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# **Summary of Scientific Research on Maharishi's Transcendental Meditation and TM-Sidhi Program**

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The scientific research on the Transcendental Meditation and TM-Sidhi program of Maharishi Mahesh Yogi is the largest and strongest body of research in the world on any program to develop human potential. The more than 500 scientific studies conducted at 200 independent universities and institutions in 33 countries and published in over 100 leading scientific journals have documented that this technology benefits every sphere of life: physiological, psychological, sociological, and ecological. The findings in each area of study have been replicated many times, and meta-analyses, which are the most quantitatively rigorous means to review a body of research, have found a high degree of consistency of the results<sup>1</sup>. Studies using the most sophisticated, rigorous research methodologies that are designed to prove causality have strongly verified and extended preliminary findings. This demonstrates that Maharishi's Transcendental Meditation and TM-Sidhi program causes the wide range of benefits in mental potential, health, and social behavior.

Research conducted around the world documents that the program is effective for all cultural and ethnic groups. All age groups benefit, from increased alertness in infants of meditating parents to increased health, happiness, and longevity in meditating elderly. People spanning the full range of socioeconomic levels and intellectual abilities benefit, again indicating the universality of Maharishi's program.

This body of research is unique in the extent of its cross validation, which means that the findings are validated by many different types of physiological, psychological, and sociological measures. For example, the finding that Maharishi's Transcendental Meditation and TM-Sidhi program decreases stress is validated by physiological changes such as decreased cortisol (the major stress hormone), decreased muscle tension, normalization of blood pressure, increased autonomic stability, and increased EEG coherence. At the same time, a variety of psychological changes also indicates decreased stress, including decreased anxiety and depression, decreased post-traumatic stress syndrome, and increased self-actualization. Likewise, stress reduction is demonstrated by the sociological changes, such as decreased hostility, increased family harmony, and reduced criminal behavior in incarcerated felons. Moreover, research extends the concept of stress reduction to the ecological level. Studies have found that the

<sup>1</sup> Please see papers 272, 311, 356, 466, and 470 in the list below for the five meta-analyses.

reduction of stress in meditating individuals creates an influence of harmony in the environment. Scientists have named this phenomenon the *Maharishi Effect*—the finding that even 1% of the population practicing the Transcendental Meditation technique, or the square root of one percent practicing the more advanced Transcendental Meditation-Sidhi program, improve the quality of life, as indicated by such changes as reduced crime and sickness in the larger society.

There are 430 studies contained in Volumes 1–5 of *Scientific Research on Maharishi's Transcendental Meditation and TM-Sidhi Program: Collected Papers*. Since the publication of Volume 5 more than 75 new research and theoretical papers have been published. Volume 6 of *Collected Papers* is now in preparation. These studies are given below by volume with annotations that summarize the findings for each study. Each reference also includes previous publication information and/or details of the institutes or universities at which the research was conducted as well as conferences at which the research results were presented. The numbers before the references refer to the designated numbers of the papers as they are reprinted in the *Collected Papers*. This bibliography is also available for access through Internet at [gopher: //info.miu.edu/](http://info.miu.edu/). Reprints of individual papers may be ordered through the Institute for Scientific Research, MIU DB 1118, 1000 N. Fourth Street, Fairfield, IA 52557-1118. The following briefly summarizes the overall research findings by category: physiological, psychological, sociological, and ecological.

### **Physiological Benefits**

The original landmark research on the physiological correlates of Maharishi's Transcendental Meditation technique was published in *Science*, *American Journal of Physiology*, and *Scientific American* in 1970–1972 (papers 1, 3, 4). This research found that the Transcendental Meditation technique produces a physiological state of *restful alertness*. During the technique the physiology becomes deeply rested, as indicated by significant reductions in respiration, minute ventilation, tidal volume, and blood lactate, and significant increases in basal skin resistance (an index of relaxation). At the same time the physiology is alert rather than asleep, as indicated by an increased abundance of alpha waves in the EEG. These findings led researcher Dr. Keith Wallace to conclude that restful alertness is a fourth major state of consciousness, termed *transcendental consciousness*, that is physiologically distinct from ordinary waking, dreaming, and deep sleep (paper 2).

Many other researchers have confirmed the reality of transcendental consciousness. Moreover, they have found that through regular practice of Maharishi's Transcendental Meditation technique, the physiology becomes more relaxed outside of meditation as well. Baseline levels of respiration rate, heart rate, plasma lactate, and skin resistance are all lower. The autonomic nervous system, which regulates vital internal processes, becomes more stable, integrated, and adaptable, as indicated by its increased ability to recover rapidly from the effects of stress. Brain functioning becomes more orderly, as indicated by the growth of physiological correlates of creativity and intelligence, such as shorter latencies of cognitive evoked potentials, faster paired H-reflexes, increased

EEG coherence, shorter inspection time, and faster choice reaction time. Medical researchers have found a reduction of important cardiovascular risk factors such as high blood pressure and serum cholesterol. Large health insurance studies have found that people practicing Maharishi's Transcendental Meditation and TM-Sidhi program, in all age groups combined, display a 50% reduction in both inpatient and outpatient medical care utilization compared to controls. Hospitalization is 87% lower for heart disease and 55% lower for cancer. And what is most remarkable, meditators over 40 years old have approximately 70% fewer medical problems than others in their age group.

Other research has found that meditating individuals in their mid-50s have a biological age twelve years younger than their chronological age, and that people beginning the practice even at 80 years of age live longer and are healthier and happier than controls of the same age (see Part I: Physiology, Vols. 1–5, and in the recent research section).

### **Psychological Benefits**

Numerous studies have found that the practice of Maharishi's Transcendental Meditation and TM-Sidhi program increases broad comprehension and improves the ability to focus sharply (field independence). Through regular practice of this program, the physiology becomes habituated to sustain the experience of restful alertness at all times. Research shows that this is the best means of reducing anxiety, depression, and anger. Transcendental consciousness, the experience of one's higher Self, becomes a stable internal frame of reference, providing an unshakable sense of self even during dynamic activity. Meditators become better able to see another person's perspective, yet they cannot easily be swayed by social pressure to do something which they judge to be wrong. They tend to perceive the world more positively and holistically.

Creativity increases, as measured by tests of both verbal and pictorial fluency, flexibility, and originality. Perception becomes more accurate and less driven by preconceptions and misconceptions. Basic memory processes improve. School children who practice Maharishi's Transcendental Meditation technique significantly improve in their basic skills in mathematics, reading, language, and study skills within a semester. Studies of elementary school students, high school students, college students, and adults have found significant increased IQ scores compared to non-meditating controls over the same period. A ten-year longitudinal study following meditating college students after they graduated found significant increases on holistic measures of self development (ego development) compared to data sets for graduates of three control universities matched for gender and age. The meditators reached higher levels of moral reasoning, autonomy and integration than has ever been seen before in any other group. The conclusion of all the research on meditation and relaxation techniques in the field of self-actualization shows that Maharishi's Transcendental Meditation technique is unparalleled in its ability to fully develop the unique potential of the individual. This technique makes a person more self-sufficient, more spontaneous, more productive, better able to meet challenges, and more capable of warm interpersonal relationships (see Part II: Psychology, Vols. 1–5, and in the recent research section).

### **Sociological Benefits**

A quantitative review of 198 studies found that Maharishi's Transcendental Meditation program is the most effective means of preventing and treating drug and alcohol abuse. In a study of transient, chronic alcoholics it was found that the technique produced a 65% abstinence rate and another study of high school and college drug users in a rehabilitation center found an 89% reduction in drug usage.

A study of war veterans with post-traumatic adjustment problems found that Maharishi's Transcendental Meditation technique produced significant decreases in emotional numbness, alcohol consumption, family problems, insomnia, unemployment, and overall post-traumatic stress disorder, in comparison to controls receiving psychotherapy.

The Japanese Ministry of Labor commissioned a five-month study of the effects of Maharishi's Transcendental Meditation program on 447 of their employees in a major heavy industry. The study found decreased physical complaints, decreased anxiety, decreased depression, decreased smoking, decreased insomnia, decreased digestive problems, and a decreased tendency towards neurosis and psychosomatic problems among those who learned this technique compared to non-meditating controls.

Maharishi's Transcendental Meditation program has been widely used for effective prison rehabilitation. Studies indicate that it produces positive changes in health, personality development, behavior, and reduced recidivism (lower return to prison) among inmates. One study of recidivism found that 259 inmates of Folsom and San Quentin prisons and Deuel Vocational Institute in California who learned Maharishi's Transcendental Meditation technique had 35–40% fewer new prison terms compared to the matched controls, whereas it is known that traditional prison education, vocational training, and psychotherapy do not consistently reduce recidivism. A large scale study of 11,000 prisoners and 900 staff officers in Senegal, West Africa in 1987 found that Maharishi's Transcendental Meditation program markedly decreased prison violence and health problems and that it reduced recidivism to a mere 8% (see Part III: Sociology, Vols. 1–5, and in the recent research section).

### **Ecological Changes**

Maharishi has brought to light that the most important single ecological consideration is a pervasive field of collective consciousness—the collective influence of the consciousness of individuals that comprise a society. Stressed individuals create an atmosphere of stress in collective consciousness that reciprocally affects the thinking and actions of every individual in that system. Maharishi maintains that crime, drug abuse, armed conflict, and other problems of society are more than just the problem of individual criminals, drug users, and conflicting factions in society. Such problems are more fundamentally symptoms of stress in collective consciousness.

Maharishi has introduced a new theoretical understanding of society, which concludes that the only practical way to handle large-scale problems is to approach them holistically by creating coherence in collective consciousness. Citing the general princi-

ple of science that the coherent elements of a system exert an influence proportional to their number squared, Maharishi has estimated that 1% of the population practicing his Transcendental Meditation technique and as few as the square root of 1% collectively practicing his Transcendental Meditation and TM-Sidhi program would be enough to create an influence of coherence in collective consciousness capable of neutralizing the stresses that are the root cause of social problems. Extensive scientific research on the city, state, national, and international levels has confirmed Maharishi's prediction. A study of 160 U.S. cities found a significant reduction in crime trend from 1974 to 1978 in proportion to the number of people in the city who had learned the technique by 1973. The study controlled for demographic variables known to influence crime.

Research has further demonstrated that when groups practicing Maharishi's Transcendental Meditation and TM-Sidhi program are introduced into a city, state, or country anywhere in the world that crime decreases, there are fewer traffic accidents, and the quality of life improves in that area.

Since 1979, Maharishi International University (MIU) has had a group of Transcendental Meditation and TM-Sidhi participants that has varied in size from a few hundred to over 8,000. Published research has shown that increases in the size of the group have an influence in both the U.S. and Canada, resulting in fewer violent deaths due to homicides, suicides, and traffic fatalities; a reduction in unemployment and inflation; and a general improvement in the quality of life. Studies have shown that when the MIU group, or a similar group located anywhere in the world, is sufficiently large, that is, approaching the square root of 1% of the world population (7,000), that international relations improve and regional conflicts decrease worldwide. The conclusion of this research is that the only viable means of reducing and eventually eliminating the age-old problems of society and creating world peace is the ecological and truly systemic approach of creating coherence in collective consciousness through Maharishi's Transcendental Meditation and TM-Sidhi program.

This remarkable body of research showing that Maharishi's Transcendental Meditation and TM-Sidhi program produces basic improvements on all levels of life—health, mental potential, social behavior, and world peace—confirms that this technology of consciousness operates on the most fundamental level of nature's functioning, enlivening the unified field of natural law in the consciousness of the individual and in society, so that life may be lived in accord with natural law, creating a state of Heaven on Earth (see Part III: Sociology, Findings Reflecting Growth of Coherence in Collective Consciousness, Vols. 1–5, and in the recent research section).

**ANNOTATED BIBLIOGRAPHY**  
**SCIENTIFIC RESEARCH ON**  
**MAHARISHI'S TRANSCENDENTAL MEDITATION**  
**AND TM-SIDHI PROGRAM**  
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**PART I: PHYSIOLOGY**

*The studies in the first two sections document changes during the practice of the Transcendental Meditation technique unless otherwise stated.*

**A: Metabolic Changes**

1. WALLACE, R. K. Physiological effects of Transcendental Meditation. *Science* 167: 1751–1754, 1970.  
Indications of Deep Rest along with Wakeful, Ordered State of Brain Functioning: Decreased Metabolic Rate (Decreased Oxygen Consumption and Unchanged Respiratory Quotient); Decreased Minute Ventilation; Decreased Heart Rate; Increased Basal Skin Resistance; Increased Regularity and Intensity of EEG Alpha Activity.
2. WALLACE, R. K. The physiological effects of Transcendental Meditation: A proposed fourth major state of consciousness. Doctoral thesis, Department of Physiology, School of Medicine, University of California at Los Angeles, Los Angeles, California, U.S.A., 1970.  
Indications of Deep Rest along with Wakeful, Ordered State of Brain Functioning: Decreased Metabolic Rate (Decreased Oxygen Consumption and Decreased Carbon Dioxide Elimination); Normal Arterial Oxygen and Carbon Dioxide Partial Pressures; Decreased Respiration Rate; Decreased Heart Rate; Increased Basal Skin Resistance; Increased Regularity and Intensity of EEG Alpha Activity in Frontal and Central Regions. Reduction in Biochemical Index of Stress: Decreased Arterial Lactate Levels. Self-Reported Improvements in Physical and Mental Health, and Resistance to Disease.
3. WALLACE, R. K., et al. A wakeful hypometabolic physiologic state. *American Journal of Physiology* 221: 795–799, 1971.  
Indications of Deep Rest along with Wakeful, Ordered State of Brain Functioning: Decreased Metabolic Rate (Decreased Oxygen Consumption and Decreased Carbon Dioxide Elimination); Normal Arterial Oxygen and Carbon Dioxide Partial Pressures; Decreased Respiration Rate; Decreased Minute Ventilation; Decreased Heart Rate; Increased Basal Skin Resistance; Increased Regularity and Intensity of EEG Alpha Activity in Frontal and Central Regions; Episodes of Rhythmical EEG Theta Activity in Frontal Region. Reduction in Biochemical Index of Stress: Decreased Arterial Lactate Levels.
4. WALLACE, R. K., et al. The physiology of meditation. *Scientific American* 226: 84–90, 1972.

Indications of Deep Rest along with Wakeful, Ordered State of Brain Functioning: Decreased Metabolic Rate (Decreased Oxygen Consumption and Decreased Carbon Dioxide Elimination); Normal Arterial Oxygen and Carbon Dioxide Partial Pressures; Decreased Respiration Rate; Decreased Minute Ventilation; Decreased Heart Rate; Increased Skin Resistance; Increased Regularity and Intensity of EEG Alpha Activity in Frontal and Central Regions. Reduction in Biochemical Index of Stress: Decreased Arterial Lactate Levels.

5. ALLISON, J. Respiratory changes during Transcendental Meditation. *Lancet* 7651: 833, 1970.

Indication of Deep Rest: Decreased Respiration Rate.

6. COREY, P. W. Airway conductance and oxygen consumption changes associated with practice of the Transcendental Meditation technique. University of Colorado Medical Center, Denver, Colorado, U.S.A., 1973.

Increased Ease of Breathing: Increased Airway Conductance. Indications of Deep Rest: Decreased Metabolic Rate (Decreased Oxygen Consumption and Decreased Carbon Dioxide Elimination); Decreased Heart Rate. Maintenance of a Relaxed Style of Physiological Functioning Outside of Meditation: Lower Basal Metabolic Rate after Meditation.

7. FARROW, J. T. Physiological changes associated with transcendental consciousness, the state of least excitation of consciousness. Psychophysiology Laboratory, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Switzerland, 1975.

Experience of Transcendental Consciousness Associated with: High EEG Coherence in the Theta, Alpha, and Beta Bands; Episodes of Spontaneous Breath Suspension (Not Followed by Hyperventilation); Marked Reductions in Respiration Rate, Minute Ventilation, Metabolic Rate (Oxygen Consumption and Carbon Dioxide Elimination), and Heart Rate; Increased Basal Skin Resistance; Cessation of Spontaneous Skin Resistance Response.

8. HEBERT, J. R. Periodic suspension of respiration during the Transcendental Meditation technique. Psychophysiology Laboratory, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Switzerland, 1976.

Maximum State of Deep Rest: Episodes of Spontaneous Breath Suspension (Not Followed by Hyperventilation).

9. DHANARAJ, V. H., and SINGH, M. Reduction in metabolic rate during the practice of the Transcendental Meditation technique. Doctoral thesis of first author (summary), Department of Physical Education, University of Alberta, Edmonton, Alberta, Canada. Paper presented at the first Canadian Congress for Multidisciplinary Study of Sport and Physical Activity, Quebec, Canada, October 1973.

Indications of Deep Rest: Decreased Metabolic Rate (Decreased Oxygen Consumption and Unchanged Respiratory Quotient); Decreased Tidal Volume; Decreased Respiration Rate.

10. BAKKER, R. Decreased respiratory rate during the Transcendental Meditation

technique: A replication. Department of Biology, California State College at Sonoma, Sonoma, California, U.S.A., 1974.

Indication of Deep Rest: Decreased Respiration Rate.

11. LEVANDER, V. L., et al. Increased forearm blood flow during a wakeful hypometabolic state. *Federation Proceedings* 31: 405 (Abstract), 1972.

Small Increase in Forearm Blood Flow.

12. JEVNING, R.; WILSON, A.; VANDERLAAN, E.; and LEVINE, S. Plasma prolactin and cortisol during Transcendental Meditation. Findings previously published in *The Endocrine Society Program 57th Annual Meeting*, New York City, 18–20 June 1975, p. 257 (Abstract).

Reduction in Biochemical Index of Stress: Decreased Plasma Cortisol Levels. Small Increase in Plasma Prolactin Immediately following Transcendental Meditation.

13. JEVNING, R.; WILSON, A. F.; and SMITH, W. R. Plasma amino acids during the Transcendental Meditation technique: Comparison to sleep. Findings previously published in *Sleep Research*, vol. 4, ed. M. H. Chase, W. C. Stern, and P. L. Walter, pp. 79–80 (Abstract). Los Angeles: Brain Information Service, Brain Research Institute, University of California at Los Angeles, Los Angeles, California, U.S.A., 1975.

Increased Plasma Phenylalanine Levels.

#### **B: Electrophysiological and Electroencephalographic Changes**

14. BANQUET, J. P. EEG and meditation. *Electroencephalography and Clinical Neurophysiology* 33: 454 (Abstract), 1972.

EEG Indications of Restful Alertness: Coexistence of Theta and Delta with Alpha and Beta EEG Activity. Increased Orderliness and Integration of Brain Functioning: Hypersynchrony and Rhythmicity; Synchronization of Anterior and Posterior Channels; Periods of Uniformity of Frequency and Amplitude from All Leads.

15. BANQUET, J. P. Spectral analysis of the EEG in meditation. *Electro-encephalography and Clinical Neurophysiology* 35: 143–151, 1973.

Increased Orderliness and Integration of Brain Functioning: High Amplitude EEG Alpha Activity Extending to Anterior Channels; Bursts of High Amplitude Theta Activity in All Channels; Rhythmic High Amplitude Beta Activity in All Channels; Synchronization of Anterior and Posterior Channels. Electromyographic Evidence of Deep Muscular Relaxation.

16. WESTCOTT, M. Hemispheric symmetry of the EEG during the Transcendental Meditation technique. Department of Psychology, University of Durham, Durham, England, 1973.

Increased Orderliness and Integration of Brain Functioning: High Levels of Interhemispheric EEG Alpha Correlation; Greater Power Balance between Right and Left Hemispheres.

17. BANQUET, J. P., and SAILHAN, M. EEG analysis of spontaneous and induced states of consciousness. *Revue d'Electroencéphalographie et de Neurophysiologie Clinique* 4: 445–453, 1974.  
EEG Indications of Restful Alertness: Less Activation (Decreased Proportion of Beta to Alpha); Greater Wakefulness (Increased Proportion of Alpha to Delta). Increased Orderliness and Integration of Brain Functioning: Greater Interhemispheric and Intrahemispheric EEG Synchrony.
18. KRAS, D. J. The Transcendental Meditation technique and EEG alpha activity. Department of Psychology, Stirling University, Stirling, Scotland, 1974.  
EEG Indications of Restful Alertness: Increased Alpha Activity in All Areas of the Brain. Maintenance of a More Relaxed Style of Physiological Functioning Outside of Meditation: Persistence of Greater Alpha Activity following Meditation.
19. BANQUET, J. P., and SAILHAN, M. Quantified EEG spectral analysis of sleep and Transcendental Meditation. Stanley Cobb Laboratories for Psychiatric Research, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, U.S.A., and Institut La Rochefoucauld, Paris, France. Paper presented at the Second European Congress on Sleep Research, Rome, Italy, 10 April 1974.  
EEG Indications of Inner Wakefulness during Sleep.
20. LEVINE, P. H.; HEBERT, J. R.; HAYNES, C. T.; and STROBEL, U. EEG coherence during the Transcendental Meditation technique. Psychophysiology Laboratory, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Switzerland, 1976.  
Increased Orderliness and Integration of Brain Functioning: Increased EEG Coherence Especially in Alpha and Theta Bands.
21. HAYNES, C. T.; HEBERT, J. R.; REBER, W.; and ORME-JOHNSON, D. W. The psychophysiology of advanced participants in the Transcendental Meditation program: Correlations of EEG coherence, creativity, H-reflex recovery, and experience of transcendental consciousness. Psychophysiology Laboratory, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Switzerland, 1976.  
Correlations between High EEG Coherence, High Levels of Creativity, Enhanced Neurological Efficiency (Faster H-Reflex Recovery), and Clarity of Experiences of Transcendental Consciousness.
22. JANBY, J. Immediate effects of the Transcendental Meditation technique: Increased skin resistance during first meditation after instruction. Institute of Psychology, University of Aarhus, Aarhus, Denmark, 1973.  
Indication of Deep Relaxation: Marked Increase in Basal Skin Resistance.
23. LAURIE, G. An investigation into the changes in skin resistance during the Transcendental Meditation technique. Department of Psychology, Portsmouth Polytechnic, Portsmouth, Hampshire, England, 1973.  
Indication of Deep Relaxation: Marked Increase in Basal Skin Resistance.
24. WEST, M. A. Changes in skin resistance in subjects resting, reading, listening to

music, or practicing the Transcendental Meditation technique. University College of Swansea, University of Wales, Swansea, Wales, 1973.

Indication of Deep Relaxation: Marked Increase in Basal Skin Resistance.

### C: Physiological Efficiency and Stability

25. ORME-JOHNSON, D. W. Autonomic stability and Transcendental Meditation. *Psychosomatic Medicine* 35: 341–349, 1973.  
Improved Resistance to Stress and Greater Autonomic Stability: Faster Habituation of Skin Resistance Response to Stressful Stimuli; Fewer Multiple Responses; Fewer Spontaneous Skin Resistance Responses.
26. WILCOX, G. G. Autonomic functioning in subjects practicing the Transcendental Meditation technique. School of Applied Psychology, University of New South Wales, Sydney, New South Wales, Australia, 1973.  
Improved Resistance to Stress and Greater Autonomic Stability: Faster Habituation of Skin Resistance Response to Stressful Stimuli; Fewer Spontaneous Skin Resistance Responses.
27. BERKER, E. Stability of skin resistance responses one week after instruction in the Transcendental Meditation technique. Department of Biology, Rollins College, Winter Park, Florida, U.S.A., 1974.  
Improved Resistance to Stress and Greater Autonomic Stability: Faster Habituation of Skin Resistance Response to Stressful Stimuli; Fewer Spontaneous Skin Resistance Responses.
28. SMITH, T. R. The Transcendental Meditation technique and skin resistance response to loud tones. Department of Psychology, Eastern Michigan University, Ypsilanti, Michigan, U.S.A., 1974.  
Improved Resistance to Stress and Greater Autonomic Stability: Faster Habituation of Skin Resistance Response to Stressful Stimuli.
29. WILLIAMS, P., and WEST, M. EEG responses to photic stimulation in persons experienced at meditation. *Electroencephalography and Clinical Neurophysiology* 39: 519–522, 1975.  
EEG Indications of Greater Alertness (in Response to Photic Stimulation).
30. ROUTT, T. J. Low normal heart and respiration rates in individuals practicing the Transcendental Meditation technique. Department of Psychology, Huxley College of Environmental Studies, Western Washington State College, Bellingham, Washington, U.S.A., 1973.  
Increased Basal Skin Resistance during Transcendental Meditation. Maintenance of a Relaxed Style of Physiological Functioning outside the Practice of Transcendental Meditation: Lower Heart Rate; Lower Respiration Rate.
31. MCDONAGH, J. M., and EGENES, T. The Transcendental Meditation technique and temperature homeostasis. Department of Psychology, St. Mary's College, Notre Dame, Indiana, U.S.A., 1973.

Enhanced Temperature Homeostasis: Faster Recovery of Normal Skin Temperature following Exertion.

**D: Health**

32. WALLACE, R. K., et al. Decreased blood pressure in hypertensive subjects who practiced meditation. Supplement II to *Circulation* 45 and 46: 516 (Abstract), 1972.

Improvements in Hypertensive Subjects: Decreased Blood Pressure.

33. BLACKWELL, B.; HANENSON, I. B.; BLOOMFIELD, S. S.; MAGENHEIM, H. G.; NIDICH, S. I.; and GARTSIDE, P. Effects of Transcendental Meditation on blood pressure: A controlled pilot experiment. *Psychosomatic Medicine* 37(1): 86 (Abstract), 1976.

Improvements in Hypertensive Subjects: Decreased Blood Pressure; Decreased Anxiety.

34. SIMON, D. B.; OPARIL, S.; and KIMBALL, C. P. The Transcendental Meditation program and essential hypertension. Hypertension Clinic and Department of Psychiatry, Pritzker School of Medicine, University of Chicago, Chicago, Illinois, U.S.A., 1974.

