability to meditate to total therapy group displayed more clinical improvement than those who did not. Stage Three: pre-treatment, 3 and 6 week assessment with Taylor's Anxiety Rating Scale, Hamilton's Depression Rating Scale, and Bell's Social Adjustment Scale, treatments equally effective on depression rating; psychophysiologic therapy showed greater reduction than drug therapy on anxiety scale, and psychophysiologic therapy patients showed reduction on social adjustment scale.				
Girodo 1974	Patients diagnosed as "anxious," "neurotid," length of illness: 5-71 months.	N=9, 7 male, 2 female, ages 18-42 years, not stated	"TM like" meditation on mantric sound used 20 min., twice per day used for all patients; combined with imaginal flooding procedure and relaxation for 4 patients who failed to show anxiety decrement after 8 sessions with meditation alone (total length of treatment: 6-8 months)	Patients seen every 7-14 days	Anxiety-symptom questionnaire (administered every 2 weeks) showed reduction in anxiety symptomatology by 8th session of meditation, 4 patients found meditation unbeneficial, but experienced relief of symptoms with flooding. Note: later analysis showed difference in group successful with meditation treatment (mean group duration of symptoms--14.2 months and mean "cognitive" symptom severity of 9.5) and group successful with flooding (mean group duration of symptoms--44.2 months and mean "cognitive" symptom severity of 16.4)	None	Degrees of somatic symptoms reported in questionnaire	None	6 month mailed follow-up questionnaire	Patients as own controls, patients told to expect "calm relaxation", etc. from technique introducing expectation effect, no control group.
Shapiro 1976	Complaining of "free-floating anxiety."	N=1, female college student, no prior experience	(1) 2 weeks: monitoring of anxiety with counter; (2) weekend Zen workshop teaching anxiety contingent Zen breath meditation plus covert self modeling (3) 3 weeks with instructions to meditate 10 min., 2x per day, to continue anxiety monitoring and practice informal breath meditation when anxious	Therapist (E) did not contact patient during 3 week meditation period.	Significant decrease in feelings of anxiety during intervention phase (3 weeks) and positive self perception change on semantic differential	Wrist counter used as anxiety monitor	None	None	None	N=1 design, relative effect of formal vs. informal meditation in relief of anxiety not clear, also possible reactive effect from initial self monitoring.
Smith 1976	Anxiety (Isolating effect of TM from expectation of relief and daily sitting.)	Exp. 1: N=139, college students, mean age 22 yrs., 70 male, 69 female, no prior meditation experience	Exp. 1: 1) Pretreatment: Elaborate placebo procedure with control treatment. Rationale given: Assessment included STAI A-Trait Inventory, Epstein-Fenz Manifest Anxiety Scale, and other supplementary measures including test of skin conductance reactivity. 2) Random assignment of S's to: 1) Standard TM training (N=49) 2) Control treatment called (PSI) "Periodic Somatic Inactivity" (sitting, eyes closed) (N=51) 3) No treatment - (waiting list) (N=39)	Exp. 1: Placebo treatment matched with TM procedure for similar amount of therapist contact and treatment credibility.	Subjective Exp. 1: TM and PSI groups did not differ significantly on post-test STAI-A Trait Scale (trait anxiety) scores; symptoms of striated muscle tension and autonomic arousal (Epstein-Fenz Manifest anxiety scale). Both TM and PSI post-test means significantly lower than No Treatment on all dep. var.	None	None	None	Exp. 1: No treatment S's post-tested at 3.5 mos.; TM and PSI S's post-tested at 6 mos., including assessment on drug use, and subjective reponses to treatment.	Useful study is beginning to isolate aspects of treatment variance.
		Exp. 2: N=54, college students, mean age 21.5 yrs., 27 male, 27 female.	Exp. 2: 1) No treatment controls, Exp. 1 (N=24) and others (N=30) given similar pretreatment assessment (cf. Exp. 1) placebo procedure 2) Random assignt. of S's to: 1) TM-like meditation called "Cortically Mediated Stabilization" 2) "Anti-meditation" exercise involving sitting with eyes closed, actively generating pos. thoughts	Exp. 2: Both treatments taught in similar fashion by experimentor with elaborate treatment rationales given.	Exp. 2: Groups did not differ significantly on dep. var. measures. T-test of within group differences reveal significant impact, on STAI-A Trait and symptoms of autonomic arousal for both groups.				Exp. 2: Same post-tests (Exp. 1) given at 11 weeks.	

Table 1. Studies on Fears and Phobias, Stress, and Tension Management *(cont'd.)*

		DEPENDENT VARIABLE			INDEPENDENT VARIABLE					
Investigator(s)	Clinical Problem	S's (N, age, sex, prior experience)	Type and Length of Treatment/Training	Frequency of Therapist (E) Contact	Subjective Effects	Behavioral	Physiological	Overt, Concurrent (e.g., medical)	Follow-up	Type of Design, Quality of Control, Methodological Problems
Goleman and Schwartz 1976	Ability to reduce stress in lab situation in response to stressful film.	Group One: N=30, avg. age approx. 25 yrs., more than 2 years TM experience Group Two: N=30, avg. age approx. 23 yrs., non-meditators interested in TM or Yoga. Note: Difference in "life-style" found; meditators reported reduced usage of hot and illicit drugs, alcohol, cigarettes and coffee, and dietary changes (e.g., less meat and candy).	Experimental Procedure - Note: S's assigned serially to 1 of 3 experimental conditions 1) 4 min. baseline 2) 20 min. treatment - 3 conditions a) Meditation: eyes closed (not using mantra) b) Relaxation: eyes open c) Relaxation: eyes closed 3) 5 min. rest 4) 12 min. exposure to stressful film		Pre and post treatment testing on State-Trait Anxiety Inventory A State Form (Spielberger, 1970) showed meditators reported less state and trait anxiety before and after treatment. Affective Adjective Checklist (Zuckerman, 1960) showed meditators reported feeling more positive upon entering lab and throughout treatment. Activity Preference questionnaire (Lykken & Katzenmeyer, 1960) administered post treatment found S's in meditation condition were less anxiety prone after leaving lab though no between group differences. Post treatment testing on Eysenck Personality Inventory showed meditators significantly less neurotic and more stable than non-meditators.	None	Physiological Meditators heart rate less than controls during treatment, increase heart rate more in response to anticipation of stress or impact, then recover more quickly post impact. On phasic skin conductance—all groups decrease equally in response frequency during treatment; meditators increase more in anticipatory minute prior to stressor impact and decrease more during post impact minute. Meditators compared to controls had higher skin conductance response freq. peaks and lower troughs.	None	None	Treatment conditions randomized and controlled; eyes open/closed factor. "Life-style" differences between groups suggest importance of other factors besides meditation in stress response.