Improvements in Hypertensive Subjects: Decreased Blood Pressure. Improvements in Patients with Angina Pectoris: Improved Exercise Tolerance; Increased Maximum Workload; Delayed Appearance of Electrocardiographic Abnormalities during Exercise (Delayed Onset of ST Segment Depression); Decreased Double Product; Clinical Observations of Decreased Anxiety; Decreased Need for Tranquillizers and Anti-Anginal Drugs; Improved Sleeping Patterns; Improved Personal Relationships.

35. ZAMARRA, J. W. ; BESSEGHINI, I.: and WITTENBERG, S. The effects of the Transcendental Meditation program on the exercise performance of patients with angina pectoris. Department of Medicine, State University of New York at Buffalo, New York, U.S.A., and Buffalo Veterans Administration Hospital, Buffalo, New York, U.S.A., 1975.

Improvements in Patients with Angina Pectoris; Improved Exercise Tolerance; Increased Maximum Workload; Delayed Appearance of Electrocardiographic Abnormalities during Exercise (Delayed Onset of ST Segment Depression); Decreased Double Product; Clinical Observations of Decreased Anxiety; Decreased Need for Tranquillizers and Anti-Anginal Drugs; Improved Sleeping Patterns; Improved Personal Relationships.

36. HONSBERGER, R. W., and WILSON, A. F. The effect of Transcendental Meditation upon bronchial asthma. *Clinical Research* 21: 278 (Abstract), 1973.

Improvements in Patients with Bronchial Asthma: Decreased Severity of Symptoms Reported by Patients and Physicians; Reduced Airway Resistance.

37. HONSBERGER, R. W., and WILSON, A. F. Transcendental Meditation in treating asthma. *Respiratory Therapy: The Journal of Inhalation Technology* 3: 79–80, 1973.

Improvements in Patients with Bronchial Asthma: Decreased Severity of Symptoms; Reduced Airway Resistance.

38. WILSON, A. F.; HONSBERGER, R. W.; CHIU, J. T.; and NOVEY, H. S. Transcendental Meditation and asthma. *Respiration* 32: 74–80, 1975.

Improvements in Patients with Bronchial Asthma: Decreased Severity of Symptoms Reported by Patients and Physicians; Reduced Airway Resistance.

39. KLEMONS, I. M. Changes in inflammation in persons practicing the Transcendental Meditation technique. Department of Health Education, Pennsylvania State University, University Park, Pennsylvania, U.S.A., 1972.

Improved Periodontal Health: Decreased Gingival Inflammation.

40. MISKIMAN, D. E. The effect of the Transcendental Meditation program on compensatory paradoxical sleep. Graduate Department of Psychology, University of Alberta, Edmonton, Alberta, Canada, 1972.

Faster Recovery from Sleep Deprivation.

41. MISKIMAN, D. E. The treatment of insomnia by the Transcendental Meditation program. Graduate Department of Psychology, University of Alberta, Edmonton, Alberta, Canada, 1972.

Relief from Insomnia: Decreased Time Taken to Fall Asleep.

42. MISKIMAN, D. E. Long-term effects of the Transcendental Meditation program in the treatment of insomnia. Graduate Department of Psychology, University of Alberta, Edmonton, Alberta, Canada, 1975.

Relief from Insomnia: Decreased Time Taken to Fall Asleep (Benefits Sustained over Time).

43. MCINTYRE, M. E.; SILVERMAN, F. H.; and TROTTER, W. D. Transcendental Meditation and stuttering: A preliminary report. *Perceptual and Motor Skills* 39: 294 (Abstract), 1974.

Decreased Stuttering.

44. WELDON, J. T., and ARON, A. The Transcendental Meditation program and normalization of weight. Department of Psychology, Maharishi International University, Fairfield, Iowa, U.S.A., 1974.

Normalization of Weight.

### **E: Motor and Perceptual Ability, and Athletic Performance**

45. SHAW, R., and KOLB, D. Reaction time following the Transcendental Meditation technique. Graduate Department of Psychology, University of Texas at Austin, Austin, Texas, U.S.A., 1971.

Improved Mind-Body Co-ordination: Faster Reactions.

46. APPELLE, S., and OSWALD, L. E. Simple reaction time as a function of alertness and prior mental activity. *Perceptual and Motor Skills* 38: 1263–1268, 1974.

Improved Mind-Body Co-ordination: Faster Reactions.



47. ORME-JOHNSON, D. W.; KOLB, D.; and HEBERT, J. R. An experimental analysis of the effects of the Transcendental Meditation technique on reaction time. International Center for Scientific Research, Maharishi International University, Fairfield, Iowa, U.S.A., 1973.  
Improved Mind-Body Co-ordination: Faster Reactions.
48. BLASDELL, K. S. The effects of the Transcendental Meditation technique upon a complex perceptual-motor task. Department of Kinesiology, University of California at Los Angeles, Los Angeles, California, U.S.A., 1971.  
Improved Mind-Body Co-ordination: Superior Perceptual-Motor Performance.
49. RIMOL, A. G. P. The Transcendental Meditation technique and its effects on sensory-motor performance. Department of Psychology, Princeton University, Princeton, New Jersey, U.S.A., 1974.  
Improved Mind-Body Co-ordination: Short- and Long-Term Improvements in Complex Sensory-Motor Performance.
50. PIROT, M. The effects of the Transcendental Meditation technique upon auditory discrimination. Department of Psychology, University of Victoria, Victoria, British Columbia, Canada, 1973.  
Increased Perceptual Acuity: Improved Auditory Temporal Discrimination.
51. PELLETIER, K. R. Influence of Transcendental Meditation upon autokinetic perception. *Perceptual and Motor Skills* 39: 1031–1034, 1974.  
Increased Field Independence (Growth of a Stable Internal Frame of Reference, Increased Perceptual Acuity).
52. PELLETIER, K. R. The effects of the Transcendental Meditation program on perceptual style: Increased field independence. Langley Porter Neuropsychiatric Institute, University of California School of Medicine, San Francisco, California, U.S.A. Paper presented at the meeting of the Western Psychological Association, San Francisco, California, 25–28 April 1974.  
Increased Field Independence (Growth of a Stable Internal Frame of Reference, Increased Perceptual Acuity).
53. REDDY, M. K.; BAI, A. J. L.; and RAO, V. R. The effects of the Transcendental Meditation program on athletic performance. A.P. Sports Council, Lal Bahadar Stadium, and Nilouffer Hospital Hyderabad, Andhra Pradesh, India, 1974.  
Benefits for Athletes: Improved Physiological Functioning—Improved Cardiovascular Efficiency; Improved Respiratory Efficiency (Increased Vital Capacity); Reduction of Blood Pressure to More Ideal Levels; Increased Hemoglobin Concentration. Improved Athletic Performance and Neuromuscular Integration: Increased Running Speed; Improved Standing Broad Jump; Improved Agility; Faster Reactions and Improved Co-ordination. Increased Intelligence.

**PART II: PSYCHOLOGY****A: Intelligence, Learning, and Academic Performance**

54. TJOA, A. Some evidence that the Transcendental Meditation program increases intelligence and reduces neuroticism as measured by psychological tests. G.I.T.P., Amsterdam, The Netherlands, 1972.  
Benefits for High School Students: Decreased Neuroticism; Greater Intelligence Growth Rate: Increased Fluid Intelligence.
55. TJOA, A. Increased intelligence and reduced neuroticism through the Transcendental Meditation program. Findings previously published as "Meditation, neuroticism and intelligence: A follow-up" in *Gedrag: Tijdschrift voor Psychologie (Behavior: Journal of Psychology)* 3: 167–182, 1975.  
Increased Fluid Intelligence; Decreased Neuroticism; Decreased Somatic Neurotic Instability.
56. ABRAMS, A. I. Paired-associate learning and recall: A pilot study of the Transcendental Meditation program. Graduate Department of Education, University of California at Berkeley, Berkeley, California, U.S.A., 1972.  
Benefits for University Students: Quicker Acquisition of Information (Better Learning Ability); Superior Recall.
57. MISKIMAN, D. E. Performance on a learning task by subjects who practice the Transcendental Meditation technique. Graduate Department of Psychology, University of Alberta, Edmonton, Alberta, Canada, 1972.  
Benefits for University Students: Superior Learning Ability.
58. MISKIMAN, D. E. The effect of the Transcendental Meditation program on the organization of thinking and recall (secondary organization). Graduate Department of Psychology, University of Alberta, Edmonton, Alberta, Canada, 1973.  
Benefits for University Students: Improved Spontaneous Organization of Memory; Improved Stabilization of Organized Memory; Improved Problem-Solving Ability.
59. COLLIER, R. W. The effect of the Transcendental Meditation program upon university academic attainment. Department of English as a Second Language, College of Arts and Sciences, University of Hawaii, Honolulu, Hawaii, U.S.A., 1973.  
Benefits for University Students: Improved Academic Performance.
60. HEATON, D. P., and ORME-JOHNSON, D. W. The Transcendental Meditation program and academic achievement. International Center for Scientific Research, Maharishi International University, Fairfield, Iowa, U.S.A., 1974.  
Benefits for University Students: Improved Academic Performance.
61. CORY, R., and HUFNAGEL, P. The effect of the Science of Creative Intelligence course on high school students: A preliminary report. American Foundation for the Science of Creative Intelligence, Hartford, Connecticut, U.S.A., 1974.  
Benefits for High School Students: Improved Academic Performance; Reduced

State and Trait Anxiety.

62. SHECTER, H. The Transcendental Meditation program in the classroom: A psychological evaluation. Doctoral thesis (summary), Graduate Department of Psychology, York University, North York, Ontario, Canada, *Dissertation Abstracts International* 38 (07) (1977): 3372B.

Benefits for High School Students: Improved Intellectual Performance (Increased Problem Solving Ability); Increased Creativity; Increased Energy Level; Increased Innovation, Autonomy, and Independence; Increased Self-Esteem; Increased Tolerance; Increased Ability to Deal with Abstract and Complex Situations; Decreased Anxiety.

63. MACCALLUM, M. J. The Transcendental Meditation program and creativity. Graduate Department of Psychology, California State University at Long Beach, Long Beach, California, U.S.A., 1974.

Greater Creativity: Greater Fluency, Flexibility, and Originality of Creative Thought.

#### **B: Development of Personality**

64. SEEMAN, W.; NIDICH, S.; and BANTA, T. Influence of Transcendental Meditation on a measure of self-actualization. *Journal of Counseling Psychology* 19: 184–187, 1972.

Increased Self-Actualization: Increased Inner-Directedness (Independence, Self-Supportiveness)<sup>1</sup>; Increased Spontaneity; Enhanced Self-Regard.

65. FEHR, T.; NERSTHEIMER, U.; and TORBER, S. Study of personality changes resulting from the Transcendental Meditation program: Freiburger Personality Inventory. Department of Social Affairs, MIU/Forschungsring Schöpferische Intelligenz, Dormagen, W. Germany, 1972.

Less Nervousness (Less Psychosomatic Disturbance); Less Aggressiveness (Greater Self-Control, Greater Emotional Maturity); Less Depression (Greater Contentment, Greater Self-Confidence); Less Irritability (Greater Calm in Frustrating Situations, Greater Tolerance); Greater Sociability (Greater Friendliness, Greater Liveliness); Greater Placidity (Greater Self-Assuredness, More Good Humor, Less Tendency to Procrastinate); Less Tendency to Dominate (Greater Respectfulness); Less Inhibition (Greater Naturalness, Greater Spontaneity, Greater Self-Sufficiency); Less Neuroticism (Greater Emotional Stability, Less Tension); Greater Self-Reliance (Greater Effectiveness, More Balanced Mood, Greater Vigor).

66. STEK, R. J., and BASS, B. A. Personal adjustment and perceived locus of control among students interested in meditation. *Psychological Reports* 32: 1019–1022, 1973.

Interest in Learning Transcendental Meditation Found to Be Uncorrelated with Personality Factors.

67. BERG, W. P. VAN DEN, and MULDER, B. Psychological research on the effects of the Transcendental Meditation technique on a number of personality variables.

Findings previously published in *Gedrag: Tijdschrift voor Psychologie (Behavior: Journal of Psychology)* 4: 206–218, 1976 . See also DIJK, H. VAN, and BERG, W. P. VAN DEN. Begripsvaliditeit van de NPV-Zelfwaarde-Ringsschaal. *Heymans Bulletins*, Psychologische Instituten R.U., Groningen, the Netherlands, NR: HB-74–147 Ex.

Less Neuroticism; Greater Self-Esteem; Better Self-Image; Greater Ego Strength; Greater Trust; Greater Satisfaction; Greater Self-Actualization; Less Sensitivity to Criticism; Less Depression; Decreased Sense of Physical Inadequacy.

68. NIDICH, S.; SEEMAN, W.; and SEIBERT, M. Influence of the Transcendental Meditation program on state anxiety. Department of Psychology, University of Cincinnati, Cincinnati, Ohio, U.S.A., 1973.

Decreased Anxiety.

69. HJELLE, L. A. Transcendental Meditation and psychological health. *Perceptual and Motor Skills* 39: 623–628, 1974.

Increased Self-Actualization: Increases in—Time Competence (Ability to Live More Fully in the Present, Ability to Connect Past and Present Meaningfully); Inner-Directedness (Independence, Self-Supportiveness); Self-Actualizing Value (Holding of Values of Self-Actualizing People); Feeling Reactivity (Sensitivity to One's Own Needs and Feelings); Spontaneity; Self-Regard; Capacity for Intimate Contact (Capacity for Warm Interpersonal Relationships). Greater Inner Locus of Control; Less Anxiety.

70. NIDICH, S.; SEEMAN, W.; and DRESKIN, T. Influence of Transcendental Meditation on Self-Actualization: A replication. *Journal of Counseling Psychology* 20: 565–566, 1973.

Increased Self-Actualization: Increases in—Time Competence (Ability to Live More Fully in the Present, Ability to Connect Past, Present, and Future Meaningfully); Inner-Directedness (Independence, Self-Supportiveness); Self-Actualizing Value (Holding of Values of Self-Actualizing People); Feeling Reactivity (Sensitivity to One's Own Needs and Feelings); Spontaneity; Self-Acceptance; Capacity for Intimate Contact (Capacity for Warm Interpersonal Relationships).

71. PENNER, W. J.; ZINGLE, H. W.; DYCK, R.; and TRUCH, S. Does an in-depth Transcendental Meditation course effect change in the personalities of the participants? *Western Psychologist* 4: 104–111, 1974.

Greater Interest in Academic Activities; Greater Intellectual Orientation; Greater Aestheticism; Greater Respect for Traditional Religious Values; Greater Adaptability of Mental Orientation; Greater Autonomy; Greater Social Extroversion; Less Impulsiveness; Greater Personal Integration (Decreased Social Alienation and Emotional Disturbance); Lower Anxiety Level; Greater Altruism.

72. DAVIES, J. The Transcendental Meditation program and progressive relaxation: Comparative effects on trait anxiety and self-actualization. Department of Psychology, University of New England at Armidale, Armidale, New South Wales, Australia, 1974.

Increased Self-Actualization: Increased Inner-Directedness/Time Competence. Increased Feeling Reactivity (Increased Sensitivity to One's Own Needs and Feelings). Reduced Trait Anxiety.

73. SCHILLING, P. B. The effect of the regular practice of the Transcendental Meditation technique on behavior and personality. Department of Clinical Psychology, Eastern Kentucky University, Richmond, Kentucky, U.S.A., 1974.

Decreased Aggression (Increases in: Tactfulness, Calmness, Easygoingness, Forgiveness, and Consideration; Decreases in: Argumentativeness, Irritability, and Threatening Behavior); Improved Leadership Ability; Growth of a More Brave, Adventurous, Action-Oriented Nature; Increased Affiliation (Increases in: Enjoyment of Friends, Maintenance of Associations with Others, Warmth, Neighborliness, and Co-operativeness); Increased Nurturance (Increases in: Need to Give Sympathy and Assistance to Others, Protectiveness, and Consideration for Others); Decreased Use of Drugs; Decreased Use of Alcohol.

74. SHAPIRO, J. The relationship of the Transcendental Meditation program to self-actualization and negative personality characteristics. Doctoral thesis (summary), Department of Psychology, University of Southern California, Los Angeles, California, U.S.A., 1974.

Increased Self-Actualization; Decreased Depression; Decreased Neuroticism; Decreased Aggression; Decreased Anxiety.

75. STERN, M. The effects of the Transcendental Meditation program on trait anxiety. Department of Education, Xavier University, Cincinnati, Ohio, U.S.A., 1974.

Decreased General Anxiety.

76. ORME-JOHNSON, D. W., and DUCK, B. Psychological testing of MIU students: First report. Department of Psychology, Maharishi European Research University, Switzerland, and International Center for Scientific Research, Maharishi International University, Fairfield, Iowa, U.S.A., 1974.

Greater Self-Actualization in Students at Maharishi International University than in Other College Students: Greater—Time Competence (Ability to Live More Fully in the Present, Ability to Connect Past and Present Meaningfully); Inner-Directedness (Independence, Self-Supportiveness); Self-Actualizing Value (Holding of Values of Self-Actualizing People); Spontaneity; Self-Regard; Nature of Man is Constructive (Ability to See Man as Essentially Good); Synergy (Ability to See Opposites of Life as Meaningfully Related); Capacity for Intimate Contact (Capacity for Warm Interpersonal Relationships).

77. FEHR, T. A longitudinal study of the effect of the Transcendental Meditation program on changes in personality. Department of Social Affairs, MIU/Forschungsring Schöpferische Intelligenz, Dormagen, W. Germany, 1974.

Decreased Nervousness (Decreased Psychosomatic Disturbance); Decreased Aggressiveness (Increased Self-Control, Increased Emotional Maturity); Decreased Depression (Increased Contentment, Increased Self-Confidence); Decreased Irritability (Increased Calm in Frustrating Situations, Increased Tolerance); Increased Sociability (Increased Friendliness, Increased Liveliness); Increased Placidity (Increased Self-Assuredness, Increased Good Humor, Decreased Tendency to

Procrastinate); Decreased Tendency to Dominate (Increased Flexibility, Respectfulness, and Tolerance); Decreased Inhibition (Increases in: Naturalness, Spontaneity, Self-Sufficiency); Increased Extroversion (Increased Capacity for Warm Interpersonal Relationships); Decreased Neuroticism (Increased Emotional Stability, Decreased Tension); Increased Self-Reliance (Increased Effectiveness, More Balanced Mood, Increased Vigor).

78. FERGUSON, P. C., and GOWAN, J. C. Psychological findings on Transcendental Meditation. Also published as "TM—some preliminary psychological findings" in *Journal of Humanistic Psychology* 16(3): 51–60, 1976.

Increased Self-Actualization; Decreased Anxiety; Decreased Depression; Decreased Neuroticism.

### PART III: SOCIOLOGY

#### A: Rehabilitation

79. WINQUIST, W. T. The Transcendental Meditation program and drug abuse: A retrospective study. Department of Sociology, University of California at Los Angeles, Los Angeles, California, U.S.A., 1969.

Decreased Drug Abuse.

80. WALLACE, R. K., et al. Decreased drug abuse with Transcendental Meditation: A study of 1,862 subjects. In *Drug Abuse: Proceedings of the International Conference*, ed. Chris J. D. Zarafonetis, pp. 369–376. Philadelphia: Lea and Febiger, 1972.

Decreased Drug Abuse; Decreased Use of Alcohol; Decreased Use of Cigarettes; Decreased Drug Selling; Increased Tendency to Discourage the Use of Drugs by Others.

81. BRAUTIGAM, E. Effects of the Transcendental Meditation program on drug abusers: A prospective study. Department of Psychology, University of Lund, Lund, Sweden, 1972.

Increased Psychological Stability; Increased Adjustment (Increased Self-Acceptance, Satisfaction, and Ability to Handle One's Situation); Decreased Anxiety; Decreased Tension; Decreased Psycho-Motor Retardation; Decreased Drug Abuse.

82. SHAFII, M.; LAVELY, R. A.; and JAFFE, R. D. Meditation and marijuana. *American Journal of Psychiatry* 131: 60–63, 1974.

Decreased Drug Abuse.

83. SHAFII, M.; LAVELY, R. A.; and JAFFE, R. Meditation and the prevention of alcohol abuse. *American Journal of Psychiatry* 132: 942–945, 1975.

Decreased Use of Alcohol.

84. LAZAR, Z.; FARWELL, L.; and FARROW, J. T. The effects of the Transcendental Meditation program on anxiety, drug abuse, cigarette smoking, and

alcohol consumption. Graduate School of Education, Boston University, Boston, Massachusetts, U.S.A.; Department of Social Relations, Harvard University, Cambridge, Massachusetts, U.S.A.; and Graduate Department of Biochemistry, Brandeis University, Waltham, Massachusetts, U.S.A., 1972.

Decreased Anxiety; Decreased Use of Cigarettes; Decreased Use of Alcohol; Decreased Drug Abuse.

85. KATZ, D. Decreased drug use and prevention of drug use through the Transcendental Meditation program. International Center for Scientific Research, Maharishi International University, Fairfield, Iowa, U.S.A., 1974.

Decreased Use of Alcohol; Decreased Drug Abuse.

86. SCHENKLUHN, H., and GEISLER, M. A longitudinal study of the influence of the Transcendental Meditation program on drug abuse. Drug Rehabilitation Center of Arbeiterwohlfahrt Kreisverband, Mülheim/Ruhr, W. Germany, 1974.

Decreased Drug Abuse.

87. ORME-JOHNSON, D. W.; KIEHLBAUCH, J.; MOORE, R.; and BRISTOL, J. Personality and autonomic changes in prisoners practicing the Transcendental Meditation technique. University of Texas at El Paso, El Paso, Texas, U.S.A., 1971.

Rehabilitation of Prisoners: Increased Physiological Stability and Psychological Adaptability—Fewer Spontaneous Skin Resistance Responses; Decreased Obsessive-Compulsive Behavior (Increased Behavioral Flexibility); Decreased Social Introversion (Increased Social Ease and Outgoingness).

88. CUNNINGHAM, M., and KOCH, W. The Transcendental Meditation program and rehabilitation: A pilot project at the Federal Correctional Institution at Lompoc, California. International Meditation Society, Los Angeles, California, U.S.A., 1973.

Rehabilitation of Prisoners: Decreased Anxiety; Other Improvements in Mental Health.

89. BALLOU, D. The Transcendental Meditation program at Stillwater Prison. Graduate Department of Social Anthropology, University of Kansas, Lawrence, Kansas, U.S.A., 1973.

Rehabilitation of Prisoners: Decreased Anxiety; Decreased Prison Disciplinary Rule Infractions; Fewer Parole Violations; Increased Participation in Recreational and Educational Activities; Decreased Drug Abuse.

90. CHILDS, J. P. The use of the Transcendental Meditation program as a therapy with juvenile offenders. Doctoral dissertation (abbr.), Department of Educational Psychology and Guidance, University of Tennessee, Knoxville, Tennessee, U.S.A., 1973. *Dissertation Abstracts International* 34/08-A, 1973, Order Number AAD74-03806.

Rehabilitation of Juvenile Offenders: Decreased Anxiety; Positive Change as Reported by Both Subjects and Parents; Decreased Drug Abuse; Decreased Court Problems; Increased Happiness; Improved Interpersonal Relationships; Increased Self-Actualization; Enhanced Self-Regard.

91. NIDICH, S. I. A study of the relationship of the Transcendental Meditation program to Kohlberg's stages of moral reasoning. Doctoral thesis (abbr.), Department of

Learning and Development, College of Education, University of Cincinnati, Cincinnati, Ohio, U.S.A., 1975. *Dissertation Abstracts International* 36: 4361a-4362a, 1975.

Greater Moral Maturity.

92. ROSS, J. The effects of the Transcendental Meditation program on anxiety, neuroticism, and psychoticism. Master's thesis, Graduate Department of Psychology, University of Edinburgh, Edinburgh, Scotland, 1972.

Decreased Anxiety; Decreased Neuroticism; Decreased Psychoticism.

93. ORME-JOHNSON, D. W.; ARTHUR, G. K.; FRANKLIN, L.; and O'CONNELL, J. The Transcendental Meditation technique and drug abuse counselors. Department of Research and Evaluation, Drug and Alcohol Abuse Control and Prevention Program, Fort Bliss, Texas, U.S.A., 1972.

Improvements in Mental Health: Decreased Anxiety; Decreased Hypochondria; Decreased Internal Conflicts and Confusion; Increased Clarity of Mind, Relaxation, Energy Level, and Sensitivity to Others.

94. DICK, L. D., and RAGLAND, R. E. A study of the Transcendental Meditation program in the service of counseling. Departments of Psychology and Education, University of Oklahoma, Norman, Oklahoma, U.S.A., 1973.

Increased Self-Actualization: Increased Time Competence (Ability to Live More Fully in the Present, Ability to Connect Past, Present, and Future Meaningfully); Increased Inner-Directedness (Independence, Self-Supportiveness); Increased Existentiality (Flexibility in Application of Self-Actualizing Values); Enhanced Self-Regard; Increased Self-Acceptance.

95. BLOOMFIELD, H. H. Some observations on the uses of the Transcendental Meditation program in psychiatry. Institute of Psychophysiological Medicine, San Diego, California, U.S.A., 1975.

Case Histories Illustrating Benefits in the Treatment of Psychiatric Patients with a Variety of Disorders, Including Anxiety Neurosis, Obsessive-Compulsive Neurosis, Depression, Drug and Alcohol Abuse, Psychosomatic Disorders, and Chronic Insomnia.

### **B: Productivity and Quality of Life**

96. FREW, D. R. Transcendental Meditation and productivity. *Academy of Management Journal* 17: 362-368, 1974. A version of this study and a second study replicating the results can be found in David R. Frew, *Management of Stress: Using TM at Work*. Chicago: Nelson-Hall Press, 1977.