Linden 1973	Test anxiety, field independence, and reading ability.	N=15 male and 15 female randomly assigned to each treatment condition. S's drawn from upper half (in reading ability) of third grade classes of school in disadvantaged urban areas.	Group One: Taught Zen breath meditation (Maupin, 1965) and visual fixation task (Dreikman, 1963); practiced 2x per week x 13 weeks for 20-25 min. Group Two: Given guidance counseling focusing on improving study skills; met 45 min. per week for 18 weeks in 3 groups of 10 S's. Controls: Controlled for by guidance condition		Pre and Post Treatment Test Results: Meditating group showed gain in field independence (Children's Embedded Figures Test) and decrease in test anxiety (Test Anxiety Scale for Children over controls. There was no effect on reading achievement.	Never	None	None	Follow-up to be reported.	Well designed study; between groups design.
Lazar, Farwell and Farrow 1977	Anxiety	Group A: N=12, 7 male, 5 female, mean age 23.66 yrs., 4 weeks meditation experience. Group B: N=11, 5 male, 6 female, mean age 24.10. prospective meditators.	Standard TM training	Same as above	IPAT anxiety scale questionnaire administered pre and post—(after 2 weeks) meditation instruction found mean group average reduction from 80th to 66th pop. percentile (Group B). Mean postest score of Group A (50th percentile) was significantly lower than pretest score of Group B and insignificantly different from their postest score.	None	None	None	None reported	Employed recurrent Institutional Design (Campbell & Stanley, 1963).
Woolfolk et al., 1976	Chronic insomnia	N=24, mean age approx. 44.3 yrs., 6 male, 18 female. Avg. duration of trouble with insomnia -- 14.1 yrs.	All S's suspended sleep medication Group One: N=8, Taught meditation technique involving immobility, closed eyes and a passive focus on breathing. Breathing focus shifted (session 2) to mantra and then, to focus on a specific image (session 3). Group Two: N=8, Taught in 4 weekly 1 hr. sessions in groups S's instructed to practice 30 min./2x daily at home. Group Three: Waiting list controls, asked to keep records of sleep patterns for 4 more weeks with promise of treatment at end of experiment	4 wks. x 1 hr. treatment	S's retrospective rating initial belief in potential effectiveness of treatments revealed no significant differences in treatment groups. College students asked to rate credibility of treatment procedures and rationale on same scale showed no significant differences between treatments.	Behavioral Treatments reported on— (1) Latency of Sleep Onset: Means (in minutes) Pretest / Post-test / Follow-up Meditation 74.08 / 34.19 / 24.51 Progressive Relaxation 65.01 / 29.20 / 26.73 Control 67.21 / 66.61 / -- Treatments equally effective. Both meditation and Progressive Relaxation groups showed significant improvement over pretreatment, while pretreatment and follow-up means for control group did not differ. (2) Rated Difficulty of Falling Asleep (10 -- extremely difficult) Pretest / Post-test / Follow-up Meditation 5.92 / 2.91 / 2.94 Progressive Relaxation 6.35 / 3.48 / 3.28 Control 5.38 / 5.79 / --		None	6 month in form of 1 week of daily sleep records.	Techniques called "self-control" skills protecting against meditation placebo effect. Excellent study.
Tupele et al., 1971	Isachemic Heart disease Group One: all but 2 patients with history of myocardial infarct. Period from infarction to time of study ranged from 1 to 10 yrs., avg. 3.9 yrs. no relief from antianginal drugs. Group Two: recent myocardial infarct.	Group One: N=23, avg. age= 48.5 yrs., male, "all of high economic class with sedentary habits except 1 farmer." Group Two: N=21, avg. age=32.4 yrs., 19 male, 2 female, "all except 1 belonged to a sedentary occupation."	11 Hatha Yogic positions (asana) practiced until patient was symptom free (e.g., stable heart rate, and blood pressure, and absence of complications of E.C.G.) Positions practiced daily.	Not stated specifically	Group One: Patients who performed exercises regularly expressed "feeling of physical well-being" and ability to work without fatigue. Group Two: Similar subjective feelings reported. Ambulation achieved during 2nd week in 10 cases and 3rd week in 10 cases. Rehabilitation effected during 5th week in 8 cases and before 9th week in others	None	Physiological Group Two: 150 observations made before & after exercise on heart rate, B.P. & respiration Behavioral Group One: Report states, "Patients unable to return to their full occupation, even after a year from infarct, could be rehabilitated after about a month of starting these exercises."	None	One month to 7 years	Patients in group one had been treated by one of experimenters in past; measure of "well-being" not reported, no controls, no statistical data reported.