Increased Productivity: Improved Work Performance; Increased Work Satisfaction; Improved Relations with Co-Workers; Improved Relations with Supervisors; Decreased Turnover Propensity; Decreased Self-Report Climb Orientation/Increased Climb Orientation as Reported by Co-Workers and Supervisors.

97. FRIEND, K. E. Effects of the Transcendental Meditation program on work attitudes



and behavior. Graduate School of Business, University of Chicago, Chicago, Illinois, U.S.A., 1975.

Improved Work Performance; Increased Work Satisfaction; Improved Relations with Co-Workers; Improved Relations with Supervisors.

98. BORLAND, C., and LANDRITH III, G. Improved quality of city life through the Transcendental Meditation program: Decreased crime rate. Department of Educational Psychology, Maharishi European Research University, Switzerland, and Department of Psychology, Maharishi International University, Fairfield, Iowa, U.S.A., 1976.

Improved Quality of City Life: Decreased Crime Rate (U.S.A., 1973).

#### **PART IV: THEORETICAL PAPERS**

99. DOMASH, L. H. The Transcendental Meditation technique and quantum physics: Is pure consciousness a macroscopic quantum state in the brain? Department of Physics, Maharishi European Research University, Switzerland, 1975.

In this contribution, the data of many of the preceding papers are organized into a theory of the Transcendental Meditation technique. Intended mainly for an audience of physicists, this paper should be of interest to psychologists, physiologists, and philosophers as well. The author interprets the pure consciousness state induced by the Transcendental Meditation technique in terms of quantum physics as a zero-entropy vacuum state, and puts forward the hypothesis that a form of superconductivity in the brain may underlie its physiology.

100. ORME-JOHNSON, D. The dawn of the Age of Enlightenment: Experimental evidence that the Transcendental Meditation technique produces a fourth and a fifth state of consciousness in the individual and a profound influence of orderliness in society. Department of Psychology, Maharishi European Research University, Switzerland, 1976.

A review of scientific data shows that a fourth state of consciousness is reached through the Transcendental Meditation program. It is seen that repeated experience of this state develops a fifth state of consciousness, cosmic consciousness or enlightenment, in which behavior is spontaneously "in accord with all the laws of nature."

101. WALLACE, R. K. Neurophysiology of enlightenment. Paper presented at the 26th International Congress of Physiological Sciences, New Delhi, India, October 1974. Livingston Manor, New York: MIU Press, 1974.

This contribution outlines the broad historical implications of scientific research on the Transcendental Meditation program for developing enlightened individuals, an enlightened society, cultural integrity, and world peace.

#### **PART V: THE TM-SIDHI PROGRAM<sup>2</sup>**

102. ORME-JOHNSON, D. W.; CLEMENTS, G.; HAYNES, C. T.; and BADAWI, K.

Higher states of consciousness: EEG coherence, creativity, and experiences of the sidhis. Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Switzerland, 1977.

Global EEG Coherence during Experience of the TM-Sidhis; Correlations between High EEG Coherence, Higher States of Consciousness, Experience of the TM-Sidhis, and Creativity.

103. ORME-JOHNSON, D. W., and GRANIERI, B. The effects of the Age of Enlightenment Governor Training Courses on field independence, creativity, intelligence, and behavioral flexibility. Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Switzerland, 1977.

Increased Field Independence (Growth of a More Stable Internal Frame of Reference, Increased Perceptual Acuity); Increased Creativity—Increased Figural Fluency and Originality; Increased Intelligence; Increased Behavioral Flexibility; Increased Psychomotor Speed and Motor-Cognitive Flexibility (Findings Indicate a Reversal of the Aging Process).

104. CLEMENTS, G., and MILSTEIN, S. L. Auditory thresholds in advanced participants in the Transcendental Meditation program. Department of Experimental Psychology, Maharishi European Research University, Switzerland, and Institut National de la Recherche Scientifique, Centre de Recherche en Sciences de la Santé, Université du Québec, Montreal-Gamelin, Québec, Canada, 1977.

Greatly Improved Auditory Thresholds.

## VOLUME 2

CHALMERS, R. A.; CLEMENTS, G.; SCHENKLUHN, H.; and WEINLESS, M., eds. 1989. *Scientific research on Maharishi's Transcendental Meditation and TM-Sidhi program: Collected papers, vol. 2*. Vlodrop, the Netherlands: MVU Press.

## PART I: PHYSIOLOGY

*The studies in the first two sections document changes during the practice of the Transcendental Meditation technique unless otherwise stated.*

### A: Metabolic, Biochemical, and Cardiovascular Changes

105. JEVNING, R.; SMITH, R.; WILSON A. F.; and MORTON, M. E. Alterations in blood flow during Transcendental Meditation. *Psychophysiology* 13: 168 (SPR Abstract # 20), 1976.

Changes in Regional Blood Flow Indicative of Increased Blood Flow to the Brain.

106. JEVNING, R.; WILSON, A. F.; SMITH, W. R.; and MORTON, M. Redistribution of blood flow in Transcendental Meditation. Department of Medicine, University of California at Irvine, Orange, California, U.S.A. Paper

presented at the American Psychological Society, San Francisco, California, U.S.A., October 1975.

Changes in Regional Blood Flow Indicative of Increased Blood Flow to the Brain.

107. MCCUAIG, L. W. Salivary electrolytes, protein, and pH during Transcendental Meditation. *Experientia* 30(9): 988–989, 1974.

Increased Concentration of Salivary Electrolytes and Protein.

108. STEHLE, R. Ventilation, heart rate, and respiratory partial pressures of athletes practicing the Transcendental Meditation technique. Diplomarbeit (abbr.), Deutsche Sporthochschule Köln, Cologne, W. Germany, 1975.

Indications of Deep Rest in Athletes: Decreased Metabolic Rate (Decreased Oxygen Consumption and Decreased Carbon Dioxide Elimination); Decreased Respiration Rate; Decreased Heart Rate; Decreased Minute Ventilation.

109. BEVAN, A. J. W.; YOUNG, P. M.; WELLBY, M. L.; NENADOVIC, P.; and DICKINS, J. A. Endocrine changes in relaxation procedures. *Proceedings of the Endocrine Society of Australia* 19: 59 (Abstract), 1976.

Reduction in Biochemical Index of Stress: Decreased Plasma Cortisol Levels. Biochemical Indication of Reduced Stress during Activity: Decreased Urinary Free Cortisol Levels.

110. BUJATTI, M., and RIEDERER, P. Serotonin, noradrenaline, dopamine metabolites in Transcendental Meditation technique. *Journal of Neural Transmission* 39: 257–267, 1976.

Changes in Neurotransmitter Balance: Increased Levels of Serotonin Metabolite (Increased 5-HIAA Levels); Decreased Levels of Adrenaline and Noradrenaline Metabolite (Decreased VMA Levels) and Higher Levels of 5-HIAA outside the Practice of Transcendental Meditation.

111. JEVNING, R., and WILSON, A. F. Acute decline in adrenocortical activity during Transcendental Meditation. Department of Medicine, University of California at Irvine, Orange, California, U.S.A., 1977.

Reduction in Biochemical Index of Stress: Decreased Plasma Cortisol Levels.

112. JEVNING, R., and WILSON, A. F. Altered red cell metabolism in TM. *Psychophysiology* 14: 94 (Abstract), 1977.

Fundamental Change in Cellular Metabolism: Reduced Glucose Metabolism in Red Blood Cells.

113. JEVNING, R.; PIRKLE, H. C.; and WILSON, A. F. Behavioral alteration of plasma phenylalanine concentration. *Physiology & Behavior* 19: 611–614, 1977.

Increased Plasma Phenylalanine Levels.

## **B: Electrophysiological and Electroencephalographic Changes**

114. KOBAL, G.; WANDHÖFER, R. A.; and PLATTIG, K.-H. EEG power spectra and auditory evoked potentials in Transcendental Meditation (TM). *Pflügers Archiv*,

Supplement 359: 191, R 96, 1975.

Improved Efficiency of Information Transfer in the Brain: Shorter Latencies of Auditory Evoked Potentials (Both during and outside the Practice of Transcendental Meditation). Increased EEG Alpha Power.

115. KRAHNE, W., and TANELI, B. EEG and Transcendental Meditation. *Pflügers Archiv*, Supplement 359: 190, R 95, 1975.

EEG Indications of Increased Orderliness of Brain Functioning: High Amplitude Alpha and Theta Activity in All Cortical Regions.

116. WANDHÖFER, A.; KOBAL, G.; and PLATTIG, K.-H. Shortening of latencies of human auditory evoked brain potentials during the Transcendental Meditation technique. *Zeitschrift für Elektroenzephalographie und Elektromyographie EEG-EMG* 7: 99–103, 1976. (Transl.)

Improved Efficiency of Information Transfer in the Brain: Shorter Latencies of Auditory Evoked Potentials (Both during and outside the Practice of Transcendental Meditation).

117. DASH, P., and ALEXANDER, C. N. Electrophysiological characteristics during the Transcendental Meditation program and napping: A pilot study. Divisions of Natural and Social Sciences, University of California at Santa Cruz, Santa Cruz, California, U.S.A., 1976.

EEG Differentiation between Transcendental Meditation and Napping.

118. BANQUET, J. P.; HAYNES, C.; HEBERT, R.; and REBER, B. Analysis of sleep in altered states of consciousness by classical EEG and coherence spectra. *Electroencephalography and Clinical Neurophysiology* 43(4): 503, E 203 (Abstract), 1977.

EEG Indications of Lessened Sleep Requirement.

119. BANQUET, J. P.; HAYNES, C.; HEBERT, R.; and REBER, B. Sleep and dream in altered states of consciousness. LENA, La Salpêtrière, Paris, France, and EEG Laboratory, Maharishi European Research University, Seelisberg, Switzerland, 1976.

EEG Indications of Lessened Sleep Requirement.

120. BENNETT, J. E., and TRINDER, J. Hemispheric laterality and cognitive style associated with Transcendental Meditation. *Psychophysiology* 14: 293–296, 1977.

Greater Adaptability of Brain Functioning outside the Practice of Transcendental Meditation: Greater Lateral EEG Asymmetry during Right and Left Hemisphere Tasks.

121. HEBERT, R., and LEHMANN, D. Theta bursts: An EEG pattern in normal subjects practicing the Transcendental Meditation technique. *Electroencephalography and Clinical Neurophysiology* 42: 397–405, 1977.

EEG Indications of Increased Inner Satisfaction: Synchronous Theta Bursts.

### **C: Physiological Efficiency and Stability**

122. SULTAN, S. E. A study of the ability of individuals trained in Transcendental

Meditation to achieve and maintain levels of physiological relaxation. Master's thesis (abbr.), School of Human Behavior, United States International University, San Diego, California, U.S.A., 1975.

Electromyographic Evidence of Deep Muscular Relaxation; Greater Ability to Maintain Relaxation during Activity.

123. DANIELS, D. Comparison of the Transcendental Meditation technique to various relaxation procedures. Department of Psychology, Washington Singer Laboratories, University of Exeter, Exeter, Devon, England, 1976.

Improved Resistance to Stress: Greater Autonomic Stability—Greater Stability of Skin Resistance in Response to Stressful Stimuli. Improved Auditory Discrimination and Greater Ability to Process Information at Speed (Superior Dichotic Listening).

#### **D: Health**

124. LOVELL-SMITH, H. D.; DICKIE, A.; and ROBINSON, J. Blood pressure and plasma cholesterol levels before and after learning Transcendental Meditation. University of Otago Medical School, Dunedin, New Zealand, 1975.

Reduction of Blood Pressure to More Ideal Levels in Both Hypertensive and Normotensive Subjects.

125. DONER, D. W. JR. The Transcendental Meditation technique—a “self-care” program for the dialysis/transplant patient. Findings previously published in *Journal of the American Association of Nephrology Nurses and Technicians* 3(3): 119–125, 1976.

Improved Mental and Physical Health in Patients on a Kidney Transplant/Dialysis Program: Decreased Blood Pressure; Decreased Anxiety; Increased Independence; Enhanced Self-Image; Improved Sense of Well-Being.

126. FUSON, J. W. The effect of the Transcendental Meditation program on sleeping and dreaming patterns. Unpublished doctoral dissertation (abbr.), Yale Medical School, New Haven, Connecticut, U.S.A., 1976.

Improvements in Sleeping and Dreaming Patterns: Improved Quality of Sleep; Decreased Time to Fall Asleep; More Rested on Awakening; Decreased Awakenings per Night; Decreased Time to Awaken Fully; Decreased Drowsiness; Decreased Lethargy; Decreased Daytime Napping; Decreased Number of Dreams Remembered; Decrease in Complexity of Dreams; Decrease in Unpleasant Emotional Content of Dreams; Decrease in Recurring Dreams; Decreased Need for Sleep Medications. Decreased Use of Alcohol. Improved Reported State of Mental Health. Reduced Need for Medical Attention.

127. SUURKÜLA, J. The Transcendental Meditation technique and the prevention of psychiatric illness. Vasa Hospital University of Gothenburg, Gothenburg, Sweden, 1977.

Epidemiological Evidence for Prevention of Psychiatric Illness.

**E: Motor and Perceptual Ability, and Athletic Performance**

128. GRAHAM, J. The effects of Transcendental Meditation on auditory thresholds. Department of Experimental Psychology, University of Sussex, Brighton, Sussex, England, 1971.  
Increased Perceptual Acuity: Improved Auditory Frequency and Amplitude Discrimination.
129. HARDESTY, M. J. The effect of Transcendental Meditation on reaction time. Western Kentucky University, Bowling Green, Kentucky, U.S.A., 1972.  
Improved Mind-Body Co-ordination: Faster Reactions (Simple and Choice Visual Reaction Time).
130. REDDY, M. K. The role of the Transcendental Meditation program in the promotion of athletic excellence: Long- and short-term effects and their relation to activation theory. Master's thesis, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Switzerland, 1976.  
Benefits for Athletes: A Unique State of Deep Rest during Transcendental Meditation—Decreased Metabolic Rate (Decreased Oxygen Consumption); Increased Basal Skin Resistance; Fewer Spontaneous Skin Resistance Responses. Improved Physiological Functioning outside the Practice of Transcendental Meditation—Improved Cardiovascular Efficiency; Improved Respiratory Efficiency (Increased Vital Capacity). Improved Athletic Performance and Neuromuscular Integration—Improved Running Speed; Improved Standing Broad Jump; Improved Agility; Faster Reactions.
131. MARTINETTI, R. F. Influence of Transcendental Meditation on perceptual illusion: A pilot study. *Perceptual and Motor Skills* 43: 822, 1976.  
Improved Perceptual Ability: Lower Incidence of Perceptual Illusions.

**PART II: PSYCHOLOGY****A: Intelligence, Learning, and Academic Performance**

132. NATARAJ, P., and RADHAMANI, M. G. The Transcendental Meditation program and its effects on psychological functions in secondary school students of a rural Indian high school. Department of Psychology, Maharani's College, Mysore, India. Research presented at the International Conference on 'Veda and Science,' Bangalore, Karnataka, India, 25–30 June 1975.  
Benefits for High School Students: Improved Concentration; Improved Reading Comprehension; Improved Memory.
133. OVERBECK, K.-D., and TÖNNIES, S. E. Einige Effekte der Transzendentalen Meditation bei lernbehinderten Sonderschülern. Diplomarbeit of first author (abbr.), Psychologisches Institut III, University of Hamburg, Hamburg, W. Germany, 1975.

- Benefits for School Children with Learning Problems: Decreased Anxiety; Decreased Examination Anxiety; Decreased School Dislike.
134. SCHER, D. The effects of Transcendental Meditation on free recall. Master's thesis (abbr.), State University College, New Paltz, New York, U.S.A., 1975.
- Improved Memory and Organization of Memory—Effect More Pronounced in Long-Term Meditators.
135. HARRISON, S. D.; PAGANO, R.; and WARKENBURG, S. Meditation and right hemispheric functioning—spatial localization. In *Proceedings of the Biofeedback Research Society, Seventh Annual Meeting, Colorado Springs, Colorado, U.S.A., 27 February–2 March 1976*, p. 33 (Abstract).
- More Efficient Functioning of the Right Cerebral Hemisphere: Better Spatial Localization.
136. BERRETTINI, R. B. The effects of the Transcendental Meditation program on short-term recall performance. Master's thesis (abbr.), Department of Education, Wilkes College, Wilkes-Barre, Pennsylvania, U.S.A., 1976.
- Benefits for College Students: Improved Short-Term Memory, Ability to Focus Attention, and Spontaneous Organization of Memory.
137. HARDING, S. D. The Transcendental Meditation program in British secondary schools. Department of Experimental Psychology, University of Sussex, Brighton, Sussex, England, 1976.
- Decreased Neuroticism in Secondary School Students.
138. BROWN, M. Higher education for higher consciousness: A study of students at Maharishi International University. Doctoral dissertation (abbr.), University of California at Berkeley, Berkeley, California, U.S.A., *Dissertation Abstracts International* 38, 649A–650A, 1976.
- Benefits for Students Resulting from Maharishi's Integrated System of Education at Maharishi International University: Greater Interest in Academic Activities; Greater Commitment to Higher Education; Greater Intellectual and Scientific Orientation; Greater Aesthetic Orientation; Greater Respect for Traditional Religious Values; Greater Optimism about the Future of Society; Greater Altruism (Greater Commitment to Helping Others and Improving Society); Greater Sense of Social Responsibility; Greater Tolerance of Authority; Greater Trust; Greater Sociability; Greater Psychological Stability; Greater Commitment to Personal Growth; Less Anxiety; Less Impulsiveness.
139. JACKSON, Y. Learning disorders and the Transcendental Meditation program: Retrospects and prospects. A preliminary study with economically deprived adolescents. Doctoral thesis (abbr.), University of Massachusetts, Amherst, Massachusetts, U.S.A., 1977. *Dissertation Abstracts International* 38 (6): 3351A, 1977.
- Increased Self-Actualization in Economically Deprived Adolescents with Learning Problems: Increased Inner-Directedness (Independence, Self-Supportiveness)<sup>3</sup>; Increased Self-Regard. Decreased Dropout Rate from School.
140. PAGANO, R. R., and FRUMKIN, L. R. The effect of Transcendental Meditation on right hemispheric functioning. *Biofeedback and Self-Regulation* 2(4): 407–415, 1977.

Superior Synthetic and Holistic Thinking: Enhanced Tonal Memory.

**B: Development of Personality**

141. CURTIN, T. G. The relationship between Transcendental Meditation and adaptive regression. Doctoral thesis (abbr.), School of Education, Boston University, Boston, Massachusetts, U.S.A., 1973.  
Improved Mental Health: Increased Capacity for 'Adaptive Regression' (Conscious Experience of the Inner Self and Ability to Bring the Inner Self to Healthy Expression).
142. BOESE, E., and BERGER, K. Psychological effects of Transcendental Meditation. Department of Behavioral Science, Milton S. Hershey Medical Center, Pennsylvania State University, Hershey, Pennsylvania, U.S.A., 1971.  
Decreased Number of Situations in Life Felt to Be a Problem; Decreased Number of Serious Problems Experienced; Decreased Hostility; Enhanced Self-Concept.
143. HAHN, H. R., and WHALEN, T. E. The effects of the Transcendental Meditation program on levels of hostility, anxiety, and depression. Master's thesis (abbr.), Department of Educational Psychology, California State University at Hayward, Hayward, California, U.S.A., 1974.  
Decreased Hostility; Decreased Anxiety; Decreased Depression.
144. ROSENTHAL, J. M. The effect of the Transcendental Meditation program on self-actualization, self-concept, and hypnotic susceptibility. Master's thesis (abstract), Department of Psychology, University of Hawaii, Honolulu, Hawaii, U.S.A., 1974.  
Benefits for University Students: Increased Self-Actualization; Enhanced Self-Concept.
145. FLOYD III, W. T., and HAYNES, J. The influence of Transcendental Meditation on anxiety. Master's thesis of first author (abbr.), Department of Psychology, North Texas State University, Denton, Texas, U.S.A., 1974.  
Decreased Anxiety.
146. WILLIS, C. Transcendental Meditation and its influence on the self-concept. Texas A&M University, College Station, Texas, U.S.A., 1974.  
Better Self-Concept and Degree of Adjustment; Improved Psychological Health.
147. WEISS, C. The immediate effect of the Transcendental Meditation technique and theoretical reflections upon the psychology and physiology of subjective well-being. Diplomarbeit (abbr.), Institute of Psychology, University of the Saarland, Saarbrücken, W. Germany, 1975.  
Increased Elevated Mood; Increased Mental Clarity and Wakefulness; Increased Readiness for Activity; Decreased Vulnerability; Decreased Nervousness; Decreased Fatigue; Decreased Drowsiness; Decreased Lethargy; Decreased Depressed Mood; Decreased Introversion; Decreased Aggressive Irritation.
148. GUPTA, N. C. Effects of Transcendental Meditation on anxiety and self-concept. Department of Educational Psychology, Ball State University, Muncie,



Indiana, U.S.A., 1974.

Enhanced Self-Concept; Decreased Anxiety.

149. GRIGGS, S. T. A preliminary study into the effect of Transcendental Meditation on empathy. Master's thesis (abbr.), School of Human Behavior, United States International University, San Diego, California, U.S.A., 1976.

Greater Empathy.

150. THROLL, D. A., and THROLL, L. A. The effect of a three-month residence course upon the personalities of experienced meditators. Victoria University, Wellington, New Zealand, 1977.

Increased Ego Strength, Emotional Stability and Maturity, and Decreased Overreactionary Behavior; Increased Emotional Harmony and Absence of Regressive Behavior; Increased Emotional Strength and Lessening of Unwelcome Thoughts or Compulsive Habits; Decreased Depression, Showing a Calmer, More Confident Attitude; Increases in—Intelligence; Self-Sufficiency and Resourcefulness; Contentment; Enthusiasm for Work; Trust; Tolerant and Participating Attitude; Creativity; Decreases in—Anxiety and Tension; Use of Alcohol; Use of Cigarettes; Need for Tranquilizers and Other Prescribed Drugs.

151. RUSSIE, R. E. The influence of Transcendental Meditation on positive mental health and self-actualization; and the role of expectation, rigidity, and self-control in the achievement of these benefits. Doctoral thesis (abbr.), California School of Professional Psychology, Los Angeles, California, U.S.A., 1975.

Increased Self-Actualization: Increases in—Time Competence (Ability to Live More Fully in the Present, Ability to Connect Past, Present, and Future Meaningfully); Inner-Directedness (Independence, Self-Supportiveness); Self-Actualizing Value (Holding of Values of Self-Actualizing People); Feeling Reactivity (Sensitivity to One's Own Needs and Feelings); Spontaneity; Self-Regard; Self-Acceptance; Capacity for Intimate Contact (Capacity for Warm Interpersonal Relationships).

152. MADSEN, W. C. Transcendental Meditation and the flexibility of constructions of reality. Department of Psychology, Stanford University, Palo Alto, California, U.S.A., 1976.

Greater Open-Mindedness: Greater Flexibility of Constructions of Reality.

153. THROLL, D. A. The effects of the Transcendental Meditation technique upon adolescent personality. Master's thesis (abbr.), Victoria University, Wellington, New Zealand, 1978.

Increased Self-Actualization: Increases in—Time Competence (Ability to Live More Fully in the Present, Ability to Connect Past, Present, and Future Meaningfully); Inner-Directedness (Independence, Self-Supportiveness); Self-Actualizing Value (Holding of Values of Self-Actualizing People); Feeling Reactivity (Sensitivity to One's Own Needs and Feelings); Spontaneity; Self-Regard; Nature of Man is Constructive (Ability to See Man as Essentially Good); Capacity for Intimate Contact (Capacity for Warm Interpersonal Relationships). Increased Ego Strength and Emotional Maturity, Decreased Overreactionary Behavior; Increased Boldness and Self-Sufficiency, Decreased Inhibition;

Increased Self-Reliance, Practicality, Realism, and Logical Behavior; Increased Tolerant and Conciliatory Attitudes; Decreased Instability, Insomnia, and Hypochondriacal and Neurasthenic Symptoms; Increased Self-Control, Persistence, Foresight, Consideration of Others, and Regard for Etiquette; Increased Relaxed, Unfrustrated, Guilt-Free Behavior; Increased Outgoingness and Tendency to Participate; Decreased Anxiety; Increased Self-Sufficiency. Decreased Need for Sleep Medication and Pain Relievers; Decreased Use of Cigarettes; Decreased Use of Alcohol; Decreased Drug Abuse.

154. DILLBECK, M. C. The effect of the Transcendental Meditation technique on anxiety level. *Journal of Clinical Psychology* 33(4): 1076–1078, 1977.

Decreased Anxiety in University Students.

155. BOSMAJIAN, L. S. Role of expectancy and pretreatment personality in subjects' self-actualizing changes while practicing Transcendental Meditation. Doctoral thesis (abbr.), Department of Psychology, The George Washington University, Washington, D.C., U.S.A., 1977.

Increased Self-Actualization: Increases in—Time Competence (Ability to Live More Fully in the Present, Ability to Connect Past and Present Meaningfully); Inner-Directedness (Independence, Self-Supportiveness).

156. NYSTUL, M. S., and GARDE, M. Comparison of self-concepts of Transcendental Meditators and nonmeditators. *Psychological Reports* 41: 303–306, 1977.

Enhanced Self-Concept: Less Likely to Qualify Self-Description; Fewer Personality Defects; Greater Self-Esteem; Better Opinion of Oneself; Greater Self-Satisfaction; Greater Sense of Personal Worth; Greater Satisfaction with One's Moral Worth and Relationship to God and Religion.

### PART III: SOCIOLOGY

#### A: Rehabilitation

157. CANDELENT, T., and CANDELENT, G. Teaching Transcendental Meditation in a psychiatric setting. *Hospital & Community Psychiatry* 26(3): 156–159, 1975.