Honsberger and Wilson 1973	Bronchial asthma	N=22, no prior experience with TM	Treatment Group: (N=11) Practiced Transcendental Meditation for 3 months Control Group: (N=11) read related material daily x 3 months	Not reported	74% of patients reported TM has benefitted their asthma; 69% thought it had helped their general health; 63% reported TM assisted their emotional life. None reported worsening on these parameters.	None Reported	Pulmonary function data obtained at baseline, 3, & 6 months. GSR showed 79% of patients effectively meditated. 94% of patients had improved airway resistance after TM in comparison to control values.	Physicians asked to compare pre and post treatment periods. Reported 55% of patients better with TM, 27% worse. No large changes in medication but severity of symptoms reduced in TM group (according to daily diaries kept).	At 6 months 80% of patients still meditating, only 60% thought it was helping their asthma	Parameters of "general health" and emotional assistance from TM, vague.

Table two: Studies of Addictions

TABLE TWO: STUDIES ON ADDICTIONS: DRUGS/CIGARETTES/ALCOHOL

Investigator(s)	Clinical Problem	INDEPENDENT VARIABLE: S's (N; age, sex, prior experience)	INDEPENDENT VARIABLE: Type and Length of Treatment/Training	INDEPENDENT VARIABLE: Frequency of Therapist (E) Contact	DEPENDENT VARIABLE: Subjective Effects (unless otherwise noted)	Follow-up	Type of Design, Quality of Controls, Methodological Problems
Benson, 1969[76]	Drug abuse	N=20, male, age 21-38	Standard TM training	None; study done by retrospective survey	19 claimed to have stopped drug abuse ranging from marijuana to LSD, heroin, amphetamines, and barbiturates. S's reported drug induced feelings became "extremely distasteful" compared with those during TM.	None reported	No control group; subject self selection bias: subject were only those who had continued to meditate more than 3 months; and were motivated to attend a one-month training session; no concurrent validity; retrospective questionnaire.
Benson and Wallace, 1971[77]	Drug abuse, alcohol and cigarette consumption.	N=1950 (original sample) N=1862 (final no. of respondents), 90% between 19-23 yrs., 1080 men, 781 women. Avg. experience: 20 months minimum: 3 months	Standard TM training, S's were attending one month TM teacher training course	Same as above	With three mos. TM, S's reported marked decrease in abuse of all categories of drugs (marijuana, LSD, narcotics, amphetamines, tobacco and liquor). With continued TM, S's report progressive decrease of drug use. After 21 mos. most S's completely stopped using drugs. In 6-mo. period pre-TM 80% of S's reported marijuana use, 28% heavy use (once a day or more). After 6 mos. TM, 37% reported marijuana use, 6.8% heavy use. Marked decreases in LSD and narcotic abuse. Also S's reported stopping former drug-selling and discouraging other from drug use, after TM. Most S's felt TM important in curbing their drug abuse.	None reported	Same as above
Brautigam[81]	Drug abuse, pathological behavior and anxiety	N=20; 6 light drug users (e.g. hashish) and 4 heavy drug users (e.g. amphetamines, LSD, opiates) in each group; no prior meditation experience.	Group One: N=10, TM instruction 2 hrs. per day x 4 days. Checking once a week for first month Group Two: N=10: controls group counseling 4 hrs. per week	Not stated specifically	Hashish use dropped from approx. 20 x/mo. to 3 x/mo. among experimental group and 18.2 x/mo. among controls. After 3 mo.: hard drug usage decreased among meditators, increased with controls. Reduction in pathological behaviors and anxiety self-reported by meditators. *Behavioral Data* Tension-restlessness, flaccidity, psychomotor retardation reported improved by outside observers, Ratings and S's self-estimate.	None reported	Possible expectation effect; S's informed at probable subjective benefits; effect of motivation. In experimental group, only 6 S's meditated regularly. Dependent variables lumped together: hashish, LSD, and opiates. These should be treated as separates. Other effects--e.g. "meeting a new group of non-drug using peers" may be part of treatment variance.
Shafii, Lavely, and Jaffe (1)[82]	Marijuana use	S's provided their own matched control N=90, S's placed in 5 groups according to length of TM practice (range from 1-39 mos.) N=125 (original sample) N=115 (final no. respondents)	Standard TM training	None; study done by retrospective survey	1) 92% of meditators (2yrs. or more exp.) reported decreased significantly marijuana use; 77% reported stopping of usage. 2) In above group, 69% reported stopping marijuana use during first 3 mos. post TM in contrast to 19% stoppage among controls. 3) In Group I (1-3 mos. TM) a 46% decrease and a 23% stoppage reported in marijuana use during first 3 mos. post TM instruction. Controls reported 15% stoppage. 4) In Groups II (4-6 mos. TM), III (7-12 mos. TM) and IV (13-24 mos. TM) reported significant decrease and stoppage marijuana use during first 3 mos. post TM instruction. 5) The longer group practiced meditation, the more they reported a decrease or discontinuation of marijuana use. 6) Mean frequency marijuana use per month for meditators pre TM was 7.3. The control group's mean was 3.6. Following TM, mean of the meditators dropped to 2.8 whereas the control group's mean stayed the same.	None reported	Control group does not control for possible variance of treatment due to S's motivation. Margin sane.
Shafii, Lavely, and Jaffe (2)[82]	Alcohol abuse	Same as above	Standard TM training	Same as above	No control S's reported discontinuation of beer and wine use. 40% of S's meditating for more than 2 yrs. reported discontinuation of wine and beer use within first 6 mos. After 25-34 mos. of meditation, 60% reported discontinuation, with 34% discontinuing hard liquor use. 6-20% of S reported discontinuation of beer and wine in first 3 mos. 11-40% " " " " " second 3 mos.	None reported	Control group picked by the meditators. This control group, however, does not control for possible variance of treatment due to S's motivation. Also, dependent variables gathered by retrospective questionnaire.