Benefits for Psychiatric Patients with Schizophrenia, Neurosis, Personality Disorders, and Alcohol and Drug Problems: Decreased Anxiety and Tension; Decreased Overactive or Impulsive Behavior; Improved Sleep Patterns (Decreased Awakenings per Night, Improved Quality of Sleep).

158. RAMIREZ, J. The Transcendental Meditation program as a possible treatment modality for drug offenders: Evaluation of a pilot project at Milan Federal Correctional Institution. Department of Forensic Studies, Indiana University, Bloomington, Indiana, U.S.A., 1975.

Rehabilitation of Imprisoned Drug Offenders: Enhanced Self-Esteem; Indications of Increased Emotional Stability and Maturity—Decreased Depression; Decreased Neuroticism; Decreased Guilt; Decreased Psychasthenia; Decreased Hypomania;

Decreased Schizophrenia; Increased Social Responsibility. Indications of Decreased Aggression—Decreased Hostility; Decreased Assault; Decreased Irritability; Decreased Suspicion; Decreased Resentment; Decreased Psychopathic Deviation.

159. BLOOMFIELD, H. H., and KORY, R. The Transcendental Meditation program, spiritual crisis and enlightenment. Findings previously published in *Holistic way to health and happiness: A new approach to complete lifetime wellness*. 243–259. New York: Simon and Schuster, 1978.

Resolution of Spiritual Crisis through Development of Integration of Personality: Growth of Enlightenment.

160. FERGUSON, R. E. The Transcendental Meditation program at Massachusetts Correctional Institution Walpole: An evaluation report. Institute for Social Rehabilitation, Pacific Palisades, Los Angeles, California, U.S.A., 1977.

Rehabilitation of Prisoners: Decreased Anxiety; Decreased Hostility; Decreased Prison Disciplinary Rule Infractions; Improved Sleep Patterns (Decreased Time to Fall Asleep, Decreased Awakenings per Night, Improved Quality of Sleep).

161. FERGUSON, R. E. A self-report evaluation of the effects of the Transcendental Meditation program at Massachusetts Correctional Institution Walpole—a follow-up. Institute for Social Rehabilitation, Pacific Palisades, Los Angeles, California, U.S.A., 1978.

Rehabilitation of Prisoners: Increased Work Efficiency; Increased Ability to Handle Stress and Tension; Increased Ability to Deal with Others; Decreased Use of Alcohol and Prescribed and Non-Prescribed Drugs; Decreased Use of Cigarettes; Decreased Drug Abuse.

162. DHANARAJ, H. The influence of Transcendental Meditation on cessation of drug use: Some preliminary findings. Findings previously published in *RODA Summer Scholarship Abstracts*, National Health and Welfare, Canada, 1973.

Decreased Drug Abuse; Decreased Use of Cigarettes; Decreased Use of Alcohol.

163. MONAHAN, R. J. Secondary prevention of drug dependence through the Transcendental Meditation program in metropolitan Philadelphia. *The International Journal of the Addictions* 12(6): 729–754, 1977.

Decreased Drug Abuse; Decreased Use of Cigarettes; Decreased Use of Alcohol; Decreased Use of Caffeine; Decreased Need for Tranquillizers and Other Prescribed Drugs.

#### **B: Productivity and Quality of Life**

164. JONSSON, C. Organizational development through the Transcendental Meditation program: A study of relationships between the Transcendental Meditation program and certain efficiency criteria. Unpublished master's thesis (abbr.), Department of Business Administration, Stockholm University, Stockholm, Sweden, 1975.

Fulfillment of Goals of Organizational Development: Ability to Accomplish More

with Less Effort; Greater Alertness, Attentiveness, and Initiative; Greater Self-Confidence; Greater Decision Making Ability; Greater Ability to Assign Priorities; Greater Ease in Making Contacts with Other People; Greater Ability to Cooperate with Others and Greater Respect for the Views of Others; Greater Tolerance; Less Easily Irritated; Less Often Angry; Less Tendency to Worry about Other People's Opinions; Less Often Tired.

165. SUAREZ, V. W. The relationship of the practice of Transcendental Meditation to subjective evaluations of marital satisfaction and adjustment. Unpublished master's thesis (abbr.), School of Education, University of Southern California, Los Angeles, California, U.S.A., 1976.

Greater Marital Satisfaction: Greater Adjustment; Greater Happiness and Harmony; Greater Intimacy; Greater Acceptance of One's Spouse; Greater Admiration of One's Spouse; Greater Agreement on Conduct and Recreation.

166. HATCHARD, G. Influence of the Transcendental Meditation program on crime rate in suburban Cleveland. Cleveland World Plan Center, Cleveland, Ohio, U.S.A., 1977.

Improved Quality of City Life: Decreased Crime Rate in Suburban Communities (U.S.A., 1974–1976).

#### PART IV: REVIEW PAPERS

Papers 167 to 189 review the application of the Transcendental Meditation and TM-Sidhi program in the areas of health, education, development of personality, rehabilitation, and quality of life.

##### A: Health

167. GRÄF, H.-D. Transzendente Meditation—ein Weg in der psychophysischen Therapie. *Ärzteblatt Baden-Württemberg* (6), 1975 .

The physiological, psychological, and sociological benefits resulting from the practice of the Transcendental Meditation technique are reviewed. The value of the technique both in clinical practice and for society as a whole is emphasized.

168. TOANE, E. B. The Transcendental Meditation program. *Journal of the Canadian Medical Association* 114: 1095–1096, 1976.

The author discusses results of research on the Transcendental Meditation program and gives examples from his own experience of the benefits of Transcendental Meditation for the patient and the doctor.

169. STUTZ, E. Transzendente Meditation in der Medizin. *Medizinische Klinik* 72(20): 905–908, 1977.

The benefits of Transcendental Meditation for physiological functioning are reviewed and their value in clinical medicine is emphasized.

170. ORME-JOHNSON, D. W. EEG coherence during transcendental consciousness.

*Electroencephalography and Clinical Neurophysiology* 43(4): 581–582, E 487 (Abstract), 1977.

Very high EEG coherence, indicating increased orderliness of brain functioning, was found to be characteristic of the experience of transcendental consciousness during Transcendental Meditation. High correlations were found between: 1) coherence, 2) creativity, 3) clarity of experience of transcendental consciousness, 4) H-reflex recovery, and 5) suspension of respiration.

171. RIGBY, B. Higher states of consciousness through the Transcendental Meditation program: A literature review. Department of Psychiatry, Maharishi European Research University, Seelisberg, Switzerland. Rheinweiler, W. Germany: MERU Press, 1978.

The paper presents a concise review of research on higher states of consciousness developed through the Transcendental Meditation and TM-Sidhi program and discusses the profound benefits of this program for the development of perfect health for both the individual and society.

172. GRÄF, D. Die Technik der Transzendentalen Meditation und ihre Wirkungen auf die Gesundheit. *Erfahrungsheilkunde* 27(3): 99–102, 1978.

The benefits of Transcendental Meditation for physiological functioning and their importance for health are reviewed.

173. KANELLAKOS, D. P. Transcendental consciousness: Expanded awareness as a means of preventing and eliminating the effects of stress. In *Stress and anxiety*, C.D. Spielberger and I.G. Sarason (Eds.), Vol. 5, pp. 261–315. Washington, D.C.: Hemisphere Publishing Corporation, 1978.

The paper reviews the beneficial effects of the Transcendental Meditation program in the light of their importance for the prevention and elimination of stress and expansion of individual consciousness.

174. GRÄF, D. Die Transzendentalen Meditation (TM) und ihre therapeutischen Möglichkeiten. *Zeitschrift für Allgemeinmedizin* 54(12): 701–709, 1978.

Research findings on the Transcendental Meditation program are discussed with respect to its benefits in the fields of health and social welfare.

175. KROENER, D. Transzendentalen Meditation und ihre Indikationen für den niedergelassenen Arzt. *Biologische Medizin* 9(3): 122–127, 1980.

The benefits of the Transcendental Meditation program in medical practice are described with particular reference to the alleviation of stress-related illness and psychosomatic complaints.

## **B: Education**

176. LEVINE, P. H. Transcendental Meditation and the Science of Creative Intelligence. *Phi Delta Kappan* 54(4): 231–235, 1972.

The Science of Creative Intelligence and its practical aspect the Transcendental Meditation program are discussed in the light of their implications for resolving

the problems in education.

177. DRISCOLL, F. TM as a secondary school subject. *Phi Delta Kappan* 54(4): 236–237, 1972.

A U.S. public school superintendent outlines his successful experience of introducing Transcendental Meditation into the adult education program of his area and at a senior high school. Improved grades, improved relationships with family, teachers, and peers, and disappearance of drug abuse are reported.

178. PRICE, J. F. Education and the Science of Creative Intelligence. *Vestes: the Australian Universities' Review* 17(1): 28–37, 1974.

The author presents the Science of Creative Intelligence as a fundamental interdisciplinary approach to education and outlines its great practical value in improving the quality of life in the light of scientific research on the Transcendental Meditation program.

179. CLEMENTS, G., and RIGBY, B. P. The Science of Creative Intelligence offers fulfillment in education: Self-realization found in the simplest form of awareness—the field of all possibilities. Paper presented at the Seventh World Congress, International Association for the Advancement of Educational Research, Gent, Belgium, July 1977. Rheinweiler, W. Germany: MERU Press, 1977.

The paper discusses the educational programs of Maharishi European Research University for unfolding the full potential of consciousness in every student, and developing a unified understanding of all fields of knowledge through the Science of Creative Intelligence and its practical aspect, the Transcendental Meditation and TM-Sidhi program. The authors propose that the implementation of this scientifically validated program in all areas of education will bring fulfillment to the goals of every system of education.

### **C: Personality**

180. SHELLY, M. Meditation and the great evolution. Department of Psychology, University of Kansas, Lawrence, Kansas, U.S.A., 1972.

Transcendental Meditation is seen as an important method of increasing satisfaction and happiness.

### **D: Rehabilitation**

181. KNIFFKI, K.-D. Transzendente Meditation—TM—u.a. eine nichtchemische Methode gegen Drogenmißbrauch. *Niedersächsisches Ärzteblatt* 44(24): 805–809, 1971.

Transcendental Meditation is discussed as a highly effective method to combat drug abuse.

182. COX, S. B. Transcendental Meditation and the criminal justice system. *Kentucky Law Journal* 60(2), 1971–1972.

The Transcendental Meditation technique is introduced as an effective means for criminal and drug rehabilitation.

183. SYKES, D. E. Transcendental Meditation—as applied to criminal justice reform, drug rehabilitation and society in general. *The University of Maryland Law Forum* 3(2), 1973.

The benefits of Transcendental Meditation for mind, body, social behavior, and world harmony are discussed. On this basis the application of the Transcendental Meditation program in prison and drug rehabilitation is proposed.

184. MARCUS, J. B. Transcendental Meditation: A new method of reducing drug abuse. *Drug Forum* 3(2): 113–136, 1974.

Research demonstrates that Transcendental Meditation is effective in the treatment and prevention of drug abuse.

185. FULLERMAN, F. J. The Transcendental Meditation program: New hope for criminal rehabilitation. United States Probation Officer, United States District Court, Northern District of Illinois, Illinois, U.S.A. Paper presented at the First International Conference on Criminology and Consciousness, Maharishi International University, Fairfield, Iowa, U.S.A., 29–30 October 1977.

The unique effectiveness of the Transcendental Meditation program in the rehabilitation of prisoners is discussed on the basis of research projects conducted in U.S. prisons. The author proposes the introduction of Transcendental Meditation in the probation and parole systems.

186. KANELLAKOS, D. P.; RIGBY, B. P.; BLOOMFIELD, H. H.; CHARLES, B. M.; CLEMENTS, G.; DAVIS, B. V.; and MEAD, G. Enlightenment for ideal rehabilitation: Expansion of consciousness as the basis of the restoration of creative intelligence. The effectiveness of the Transcendental Meditation program for rehabilitation. Paper presented at the Third International Conference on Drug Dependency, Liverpool, England, 6 April 1976. Rheinweiler, W. Germany: MERU Press, 1976.

The authors propose that the development of enlightenment through the Transcendental Meditation program is the ideal means of rehabilitation. Scientific research on Transcendental Meditation is examined in the light of its application for the restoration of the full creative intelligence of the individual.

187. STUTZ, E. Transzendente Meditation in der Behandlung Drogenabhängiger. *Das öffentliche Gesundheitswesen* 39: 759–766, 1977.

The Transcendental Meditation program is found to be effective in drug rehabilitation.

188. RIGBY, B. Enlightenment in world psychiatry: The Transcendental Meditation technique—new light on consciousness. Paper presented at The Sixth World Congress of Psychiatry, Honolulu, Hawaii, U.S.A., 28 August–3 September 1977. Rheinweiler, W. Germany: MERU Press, 1977.

A review of research reveals that enlightenment—the state of fully developed human consciousness resulting from the regular practice of the Transcendental Meditation and TM-Sidhi program—fulfills the highest goals of psychiatry and

medicine in bringing perfect health to both the individual and society—the basis for world peace.

**E: Quality of Life**

189. BAUMANN, E. Neurophysiologische Integration als Grundlage für Lernen und Arbeiten in der Ökologie. *Verhandlungen der Gesellschaft für Ökologie*, Kiel 1977, 6: 557–560, 1978.

The integrated functioning of the nervous system, developed through Transcendental Meditation, is discussed as the basis of a holistic and all encompassing view of the environment and of life in accord with natural law.

**VOLUME 3**

CHALMERS, R. A.; CLEMENTS, G.; SCHENKLUHN, H.; and WEINLESS, M., eds. *Scientific research on Maharishi's Transcendental Meditation and TM-Sidhi program: Collected papers, vol. 3*. Vlodrop, the Netherlands: MVU Press, 1989.

**PART I: PHYSIOLOGY**

*The studies in the first two sections document changes during the practice of the Transcendental Meditation technique unless otherwise stated.*

**A: Metabolic, Biochemical, and Cardiovascular Changes**

190. JEVNING, R.; WILSON, A. F.; and DAVIDSON, J. M. Adrenocortical activity during meditation. *Hormones and Behavior* 10(1): 54–60, 1978.

Reduction in Biochemical Index of Stress: Decreased Plasma Cortisol Levels.

191. JEVNING, R.; WILSON, A. F.; and SMITH, W. R. The Transcendental Meditation technique, adrenocortical activity, and implications for stress. *Experientia* 34: 618–619, 1978.

Reduction in Biochemical Index of Stress: Decreased Plasma Cortisol Levels.

192. JEVNING, R.; WILSON, A. F.; and VANDER LAAN, E. F. Plasma prolactin and growth hormone during meditation. *Psychosomatic Medicine* 40(4): 329–333, 1978.

Change in Hormonal Balance: Small Increase in Plasma Prolactin Levels following Transcendental Meditation.

193. BAUHOFER, U. Die kreislaufphysiologischen Auswirkungen bei der Transzendentalen Meditation. Unpublished doctoral dissertation, Faculty of Medicine, University of Würzburg, Würzburg, W. Germany. 1978.

Changes in Cardiac Output and Stroke Volume.



194. JEVNING, R.; WILSON, A. F.; SMITH, W. R.; and MORTON, M. E. Redistribution of blood flow in acute hypometabolic behavior. *American Journal of Physiology* 235(1): R89–R92, 1978.
- Changes in Regional Blood Flow and Cardiac Output Indicative of Increased Blood Flow to the Brain. Reduction in Biochemical Index of Stress: Decreased Arterial Lactate Levels. Indication of Deep Rest: Decreased Respiratory Minute Volume.
195. JEVNING, R., and WILSON, A. F. Behavioral increase of cerebral blood flow. *The Physiologist* 21: 60 (Abstract), 1978.
- Large Increase in Blood Flow to the Brain.
196. ARNHOLD, E.; CHARLES, B. M.; GANDHI, J. S.; BRAGG, M. C.; and RIGBY, B. P. Endocrinological changes following instruction in the TM-Sidhi program. In *XIVth International Congress of Internal Medicine Abstracts*, Rome, Italy, October 1978, p. 363. Amsterdam: Excerpta Medica.
- Changes in Hormonal Balance as a Result of the TM-Sidhi Program: Short- and Long-Term Changes in Pituitary Hormone Levels Indicative of Increased Sensitivity in Endocrine Control Systems.
197. SEVEREIDE, C. J. Physiological and phenomenological aspects of Transcendental Meditation. Master's thesis (abbr.), Department of Psychology, University of Trondheim, Trondheim, Norway, 1979.
- Experience of Pure Consciousness Associated with: Marked Reductions in Respiration and Heart Rates; Periodic Breath Suspension; Absence of Spontaneous Skin Resistance Responses. Maintenance of Relaxed Style of Physiological Functioning Outside of Meditation: Fewer Spontaneous Skin Resistance Responses.
198. LANG, R.; DEHOF, K.; MEURER, K. A.; and KAUFMANN, W. Sympathetic activity and Transcendental Meditation. *Journal of Neural Transmission* 44: 117–135, 1979.
- Integration of Opposite Styles of Physiological Functioning: Simultaneous Increased Activity of Sympathetic and Parasympathetic Branches of Autonomic Nervous System.
199. BEVAN, A. J. W.; SYMONS, R. G.; BENG, C. G.; and WELLBY, M. L. Short-term endocrine changes in Transcendental Meditation. *Proceedings of the Endocrine Society of Australia* 2 (Abstract 56), 1979.
- Changes in Hormonal Balance: Decreased Serum Growth Hormone Levels.
200. BEVAN, A. J. W. Endocrine changes in Transcendental Meditation. *Clinical and Experimental Pharmacology and Physiology* 7: 75–76 (Abstract), 1980.
- Biochemical Indications of Reduced Stress: Decreased Serum Growth Hormone Levels; Decreased Serum Cortisol Levels; Decreased Serum Triiodothyronine Levels.
201. ROBERTSON, D. W., and PETERSON, J. W. Change in cardiac output during Transcendental Meditation as measured by noninvasive impedance plethysmography. Departments of Physical Education and Biomedical Engineering, University of Texas at Austin, Austin, Texas, U.S.A., 1980.
- Changes in Cardiac Output and Stroke Volume.

202. SUBRAHMANYAM, S., and PORKODI, K. Neurohumoral correlates of Transcendental Meditation. *Journal of Biomedicine* 1: 73–88, 1980.  
Changes in Biochemical and Hormonal Balance outside the Practice of Transcendental Meditation: Decreased Levels of Catecholamine and Steroid Metabolites; Decreased Plasma Cortisol Levels. Improved Cardiovascular Health: Decreased Serum Cholesterol Levels. Benefits for Patients with Aggressive Behavior, Mental Retardation, and Epilepsy: Normalization of Neurotransmitter Metabolite Levels, Plasma Cortisol Levels, and EEG Features; Decreased Aggression in Aggressive Patients; Improved IQ and Cognitive Functioning in Mentally Retarded Subjects; Reduction of Frequency and Severity of Epileptic Seizures in Epileptic Patients.
203. JEVNING, R.; WILSON, A. F.; and PIRKLE, H. C. Behavioral control of red blood cell metabolism. Departments of Medicine, Physiology, and Pathology, University of California at Irvine, Orange, California, U.S.A., 1981.  
Fundamental Change in Cellular Metabolism: Reduced Glucose Metabolism in Red Blood Cells.
204. WALTON, K. G.; LEROM, M.; SALERNO, J.; and WALLACE, R. K. Practice of the Transcendental Meditation (TM) and TM-Sidhi program may affect the circadian rhythm of urinary 5-hydroxyindole excretion. *Society for Neuroscience Abstracts* 7: 48, 1981.  
Changes in Serotonergic Activity: Increased Urinary 5-Hydroxyindole Excretion.
205. FARROW, J. T., and, HEBERT J. R. Breath suspension during the Transcendental Meditation technique. *Psychosomatic Medicine* 44(2):133–153, 1982.  
Experience of Pure Consciousness Associated with: Periodic Breath Suspension; Marked Reductions in Metabolic Rate (Oxygen Consumption and Carbon Dioxide Elimination), Mean Respiration Rate, and Minute Ventilation Rate; Reduced Heart Rate; Increased Basal Skin Resistance; Stable Phasic Skin Resistance; Increased EEG Coherence in Theta, Alpha and Beta Bands.
206. WERNER, O.; WALLACE, R. K.; CHARLES, B.; JANSSEN, G.; and CHALMERS, R. Endocrine balance and the TM-Sidhi program. Maharishi European Research University, Seelisberg, Switzerland, and Department of Biology, Maharishi International University, Fairfield, Iowa, U.S.A., 1982.  
Changes in Hormonal Balance as a Result of the TM-Sidhi Program: Short- and Long-Term Changes in Pituitary Hormone Levels Indicative of Increased Stability and Sensitivity in Endocrine Control Systems.
207. JEVNING, R.; WILSON, A. F.; and O'HALLORAN, J. P. Muscle and skin blood flow and metabolism during states of decreased activation. *Physiology & Behavior* 29(2): 343–348, 1982.  
Indication of Deep Rest: Decreased Oxygen Consumption in Muscle Tissue.
208. O'HALLORAN, J. P.; JEVNING, R. A.; WILSON, A. F.; SKOWSKY, R.; and ALEXANDER, C. N. Behaviorally induced secretion of arginine vasopressin. Departments of Medicine and Physiology, University of California at Irvine, Orange, California, U.S.A.; Department of Endocrinology, Long Beach Veteran's

Administration Hospital, Long Beach, California, U.S.A.; and Department of Psychology and Social Relations, Harvard University, Cambridge, Massachusetts, U.S.A., 1983.

Changes in Hormonal Balance: Increased Plasma Vasopressin Levels at Regular Twice Daily Practice of Transcendental Meditation. Indication of Deep Rest: Increased Basal Skin Resistance. Lower State and Trait Anxiety.

**B: Electrophysiological and Electroencephalographic Changes**

209. KEMMERLING, T. Wirkung der Transzendentalen Meditation auf den Muskeltonus. *Psychopathometrie* 4: 437–438, 1978.

Electromyographic Evidence of Deep Muscular Relaxation.

210. ORME-JOHNSON, D. W. EEG coherence and the TM-Sidhi program. Maharishi International University, Fairfield, Iowa, U.S.A. Abstract presented at the American Psychological Association, Toronto, Ontario, Canada, 28 August 1978.

Increased Orderliness and Integration of Brain Functioning as a Result of the TM-Sidhi Program: Longitudinal Increases in Interhemispheric EEG Coherence.

211. ROUZERÉ, A.-M.; BADAWI, K.; and HARTMANN, R. High amplitude fronto-central alpha and theta activity during the Transcendental Meditation technique. Department of Neurophysiology, Maharishi European Research University, Seelisberg, Switzerland, 1979.

Increased Orderliness and Integration of Brain Functioning: Bursts of High Amplitude EEG Alpha and Theta Activity in Frontal and Central Regions.

212. CHENARD, J.-R. A controlled study of the influence of Transcendental Meditation on a specific value of the H-reflex (Hoffman reflex) recruitment curve and the surface EMG. Centre d'études universitaires dans l'Ouest Québécois, University of Quebec, Rouyn, Quebec, Canada, 1979.

Electromyographic Evidence of Deep Muscular Relaxation; Reduction in Amplitude of H-Reflex.

213. BADAWI, K.; WALLACE, R. K.; ORME-JOHNSON, D.; and ROUZERÉ, A.-M. Electrophysiologic characteristics of respiratory suspension periods occurring during the practice of the Transcendental Meditation program. *Psychosomatic Medicine* 46(3): 267–276, 1984.

Experience of Pure Consciousness Associated with Periodic Breath Suspension and High EEG Coherence.

214. MCEVOY, T. M.; FRUMKIN, L. R.; and HARKINS, S. W. Effects of meditation on brainstem auditory evoked potentials. *International Journal of Neuroscience* 10: 165–170, 1980.

Changes in Brainstem Auditory Evoked Potentials following the Transcendental Meditation and TM-Sidhi Program Suggesting Improved Processing of Auditory Information.

215. ORME-JOHNSON, D. W.; WALLACE, R. K.; and DILLBECK, M. C. Longi-

tudinal effects of the TM-Sidhi program on EEG phase coherence. Departments of Psychology and Biology, Maharishi International University, Fairfield, Iowa, U.S.A., 1980.

Increased Orderliness and Integration of Brain Functioning as a Result of the TM-Sidhi Program: Longitudinal Increases in EEG Alpha and Theta Coherence.

216. ORME-JOHNSON, D. W., and HAYNES, C. T. EEG phase coherence, pure consciousness, creativity, and TM-Sidhi experiences. *International Journal of Neuroscience* 13: 211–217, 1981.

Clear Experiences of Pure Consciousness and TM-Sidhis Correlated with Higher Frontal EEG Alpha Coherence and Greater Creativity.

217. DILLBECK, M. C., and BRONSON, E. C. Short-term longitudinal effects of the Transcendental Meditation technique on EEG power and coherence. *International Journal of Neuroscience* 14: 147–151, 1981.

Increased Orderliness and Integration of Brain Functioning: Longitudinal Increase in Frontal EEG Alpha Coherence.

218. ORME-JOHNSON, D. W. Does the nervous system have a ground state? A description of high EEG coherence events in a single subject. Department of Psychology, Maharishi International University, Fairfield, Iowa, U.S.A., 1981.

Experience of Pure Consciousness Associated with Overall High EEG Coherence.

219. DILLBECK, M. C.; ORME-JOHNSON, D. W.; and WALLACE, R. K. Frontal EEG coherence, H-reflex recovery, concept learning, and the TM-Sidhi program. *International Journal of Neuroscience* 15: 151–157, 1981.

Improved Efficiency of Concept Learning as a Result of the TM-Sidhi Program; Correlations between High Frontal EEG Alpha and Theta Coherence, Greater Neurological Efficiency (Faster H-Reflex Recovery), and Greater Flexibility of Concept Learning.