Lazar, Farwell, and Farrow[72]	Anxiety, drug abuse, cigarette smoking, and alcohol consumption.	Study Two: Group 1: N=24, 8 male, 16 female, mean age 25.29 yrs. (S.D.7.37) Controls Meditators Group 2: N=13, 9 male, 4 female, mean age 20.85 yrs. (S.D. 4.41) Group 3: N=9, 2 male, 7 female, mean age 29.11 yrs. (S.D. 10.75) Group 4: N=14, 6 male, 8 female, mean age 23.5 yrs. (S.D. 7.88)			Study Two: IPAT anxiety scale and questionnaire concerning drug abuse, cigarette and alcohol consumption. Group one controls administered a few days prior to TM instruction, and 4 weeks (group 2), eight weeks (group 3, or twelve weeks (group 4) after instruction. Showed progressive decreases in anxiety among meditators and use of drugs, cigarettes and alcohol; drug use showed initial rapid decrement then continuing gradual decline.		
Shapiro and Zifferblatt[ ]	Methadone addiction	N=2 Case One: 25 yrs., male no prior experience Case Two: 29 yrs., male no prior experience	Clients taught behavioral functional analysis to monitor drug abuse, covert behavioral rehearsal and formal Zen breath meditation. Practiced one month	Not stated specifically	*Overt, Concurrent* Case One: Drop in dosage from 30 milligrams methadone to complete detoxification Case Two: Drop in dosage from 40 milgms. methadone to complete detoxification. Concurrent validity random urinalysis to monitor drugs in blood system.	Case One: 2 yrs.; S's self-report free of all opioid use. Case Two: 6 mos. + 2 yrs. S's self-report: free of all opioid use	Within subj. design relative effects of varying treatments unclear.

Table 3. Studies on Hypertension

Investigator(s)	Clinical Problem	S's (N, age, sex, prior experience)	INDEPENDENT VARIABLE: Type and Length of Treatment/Training	Frequency of Therapist (E) Contact	DEPENDENT VARIABLE: Subjective Effects	DEPENDENT VARIABLE: Physiological (Note: BP measures given systolic/diastolic unless otherwise noted)	Follow-up	Type of Design, Quality of Controls, Methodological Problems
Benson and Wallace, 1972a	Hypertension	N=22, no prior experience	Standard TM training by Student's International Society—8½ hrs. S's instructed practice technique 2x20 min/daily.	Not stated	None reported	Found decreased resting systemic arterial blood pressure levels Mean BP levels prior to meditation—150±17/94±9mmHg (mean ± one S.D.) Mean BP levels post meditation—141±11/87±7mmHg (mean ± one S.D.)	4-63 weeks	N=1, S's as own control pre, during, and post meditation
Benson et al., 1974a	Borderline hypertension with S's not using anti-hypertensive drugs	N=22, avg. age approx. 43.1 ± 12.9 yr. (mean ± one S.D.) 10 male, 12 female, volunteers from introductory TM lecture group	Same as above	Not stated	None reported	Found decreased resting blood pressure levels Mean BP levels prior to meditation—146.5±13.7/61±6.96mmHg Mean BP levels post meditation—139.5±12.61/90.75± 8.76mmHg	Post meditation instruction measurement every 2-3 weeks x 25 weeks	N=1, S's as own control 6 weeks prior to meditaton instruction baseline measurement
Benson et al., 1974b	Hypertension with S's using anti-hypertensive drugs	N=14, avg. age approx. 53.3 yrs. (S.D. 9.9) 6 males, 8 females, no prior experience, volunteers from introductory TM lecture.	Same as above	Not stated	None reported	Found decreased resting blood pressure levels Mean BP levels prior to meditation—145.6±7.38/91.9± 11.9mmHg Mean BP levels post meditation—135.0±8.32/87.0±11.34mmHg S's diet and anti-hypertensive drug use (mean 1 one S.D.) monitored by questionnaire	Post instruction measurement 10 days x 20 weeks	1 x 6 weeks prior to meditation instruction measurements taken, study unbiased in regard to alterations in anthypertensive agents or significantly altered diet
Patel 1973, 1975a follow-up	Hypertension with S's using anti-hypertensive drugs. Duration of hypertension from 1-20 years (avg. 6.8 years) Symptomatology ± tiredness (14 patients), headache (13), dyspnoea on exertion (11), dizziness (a), irritability (8), chest pain (6), angina (2), palpitation (6), and nervousness and depression in (5).	Group One: N=20, avg. age 57.35 yrs., 9 males, 11 females Group Two: N=20, controls matched for age and sex	Patients instructed to practice Yoga, breath meditation, muscle relaxation, and concentration meditation on an idea, also biofeedback of GSR through audio signal of "relaxometer" given continuously. Patients also told pre and post session BP levels.	3x per week x 3 months for ½ hr. relaxation training	Report stated "patients responded favourably," criteria of subjective effects not stated.	1) Alteration in BP over 3 months of Relaxation Training "Pretrial" BP Treatment Group 159.1±15.9/100.1±12.8 Control Group 163.1±20.9/9.99±12.8 "End of trial" BP Treatment Group 138.7±16.0/85.9±8.7 Control Group 162.6±24.4/97.0±12.0 2) Follow-up Results End of trial arrival BP Treatment Group 144.6±11.0/86.0±5.74 Control Group 167.7±9.73/97.1±6.54 Final follow-up measured BP Treatment Group 144.4±9.83/86.7±3.33 Control Group 163.6±9.42/98.1±7.83 (12 month)/(9 month) with 42% drop in total drug requirement among patients. 5 patients ended use of drugs, of four patients who did not control BP one achieved control of migraine and stopped antidepressant drug therapy. BP respiration rates recorded and given to patient pre and post session, also biofeedback of GSR, given continuously during treatment	3, 6, 9 and 12 months	Variance of treatment effect attributable to Yoga, biofeedback and role of therapist not clear