220. ALEXANDER, C. N., and LARIMORE, W. E. Distinguishing between Transcendental Meditation and sleep according to electrophysiological criteria. Department of Psychology and Social Relations, Harvard University, Cambridge, Massachusetts, U.S.A., and The Analytic Sciences Corporation, Reading, Massachusetts, U.S.A., 1981.

EEG Differentiation between Transcendental Meditation and Napping.

221. NIDICH, S. I.; ABRAMS, A.; JONES, C.; ORME-JOHNSON, D. W.; and WALLACE, R. K. Neurophysiological entry characteristics: Correlation between EEG coherence and math achievement with subjects practicing the TM program. Maharishi International University, Fairfield, Iowa, U.S.A., 1981.

High Frontal EEG Alpha Coherence Correlated with Superior Performance in Mathematics.

222. ORME-JOHNSON, D.W.; DILLBECK, M. C.; WALLACE, R. K.; and LANDRITH III, G. S. Intersubject EEG coherence: Is consciousness a field? *International Journal of Neuroscience* 16: 203–209, 1982.

Physiological Correlate of Increased Coherence in Collective Consciousness:

Increased Intersubject EEG Coherence Due to Long-Range Influence of Group Practice of the TM-Sidhi Program.

223. NIDICH, S. I.; RYNCARZ, R. A.; ABRAMS, A. I.; ORME-JOHNSON, D. W.; and WALLACE, R. K. Kohlbergian cosmic perspective responses, EEG coherence, and the Transcendental Meditation and TM-Sidhi program. *Journal of Moral Education* 12(3): 166–173, 1983.

High Frontal Alpha EEG Coherence Correlated with High Levels of Principled Moral Reasoning and Unified Cosmic Perspective on Life.

224. BERESFORD, M., and CLEMENTS, G. Real time EEG coherence analysis of the Transcendental Meditation and TM-Sidhi program. Department of Neurophysiology, MERU Research Institute, Mentmore, Buckinghamshire, England, 1983.

Increased Orderliness and Integration of Brain Functioning: Increased EEG Coherence in Alpha, Theta, and Beta Bands; Further Increases during the TM-Sidhi Program.

225. BERESFORD, M.; JEDRCZAK, A.; TOOMEY, M.; and CLEMENTS, G. EEG coherence, age-related psychological variables, and the Transcendental Meditation and TM-Sidhi program. Departments of Neurophysiology and Psychology, MERU Research Institute, Mentmore, Buckinghamshire, England, 1983.

Correlations between High EEG Coherence and Superior Performance on Age-Related Psychological Variables: Fluency; Motor Speed; Reaction Time; Shape Memory; Flexibility. Length of Time Practicing TM-Sidhi Program Predictive of Higher Mean Right Alpha Coherence. *The studies in the following sections document changes outside the practice of the Transcendental Meditation and TM-Sidhi programs.*

### **C: Physiological Efficiency and Stability**

226. MILLS, P. J., and WALLACE, R. K. The effect of the Transcendental Meditation and TM-Sidhi program on the paired Hoffman reflex. Department of Biology, Maharishi International University, Fairfield, Iowa, U.S.A., 1978.

Enhanced Neurological Efficiency as a Result of the TM-Sidhi Program: Facilitation of the Paired H-Reflex.

227. WARSHAL, D. Effects of the Transcendental Meditation technique on normal and Jendrassik reflex time. *Perceptual and Motor Skills* 50: 1103–1106, 1980.

Enhanced Neuromuscular Efficiency: Decreased Reflex Latency and Reflex Motor Time.

228. MILLS, W. W., and FARROW, J. T. The Transcendental Meditation technique and acute experimental pain. *Psychosomatic Medicine* 43(2): 157–164, 1981.

Reduced Pain-Related Distress.

229. WALLACE, R. K.; MILLS, P. J.; ORME-JOHNSON, D. W.; DILLBECK, M. C.; and JACOB, E. Modification of the paired H-reflex through the Transcendental Meditation and TM-Sidhi program. *Experimental Neurology* 79: 77–86, 1983.

Enhanced Neurological Efficiency as a Result of the TM-Sidhi Program: Facilitation of the Paired H-Reflex.

230. WALLACE, R. K.; MILLS, P. J.; ORME-JOHNSON, D. W.; DILLBECK, M. C.; and JACOBE, E. The paired H-reflex and its correlation with EEG coherence and academic performance in normal subjects practicing meditation. *Society for Neuroscience Abstracts* 8: 537, 1982.

Correlations between High EEG Coherence, Enhanced Neurological Efficiency (Paired H-Reflex Recovery), and Superior Academic Performance.

231. WALLACE, R. K.; ORME-JOHNSON, D. W.; MILLS, P. J.; DILLBECK, M. C.; and JACOBE, E. The relationship between the paired Hoffman reflex and academic achievement in participants of the Transcendental Meditation (TM) program. Departments of Biology and Psychology, Maharishi International University, Fairfield, Iowa, U.S.A., 1980.

Enhanced Neurological Efficiency (Paired H-Reflex Recovery) Correlated with Superior Academic Performance.

#### **D: Health**

232. GRÄF, D., and PFISTERER, G. Der Nutzen der Technik der Transzendentalen Meditation für die ärztliche Praxis. *Erfahrungsheilkunde* 9: 594–596, 1978.

Case History of Benefits for Patient Recovering from Severe Illness, Including Severe Bronchial Asthma and Heart Disease.

233. COOPER, M. J., and AYGEM, M. M. Effect of Transcendental Meditation on serum cholesterol and blood pressure. Findings previously published in *Harefuah*, the Journal of the Israel Medical Association, 95(1): 1–2, 1978.

Improved Cardiovascular Health: Decreased Serum Cholesterol Levels in Normal and Hypercholesterolaemic Patients; Reduction of Blood Pressure to More Ideal Levels in Normotensive Subjects.

234. HEIDELBERG, R. Transzendente Meditation in der geburtshilflichen Psychoprophylaxe. Doctoral dissertation (abbr.), Medical Faculty, Free University of Berlin, West Berlin, W. Germany, 1979.

Better Health for Mother and Child during Pregnancy and Childbirth: Fewer Medical Complaints during Pregnancy; Less Pain and Anxiety during Pregnancy and Childbirth; Shorter Duration of Labour; Lower Frequency of Vacuum or Forceps Delivery and Other Operative Interventions during Labour; Greater Frequency and Longer Duration of Breast-Feeding.

235. AGARWAL, B. L., and KHARBANDA, A. Effect of Transcendental Meditation on mild and moderate hypertension. Postgraduate Department of Medicine, M.L.N. Medical College, Allahabad, Uttar Pradesh, India. Paper presented at the VIIIth Asian-Pacific Congress on Cardiology, Bangkok, Thailand, November 1979.

Improved Cardiovascular Health: Decreased Blood Pressure in Patients with Mild and Moderate Hypertension.

236. COOPER, M. J., and AYGEN, M. M. Transcendental Meditation in the management of hypercholesterolemia. *Journal of Human Stress* 5(4): 24–27, 1979.  
Improved Cardiovascular Health: Long-Term Reductions in Serum Cholesterol in Hypercholesterolaemic Patients.
237. SEILER, G., and SEILER, V. The effects of Transcendental Meditation on periodontal tissue. *Journal of the American Society of Psychosomatic Dentistry and Medicine* 26(1): 8–12, 1979.  
Better Periodontal Health.
238. KIRTANE, L. Transcendental Meditation: A multipurpose tool in clinical practice. General medical practice, Poona, Maharashtra, India, 1980.  
Benefits in General Medical Practice: Improvements in General Health and in a Wide Variety of Physical and Mental Disorders Including Hypertension; Angina Pectoris; Bronchial Asthma; Chronic Bronchitis; Diabetes Mellitus; Menorrhagia; Periodontal Inflammation; Recurrent Upper Respiratory Infections; Allergic Rhinitis; Chronic Back Pain; Rheumatoid Arthritis; Dyspepsia; Chronic Colitis; Insomnia; Chronic Headaches; Anxiety; Depression; Fatigue; Obesity. Decreased Need for Tranquilizers, Sleep Medications, Anti-Asthmatics, Anti-Hypertensives, and Drugs for Hypertension, Asthma, and Heart Disease. Increased Cooperation with Medical Advice. Recovery from Major Illness, Chronic Musculo-Skeletal Complaints.
239. FARINELLI, L. Possibilità di applicazioni della tecnologia della coscienza in aspetti di medicina preventiva: Una ricerca pilota. Unpublished doctoral dissertation (abbr.), Faculty of Medicine and Surgery, University of Padova at Verona, Verona, Italy, 1981.  
Multiple Improvements in Physical and Mental Health: Fewer Infectious Diseases; Better Health of the Respiratory and Digestive Systems; Less Eczema and Fewer Allergic Reactions; Less Depression; Greater Self-Actualization; Greater Self-Esteem; Better Social Relationships; Less Nervousness; Less Insomnia; Lower Use of Tranquilizers, Sleep Medication, and Analgesics; Fewer Accidents; Lower Usage of Cigarettes, Alcohol, Non-Prescribed Drugs, and Coffee.
240. YEE, A. C., and DISSANAYAKE, A. S. Glucose tolerance and the Transcendental Meditation program (a pilot study). MERU Research Institute, Singapore, and Department of Physiology, University of Singapore, Singapore. Paper presented at the International Congress on Research on Higher States of Consciousness at the Faculty of Science, Mahidol University, Bangkok, Thailand, 4–6 December 1980.  
Improved Blood Sugar Homeostasis as Measured by Oral Glucose Tolerance Test.
241. OVERBECK, K.-D. Auswirkungen der Technik der Transzendentalen Meditation (TM) auf die psychische und psychosomatische Befindlichkeit. *Psychotherapie-Psychosomatik Medizinische Psychologie* 32(6): 188–192, 1982.  
Decreased Psychosomatic Complaints; Decreased Musculo-skeletal Complaints; Decreased Limitations Caused by Physical and General Ailments; Increased Efficiency; Increased Emotional Stability; Decreased Use of Medicines and Non-Prescribed Drugs; Decreased Over-Sensitivity.
242. WALLACE, R. K.; DILLBECK, M.; JACOB, E.; and HARRINGTON, B. The

effects of the Transcendental Meditation and TM-Sidhi program on the aging process. *International Journal of Neuroscience* 16: 53–58, 1982.

Reversal of Biological Aging: Younger Biological Age Compared with Control Subjects and Population Norms. Length of Time Practicing Transcendental Meditation Associated with Reduction in Biological Age.

243. LOVELL-SMITH, H. D. Transcendental Meditation—treating the patient as well as the disease. *The New Zealand Family Physician* 9: 62–65, April 1982.

Case History Illustrating Holistic Improvements in Physical and Mental Health Including Relief from Insomnia; Decreased Anxiety; Decreased Need for Tranquillizers; Fewer Headaches; Increased Enjoyment of Life, and Increased Efficiency.

244. WALLACE, R. K.; SILVER, J.; MILLS, P. J.; DILLBECK, M. C.; and WAGONER, D. E. Systolic blood pressure and long-term practice of the Transcendental Meditation and TM-Sidhi program: Effects of TM on systolic blood pressure. *Psychosomatic Medicine* 45(1): 41–46, 1983.

Improved Cardiovascular Health: Lower Systolic Blood Pressure Compared to Norms for Age; Effect More Pronounced in Long-Term Meditators.

245. TOOMEY, M.; PENNINGTON, B.; CHALMERS, R.; and CLEMENTS, G. The practice of the Transcendental Meditation and TM-Sidhi program reverses the physiological ageing process. MERU Research Institute, Mentmore, Buckinghamshire, England, and Department of Biology, University of York, Yorkshire, England, 1982.

Reversal of Biological Aging: Younger Biological Age Compared with Norms. Length of Time Practicing Transcendental Meditation and TM-Sidhi Program Correlated with Younger Biological Age and Younger Functional Age, and Predictive of Lower Systolic Blood Pressure and Auditory Threshold.

246. TOOMEY, M.; CHALMERS, R.; and CLEMENTS, G. The Transcendental Meditation and TM-Sidhi program and reversal of the ageing process: A longitudinal study. MERU Research Institute, Mentmore, Buckinghamshire, England, 1983.

Reversal of Biological Aging: Longitudinal Reduction in Biological Age; Younger Biological Age Compared with Norms. Length of Time Practicing Transcendental Meditation and TM-Sidhi Program Correlated with Younger Biological Age and Younger Functional Age. Decreased Systolic Blood Pressure and Improved Auditory Threshold.

247. BROWNE, G. E.; FOUGÉRE, D.; ROXBURGH, A.; BIRD, J.; and LOVELL-SMITH, H. D. Improved mental and physical health and decreased use of prescribed and non-prescribed drugs through the Transcendental Meditation program. Age of Enlightenment Medical Council, Christchurch, New Zealand; Heylen Research Centre, Auckland, New Zealand; and Dunedin Hospital, Dunedin, New Zealand, 1983.

Improvements in Physical and Mental Health Correlated with Duration and Regularity of Practice of Transcendental Meditation; Decreased Use of Alcohol; Decreased Use of Cigarettes; Decreased Drug Abuse; Decreased Need for Anti-



Hypertensives, Drugs for Heart Disease, Sleep Medications, Tranquilizers, Anti-Depressants, Anti-Asthmatics, Anti-Histamines, Analgesics, and Drugs for Hypertension, Asthma, and Heart Disease.

**E: Motor and Perceptual Ability**

248. HOLT, W. R.; CARUSO, J. L.; and RILEY, J. B. Transcendental Meditation vs. pseudo-meditation on visual choice reaction time. *Perceptual and Motor Skills* 46: 726, 1978.  
Improved Mind-Body Coordination: Faster Reactions (Visual Choice Reaction Time).
249. FRIEND, K. E., and MALISZEWSKI, M. More on the reliability of the kinesthetic after-effects measure and need for stimulation. *Journal of Personality Assessment* 42(4): 385–391, 1978.  
Reduced Need for External Stimulation.
250. ANTES, M. The effects of the TM-Sidhi program on rigidity-flexibility. Diplomarbeit (abbr.), Department of Psychology, University of Saarland, Saarbrücken, W. Germany, 1978.  
Increased Behavioral Flexibility as a Result of the TM-Sidhi Program: Increased Perceptual Flexibility; Increased Psychomotor Speed; Increased Functional Efficiency of Psychomotor Co-ordination.
251. BANQUET, J. P., and LESEVRE, N. Event-related potentials in altered states of consciousness. *Motivation, Motor and Sensory Processes of the Brain, Progress in Brain Research* 54: 447–453, 1980.  
Increased Vigilance and Improved Capacity for Selective Attention: Faster Reactions with Fewer Mistakes (Visual Choice Reaction Time); Shorter Latency and Larger Amplitude of Visual Evoked Potentials.
252. SCHWARTZ, E. The effects of the Transcendental Meditation program on strength of the nervous system, perceptual reactance, reaction time, and auditory threshold. Master's thesis (abstract), Department of Exercise Science, University of Massachusetts, Amherst, Massachusetts, U.S.A., 1979.  
Increased Sensitivity, Strength, and Flexibility of the Nervous System; Improved Auditory Thresholds; Faster Reactions.
253. DILLBECK, M. C. Meditation and flexibility of visual perception and verbal problem solving. *Memory and Cognition* 10(3): 207–215, 1982.  
Improved Efficiency of Visual Perception; Increased Freedom from Habitual Patterns of Perception with Increased Ability to Use Such Patterns Effectively Where Appropriate.
254. ROWE, K. C.; NEUSCHATZ, J. S.; and NIDICH, S. I. Effect of the Transcendental Meditation and TM-Sidhi program on reaction time. State University of New York at New Paltz, New Paltz, New York, U.S.A.; Roger Williams College, Bristol, Rhode Island, U.S.A.; and Maharishi International University, Fairfield,

Iowa, U.S.A. Paper presented at the meeting of the American Psychological Association, Montreal, Quebec, Canada, September 1980.

Improved Mind-Body Coordination: Faster Reactions (Visual Choice Reaction Time).

255. ORME-JOHNSON, D. W.; RAIMONDI, D.; VESELEY, B.; DILLBECK, M. C.; and WALLACE, R. K. The influence of the Transcendental Meditation and TM-Sidhi program on field independence: The growth of a stable internal frame of reference. Maharishi International University, Fairfield, Iowa, U.S.A., 1981.

More Stable Internal Frame of Reference: Greater Field Independence.

256. HARDING, S. D. The effects of Transcendental Meditation on an auditory temporal discrimination task. Department of Experimental Psychology, University of Sussex, Brighton, Sussex, England, 1981.

Improved Auditory Temporal Discrimination.

257. JEDRCZAK, A. The TM-Sidhi program and age-related psychological variables. Department of Psychology, MERU Research Institute, Mentmore, Buckinghamshire, England, 1982.

Length of Time Practicing TM-Sidhi Program Predictive of Superior Performance on Tests Measuring Age-Related Psychological Variables: Visual Memory; Creativity; Field Independence; Perceptual Speed; Motor Speed; Reaction Time; Non-Verbal Intelligence. Length of Time Practicing the TM-Sidhi Program Predictive of Younger Functional Age.

258. JEDRCZAK, A. Psychological correlates of experiences of higher states of consciousness in subjects practicing the Transcendental Meditation and TM-Sidhi program. Department of Psychology, MERU Research Institute, Mentmore, Buckinghamshire, England, 1982.

Experience of Higher States of Consciousness Positively Correlated with Superior Performance on Tests Measuring Perceptual Speed, Flexibility, Creativity, Intelligence, Field Independence, and Psycho-Motor Speed.

259. JEDRCZAK, A. The Transcendental Meditation and TM-Sidhi program and field independence. Findings published in *Perceptual and Motor Skills* 59: 999–100, 1984.

More Stable Internal Frame of Reference: Greater Field Independence.

## **PART II: PSYCHOLOGY**

### **A: Intelligence, Learning, and Academic Performance**

260. TRAVIS, F. Creative thinking and the Transcendental Meditation technique. A version printed in *The Journal of Creative Behavior* 13(3): 169–180, 1979.

Increased Creativity: Increased Figural Flexibility and Originality; Increased Verbal Fluency.

261. ARON, A.; ORME-JOHNSON, D. W.; and BRUBAKER, P. The Transcendental Meditation program in the college curriculum: A 4-year longitudinal study of effects on cognitive and affective functioning. *College Student Journal* 15(2): 140–146, 1981.  
Benefits for Students at Maharishi International University: Increased Intelligence; Increased Self-Confidence; Increased Sociability; Improved Psychological Health; Increased Social Maturity.
262. WOOD, M. F. The effectiveness of Transcendental Meditation as a means of improving the echolalic behavior of an autistic student. College of Exceptional Child Education, University of Central Florida, Orlando, Florida, U.S.A. Paper presented at the International Symposium on Autism Research, Boston, Massachusetts, U.S.A., 14 July 1981.  
Improved Echolalic Behavior in Autistic Student.
263. EYERMAN, J. Transcendental Meditation and mental retardation. *Journal of Clinical Psychiatry* 42(1): 35–36, 1981.  
Improved Speech, Social Behavior, Intelligence, and Physiological Functioning in a Mentally Retarded Subject
264. DILLBECK, M. C., and SZAL, T. J. The Transcendental Meditation technique, working memory, and field independence in school-aged children. Department of Psychology, Maharishi International University, Fairfield, Iowa, U.S.A., 1981.  
Improved Working Memory in School Children.
265. KOTCHABHAKDI, N. J.; PIPATVERAVAT, S.; KOTCHABHAKDI, N.; TAPANAYA, P.; and PORNPATHKUL, S. Improvement of intelligence, learning ability and moral judgment through the practice of the Transcendental Meditation technique. In *Proceedings of the Second Asian Workshop on Child and Adolescent Development*, Bangkok and Bangsaen, Thailand, 15–24 February 1982. Bangkok: Sri Nakharinwirot University.  
Benefits for High School Students: Increased Intelligence Growth Rate; Improved Learning Ability; Improved Moral Judgement.

**B: Development of Personality**

266. HANLEY, C. P., and SPATES, J. L. Transcendental Meditation and social psychological attitudes. *The Journal of Psychology* 99: 121–127, 1978.  
More Positive Conception of Human Nature; More Positive Self-Image; Higher Levels of Tolerance; Greater Sociability; Less Pronounced Feelings of Social Inadequacy.
267. LJUNGGREN, G. Inflytandet av Transcendental Meditation pa neuroticism, medicinbruk och sömnproblem. *Läkartidningen* 74(47): 4212–4214, 1977.  
Decreased Neuroticism; Decreased Insomnia; Decreased Use of Tranquilizers.
268. HANDMACHER, B. H. Length of time spent in the practice of Transcendental Meditation and sex differences related to intrapersonal and interpersonal orienta-

tion. Doctoral thesis (abbr.), College of Education and Departments of Psychology and Sociology, The Ohio State University, Columbus, Ohio, U.S.A., 1978. *Dissertation Abstracts International*, 39: 676A.

Less Anxiety; Less Depression; More Affectionate; More Tolerant; Less Tendency to Dominate; Less Interested in Superficial Social Contacts; More Selective in Personal Relationships; Less Need for Acceptance; More Inner-Directed.

269. SANDAHL, F. P. The effect of the practice of TM on the degree of neuroticism as measured by the defense mechanism test. National Defense Research Institute, Karlstad, Sweden, 1978.

Decreased Hidden Mental Turbulence: Decreased Neuroticism.

270. NIDICH, S. I., and NIDICH, R. The Transcendental Meditation and TM-Sidhi program and moral development. Department of Education, Maharishi International University, Fairfield, Iowa, U.S.A., 1983.

Enhanced Cognitive-Moral Development; Benefits of Transcendental Meditation Further Enhanced by the TM-Sidhi Program.

271. HOLEMAN, R., and SEILER, G. Effects of sensitivity training and Transcendental Meditation on perception of others. *Perceptual and Motor Skills* 49: 270, 1979.

Improved Perception of Others.

272. FERGUSON, P. C. An integrative meta-analysis of psychological studies investigating the treatment outcomes of meditation techniques. Doctoral thesis (abbr.), School of Education, University of Colorado, Boulder, Colorado, U.S.A., 1981.

Greater Beneficial Effect from Transcendental Meditation than from Other Meditation and Relaxation Procedures as Indicated by Meta-Analysis.

273. KNIFFKI, C. Transcendental Meditation and autogenic training: A comparison. *Transzendente Meditation und Autogenes Training—Ein Vergleich* in the series 'Geist und Psyche'. Munich: Kindler Verlag, 1979.

Cumulative Benefits for Psychological Health: Decreased Nervousness; Decreased Depression; Decreased Emotional Instability; Decreased Manifest Anxiety.

274. TURNBULL, M. J., and NORRIS, H. Effects of Transcendental Meditation on self-identity indices and personality. *British Journal of Psychology* 73: 57–68, 1982.

Stronger Self-Identity.

275. NIDICH, S. I. Effects of the Transcendental Meditation program on state-trait anxiety. Maharishi International University, Fairfield, Iowa, U.S.A., 1982.

Decreased State and Trait Anxiety.

**PART III: SOCIOLOGY**

**A: Rehabilitation**

276. SHAFII, M.; LAVELY, R.; and JAFFE, R. Decrease in cigarette smoking following Transcendental Meditation. University of Michigan Medical School, Ann Arbor, Michigan, U.S.A. Findings previously published in *MERU Journal* 24: 29 (Abstract), 1976.

Decreased or Discontinued Use of Cigarettes.

277. GEISLER, M. Therapeutische Wirkungen der Transzendentalen Meditation auf Drogenkonsumenten. *Zeitschrift für klinische Psychologie* 7(4): 235–255, 1978.

Decreased Drug Abuse; Decreased Nervousness (Decreased Psychosomatic Disturbance)<sup>4</sup>; Decreased Depression (Increased Contentment, Increased Self-Confidence); Increased Sociability (Increased Friendliness, Increased Liveliness); Increased Placidity (Increased Self-Assuredness, Increased Good Humor, Decreased Tendency to Procrastinate); Decreased Inhibition (Increases in: Naturalness, Spontaneity, Self-Sufficiency); Increased Extroversion (Increased Capacity for Warm Interpersonal Relationships); Decreased Neuroticism (Increased Emotional Stability, Decreased Tension); Increased Self-Reliance (Increased Effectiveness, More Balanced Mood, Increased Vigor).

278. ABRAMS, A. I., and SIEGEL, L. M. The Transcendental Meditation program and rehabilitation at Folsom State Prison: A cross-validation study. *Criminal Justice and Behavior* 5 (1): 3–20, 1978.

Rehabilitation of Prisoners: Decreased Anxiety; Decreased Neuroticism, Decreased Resentment; Decreased Negativism; Decreased Irritability; Decreased Hostility; Decreased Prison Disciplinary Rule Infractions; Improved Sleep Patterns (Decreased Time to Fall Asleep, Decreased Awakenings per Night, Improved Quality of Sleep).

279. ABRAMS, A. I., and SIEGEL, L. M. Transcendental Meditation and rehabilitation at Folsom Prison: Response to a critique. *Criminal Justice and Behavior* 6(1): 13–21, 1979.

Verification of Results of Paper 278.

280. ABRAMS, A. I. A follow-up study of the effects of the Transcendental Meditation program on inmates at Folsom Prison. Maharishi International University, Fairfield, Iowa, U.S.A., 1982.

Rehabilitation of Prisoners: Sustained Reductions in Neuroticism, Anxiety, Hostility, and Use of Cigarettes; Improved Sleep Patterns (Decreased Time to Fall Asleep, Decreased Awakenings per Night).

281. CARTER, R., and MEYER, J. E. The use of the Transcendental Meditation (TM) technique with severely disturbed psychiatric inpatients. Institute for Social Rehabilitation, Pacific Palisades, Los Angeles, California, U.S.A., 1979.

Benefits for Psychiatric In-Patients: Marked Improvements in Schizophrenia,

Manic-Depressive Psychosis, and Severe Personality Disorders; Decreased Anxiety and Tension.