Patel 1975b	Hypertension with S's using anti-hypertensive drugs	Phase One: (N=34) Group One: (treatment) N+17, mean age 59.5 yrs., 6 male, 11 female Group Two: (control) N+17, mean age 58.6 yrs., 7 male, 10 female Phase Two: former control group (2) given treatment	Treatment procedure (2 sessions per week x 6 weeks) 1) Educational discussion about hypertension, physiology of relaxation, etc. between doctor and patients. 2) Instruction in methodical (yogic) relaxation and slowed breathing 3) After mastery of step 2, "Transcendental meditation-like" technique taught. 4) Biofeedback (e.g., audio signal of GSR level) given continuously by "relaxometer" during steps 2 and 3. 5) S's urged to practice informal relaxation and meditation outside of treatment when tense (e.g., each patient had a red disc on his watch as a reminder to relax when he looked at the time.	Extensive doctor-patient interaction	None reported	1) BP before trial Treatment Group 167.5±23.6/99.6±9.3mmHg Control Group 168.9±20.0/100.6±11.4mmHg 2) Mean Final BP, Phase 1 Treatment Group 141.4/84.4mmHg Control Group 160.0/96.4mmHg 3) Mean BP Phase 2 Mean initial BP Treatment (formerly control) 176.6/104.3 Control (formerly treatment) 148.81/87.8 Mean final BP Treatment (formerly control) 148.6/89.3 Control (formerly treatment) 146.21/86.2	2 wks. x 3 months after phase one, then 2 month interval prior to phase two. Phase two: single used follow-up examination	Same criticism as above
Datey et al., 1969	Hypertension with chronic hypertensive (essential hypertension — 32 patients, renal — 12, arteriosclerotic — 3) Symptomatology: Giddiness (30 patients), headache (28), chest pain in 12 (angina 7), palpitation in 12, breathlessness on exertion in 10, exhaustion in 10, insomnia in 8, irritability and nervousness in 8.	N=47, avg. age 46 yrs., 37 male, 10 female Group One: N=10, not using antihypertensive drugs Group Two: N=22, BP well controlled with antihypertensive drugs. Group Three: N+15, BP inadequately controlled with antihypertensive drugs.	"Shavāsana" Yogic breathing concentration and muscle relaxation done 30 min. daily for approx. 30 weeks. EMG feedback of frontalis muscle tension used as check of muscle relaxation	Not stated specifically "experienced supervisor" checks exercising patients for correctness in breathing exercise.	Report states "patients experienced a sense of well-being after exercise. Improvement reported among almost all patients in somatic symptoms (e.g., headaches, giddiness, nervousness, irritability, and insomnia)	Decreases in avg. mean blood pressure Group One: 134mmHg to 107mmHg (reduction 27mmHg) Group Two: 102-100mmHg unchanged (since patient's BP well controlled by drugs, therapy aimed at reducing drug dosages; for 13 S's (59%), avg. drug requirement was reduced to 32% of original dosage, for 9 patients, dosage could not be reduced; however, 6 of these S's performed Yogic exercise irregularly. Group Three: 120mmHg to 110mmHg; drug requirement reduced to 29% of original in 6 patients (40%), dosage unchanged in 7 patients (of these, 2 were irregular and 2 could not perform exercise correctly), does had to be increased in 2 patients (regular with exercise). Essential (62.5%), Renal (42%), not statistically significant, arteriosclerotic (not favorable response)	to 40 weeks	Placebo tablets given S's not using anti-hypertensive drugs one month prior to treatment, data substantiating report of improvement in somatic symptoms needed, also follow-up needed.
Stone and DeLeo 1976	Mild or moderate hypertension (defined as mean arterial BP greater than 105mmHg during at least 50% of 14 pretreatment examination) with S's who had never received antihypertensive therapy	N=19. Group One (controls): N=5, avg. age 28, all male Group Two (treatment): N=14, avg. age 28, (±1 yrs.) (mean ± s.e.m.) Baseline BP for both groups similar	"Buddhist" meditation taught (e.g., counting breaths) in five 20 min. training sessions S's told to repeat technique 2x daily for 10-15 min.	Not stated specifically	None reported	Effect of Physiologic Relaxation on Arterial Blood Pressure (mean ± Standard error mean systolic/diastolic BP in mmHg) Group One (controls) Baseline—Supine 144±6/90±2 Upright 147±7/93±2 6 mos.—Supine 145±7/92±3 Upright 145±3/93±2 Group Two (treatment) Baseline—Supine 141±3/90±3 Upright 132±3/82±2 6 mos.—Supine 146±2/95±3 Upright 131±4/85±2 Found lowered mean (by 12mmHg) BP for treatment group over controls. Changes in dopamine betahydroxylase activity in blood plasma elevated, showed decrease among treatment group which correlated with BP reduction. Also reduction in furosemide-stimulated renin activity (PRA) uncorrelated with BP changes. No significant changes in blood volume	6 months	Effect of possible dietary salt restriction assessed by measuring urinary sodium excretion, controls nonrandomized with small N, reduction in adrenergic activity (DPH) may be statistically significant but not a physiologically important alteration.

TABLE FOUR: SUBJECTIVE AND OTHER CHANGES WITHIN AND FOLLOWING MEDITATION

Investigator(s)	Focus of Investigation	INDEPENDENT VARIABLE: S's (N; age; sex; prior experience)	INDEPENDENT VARIABLE: Type and Length of Treatment/Training	INDEPENDENT VARIABLE: Frequency of Therapist (E) Contact	DEPENDENT VARIABLE: Subjective Effects (unless otherwise noted)	Follow-up	Type of Design, Quality of Controls, Methodological Problems
Maupin[94]	Subjective experience during meditation	N=28, male; prior experience not stated.	Zen breath meditation; practiced for 45 min. each weekday for 2 weeks.	Not stated	Correlation found between subjective responses to meditation (e.g., depth of concentration) and adaptive regression as measured by Rorschach test (e.g., amount and degree of primary process thinking and visual imagery during free association). Subjective responses to meditation from post-session interviews scaled in 5 point categories by blind raters. Also attention measured by Digit span subtest of Wechsler-Bellvue Scale; concentration measured by continuous additions test; size-estimation task for scanning control; tolerance for unrealistic experience measured by Rorschach rate of alteration of reversible figures and amount of reported autokinetic movement.	None reported	Within subject design; S's served as own controls. Possible self selection in pool of S's noted by (E).
Deikman[95]	Exploration of mystical experiences; deautomatization of psychic structures	N=8 "normal adults in their 30's or 40's"; "most had a professional involvement in some phase of psychiatry"	Treatment: Concentration on external object (vase) + music, poetry and prose played on tape (15 X one min. selections). Session 1: 5 min. Session 2: 10 min. Session 3-12: 15 min. or more X 3 weeks. Combinations of taped materials varied. Four S's performed all 12 sessions; 4 S's performed sessions 12 + 13 only.	S's personally known to Experimenter.	Subjective experiences of altered states reported, including altered perception of vase, "more vivid" perception, loss of body boundary, merging with object. Word recognition test of taped material; S's able to recognize more words when not meditating.	None reported	Anecdotal study; effect of experimenter-subject interaction and S's apparent prior knowledge of connection between meditation and mysticism introduces extreme bias and expectation effects.
Seeman, Nidich and Banta[102]	"Self Actualization"	Group One: control N=20; 10 male, 10 female Group Two: meditation N=15; 8 male, 7 female Prior experience not stated	Standard Transcendental Meditation training: 30-60 min. initial instruction 3 days; verification + further instruction, then S's instructed to meditate 2 X daily for 15-20 min.	Not stated	Shostrom's Personality Orientation Inventory, 1966 (POI) tested 2 days prior to and 2 months post TM instruction showed meditators moved in positive "self actualizing" direction compared to controls.	None reported	Group selection and/or matching procedures not stated. Need behavioral measures of such items as spontaneity, capacity for intimate contact, tolerance for verbal agression, willingness to self disclose.
Nidich, Seeman and Dreskin[103]	"Self Actualization"	Group One: N=9 non-meditating controls Group Two: N=9 Meditation	Same as above	Not stated	Shostrom's POI measured pre and post (10 weeks) TM instruction showed meditators moved in direction of "self actualization." Controls showed no significant differences in testing.	None reported	Same as above
Stek and Bass[112]	Tested differences between those interested and not interested in meditation in "perceived locus of control" and "personal adjustment"	Group One: N=17, median age 20 yrs., 12 male, 5 female, attended free meditation lectures, paid TM initiation fee. Group Two: N=32, median age 18 yrs., 14 M, 20 F, attended 1 TM lecture. Group Three: N=27, median age 19 yrs., 12 M, 15 F, uninterested in meditation. Group Four: N=30, median age 19 yrs., 18 M, 12 F, controls.	Tests given pre-meditation training	Not stated	Administration of Rotter's IE Control of Reinforcement Scale (1966) and Shostrom's POI (time competence + internal support) found no significant difference between test scores for all 4 groups and common scores for college students	None reported	Study might indicate that initial group differences between meditators and non-meditators are insignificant; however, group differences may exist in willingness to change, etc.
Hjelle[73]	"Anxiety," "Locus of control" and "Self Actualization"	Group One: N=15, 7 M, 8 F, meditating experience =22.63 mo. Group Two: N=21, 11 M, 10 F, tested 1 week prior to receiving meditation instruction	Standard TM training	Not stated	Regular meditators (group one) scored significantly lower than beginners on Bendig's Anxiety Scale (1956) and Rotter's Internal-External Locus of Control Scale (1966) and significantly higher on 7 of 12 POI scales (Shostrom, 1966).	None reported	Possible demand characteristics in testing; study supports Seeman, Nidich & Banta.
Otis 1974[63]	Self concept change, improvement in physical and/or behavioral problems	Group One: (N=30) Transcendental Meditation Group Two: (N=15) Passive Controls; took pre and post tests. Group Three: Active Controls; A: sitting quietly 15-20 min/2 X daily; B: "meditative" treatment, repeating "I am a witness only" 15-20 min/ 2 X daily	Group One: standard TM training for 3 months. All S's: baseline physiological measurements for 3 months	Not stated	Psychological tests: Questionnaire on self-concept (Otis Descriptive Personality List) and checklist on variety of behavioral and physical problems (Otis Physical and Behavioral Inventory) found no overall differences between TM and pooled control S's. However, item analysis revealed TM S's claimed more specific benefits than passive controls. Interview conducted 3 months post-training indicated that specific benefit claims of active controls and TM S's did not differ. Author suggests that simply resting may account for benefits.	To 18 months	Treatment conditions not matched for expectation of relief.