282. NIDICH, S. I. The Science of Creative Intelligence and the Transcendental Meditation program: Reduction of drug and alcohol consumption. Department of Education, Maharishi International University, Fairfield, Iowa, U.S.A. Paper presented at the New England Educational Research Organization Conference, Lenox, Massachusetts, U.S.A., May 1980.

Decreased Use of Alcohol; Decreased Drug Abuse.

283. BIELEFELD, M. Transcendental Meditation: A stress reducing self-help support system. In *Vocational rehabilitation: Do psychologists really belong?* Cleveland V.A. Medical Center, Cleveland, Ohio, U.S.A. Paper presented at the Annual Convention of the American Psychological Association, Los Angeles, California, U.S.A., 24 August 1981.

Benefits for Patients with Psychiatric and Addictive Disorders in a Vocational Rehabilitation Unit: Greater Ability to Maintain Employment on Discharge; More Frequently Maintained on Out-Patient Care Alone.

284. ALEXANDER, C. N., and MARKS, E. J. Ego development, personality and behavioral change in inmates practicing the Transcendental Meditation technique or participating in other programs: A summary of cross-sectional and longitudinal results. Doctoral thesis of first author (summary), Department of Psychology and Social Relations, Harvard University, Cambridge, Massachusetts, U.S.A., 1982.

Rehabilitation of Prisoners: Greater Self-Development, Capacity for Warm Interpersonal Relationships, and Engagement in Private, Avocational Businesses; Lower Pathological Symptoms—Lower Psychopathic Deviation, Anxiety, Aggression, Tension, and Introversion; Growth toward Higher States of Consciousness; Longitudinal Increases in Self-Development and Decreases in Aggression, Anxiety, and Schizophrenic Symptoms.

285. ALEXANDER, C. N.; GRANT, J.; and STADTE, C. VON. The effects of the Transcendental Meditation technique on recidivism: A retrospective archival analysis. Doctoral thesis of first author (summary), Department of Psychology and Social Relations, Harvard University, Cambridge, Massachusetts, U.S.A., 1982. *Dissertation Abstracts International* 43 (1982): 539B.

Rehabilitation of Prisoners: Lower Recidivism Rate; Fewer New Convictions.

286. BLEICK, C. R. Influence of the Transcendental Meditation program on criminal recidivism. Institute for Social Rehabilitation, Berkeley, California, U.S.A., 1982.

Rehabilitation of Prisoners: Lower Recidivism Rate; Higher Incidence of Clean Records; Fewer New Convictions.

287. ARON, E. N., and ARON, A. The patterns of reduction of drug and alcohol use among Transcendental Meditation participants. *Bulletin of the Society of Psychologists in Addictive Behaviors* 2(1): 28–33, 1983.

Decreased Use of Tobacco; Decreased Use of Alcohol; Decreased Use of Marijuana.

288. ARON, A., and ARON, E. N. Rehabilitation of juvenile offenders through the

Transcendental Meditation program: A controlled study. Paper presented at the Annual Meeting of the Society of Police and Criminal Psychology, Nashville, Tennessee, October 28, 1982.

Rehabilitation of Juvenile Offenders: Decreased Anxiety.

#### **PART IV: REVIEW PAPERS**

##### **A: Health**

289. CLEMENTS, G., and CLEMENTS, D. M. The Transcendental Meditation and TM-Sidhi program and the reversal of ageing. Maharishi European Research University, Seelisberg, Switzerland. Rheinweiler, W. Germany: MERU Press, 1980.

Research findings on the Transcendental Meditation and TM-Sidhi program are reviewed in the context of current knowledge of the aging process and the usual physiological and psychological changes associated with aging.

290. BAUHOFER, U. Das Programm der Transzendentalen Meditation in der Behandlung von Adipositas. Maharishi European Research University, Seelisberg, Switzerland, 1983.

Treatment of Obesity: More Successful Weight Reduction; Improved Psychological Health in Obese Subjects—Decreased Anxiety; Decreased Nervousness (Decreased Psychosomatic Disturbance); Decreased Aggressiveness (Increased Self-Control, Increased Emotional Maturity); Decreased Depression (Increased Contentment, Increased Self-Confidence); Increased Sociability (Increased Friendliness, Increased Liveliness); Increased Placidity (Increased Self-Assuredness, Increased Good Humor); Decreased Tendency to Dominate (Increased Respectfulness); Decreased Inhibition (Increases in Naturalness, Spontaneity, Self-Sufficiency); Increased Extroversion (Increased Capacity for Warm Interpersonal Relationships); Decreased Neuroticism (Increased Emotional Stability).

#### **VOLUME 4**

CHALMERS, R. A.; CLEMENTS, G.; SCHENKLUHN, H.; and WEINLESS, M., eds. 1989. *Scientific research on Maharishi's Transcendental Meditation and TM-Sidhi program: Collected papers, vol. 4*. Vlodrop, the Netherlands: MVU Press.

#### **PART I: PHYSIOLOGY**

*The studies in the first two sections document changes during the practice of the Transcendental Meditation technique unless otherwise stated.*

**A: Metabolic, Biochemical, and Cardiovascular Changes**

291. JEVNING, R.; WILSON, A. F.; O'HALLORAN, J. P.; and WALSH, R. N. Forearm blood flow and metabolism during stylized and unstylized states of decreased activation. *American Journal of Physiology* 245 (Regulatory, Integrative, and Comparative Physiology 14): R110–R116, 1983.  
Indication of Deep Rest: Decreased Oxygen Consumption in Muscle Tissue. Reduction in Biochemical Index of Stress: Decreased Arterial Lactate Levels.
292. JEVNING, R.; WILSON, A. F.; PIRKLE, H.; O'HALLORAN, J. P.; and WALSH, R. N. Metabolic control in a state of decreased activation: modulation of red cell metabolism. *American Journal of Physiology* 245 (Cell Physiol. 14): C457–C461, 1983.  
Fundamental Change in Cellular Metabolism: Reduced Glucose Metabolism in Red Blood Cells. Normal Arterial Oxygen and Carbon Dioxide Partial Pressures. Reduction in Biochemical Index of Stress: Reduced Spontaneous Skin Resistance Responses.
293. WOLKOVE, N.; KREISMAN, H.; DARRAGH, D.; COHEN, C.; and FRANK, H. Effect of Transcendental Meditation on breathing and respiratory control. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 56(3): 607–612, 1984.  
Decreased Minute Ventilation (Decreased Tidal Volume); Increased Basal Skin Resistance; Periodic Breath Suspension; Changes in Chemical and Neural Control of Breathing.

**B: Electroencephalographic Changes**

294. ORME-JOHNSON, D. W.; WALLACE, R. K.; DILLBECK, M. C.; ALEXANDER, C. N.; and BALL, O. E. Improved functional organization of the brain through the Maharishi Technology of the Unified Field as indicated by changes in EEG coherence and its cognitive correlates: A proposed model of higher states of consciousness. Departments of Psychology and Biology, Maharishi International University, Fairfield, Iowa, U.S.A.; Department of Psychology and Social Relations, Harvard University, Cambridge, Massachusetts, U.S.A.; and Department of Education, University of Georgia, Athens, Georgia, U.S.A. Paper presented at the American Psychological Society Annual Convention, Los Angeles, California, U.S.A., September 1981.  
Increased Orderliness and Integration of Brain Functioning: Increased EEG Coherence. Correlations between Increased Frontal EEG Coherence and Increased Creativity; Correlations between Changes in EEG Coherence and Increased Grade Point Average, Increased Verbal Intelligence, Decreased Neuroticism, and Enhanced Principled Moral Reasoning.
295. MISZCZAK, J., and ACHIMOWICZ, J. Hybrid analysis of spontaneous brain activity in different states of conscious experience. Military Institute of Aviation Medicine, Warsaw, Poland. Results presented at the 5th Annual Meeting on EEG



and Clinical Neurophysiology, Esztergom, Hungary, 1–9 October 1982.

Increased Orderliness and Integration of Brain Functioning: Synchronized High Amplitude Frontal EEG Theta Activity.

296. NIDICH, R.; NIDICH, S. I.; ORME-JOHNSON, D. W.; and WALLACE, R. K. EEG coherence and the length of practice of the Transcendental Meditation program. Departments of Education, Psychology, and Biology, Maharishi International University, Fairfield, Iowa, U.S.A., 1983.

Correlation between Length of Time Practicing Transcendental Meditation and EEG Alpha Coherence.

297. NIDICH, S. I.; NIDICH, R.; ABRAMS, A.; ORME-JOHNSON, D. W.; and WALLACE, R. K. Frontal lobe functioning: EEG coherence as a predictor of highly pro-social behavior in subjects practicing the Transcendental Meditation and TM-Sidhi program. Departments of Education, Psychology, and Biology, Maharishi International University, Fairfield, Iowa, U.S.A., 1982.

Correlations between High Frontal EEG Coherence and Highly Pro-Social Behavior.

### **C: Health**

298. ALLEN, C. P. Effects of Transcendental Meditation, electromyographic (EMG) biofeedback relaxation, and conventional relaxation on vasoconstriction, muscle tension, and stuttering: A quantitative comparison. Doctoral dissertation (abstract), University of Michigan, Ann Arbor, Michigan, U.S.A., 1979. *Dissertation Abstracts International*, 40: 689B.

Decreased Stuttering.

299. TABOGI, S. Effetti indotti dal programma di Meditazione Trascendentale sulla tolleranza glicidica. Unpublished doctoral dissertation (abbr.), Faculty of Medicine and Surgery, University of Trieste, Trieste, Italy, 1983.

Improved Blood Sugar Homeostasis as Measured by Oral Glucose Tolerance Test.

300. ALEXANDER, C. N.; DAVIES, J. L.; NEWMAN, R. I.; and CHANDLER, H. M. The effects of Transcendental Meditation on cognitive and behavioral flexibility, health, and longevity in the elderly: An experimental comparison of the Transcendental Meditation program, mindfulness training, and relaxation. Department of Psychology and Social Relations and Graduate School of Education, Harvard University, Cambridge, Massachusetts, U.S.A., and Macquarie University, North Ryde, New South Wales, Australia, 1983.

Benefits for the Elderly: Increased Longevity; Increased Cognitive and Perceptual Flexibility; Increased Behavioral Flexibility; Increased Learning Ability; Improved Mental Health and Sense of Well-Being; More Ideal Levels of Blood Pressure.

### **D: Motor and Perceptual Ability**

301. SCHWARTZ, E. The effects of the Transcendental Meditation program on

strength of the nervous system, perceptual reactance, reaction time, and auditory threshold. Master's thesis (abbr.), Department of Exercise Science, University of Massachusetts, Amherst, Massachusetts, U.S.A., 1979.

Increased Sensitivity, Strength, and Flexibility of the Nervous System; Improved Auditory Thresholds; Faster Reactions at High and Low Levels of Stimulation; Decreased Perceptual Reactance.

302. FRANCE, R. An investigation into the effects of Transcendental Meditation upon hearing threshold. North Staffordshire Polytechnic, Stoke on Trent, Staffordshire, England, 1983.

Improved Auditory Thresholds; Decreased Heart Rate.

## **PART II: PSYCHOLOGY**

### **A: Intelligence, Learning, and Academic Performance**

303. ALEXANDER, C. N.; KURTH, S. C.; TRAVIS, F.; WARNER, T.; and ALEXANDER, V. K. Cognitive stage development in children practicing the Transcendental Meditation program: Acquisition and consolidation of conservation. Department of Psychology and Social Relations, Harvard University, Cambridge, Massachusetts, U.S.A.; Hampshire College, Amherst, Massachusetts, U.S.A.; Department of Psychology and Department of Management and Public Affairs, Maharishi International University, Fairfield, Iowa, U.S.A.; and Department of Psychology, York University, Toronto, Ontario, Canada, 1979.

More Rapid Cognitive Growth and Consolidation in Pre- and Primary School Children Vital for Academic Achievement and General Cognitive Development: Superior Performance and Consolidation on Piagetian Conservation Tasks of Increasing Cognitive Difficulty Indicative of Mastery of Concrete Operational Skills.

304. BAER, N.; NIDICH, S.; and ABRAMS, A. A comparative study of Maharishi International University and two small private colleges on perceived personal growth, perceived academic atmosphere, and general quality of life. Master's thesis, Department of Education, Maharishi International University, Fairfield, Iowa, U.S.A., 1981.

Benefits of Maharishi's Integrated System of Education Perceived by Students at Maharishi International University: Better Academic Atmosphere; Greater Expectation to Gain Higher Degrees; Greater Motivation to Learn; Greater Enjoyment of School; Greater Mental Stability and Sense of Personal Security; Greater Sense of Control over Direction in Life; Greater Clarity of Personal Values; Greater Sensitivity to Other's Needs and Feelings; Greater Mental and Physical Relaxation; Better State of Physical Health.

305. WRYCZA, P. J. Some effects of the Transcendental Meditation and TM-Sidhi program on artistic creativity and appreciation. Doctoral thesis (summary), School of Modern Languages and European History, University of East Anglia, Norwich, Norfolk, England, 1982.

Enrichment of Creativity and Appreciation in Artists.

306. KEMBER, P. The Transcendental Meditation technique and academic performance: A short report on a controlled longitudinal pilot study. Findings published in *British Journal of Educational Psychology*, 55: 164–166, 1985. (Abstract)  
Benefits for Graduate Students: Improved Academic Performance.
307. DILLBECK, M. C.; RAIMONDI, D.; ASSIMAKIS, P. D.; ROWE, R.; and ORME-JOHNSON, D. W. The longitudinal effects of the MIU curriculum on intelligence and field independence. Department of Psychology and Office of Evaluation, Maharishi International University, Fairfield, Iowa, U.S.A., 1984.  
Benefits of Maharishi's Integrated System of Education for Students at Maharishi International University: Increased Intelligence; Increased Field Independence.

**B: Development of Personality**

308. TÖRBER, S.; MERTESDORF, F.; and HIESEL, E. Effects of Transcendental Meditation on mood and bodily sensations. Diplomarbeit of first author (abbr.), University of Cologne, Cologne, W. Germany, 1976.  
Less Nervousness (Less Psychosomatic Disturbance)<sup>6</sup>; Less Aggressiveness (Greater Self-Control, Greater Emotional Maturity); Less Depression (Greater Contentment, Greater Self-Confidence); Less Irritability (Greater Calm in Frustrating Situations, Greater Tolerance); Greater Placidity (Greater Self-Assuredness, More Good Humor, Less Tendency to Procrastinate); Less Inhibition (Greater Naturalness, Greater Spontaneity, Greater Self-Sufficiency); Less Neuroticism (Greater Emotional Stability, Less Tension); More Relaxation; More Activation; More Elation; Less Anxiety; Less Fatigue; Less Physical Tension; Less Physical Weakness; Increased Physical Well-Being.
309. NIDICH, R., and NIDICH, S. I. An empirical study of the moral atmosphere at Maharishi International University/University High School. Department of Education, Maharishi International University, Fairfield, Iowa, U.S.A., 1983.  
Benefits of Maharishi's Integrated System of Education for Students at Maharishi International University High School: Increased Moral Maturity; High Level of Moral Atmosphere.
310. JEDRCZAK, A.; COX, D.; and CUNNINGHAM, C. Pilot testing of subjects practising the Transcendental Meditation and TM-Sidhi program: Neuroticism, anxiety, well-being, and the capacity for absorbing experiences. Department of Psychology, MERU Research Institute, Mentmore, Buckinghamshire, England, and Department of Psychology, Institute of Psychiatry, London, England, 1982.  
Greater Well-Being; Greater Sensitivity—Greater Ability to Focus Intently and Greater Responsiveness. Lower Anxiety; Lower Neuroticism.
311. EPPLEY, K. R.; ABRAMS, A.; and SHEAR, J. The effects of meditation and relaxation techniques on trait anxiety: A meta-analysis. Also published in Eppley, K.R., Abrams, A.I., and Shear, J. (1989). Differential effects of relaxation techniques on

trait anxiety: A meta-analysis. *Journal of Clinical Psychology*, 45(6), 957–974.

Decreased Trait Anxiety: Greater Benefit from Transcendental Meditation than from Other Meditation Techniques and Relaxation Procedures as Demonstrated by Meta-Analysis.

312. ALEXANDER, C. N.; ALEXANDER, V. K.; BOYER, R. W.; and JEDRCZAK, A. The subjective experience of higher states of consciousness and the Maharishi Technology of the Unified Field: Personality, cognitive, perceptual, and physiological correlates of growth to enlightenment. Harvard University, Cambridge, Massachusetts, U.S.A.; Maharishi International University, Fairfield, Iowa, U.S.A.; and MERU Research Institute, Mentmore, Buckinghamshire, England, 1984.

Growth of Higher States of Consciousness. Experiences of Higher States of Consciousness Correlated with: Better Self-Concept (Greater Self-Actualization, Greater Internality of Locus of Control); Greater Creativity (Greater Fluency, Flexibility, and Originality); Profound Physiological Rest (Episodes of Spontaneous Breath Suspension during Transcendental Meditation); Greater Neurological Integration (High EEG Alpha and Theta Coherence); Greater Neurophysiological Efficiency (Faster H-Reflex Recovery); Superior Cognitive, Perceptual, and Motor Skills (Superior Perceptual Speed, Motor Speed, Psychomotor Speed and Flexibility, Nonverbal Intelligence, and Visual Memory); Less Symptoms of Stress (Lower Anxiety, Aggression, Depression, Introversion, and Neuroticism); Greater Capacity for Absorbing Experiences. (The correlates of higher states of consciousness summarized in this paper are drawn from both new experimental findings and the results of other studies reported in the volumes of this series.)

### **PART III: SOCIOLOGY**

#### **A. Rehabilitation**

313. BROOKS, J. S., and SCARANO, T. Transcendental Meditation in the treatment of post-Vietnam adjustment. *Journal of Counseling and Development* 64: 212–215, 1985.

Improvements in Post-Vietnam Adjustment Problems: Decreased Post-Vietnam Stress Disorder; Decreased Anxiety; Decreased Depression; Decreased Alcohol Consumption; Decreased Insomnia; Improved Employment Status; Decreased Family Problems.

314. GORE, S. W.; ABRAMS, A.; and ELLIS, G. The effect of statewide implementation of the Maharishi Technology of the Unified Field in the Vermont Department of Corrections. Institute for Social Rehabilitation, Burlington, Vermont, U.S.A., 1984.

Rehabilitation of Prisoners: Decreased Sleep Disturbance (Decreased Awakenings per Night, Decreased Time to Sleep Onset, Improved Quality of Sleep); Decreased Paranoid Anxiety; Increased Internality of Locus of Control; Decreased Hostility;

Greater Control of Anger. Benefits for Correctional Staff: Decreased Sleep Disturbance; Decreased Hostility; Decreased Paranoid Anxiety.

### **B. Quality of Life**

315. ARON, E. N., and ARON, A. Transcendental Meditation program and marital adjustment. *Psychological Reports* 51: 887–890, 1982.

Greater Marital Satisfaction: Greater Marital Adjustment.

316. MARCUS, S. V. The influence of the Transcendental Meditation program on the marital dyad. Doctoral dissertation, California School of Professional Psychology, Fresno, California, U.S.A. *Dissertation Abstracts International* 38(8): 3895–B, 1977.

Benefits for Married Couples: Decreased Nervousness (Increased Composure and Relaxation); Increased Sociability, Energy, and Enthusiasm; Increased Ability for Spontaneous Expression of Warmth and Affection; Increased Ability to Be Sympathetic, Compassionate, and Understanding; Increased Ability to Be Objective, Fair-Minded, and Reasonable; Increased Tolerance and Acceptance of Others; Increased Self-Discipline; Decreased Impulsiveness (Increased Emotional Maturity); Decreased Proneness toward Anxiety.

*The following papers in this section document the growth of coherence in the collective consciousness of cities, states, nations, and the world.*

317. LANDRITH III, G. S., and DILLBECK, M. C. The growth of coherence in society through the Maharishi Effect: Reduced rates of suicides and auto accidents. Maharishi International University, Fairfield, Iowa, U.S.A., 1983.

Improved Quality of City Life: Decreased Automobile Accident Rate; Decreased Suicide Rate (Cities, U.S.A., 1973–1977).

318. DILLBECK, M. C.; LANDRITH III, G.; and ORME-JOHNSON, D. W. The Transcendental Meditation program and crime rate change in a sample of forty-eight cities. Findings previously published in *Journal of Crime and Justice* 4: 25–45, 1981.

Improved Quality of City Life: Decreased Crime Rate (Cities, U.S.A., 1973–1978).

319. DILLBECK, M. C. The Transcendental Meditation program and a compound probability model as predictors of crime rate change. Maharishi International University, Fairfield, Iowa, U.S.A., 1978.

Improved Quality of City Life: Decreased Crime Rate (Cities, U.S.A., 1974–1976).

320. DILLBECK, M. C.; LANDRITH III, G. S.; POLANZI, C.; and BAKER, S. R. The Transcendental Meditation program and crime rate change: A causal analysis. Department of Psychology, Maharishi International University, Fairfield, Iowa, U.S.A.; Center for the Study of Crime, Delinquency, and Corrections, Southern Illinois University, Carbondale, Illinois, U.S.A.; and Department of Educational Psychology, West Virginia University, Morgantown, West Virginia, U.S.A., 1982.

- Decreased Crime Rate (Cities and Metropolitan Areas, U.S.A., 1973–1978).
321. DILLBECK, M. C.; FOSS, A. P. O.; and ZIMMERMANN, W. J. Maharishi's Global Ideal Society Campaign: Improved quality of life in Rhode Island through the Transcendental Meditation and TM-Sidhi program. Maharishi International University, Fairfield, Iowa, U.S.A., and MERU Research Institute, Mentmore, Buckinghamshire, England, 1983.
- Improved Quality of Provincial Life as Measured by an Index Including: Total Crime Rate, Mortality Rate, Motor Vehicle Fatality Rate, Auto Accident Rate, Unemployment Rate, Pollution, Beer Consumption Rate, and Cigarette Consumption Rate (Rhode Island, U.S.A., 1978).
322. ORME-JOHNSON, D. W.; DILLBECK, M. C.; BOUSQUET, J. G.; and ALEXANDER, C. N. An experimental analysis of the application of the Maharishi Technology of the Unified Field in major world trouble spots: Increased harmony in international affairs. Department of Psychology, Maharishi International University, Fairfield, Iowa, U.S.A., 1979.
- Increased Harmony in International Affairs (Worldwide, 1978); Improvements in Domestic Affairs and International Relations for Major Trouble-Spot Countries (1978); Decreased War Deaths [Rhodesia (Now Zimbabwe), 1978].
323. DAVIES, J. L., and ALEXANDER, C. N. The Maharishi Technology of the Unified Field and improved quality of life in the United States: A study of the First World Peace Assembly, Amherst, Massachusetts, 1979. Macquarie University, North Ryde, New South Wales, Australia, and Harvard University, Cambridge, Massachusetts, U.S.A., 1983.
- Improved Quality of National Life: Decreased Violent Crime; Decreased Motor Vehicle Fatalities; Decreased Number of Fatalities from Accidents, Suicide, and Homicide; Decreased Air Traffic Fatal Accidents; Increased Confidence, Optimism, and Economic Prosperity: Rise in Stock Market Index (U.S.A., 1979). Improved Quality of Provincial Life: Decreased Motor Vehicle Fatalities; Decreased Violent Crime (Massachusetts, U.S.A., 1979); Decreased Air Traffic Fatal Accidents (New England, U.S.A., 1979).
324. RABINOFF, R. A.; DILLBECK, M. C.; and DEISSLER, R. Effect of coherent collective consciousness on the weather. Departments of Physics and Psychology, Maharishi International University, Fairfield, Iowa, U.S.A., 1981.
- Support of Nature for Coherence Creating Group: More Moderate Winter Temperature during Construction of Maharishi International University's First Golden Dome (Iowa, U.S.A., 1979–1980).
325. BURGMANS, W. H. P. M.; BURGT, A. T. VAN DER; LANGENKAMP, F. P. TH.; and VERSTEGEN, J. H. Sociological effects of the group dynamics of consciousness: Decrease of crime and traffic accidents in Holland. Maharishi College of Natural Law, Rotterdam, the Netherlands, 1982.
- Improved Quality of National Life: Decreased Crime (Holland, 1979 and 1981); Decreased Automobile Accidents with Injury (Holland, 1979)
326. DILLBECK, M. C.; CAVANAUGH, K. L.; and BERG, W. P. VAN DEN. The

effect of the group dynamics of consciousness on society: Reduced crime in the Union Territory of Delhi, India. Maharishi International University, Fairfield, Iowa, U.S.A.; University of Washington, Seattle, Washington, U.S.A.; and Maharishi European Research University, Seelisberg, Switzerland, 1983.

Improved Quality of Provincial Life: Decreased Crime (Delhi, India, 1980–1981).

327. DILLBECK, M. C.; LARIMORE, W. E.; and WALLACE, R. K. A time series analysis of the effect of the Maharishi Technology of the Unified Field: Reduction of traffic fatalities in the United States. Maharishi International University, Fairfield, Iowa, U.S.A., and Scientific Systems, Inc., Cambridge, Massachusetts, U.S.A., 1984.

Improved Quality of National Life: Decreased Motor Vehicle Fatalities (U.S.A., 1982).

328. LANFORD, A. G. Reduction in homicide in Washington, D. C. through the Maharishi Technology of the Unified Field, 1980–83: A time series analysis. Maharishi International University, Fairfield, Iowa, U.S.A., 1984.

Improved Quality of City Life: Decreased Homicide (Washington, D. C., U.S.A., 1981–1983).

329. LANFORD, A. G. The effect of the Maharishi Technology of the Unified Field on stock prices of Washington, D.C. area based corporations, 1980–83: A time series analysis. Maharishi International University, Fairfield, Iowa, U.S.A., 1984.

Improved Quality of City Life: Increased Confidence and Economic Prosperity: Rise in Value of Corporate Stocks (Washington, D. C., U.S.A., 1981–1983).