Udupa et al.[110]	Performance, Intelligence, and Memory Quotient(s), Neuroticism, Mental Fatiguability and Psychological Health assessed. Plasma Acetycholine and Serum Cholinesterase monitored	N=12, avg. age 23.0 ±3.36 yrs., "from a uniform socioeconomic class"	Hatha Yoga exercises (done in group) for 1 hour daily X 6 months. Exercises involved graduated sequence of muscle coordination exercises, postures (asanas), breathing (pranayama) meditation, etc.	One hour daily X 6 months with trained Yoga instructor	Table I. Certain Psychological Changes Induced by the Practice of Yoga Observations | Test Used | Initial (baseline) | 3rd month | 6th month | Direction Performance quotient (PQ) | Alexander's Passalong Test | 93.15±12.50 | 102.6±16.40 | 108.2±14.70 | Increased significantly Intelligence quotient (IQ) | Koh's Block Design Test | 92.17±18.60 | 100.3± 6.40 | 106.2±16.70 | Memory quotient (MQ) | Wechsler Memory Scale | 89.75 ±9.15 | 97.3±13.20 | 100.8 ±9.60 | Increased significantly Neuroticism Index (MPI) | Mursley Personality Inventory | N | | 19.50 ±9.95 | 11.40±10.70 | 9.82 ±8.40 | Decreased E | | 27.10 ±5.60 | 28.40 ±6.80 | 26.54 ±8.40 | Decreased Q | | 2.66 ±5.53 | 1.00 ±2.19 | 2.58 ±5.57 | Mental fatiguability | Digit Cancellation Test | Time taken | | 3.52 ±0.68 | 3.31 ±0.90 | 3.03 ±0.41 | Lowered Mistake score | | 5.54 ±4.69 | 1.31 ±1.73 | 3.64 ±3.30 | Lowered Fatigue index | | 1.59 | 0.40 | 1.20 | Health Index | Cornell Medical Index | Physiological complaints | | 125 | 83 | 64 | Lowered Psychological complaints | | 67 | 31 | 30 | Lowered Note: Significant values in decreased complaints on Cornell Medical Index include gastrointestinal, psychoneurological, and respiratory complaints (physiological), and anxiety, tension, and inadequacy complaints (psychological). *Physiological Data* Table II. Certain Biochemical Responses to the Practice of Yoga Observations | Mean ±S.D. and comparison with initial | Initial (baseline) | 3rd month | 6 month Plasma Acetylcholine in ug/100 ml. | 161.7 ±149.3 | 101.1 ±34.3 | 58.7 ±18.05 -- | | t = 1.825 | t = 2.83 | | p < 0.1 | p < 0.01 Serum Cholinesterase in pH units/hour | 1.17 ±0.309 | 0.894 ±0.313 | 0.95 ±0.087 -- | | t = 2.177 | t = 2.095 | | p < 0.05 | p < 0.05 Note: Both show statistically significant decreases, also found increase in urinary excretion of testosterone and 17-hydroxy corticosteroid; increase in serum proteins and reduction of blood sugar. EEG showed more prominent alpha with less spikes.	None reported	Within subject design; S's served as own controls.
Shapiro (104)	Daily covert behavior and "Global" self perception	N=15, college students in class on "Zen Buddhism and Self Management"; no prior meditation experience	Experimental Group: (N=9) 1) 2 weeks behavioral observation on 9 variables 2) weekend Zen experience workshop 3) formal Zen breath meditation practiced 2 X daily, plus contingent informal breath meditation and continued behavioral observation for 3 weeks Control Group: (N=6) 1) 3 weeks behavioral observation 2) weekend Zen experience workshop	During intervention phase (weeks 3-5), experimenter had no contact with either group	Data from pre and post testing on Semantic Differential, Rotter's I-E Scale showed no significant group differences but moved in hypothesized (positive) direction. Stanford Hypnotic Susceptibility Scale (Form C, Group Variant) showed increase in susceptibility for experimental group and decrease for controls. *Behavioral Data* Self monitoring of frequency of behaviors with questionnaire (e.g., positive self-statements, negative self-statements, feelings of creativity, feelings of self control, feeling anxious, becoming angry, noting positive things in nature, relating to only part of a person, and not living in the moment). Combined index of behavioral self-observation data showed greater movement in a more favorable (hypothesized) direction for experimental group than controls.	None reported	Modified multiple time series design (c.f. Campbell & Stanley, 1963 pp 55-57). Positive direction looked at daily change as well as global pre/post. Weakness: need overt co-varying variables with daily self-reported change of feelings.
Lesh (98)	Counselors measured an empathy and openness to experience	All S's were college students taking counseling courses Group One: N=16; taught Zen breath meditation. Group Two: N=12; controls Group Three: N=11; group "definitely against" meditation exercise.	Group One: Zen breath meditation practiced 30 min./day X 4 weeks.	Meditation Instructions given by tape to avoid bias	Pre and Post Treatment Measures: 1) Increased empathy among meditating group on Affective Sensitivity Scale (ASS) responses to videotaped client situation. Both control groups did not show improvement in empathic ability. 2) No correlation found between ASS and blind ratings of subjective response to meditation (Maupin, 1965). 3) Positive correlation found between openness to experience (Experience Inquiry, Fitzgerald, 1966) and response to meditation. 4) Positive correlation between individual scores on openness to experience and ASS. 5) Correlation found between high scores on ASS and "self-actualization" measure (Shostrom's POI).	None reported	Between subjects design, possible selection bias.
Leung (111)	Counselors measured an empathic ability and ability to respond selectively to clients (e.g., hearing of "notice authority" statements)	N=57, avg. age 22.75 yrs. 22 male, 45 female; prior experience not stated. Group E-1: Deep breathing training first + external concentration training. Group E-2: External concentration training first + deep breathing training. (E-1 + E-2 N=37) Group 3: N=20; controls; given no training.	Training for groups 1 + 2: 7 hrs training in meditative deep breathing. 7 hrs training in external concentration on a specific verbal stimuli on tape. Social verbal reinforcement given S's for correct performance of exercises.	Not stated	Criterion Measures: Group E-1 - Measured S's predictive analytical empathy in response to videotaped sequences of acted client situations (40 min. total). Analytic empathy measurement taken after 10 minute portions of videotape. Group E-2 - Indicated to E number of "notice authority" statements made by actor "clients" in videotape. In second part of training the criterion measures were reversed. Both (E) groups showed more accurate analytic empathy and heard more notice authority statements by clients than controls; E-1 showed more predictive ability on self-other attitude scale and heard more notice authority statements than E-2.	None reported	Post-test only control group design.

Table 5. Studies on Attention and Perception

Investigator(s)	Clinical Problem	INDEPENDENT VARIABLE: S's (N: age; sex; prior experience)	INDEPENDENT VARIABLE: Type and Length of Treatment/Training	Frequency of Therapist (E) Contact	DEPENDENT VARIABLE: Subjective Effects	DEPENDENT VARIABLE: Behavioral, Physiological, Overt; Concurrent Data	Type of Design; Quality of Controls; Methodological Problems
Van Nuys 1973	Meditation, attention and hypnotic susceptibility	N=47; males; prior experience not reported	Task: Concentration on doorstep and flame; breath meditation. Session One: Individual tests of 15 min. focused attention on each object. Session Two: Same	Not reported	Tests given post-task. Session One: Embedded Figures Test. Session Two: Stroop Color Word Test. A's Experience Inquiry; Harvard Scale of Hypnotic Susceptibility; Field Depth of Hypnosis Test. Found correlation between 2 measures of hypnotic susceptibility and number of intrusions reported during meditation.	Behavioral Self-report of intrusions of thought during attention task.	None reported
Pelletier 1974	Autokinetic perception ("perceptual style")	N=40; avg. age 24.7 yrs.; 20 male, 20 female. Group One: Meditators, volunteers from intro. TM meeting. Group Two: Sitting controls.	Group One: Standard TM instruction, 3 mos. practice. Group Two: Instructed to sit quietly 20 min. each morning (x 3 mos.)	Not reported	Pre and post tests of autokinetic effect shifted towards field indep. On Rod and Frame Test (Cancro & Voch, Witkin et al.) meditators showed increased accuracy. On Embedded Figures Test (Gardner et al.) meditators showed shorter latency time.	None reported	None reported	Half of S's in each group not pre-tested to control for possible interaction effects of perceptual measures and meditation.
Shaw and Kolb 1977	Simple reaction time	Group One: N=9; meditators, one mo. or more experience. Group Two: N=9; non-meditators.	1) Learning trials. 2) 100 trails with reaction device. 3) Rest or meditation (20 min.). 4) 100 more trials.	Not reported	Report states "Meditators brighter in mood and more responsive in conversation after meditating."	Behavioral Meditators had shorter reaction than non-meditators in first test. After resting, meditators improved; non-meditators were slower in reacting.	None reported	Test of statistical significance not reported. Matching of groups not reported.
Brown, Stuart & Blodgett 1974	1) 2-point threshold determination of skin sensitivity 2) visual brightness discrimination 3) simple reaction time 4) complex reaction time	Group One: N=11; 18-22 yrs.; female meditators with experience from "few weeks" to few mos. Group Two: N=11; 18-22 yrs.; female non-meditating controls.	1) Pre-state performance measurement. 2) Pre-state resting (eyes open) 3 min. 3) Group One: Transcendental Meditation (15 min.) Group Two: resting, eyes closed (15 min.) 4) Post-state resting (eyes open) Note: meditators took 3 min. avg. to open eyes. 5) Post-state performance measures.	Not reported	Not reported	Behavioral Tests given pre and post meditation or sitting for 3 meditators meeting physiological criteria: performance improved on all measures. One control also met meditative criteria. Performance of all controls worsened. Physiological Note: heart and respiratory rates, presence of frontal EEG alpha and kappa rhythms used to define "meditation state" --only 3 S's met this criteria.	None reported	Small N, short meditation time used (15 min.), and only 1 trial reported. Experimenter anecdotes suggest meditators may have been sleeping.
Graham 1975	Frequency and amplitude discrimination of auditory threshold	Study Group: N=8; experience with TM not reported.	Condition One: 20 minutes meditation. Condition Two: 20 minutes rest with 3 to 10 days interval between conditions.	Not reported	Not reported	Behavioral Pre and post tests showed greater percentage improvement after meditating (+25.4%) than after reading (−3.2%) in auditory discrimination and +37.0% and −15.1% respectively, for frequency discrimination. Meditators seem to evidence lower perceptual thresholds after practice.	None reported	S's divided into 2 groups, AB, BA design. Study does not report S's selection procedures.
Pirot 1973	Perceptual auditory discrimination of tones	N=32; 8 in each cell; prior experience not stated.	Stimuli: 40 pairs of tones, one 2,000 milliseconds and one 2,225 milliseconds in length (1,000 Hz, 30 dB). S's had to discriminate longest tone after TM or relaxation.	Not reported	Not reported	Behavioral Meditators performed better post-meditation than relaxation, despite in which order they had meditated. Physiological GSR, EMG, finger pulse volume and EKG measures to be reported.	None reported	Four groups with all possible disorders of meditation and relaxation represented. Repeated measured and one-way between groups analysis performed.
Davidson, Goleman, and Schwartz 1976	Differences in attentional absorption and trait anxiety	N=58; mean age 20.81 yrs., (S.D. 2.77); 36 male, 23 female.	Meditation practice ranged from TM to Zen breath meditation. Group One: (N=11) Controls expressing interest in meditation. Group Two: (N=14) Beginners; one month's meditation exp. or less. Group Three: (N=18) Regular practice of meditation for 1-24 months. Group Four: (N=15) Long-term meditators (greater than 24 month's exp.).	Tests given as "take home" among battery of other personality and attitude questionnaires.	S's rested on Shor Personal Experience Questionnaire (PEQ), Tellegen Absorption Scale (TAS), and Spielberger State-Trait Anxiety Inventory (STAI). Reliable increment in PEQ and TAS (e.g., increase in capacity to attend) and reliable decrement in STAI (train anxiety) observed across groups from controls through long-term meditators.		None reported	Cross-sectional design.