330. BERESFORD, M. S., and CLEMENTS, G. The group dynamics of consciousness and the U.K. stock market. MERU Research Institute, Mentmore, Buckinghamshire, England, 1983.

Improved Quality of National Life: Increased Confidence, Optimism, and Economic Prosperity: Rise in Stock Market Index (United Kingdom, 1982–1983).

331. ABOU NADER, T. M.; ALEXANDER, C. N.; and DAVIES, J. L. The Maharishi Technology of the Unified Field and reduction of armed conflict: A comparative, longitudinal study of Lebanese villages. American University of Beirut, Beirut, Lebanon; Harvard University, Cambridge, Massachusetts, U.S.A.; and Macquarie University, North Ryde, New South Wales, Australia, 1984.

Improved Quality of Community Life: Cessation of Attack on a Community and Protection from Ongoing Armed Conflict in the Surrounding Area (Lebanon, 1982–1984).

332. ORME-JOHNSON, D. W., and GELDERLOOS, P. The long-term effects of the Maharishi Technology of the Unified Field on the quality of life in the United States (1960 to 1983). A version: ORME-JOHNSON, D. W.; GELDERLOOS, P.; and DILLBECK, M. C. The Effects of the Maharishi Technology of the Unified Field on the U.S. Quality of Life (1960–1984) was published in *Social Science Perspectives Journal*, 2(4), 127–146, 1988.

Improved Quality of National Life as Measured by an Index Including: Crime Rate, Percentage of Civil Cases Reaching Trial, Rate of Infectious Diseases, Infant

- Mortality Rate, Suicide Rate, Cigarette Consumption, Alcohol Consumption, Gross National Product, Patent Application Rate, Number of Degrees Conferred, Divorce Rate, and Traffic Fatalities (U.S.A., 1976–1983).
333. ORME-JOHNSON, D. W.; ALEXANDER, C. N.; DAVIES, J. L.; CHANDLER, H. M.; and LARIMORE, W. E. International peace project in the Middle East: The effect of the Maharishi Technology of the Unified Field. *Journal of Conflict Resolution*, 32(4): 776–812, 1988.
- Improved Quality of National Life as Measured by Composite Indices Comprising Data on War Intensity in Lebanon, Newspaper Content Analysis of Israeli National Mood, Tel Aviv Stock Index, Automobile Accident Rate in Jerusalem, Number of Fires in Jerusalem, and Maximum Temperature in Jerusalem; Significant Improvement in Each Variable in the Index (Israel, 1983). Decreased War Deaths (Lebanon, 1983).
334. DILLBECK, M. C.; MITTFELDELDT, V.; LUKENBACH, A. P., CHILDRESS, D.; ROYER, A.; WESTSMITH, L.; and ORME-JOHNSON, D. W. A time series analysis of the relationship between the group practice of the Transcendental Meditation and TM-Sidhi program and crime rate change in Puerto Rico. Maharishi International University, Fairfield, Iowa, U.S.A., and Maharishi International Caribbean, Fajardo, Puerto Rico, 1984.
- Improved Quality of Provincial Life: Decreased Crime (Puerto Rico, U.S.A., 1984).
335. ALEXANDER, C. N.; ABOU NADER, T. M.; CAVANAUGH, K. L.; DAVIES, J. L.; DILLBECK, M. C.; KFOURY, R. J.; and ORME-JOHNSON, D. W. The effect of the Maharishi Technology of the Unified Field on the war in Lebanon: A time series analysis of the influence of international and national coherence creating assemblies. Maharishi International University, Fairfield, Iowa, U.S.A., and Massachusetts Institute of Technology, Cambridge, Massachusetts, U.S.A., 1984.
- Improved Quality of National Life: Increased Progress towards Peaceful Resolution of Conflict and Decreased War Intensity; Decreased War Deaths and War Injuries (Lebanon, 1983–1984); Increased Confidence and Economic Prosperity: Improved Foreign Exchange Rate (Lebanon, 1984).
336. CAVANAUGH, K. L.; ORME-JOHNSON, D. W.; and GELDERLOOS, P. The effect of the Taste of Utopia Assembly on the world index of international stock prices. Department of Management and Public Affairs and Department of Psychology, Maharishi International University, Fairfield, Iowa, U.S.A., 1984.
- Increased Global Confidence, Optimism, and Economic Prosperity as Measured by Rise of World Stock Index and Simultaneous Increase in Major Stock Market Indices (Worldwide, 1983–1984).
337. ORME-JOHNSON, D. W.; CAVANAUGH, K. L.; ALEXANDER, C. N.; GELDERLOOS, P.; DILLBECK, M.; LANFORD, A. G.; and ABOU NADER, T. M. The influence of the Maharishi Technology of the Unified Field on world events and global social indicators: The effects of the Taste of Utopia Assembly. Department of Psychology and Department of Management and Public Affairs, Maharishi International University, Fairfield, Iowa, U.S.A., and Department of Nutrition and Food Science, Massachusetts Institute of Technology, Cambridge,



Massachusetts, U.S.A., 1984.

A Global Taste of Utopia<sup>7</sup>: Increased Harmony in International Affairs—Increased Progress towards Peaceful Resolution of Conflict; More Positive, Evolutionary Statements and Actions of Heads of State and International Support for Their Policies and Leadership; Increased Confidence, Optimism, and Economic Prosperity as Measured by Rise of World Stock Index and Simultaneous Increase in Major Stock Market Indices; Decreased Air Traffic Fatalities (Worldwide, 1983–1984); Decreased Traffic Fatalities (U.S.A.; South Africa; States of New South Wales, Victoria, and Western Australia, Australia, 1983–1984); Decreased Crime (State of Victoria, Australia; Washington, D.C., U.S.A.; and Karachi, Pakistan, 1983–1984); Decreased Incidence of Infectious Diseases (U.S.A. and Australia, 1983–1984); Increased Creativity as Measured by Increased Patent Applications (U.S.A., Australia, South Africa, and United Kingdom, 1983–1984).

#### **PART IV: REVIEW PAPERS**

*Papers 338 to 355 review the application of the Transcendental Meditation and TM-Sidhi program in the areas of health, education, development of personality, rehabilitation, and quality of life.*

##### **A: Health**

338. WERNER, O. Das Programm der Transzendentalen Meditation in der Medizin. *Schweizerische Ärztezeitung* (39): 1722–1726, 1978.

The author discusses the benefits of the Transcendental Meditation program in general medical practice and shows that it represents a major breakthrough in the field of health.

339. WERNER, O. Perfect health through enlightenment. In *XIVth International Congress of Internal Medicine Abstracts*, Rome, Italy, October 1978, pp. 370–371. Amsterdam: Excerpta Medica.

The Transcendental Meditation and TM-Sidhi program is presented as the direct means to perfect health for both the individual and society.

340. ORME-JOHNSON, D. W.; WALLACE, R. K.; DILLBECK, M. C.; and KAY (ROSENBERG), N. Recent biochemical and physiological research on the Transcendental Meditation and TM-Sidhi program: Clinical and epidemiological applications. Center for the Study of Higher States of Consciousness, Maharishi International University, Fairfield, Iowa, U.S.A. Paper presented at the American Psychiatric Association, 132nd Annual Meeting, Chicago, Illinois, U.S.A., 17 May 1979.

This paper provides an extensive discussion of electrophysiological and biochemical research on the Transcendental Meditation and TM-Sidhi program, including some interesting findings on EEG coherence not previously reported in the literature.

341. BLICHER, B.; BLONDEAU, F.; CHOQUETTE, C.; DEANS, A.; DROUIN, P.; GLASER, J.; and THIBAudeau, P. Méditation Transcendantale revue de la littérature scientifique. *Le Médecin du Québec* 15(8): 46–66, 1980.

The Transcendental Meditation and TM-Sidhi program is found to result in a coherent state of neurophysiological functioning which is maintained during activity. This forms the basis for optimal human performance and the development of higher states of consciousness as described in the Vedic Literature.

342. GUGLIELMI, I. *Meditazione Transcendentale: Ricerche sui cambiamenti fisiologici e clinici*. Bergamo, Italy: Edizioni Walk Over Srl, 1978.

The Transcendental Meditation and TM-Sidhi program is found to have profound benefits for the prevention and cure of illness and the promotion of perfect health for both the individual and society.

343. HUYNH, N-N. *Elimination du stress par la technique de Méditation Transcendantale*. Doctoral thesis (abbr.), Faculty of Dental Surgery, René Descartes University, Paris, France, 1981.

A review of research demonstrates that the Transcendental Meditation technique is an effective means of eliminating stress. This effect is shown to be of great importance in the field of dental and oral health.

344. RASMUSSEN, S. G.; JENSEN, M. R.; and RODENBERG, J. Præsentation af en sundhedsmodel. *Ugeskrift for Læger* 145(24): 1900–1902, 1983.

This paper presents the Transcendental Meditation program as the means for developing a state of perfect health, thereby bringing fulfillment to the medical sciences.

## **B: Education**

345. RAIMONDI, D., and DILLBECK, S. L. Maharishi International University's educational index: Psychophysiological assessment of holistic development. Maharishi International University, Fairfield, Iowa, U.S.A. Paper presented at the 89th Annual Convention of the American Psychological Association, Los Angeles, California, U.S.A., 26 August 1981.

This paper discusses a unique method of student assessment being pioneered at Maharishi International University, which includes an evaluation of the psychophysiological correlates of the growth of higher states of consciousness. The findings of the student assessment program indicate that the Transcendental Meditation and TM-Sidhi program not only makes an important contribution to the realization of traditional academic goals but also promotes a holistic development of the student's life.

346. DILLBECK, M. C., and DILLBECK, S. L. *The Transcendental Meditation and TM-Sidhi program: An educational technology for the development of the knower*. Maharishi International University, Fairfield, Iowa, U.S.A., 1983.

This paper presents the Transcendental Meditation and TM-Sidhi program as a scientifically validated educational technology for the full development of the know-

er, which has been successfully implemented at all levels of education. Furthermore, the application of this technology in educational institutions is found to contribute directly to the quality of life of the whole society.

347. DILLBECK, S. L. Maharishi's integrated system of education: Offering excellence in American education. In *Proceedings of the hearing before the Subcommittee on Education, Arts and Humanities of the Committee on Labor and Human Resources, United States Senate, Ninety-Eighth Congress, First Session, on Examination of the Report of the National Commission on Excellence in Education*, 22 September 1983, pp. 522–531. Washington, D.C.: U.S. Government Printing Office, 1984.

The Maharishi Technology of the Unified Field is found to fulfill the highest goals of education by bringing life in alliance with the total potential of natural law. Research on the Maharishi Technology of the Unified Field and experience of its application at all levels of education have shown that unified field based education not only fosters academic excellence, but also unfolds the full potential of individual and collective life.

### **C: Personality**

348. NIDICH, S. I., and ORME-JOHNSON, D. W. Kohlberg Stage 7, natural law, and the Transcendental Meditation and TM-Sidhi program. In *Proceedings of the International Symposium on Moral Education*, University of Fribourg, Fribourg, Switzerland, 3 September 1982.

This paper discusses how the Transcendental Meditation and TM-Sidhi program brings fulfillment to the ideal of a 'cosmic perspective', as expressed in Kohlberg's Stage 7, and shows that the psychophysiological basis of this state can now be clearly understood in the light of the scientific research on the Transcendental Meditation and TM-Sidhi program.

349. DILLBECK, M. C. Testing the Vedic Psychology of the *Bhagavad-Gita*. *Psychologia* 26: 232–240, 1983.

Research on the Transcendental Meditation and TM-Sidhi program is found to provide experimental evidence for the Vedic description of human psychology and the growth of higher states of consciousness, as contained in the *Bhagavad-Gita*. In particular, the known effects of the Transcendental Meditation and TM-Sidhi program are shown to verify three concepts that are central to the Vedic Psychology of the *Bhagavad-Gita*: the existence of the experience of transcending; the growth of the qualities of enlightenment as a result of this experience; and the nature of the transcendent as a universal 'field' of consciousness.

### **D: Rehabilitation**

350. DEVAKAR. Correctional technique—A fresh approach through SCI. Department of Social Work, Kashi Vidyapeeth, Varanasi, Uttar Pradesh, India. Paper presented

at the Third All India Penological Conference, Lucknow, Uttar Pradesh, India, 22–24 November 1975.

The author discusses insights from the Science of Creative Intelligence into the problem of criminal behavior, and proposes the application of its practical aspect, the Transcendental Meditation program, as a solution to the current crisis in criminal correction.

351. ARON, A., and ARON, E. N. The Transcendental Meditation program's effect on addictive behavior. *Addictive Behaviors* 5: 3–12, 1980.

This paper reviews research showing that the Transcendental Meditation program is effective in counteracting a wide variety of addictive behaviors. The authors locate the basis of this effect in the comprehensive physiological, psychological, and social benefits which have been found to result from Transcendental Meditation.

352. ORME-JOHNSON, D. W. Prison rehabilitation and crime prevention through the Transcendental Meditation and TM-Sidhi program. In *Holistic approaches to offender rehabilitation*, ed. Leonard J. Hippchen, Chapter 15, 346–383. Springfield, Illinois: Charles C. Thomas Publishing, 1981.

The first part of this paper summarizes research on the Transcendental Meditation program in prisons and presents an overview of the physiological, psychological, and sociological findings in terms of the growth of stability and adaptability. The second part presents the perspective of the Science of Creative Intelligence on law, justice, and rehabilitation.

353. DILLBECK, M. C., and ABRAMS, A. I. The application of the Transcendental Meditation program to corrections and crime prevention. Maharishi International University, Fairfield, Iowa, U.S.A. Paper presented in part at the Academy of Criminal Justice Sciences Conference, Louisville, Kentucky, U.S.A., 26 March 1982.

The paper reviews research demonstrating that the Transcendental Meditation and TM-Sidhi program produces consistent beneficial effects for both criminal rehabilitation and crime prevention.

### **E: Quality of Life**

354. ARON, A., and ARON, E. N. The Transcendental Meditation program for building family strengths: Blueprint for invincibility. Department of Psychology, Maharishi International University, Fairfield, Iowa, U.S.A. Paper presented at the National Symposium on Building Family Strengths, University of Nebraska, Lincoln, Nebraska, U.S.A., 4 May 1978.

This paper presents the Transcendental Meditation and TM-Sidhi program as a means to strengthen family life by developing higher states of consciousness for the individual and creating an influence of coherence and harmony in the social environment.

355. ORME-JOHNSON, D. W., and DILLBECK, M. C. A proposal to establish a U.S. Academy of Peace. In *Proceedings of the hearing before the Subcommittees on International Security and Scientific Affairs and on International Operations of*

*the Committee on Foreign Affairs, and the Subcommittee on Postsecondary Education of the Committee on Education and Labor, House of Representatives, Ninety-Seventh Congress, Second Session, on bills H.R. 5088 and H.R. 6182, 21 July 1982, pp. 241–250. Washington, D.C.: U.S. Government Printing Office, 1982.*

This proposal presents the group practice of the Transcendental Meditation and TM-Sidhi program as the practical technology for creating coherence in national and world consciousness, thereby establishing a permanent state of social harmony and world peace.

## VOLUME 5

WALLACE, R.K., ORME-JOHNSON, D.W., and DILLBECK, M.C., eds. 1990. *Scientific Research on Maharishi's Transcendental Meditation program: Collected papers*, vol. 5. Fairfield, Iowa, U.S.A.: MIU Press

## PART I: PHYSIOLOGY

*The studies in the first section document changes during the practice of the Transcendental Meditation technique unless otherwise stated.*

### A: Metabolic, Biochemical, and Cardiovascular Changes

356. DILLBECK, M. C., and ORME-JOHNSON, D. W. Physiological differences between Transcendental Meditation and rest. *American Psychologist* 42: 879–881, 1987.

A Unique State of Deep Rest: Meta-Analysis of 31 Studies; Higher Basal Skin Resistance; Lower Respiration Rate; Lower Plasma Lactate. Lower Baseline Levels of Spontaneous Skin Resistance Responses, Respiration Rate, Heart Rate, and Plasma Lactate.

357. FARRELL, D. J. The reduction in metabolic rate and heart rate of man during meditation. *Energy Metabolism*, Lawrence E. Mount (Ed.), E.A.A.P. Publication # 26, Butterworth & Co. (Publishers) Ltd. Australia. 279–282, 1980.

A Unique State of Deep Rest: Reduction in Metabolic Rate; Reduction in Heart Rate.

358. GALLOIS, P. Modifications neurophysiologiques et respiratoires lors de la pratique des techniques de relaxation. *L'Encéphale* 10: 139–144, 1984.

A Unique State of Deep Rest: Lower Heart Rate; Decreased Breath Rate; Episodes of Spontaneous Respiratory Suspension (Without Compensatory Hyperventilation). Increased Alertness: Faster Reaction Time after the Practice. Lower Heart Rate outside the Practice.

359. GARNIER, D.; CAZABAT, A.; THÉBAULT, P.; and GAUGE, P. An experimental study: pulmonary ventilation during the Transcendental Meditation technique—

applications in preventive medicine. Summary of a paper that appeared in *Est-Médecine* 4(76): 867–870, 1984.

A Unique State of Deep Rest: Lower Oxygen Consumption per Kilo Body Weight during and outside TM Practice.

360. SHARMA, H. M., and STEPHENS, R. E. The effects of the Transcendental Meditation and TM-Sidhi program on DNA repair. Presented in part at the Federation of the American Society of Experimental Biologists meeting, St. Louis, Missouri, April 1986.

Unique Pattern of DNA Repair.

361. WILSON, A. F.; JEVNING, R.; and GUICH, S. Marked reduction of forearm carbon dioxide production during states of decreased metabolism. *Physiology and Behavior* 41: 347–352, 1987.

Unique State of Deep Rest: Reduced Difference between Arterial and Venous CO<sub>2</sub> Content in Forearm Metabolism.

362. JEVNING, R.; WILSON, A. F.; PIRKLE, H.; GUICH, S.; and WALSH, R. N. Modulation of red cell metabolism by states of decreased activation: comparison between states. *Physiology and Behavior* 35: 679–682, 1985.

A Unique State of Deep Rest: Marked Decline of Red Cell Metabolism.

363. WERNER, O. R.; WALLACE, R. K.; CHARLES, B.; JANSSEN, G.; STRYKER, T.; and CHALMERS, R. A. Long-term endocrinologic changes in subjects practicing the Transcendental Meditation and TM-Sidhi program. *Psychosomatic Medicine* 48(1/2): 59–65, 1986.

Increased Endocrinological Efficiency: Long-Term Reduction in Basal Levels of Pituitary Hormones (TSH, Growth Hormone, and Prolactin), with Maintenance of Adrenal and Thyroid Hormone Levels.

364. JEVNING, R.; WELLS, I.; WILSON, A. F.; and GUICH, S. Plasma thyroid hormones, thyroid stimulating hormone, and insulin during acute hypometabolic states in man. *Physiology and Behavior* 40: 603–606, 1987.

More Efficient Neuroendocrine Regulation: Reduction of Pituitary Hormone TSH with Maintenance of Thyroid Hormones and Insulin Levels. Lower Baseline TSH Levels in Long-Term TM Participants.

365. WALTON, K. G.; FRANCIS, D.; LEROM, M.; and TOURENNE, C. Behaviorally-induced alterations in human urinary 5-hydroxyindoles. *Transactions of the American Society for Neurochemistry* 14: 199, 1983.

Neurotransmitter Modulation: Change in Daily Cycle of Urinary 5-Hydroxyindoles, Metabolites Related to Serotonin.

366. O'HALLORAN, J. P.; JEVNING, R.; WILSON, A. F.; SKOWSKY, R.; WALSH, R. N.; and ALEXANDER, C. Hormonal control in a state of decreased activation: potentiation of arginine vasopressin secretion. *Physiology and Behavior* 35: 591–595, 1985.

Hormonal Growth: Increased Plasma Level of Arginine Vasopressin, Associated with Body Fluid Balance and with Learning and Memory.

367. MILLS, P. J.; SCHNEIDER, R.; HILL, D.; WALTON, K.; and WALLACE, R. K. Lymphocyte beta-adrenergic receptors and cardiovascular responsivity in TM participants and Type A behavior. This is a summary of a paper presented at the Annual Meeting of the American Psychosomatic Society, Philadelphia, Pennsylvania, March, 1987. (Refer also to *Psychosomatic Medicine* 49: 211, 1987, and *Journal of Psychosomatic Research* 33(6), 1989).
- Improved Stress Reactivity: Lower Beta-Adrenergic Receptor Sensitivity; Lower Blood Reactivity to Stress; Lower Resting Blood Pressure; Lower Resting Epinephrine Level.
368. SCHNEIDER, R. H.; MILLS, P. J.; SCHRAMM, W.; and WALLACE, R. K. Luteinizing hormone: a marker for Type A behavior and its modification by the Transcendental Meditation program? *Psychosomatic Medicine* 49: 212–213, 1987. (Refer also to *Neuroendocrinology Letters* 9:181, 1987.)
- Lower Chronic Stress: Normal Neuroendocrine Reactivity; Meditating Type A Subjects Showed Healthy Neuroendocrine Pattern.

**B: Electrophysiological and Electroencephalographic Changes**

369. ALEXANDER, C. N.; LARIMORE, W. E.; DASH, P.; TITUS, B.; and ISRAELSON, L. Distinguishing between Transcendental Meditation, sleep and other forms of rest according to electrophysiological criteria. Summary of a paper presented at the Midwestern Psychological Association Meeting, Chicago, Illinois, May 1987.
- EEG Differentiation between Transcendental Meditation and Napping.
370. GAYLORD, C.; ORME-JOHNSON, D. W.; and TRAVIS, F. The effects of the Transcendental Meditation technique and progressive muscle relaxation on EEG coherence, stress reactivity, and mental health in black adults. *International Journal of Neuroscience* 46: 77–86, 1989.
- Increased Functional Organization of the Brain: Increased EEG Coherence during TM Practice. Improved Mental Health; Decreased Anxiety; Decreased Neuroticism; Faster Recovery from Stress.
371. GAYLORD, C.; ORME-JOHNSON, D. W.; WILLBANKS, M.; TRAVIS, F.; RAINFORTH, M.; and REYNOLDS, B. The effects of the Transcendental Meditation program on self-concept and EEG coherence in black college students. Abstract of paper presented at the 101st session of the Iowa Academy of Science, Storm Lake, Iowa, April 1989. Also see abstract insert in *Journal of the Iowa Academy of Science* 96(1), A31–A32.
- Increased Functional Organization of the Brain: Increased EEG Coherence during TM Practice. Improved Self-Concept: Increased Self-Satisfaction; Increased Moral-Ethical Self; Increased Social Self; Decreased General Maladjustment; Decreased Personality Disorder.
372. DILLBECK, M. C., and ARAAS-VESELY, S. Participation in the Transcendental Meditation program and frontal EEG coherence during concept learning. *International Journal of Neuroscience* 29: 45–55, 1986.

Increased Frontal EEG Coherence during Acquisition of New Information; More Settled Physiological Response during Cognitively Demanding Tasks.

373. MEIRSMAN, J. Neurophysiological order in the REM sleep of participants of the Transcendental Meditation and TM-Sidhi programme. Summary of paper presented at the Sixth Annual International Conference of the Association for the Study of Dreams, London, England, July 1989.

Increased Order-Producing Activity of the Brain during Sleep as Indicated by the Ratio of High Frequency to Low Frequency REM.

374. GODDARD, P. H. Reduced age-related declines of P300 latency in elderly practicing Transcendental Meditation. *Psychophysiology* 26: S29, 1989.

Faster Processing of Cognitively Complex Information in the Elderly as Measured by Event-Related Potentials.

375. TRAVIS, F., and ORME-JOHNSON, D. W. EEG coherence and power during yogic flying. Abstract of a portion of the first author's doctoral dissertation, Department of Psychology, Maharishi International University, Fairfield, Iowa, 1988. (Refer also to *Dissertation Abstracts International* 49(8): 3493B, 1988. Full paper published in *International Journal of Neuroscience*, 54: 1-12, 1990.)

Increased EEG Coherence at the Moment of Performance of TM-Sidhi Yogic Flying.

### C: Health

376. GLASER, J. L.; BRIND, J. L.; EISNER, M. J.; DILLBECK, M. C.; VOGELMAN, J. H.; and WALLACE, R. K. Elevated serum dehydroepiandrosterone sulfate levels in older practitioners of the Transcendental Meditation and TM-Sidhi programs. Paper presented at the Annual Meeting of the Society for Neuroscience, Washington, D.C., November 1986. (An abstract of these results also appeared in *AGE* 10(4): 160, 1987.)

Hormone Levels Indicating Younger Biological Age.

377. SMITH, D. E.; GLASER, J. L.; SCHNEIDER, R. H.; and DILLBECK, M. C. Erythrocyte sedimentation rate (ESR) and the Transcendental Meditation (TM) program. *Psychosomatic Medicine* 51: 259, 1989. (Also, refer to *AGE* 10(4): 160, 1987.)

Lower Erythrocyte Sedimentation Rate Levels Indicating Less Serious Illness and Slower Aging.

378. ORME-JOHNSON, D. W. Medical care utilization and the Transcendental Meditation program. *Psychosomatic Medicine* 49(1): 493-507, 1987.

Lower Health Insurance Utilization Rates: Significantly Fewer Hospital Inpatient Days, Outpatient Visits; Fewer Inpatient Admissions for All Major Categories of Disease.

379. ORME-JOHNSON, D. W., and VEGORS, S. Medical care utilization at Maharishi International University, Fairfield, Iowa. Abstract of paper presented at the 100th Session, Iowa Academy of Science, Ames, Iowa, April 1988. Abstract insert in the *Journal of the Iowa Academy of Science* 95(1): A56.

Lower Health Insurance Utilization Rates among MIU Faculty and Staff.



380. ALEXANDER, C. N.; LANGER, E. J.; NEWMAN, R. I.; CHANDLER, H. M.; and DAVIES, J. L. Transcendental Meditation, mindfulness, and longevity: an experimental study with the elderly. Summary of paper in the *Journal of Personality and Social Psychology* 57(6): 950–964, 1989.

Benefits for the Elderly Demonstrating Reversal of Aging: Increased Longevity; Increased Cognitive Flexibility (Including Increased Learning Ability and Greater Perceptual Flexibility); Increased Word Fluency; Improvements in Self-Reported Measures of Behavioral Flexibility and Aging; Greater Sense of Well-Being; Improved Mental Health; Reduction of Blood Pressure to More Ideal Levels.

## **PART II: PSYCHOLOGY**

### **A: Intelligence, Learning, and Academic Performance**

381. DOAN, M. J. Transcendental Meditation program as a prenatal factor in the quiet alert state in normal newborns. Summary of a paper presented at the Annual Meeting of the National Association of Young Children, Anaheim, California, November 1988.

Increased Quiet Alertness in Newborns of Mothers Practicing the Transcendental Meditation and TM-Sidhi Program.

382. DIXON, C. A. Consciousness and cognitive development: a six-month longitudinal study of four-year-olds practicing the children's Transcendental Meditation technique. Abstract of Doctoral Dissertation, Department of Psychology, Maharishi International University, Fairfield, Iowa, 1989. *Dissertation Abstracts International*, 51 (3) Section B: 1518, 1989.

Accelerated Cognitive Development in Four-Year-Old Children Practicing the Children's Transcendental Meditation Technique.

383. WARNER, T. Q. Transcendental Meditation and developmental advancement: mediating abilities and conservation performance. *Dissertation Abstracts International* 47(8): 3558B, 1986.

Advanced Cognitive Development in Children.

384. GELDERLOOS, P.; LOCKIE, R. J.; and CHUTTOORGOON, S. Field independence of students at Maharishi School of the Age of Enlightenment and a Montessori school. *Perceptual and Motor Skills* 65: 613–614, 1987.

Increased Field Independence (Growth of a More Stable Internal Frame of Reference, Increased Perceptual Acuity) in Children.

385. NIDICH, S. I.; NIDICH, R. J.; and RAINFORTH, M. School effectiveness: achievement gains at the Maharishi School of the Age of Enlightenment. *Education* 107: 49–54, 1986.

Increased Academic Achievement for Both Incoming and Continuing Students at Maharishi School of the Age of Enlightenment.

386. NIDICH, S. I., and NIDICH, R. J. Increased academic achievement at Maharishi

School of the Age of enlightenment: a replication study. *Education* 109: 302–304, 1989.

Improved Scores on Social Studies, Literary Materials, Reading, Quantitative Thinking, and General Academic Achievement for Students at Maharishi School of the Age of Enlightenment.

387. MUEHLMAN, J. M.; NIDICH, S. I.; REILLY, B.; and COLE, C. Relationship of the practice of the Transcendental Meditation technique to academic achievement. Paper presented at the Annual Meeting of the Mid-Western Educational Research Association, Chicago, Illinois, October 1988. (Refer also to *Abstracts of Papers of the Annual Meeting of the Mid-Western Educational Research Association*, p. 6, 1988.)

Increased Academic Achievement and IQ as a Function of Number of Months Practicing the Transcendental Meditation and TM-Sidhi Program in Secondary School Students.

388. NIDICH, R. J., and NIDICH, S. I. Improving the social climate of a Philippine secondary school through the practice of the Transcendental Meditation program. Summary of a paper presented at the Annual Meeting of the Mid-Western Educational Research Association, Chicago, Illinois, October 1988. (Refer also to *Abstracts of Papers of the Annual Meeting of the Mid-Western Educational Research Association*, p. 14, 1988.)

Increased Morale, Facilitative Leadership, and Influence in Decision Making Concerning Classroom Instruction in Teachers Practicing the Transcendental Meditation Program.

389. DILLBECK, M. C.; ASSIMAKIS, P. D.; RAIMONDI, D.; ORME-JOHNSON, D. W.; and ROWE, R. Longitudinal effects of the Transcendental Meditation and TM-Sidhi program on cognitive ability and cognitive style. *Perceptual and Motor Skills* 62: 731–738, 1986.

Increased Fluid Intelligence and Field Independence (Growth of a More Stable Internal Frame of Reference, Increased Perceptual Acuity) in College Students.

390. CRANSON, R. Increased general intelligence through the Transcendental Meditation and TM-Sidhi program. Abstract of a paper presented at the Annual Meeting of the American Psychological Association, New Orleans, August 1989.

Improvements in General Intelligence and Reaction-Time Measures (Which are Correlated with Intelligence).

391. KEMBER, P. The Transcendental Meditation technique and postgraduate academic performance. *British Journal of Educational Psychology* 55: 164–166, 1985.

Enhanced Academic Performance in Postgraduate Students.

392. JEDRCZAK, A.; BERESFORD, M.; and CLEMENTS, G. The TM-Sidhi program, pure consciousness, creativity and intelligence. *The Journal of Creative Behavior* 19(4): 270–275, 1985.

Enhanced Creativity and Intelligence.

393. JEDRCZAK, A.; TOOMEY, M.; and CLEMENTS, G. The TM-Sidhi programme, age, and brief test of perceptual-motor speed and nonverbal intelligence. *Journal of Clinical Psychology* 42: 161–164, 1986.

Reduction of Aging Effects as Assessed by Perceptual/Motor Speed and Non-Verbal Intelligence.

**B: Development of Personality**

394. GELDERLOOS, P.; GODDARD III, P. H.; AHLSTRÖM, H. H. B.; and JACOBY R. Cognitive orientation toward positive values in advanced participants of the TM and TM-Sidhi program. *Perceptual and Motor Skills* 64: 1003–1012, 1987.

Orientation toward Positive Values: Better Recall for Positive than Negative Words; Lower Recognition Thresholds for Positive Words than Negative Words; Differential Recognition Threshold for Positive and Negative Affect Terms Correlated with the Intensity of the Experienced Positive and Negative Affects; More Positive Appraisal of Others.

395. GELDERLOOS, P. Psychological health and development of students at Maharishi International University: a controlled longitudinal study. *Modern Science and Vedic Science* 1(4): 471–487, 1987.

Student Psychological Development: Increased Psychological Health as Indicated by Unifying Ability, Autonomy, Intrinsic Spirituality, Creativity, Directedness, Well-Being, and Integration of the Personality; Higher Growth Rate on Several of These Indicators.

396. GELDERLOOS, P.; HERMANS, H. J. M.; AHLSTRÖM, H. H.; and JACOBY, R. Transcendence and psychological health: studies with long-term participants of the Transcendental Meditation and TM-Sidhi program. *Journal of Psychology* 124(2), 177–197, 1990.

Psychological Development: Higher Scores on General Factor of Psychological Health; Higher Growth Rate Longitudinally; Scores on Psychological Health Associated with Physiological Indicators of Transcendental Consciousness.

397. GELDERLOOS, P., and BETO, Z. H. A. D. The Transcendental Meditation and TM-Sidhi program and reported experiences of transcendental consciousness. This is a summary of a study that appeared in *Psychologia—An International Journal of Psychology in the Orient* 32(2): 91–103, 1989.

Experiences of Higher States of Consciousness: More Frequent Experiences of Transcendental Consciousness.

**PART III: SOCIOLOGY**

**A: Rehabilitation**

398. BLEICK, C. R., and ABRAMS, A. I. The Transcendental Meditation program and criminal recidivism in California. *Journal of Criminal Justice* 15: 211–230, 1987.

Rehabilitation of Prison Inmates: Reduced Recidivism after Release.

**B: Productivity and Quality of Life**

399. ALEXANDER, C. N.; SWANSON, G. C.; RAINFORTH, M. V.; CARLISLE, T. W.; and TODD, C. C. The Transcendental Meditation program and business: a prospective study. Paper presented at the 101st Annual Session of the Iowa Academy of Science, Storm Lake, Iowa, April 1989. Refer also to abstract insert in *The Journal of the Iowa Academy of Science* 96: A32, 1989.

Increased Productivity and Performance in Business: Increased Efficiency and Productivity; Improved Work and Personal Relationships; Reduced Anxiety; Reduced Job Worry and Tension; Improved Job Satisfaction; Improved General Health; Enhanced Sleep and Reduced Fatigue; Reduced Cigarette and Liquor Consumption; Increased Physiological Stability during Task Performance.

400. CHEN, M. E. A comparative study of dimensions of healthy functioning between families practicing the TM program for five years or for less than a year. *Dissertation Abstracts International* 45(10) 3206B, 1984.

Improved Family Life: Family Health.

*The following papers in this Section document the growth of coherence in the collective consciousness of cities, states, nations, and the world.*

401. DILLBECK, M. C.; CAVANAUGH, K. L.; GLENN, T.; ORME-JOHNSON, D. W.; and MITTLEFEHLDT, V. Consciousness as a field: the Transcendental Meditation and TM-Sidhi program and changes in social indicators. *The Journal of Mind and Behavior* 8(1): 67–104, 1987.

Improved Quality of Life in Cities and Territories: Decreased Crime (Union Territory of Delhi, 1980–1981; Metro Manila, 1984–1985; Puerto Rico, 1984). Improvements on Monthly Quality of Life Indices in Territories and States: Metro Manila Region, 1979–1981, Including Crime, Foetal Deaths, and Other Deaths; State of Rhode Island, U.S., 1978, Including Crime Rate, Motor Vehicle Fatality Rate, Mortality Rate for Other Causes, Auto Accident Rate, Unemployment Rate, Pollution, Beer Consumption Rate, and Cigarette Consumption Rate.

402. DILLBECK, M. C.; BANUS, C. B.; POLANZI, C.; and LANDRITH III, G. S. Test of a field model of consciousness and social change: the Transcendental Meditation and TM-Sidhi program and decreased urban crime. *The Journal of Mind and Behavior* 9(4): 457–486, 1988.

Improved Quality of City Life: Decreased Crime Rate (Cities and Metropolitan Areas, U.S., 1973–1979); Decreased Violent Crime (Washington, D.C., 1981–1983).

403. CAVANAUGH, K. L. Time series analysis of U.S. and Canadian inflation and unemployment: a test of a field-theoretic hypothesis. This is a revised and updated version of a paper presented at the Annual Meeting of the American Statistical Association, San Francisco, California, August 17–20, 1987, and published in *Proceedings of the American Statistical Association, Business and Economics*

*Statistics Section* (Alexandria, Virginia: American Statistical Association): 799–804, 1987.

Improved Quality of National Life as Measured by a Monthly Index of Inflation and Unemployment (United States and Canada, 1979–1988).

404. CAVANAUGH, K. L., and KING, K. D. Simultaneous transfer function analysis of Okun's misery index: improvements in the economic quality of life through Maharishi's Vedic Science and Technology of consciousness. Paper presented at the Annual Meeting of the American Statistical Association, New Orleans, Louisiana, August 22–25, 1988. An abridged version of this paper appeared in *Proceedings of the American Statistical Association, Business and Economics Statistics Section*: 491–496, 1988.

Improved Quality of National Life as Measured by a Monthly Index of Inflation and Unemployment (United States, 1979–1988), Controlling for Monetary Growth and the Rate of Change of Crude Materials Prices.

405. CAVANAUGH, K. L.; KING, K. D.; and ERTUNA, C. A multiple-input transfer function model of Okun's misery index: an empirical test of the Maharishi Effect. Paper presented at the Annual Meeting of the American Statistical Association, Washington, D.C., August 6–10, 1989. An abridged version of this paper appears in *Proceedings of the American Statistical Association, Business and Economics Statistics Section* (Alexandria, Virginia: American Statistical Association): 565–570, 1989.

Improved Quality of National Life as Measured by a Monthly Index of Inflation and Unemployment (United States, 1979–1988), Controlling for the Rate of Change of Industrial Production, Crude Materials Prices, and a Measure of the Money Supply.

406. CAVANAUGH, K. L.; KING, K. D.; and TITUS, B. D. Consciousness and the quality of economic life: empirical research on the macroeconomic effects of the collective practice of Maharishi's Transcendental Meditation and TM-Sidhi program. This is a revised version of a paper presented at the Annual Meeting of the Midwest Management Society, Chicago, Illinois, March 1989, and published in R.G. Greenwood (ed.), *Proceedings of the Midwest Management Society* (Chicago, Illinois: Midwest Management Society): 183–190, 1989.

Improved Quality of National Life as Measured by a Monthly Index of Inflation and Unemployment (United States, 1979–1988), Controlling for Changes in Major Economic Variables.

407. DILLBECK, M. C. Test of a field theory of consciousness and social change: time series analysis of participation in the TM-Sidhi program and reduction of violent death in the U.S. Summary of a paper in *Social Indicators Research* 22: 399–418, 1990.

Improved Quality of National Life as Measured by a Weekly Index of Motor Vehicle Fatalities, Homicide, and Suicide (United States, 1979–1985).

408. ASSIMAKIS, P. D. Change in the quality of life in Canada: intervention studies of the effect of the Transcendental Meditation and TM-Sidhi program. Abstract published in *Dissertation Abstracts International* 50(5) Sec. B, p. 2203, November 1989.

Improved Quality of National Life: Improvements on a Weekly Index Including Motor Vehicle Fatalities, Homicide, and Suicide (Canada, 1983–1985); Reductions of Weekly Fatalities Due to Accidents Other than Motor Vehicle Fatalities (Canada, 1983–1985); Improvements on a Monthly Index Including Violent Fatalities (Motor Vehicle Fatalities, Homicide, and Suicide), Cigarette Consumption, and Worker-Days Lost in Strikes (Canada, 1972–1986).

409. GELDERLOOS, P.; FRID, M. J.; GODDARD, P. H.; XUE, X.; and LÖLIGER, S. A. Creating world peace through the collective practice of the Maharishi Technology of the Unified Field: improved U.S.-Soviet relations. *Social Science Perspectives Journal* 2(4): 80–94, 1988.

Improved International Relations: Increased Friendliness in Statements of U.S. Head of State (1985–1987).

410. DAVIES, J. L., and ALEXANDER, C. N. Alleviating political violence through enhancing coherence in collective consciousness: impact assessment analyses of the Lebanon war. Summary of a paper presented at the 85th Annual Meeting of the American Political Science Association, September 1989. (Refer also to *Dissertation Abstracts International* 49(8): 2381A, 1988.)

Improved Quality of National Life: Reduction of Conflict in Lebanon (Increased Cooperation, Reduced Level of Conflict, Reduced War Fatalities, and Reduced War Injuries); Improvement on a Daily Index Composed of All Four of these Variables (1983–1985).

411. ORME-JOHNSON, D. W.; DILLBECK, M. C.; ALEXANDER, C. N.; CHANDLER, H. M.; and CRANSON, R. W. Time series impact assessment analysis of reduced international conflict and terrorism: effects of large assemblies of participants in the Transcendental Meditation and TM-Sidhi program. A summary of a paper presented at the Annual Conference of the American Political Science Association, Atlanta, Georgia, U.S.A., August 1989.

Improved International Relations: Reduced Conflict Globally, Reduced Terrorism, and Increase in World Index of Stock Prices, during Three Large Assemblies of Participants in the Transcendental Meditation and TM-Sidhi Program (1983–1985).

## PART IV: THEORETICAL AND REVIEW PAPERS

### A: Health

412. WALLACE, R. K.; FAGAN, J. B.; and PASCO, D. S. Vedic physiology. *Modern Science and Vedic Science* 2(1): 3–59, 1988.

The fundamental principle of Vedic Physiology is that consciousness is the basis of physiology. This paper outlines and reviews the expression of consciousness at each level of the physiology and reviews research on physiological correlates of higher states of consciousness developed through the Transcendental Meditation and TM-Sidhi program.

413. GLASER, J. L. Maharishi Ayur-Ved: An introduction to recent research. *Modern Science and Vedic Science* 2(1): 89–108, 1988.

Maharishi Ayur-Ved rasyanas (herbal and mineral preparations) and the Maharishi Panchakarma program of purification procedures have both been found to have a wide range of beneficial effects on physical and mental health as indicated by biochemical and clinical studies.

414. JEDRCZAK, A.; MILLER, D.; and ANTONIOU, M. Transcendental Meditation and health: an overview of experimental research and clinical experience. *Health Promotion* 2(4): 369–376, 1988.

The authors review the large body of research indicating improved individual and collective health through the Transcendental Meditation program and propose that it be applied on a large scale to improve public health and reduce health care costs.

### **B: Education**

415. DILLBECK, S. L., and DILLBECK, M. C. The Maharishi Technology of the Unified Field in education: principles, practice, and research. *Modern Science and Vedic Science* 1(4): 383–431, 1987.

The authors outline the principles and practical techniques of the Maharishi Unified Field Based Integrated System of Education and review research indicating the ability of this system to develop the cognitive, affective, and physiological characteristics of the student that contribute to successful learning.

416. NIDICH, S. I., and NIDICH, R. J. Holistic student development at Maharishi School of the Age of Enlightenment: theory and research. *Modern Science and Vedic Science* 1(4): 433–468, 1987.

The authors review research on the success of Maharishi Schools of the Age of Enlightenment in fostering positive educational outcomes and promoting student development.

417. DOW, M. A. A unified approach to developing intuition in mathematics. This paper is an abridged version of a paper presented to the Eugene Strens Memorial Conference on Intuitive and Recreational Mathematics and Its History, Calgary, Canada, July/August 1986. The original paper will appear in the proceedings of this conference, edited by Richard K. Guy, to be published by the Mathematical Association of America in their series MAA Notes.

This paper describes how the development of consciousness through the Transcendental Meditation program fulfills current needs in mathematics education by culturing mathematical intuition.

### **C: Personality and Development**

418. ALEXANDER, C. N.; CRANSON, R. W.; BOYER, R. W.; and ORME-JOHNSON, D. W. Transcendental consciousness: a fourth state of consciousness beyond

sleep, dreaming, and waking. This is an abridged version of a chapter which appeared in J. Gackenbach (ed.), *Sleep and Dreams: A Sourcebook*, New York: Garland Publishing, Inc., 282–315, 1987.

The authors review physiological research indicating that transcendental consciousness is a unique fourth major state of consciousness.

419. ALEXANDER, C. N.; DAVIES, J. L.; DIXON, C. A.; DILLBECK, M. C.; OETZEL, R. M.; DRUKER, S. M.; MUEHLMAN, J. M.; and ORME-JOHNSON, D. W. Growth of higher stages of consciousness: Maharishi's Vedic Psychology of human development. A summary of a chapter appearing in Charles N. Alexander and Ellen J. Langer (eds.), *Higher Stages of Human Development: Perspectives on Adult Growth*. New York: Oxford University Press, 1990.

The authors outline how the experience and understanding of higher states of consciousness found in Maharishi's Vedic Psychology fulfills the aspiration of developmental psychology to comprehend the full development of human life.

#### **D: Rehabilitation**

420. DILLBECK, M. C., and ABRAMS, A. I. The application of the Transcendental Meditation program to corrections. *International Journal of Comparative and Applied Criminal Justice* 11(1): 111–132, 1987.

This paper reviews the research on the application of the Transcendental Meditation program in corrections, including improved mental health and reduced hostility among inmates, and reduced recidivism upon release. The authors propose the implementation of the Transcendental Meditation program in correctional settings on a large scale, in order to promote effective rehabilitation and thereby reduce the substantial financial and human costs to society of incarceration.

421. CLEMENTS, G.; KRENNER, L.; and MÖLK, W. The use of the Transcendental Meditation programme in the prevention of drug abuse and in the treatment of drug-addicted persons. *Bulletin on Narcotics* 40(1): 51–56, 1988.

This paper reviews the results of studies indicating that the practice of the Transcendental Meditation program reduces substance abuse.

#### **E: Quality of Life**

422. ORME-JOHNSON, D. W., and DILLBECK, M. C. Maharishi's program to create world peace: theory and research. *Modern Science and Vedic Science* 1(2): 207–259, 1987.

This paper reviews Maharishi's theoretical principles of collective consciousness and the empirical research demonstrating improved quality of life at the city, state, national, and international levels. The research indicates that an influence of peace is created worldwide through the group practice of the Transcendental Meditation and TM-Sidhi program by at least 7000 individuals—the square root of one percent of the world's population.



**F: Maharishi's Vedic Psychology**

423. ORME-JOHNSON, D. W. The cosmic psyche: an introduction to Maharishi's Vedic Psychology—the fulfillment of modern psychology. *Modern Science and Vedic Science* 2(2): 113–163, 1988.

This paper introduces basic concepts of Maharishi's Vedic Psychology and compares its major principles to those of twentieth-century psychology. The author concludes that Maharishi's Vedic Psychology fulfills the theoretical and applied goals of psychology.

424. ORME-JOHNSON, D. W. The cosmic psyche as the unified source of creation: verification through scientific principles, direct experience, and scientific research. *Modern Science and Vedic Science* 2(2): 165–221, 1988.

This paper presents the field of pure consciousness, or cosmic psyche, as the source of all mental and physical phenomena. The qualities of this field are verified through several approaches, including direct experience and scientific research.

425. DILLBECK, M. C. The self-interacting dynamics of consciousness as the source of the creative process in nature and in human life: the mechanics of individual intelligence arising from the field of cosmic intelligence—the cosmic psyche. *Modern Science and Vedic Science* 2(3): 245–278, 1988.

This paper outlines how, from the perspective of Maharishi's Vedic Psychology, the field of pure consciousness sequentially gives rise to the diversity of subjective and objective existence. Research is reviewed indicating that all levels of subjective life are enriched from their basis, pure consciousness, through the Transcendental Meditation and TM-Sidhi program.

426. ALEXANDER, C. N., and BOYER, R. W. Seven states of consciousness: unfolding the full potential of the cosmic psyche in individual life through Maharishi's Vedic Psychology. *Modern Science and Vedic Science* 2(4): 325–371, 1989.

This paper outlines the sequential unfoldment of higher states of consciousness brought to light by Maharishi and reviews the scientific research indicating the development of higher states through the Transcendental Meditation and TM-Sidhi program.

427. GELDERLOOS, P., and VAN DEN BERG, W. P. Maharishi's TM-Sidhi Program: Participating in the infinite creativity of nature to enliven the totality of the cosmic psyche in all aspects of life. *Modern Science and Vedic Science* 2(4): 373–412, 1989.

This paper introduces Maharishi's TM-Sidhi program as the technique to enliven the self-interacting dynamics of consciousness in the awareness of the individual, thereby accelerating growth of higher states of consciousness; it also reviews the scientific research on the TM-Sidhi program.

**G: Maharishi's Vedic Science and the Foundations of Mathematics and Physics**

428. WEINLESS, M. The samhita of sets: Maharishi's Vedic Science and the founda-

tions of mathematics. *Modern Science and Vedic Science* 1(2): 141–204, 1987.

This paper reviews basic concepts of set theory and other foundational perspectives in mathematics in relation to the central principles of Maharishi's Vedic Science.

429. HAGELIN, J. S. Is consciousness the unified field? A field theorist's perspective. *Modern Science and Vedic Science* 1(1): 29–87, 1987.

This paper presents an introduction to unified quantum field theories followed by a discussion of theory, research, and subjective experiences from Maharishi's Vedic Science, in which pure consciousness is described as the unified field of all the laws of nature.

430. HAGELIN, J. S. Restructuring physics from its foundation in light of Maharishi's Vedic Science. *Modern Science and Vedic Science* 3(1): 3–72, 1989.

The author proposes the renaming of the basic forces and particles of nature in light of their basis in the unified field; he outlines how Maharishi's Vedic Science brings fulfillment to this aspiration, and reviews research indicating that the unified field can be directly experienced and utilized by human awareness through the Transcendental Meditation and TM-Sidhi program.

## RECENT RESEARCH ON MAHARISHI'S TRANSCENDENTAL MEDITATION AND TM-SIDHI PROGRAM

### PART I: PHYSIOLOGY

*The studies in the first two sections document changes during the practice of the Transcendental Meditation technique unless otherwise stated.*

#### A: Metabolic, Biochemical, and Cardiovascular Changes

431. GLASER, J. L.; BRIND, J. L.; VOGELMAN, J. H.; EISNER, M. J.; DILLBECK, M. C.; WALLACE, R. K.; and ORENTREICH, N. Elevated serum dehydroepiandrosterone sulfate levels in practitioners of the Transcendental Meditation (TM) and TM-Sidhi Program. A version of this paper was published in *Journal of Behavioral Medicine* 15(4): 327-341, 1992.

Indications of Younger Biological Age: Increased DHEAS Levels in Female and Older Male Practitioners of the TM and TM-Sidhi program.

432. PUGH, N. D.; WALTON, K. G.; and CAVANAUGH, K. L. Can time series analysis of serotonin turnover test the theory that consciousness is a field? *Society for Neuroscience Abstracts* 14: 372, 1988.

Increased Serotonin Turnover Correlated with Group Size of TM-Sidhi Participants.

433. HILL, D. A. Beta-adrenergic receptor sensitivity, autonomic balance and serotonin-

ergic activity in practitioners of Transcendental Meditation. Doctoral dissertation, Maharishi International University, U.S.A. *Dissertation Abstracts International* 50(8): 3330-B, 1989.

Decreased Sensitivity to Stress Hormones; Increased Autonomic Balance; More Stable Balance of the Physiology.

434. WALTON, K. G.; BROWN, G. M.; PUGH, N.; MACLEAN C.; and GELDERLOOS, P. Indole-mediated adaptation: Does melatonin mediate resistance to stress in humans? *Society for Neuroscience Abstracts* 16: 273, 1990.

Decreased Melatonin Turnover; Decreased State-Trait Anxiety.

435. WALTON, K. G.; GELDERLOOS, P.; PUGH, N.; MACRAE, P.; GODDARD, P.; MACLEAN, C.; and LEVITSKY, D. Stress and serotonin turnover in normal subjects: relation to serotonin deficiencies in mental disorders. Abstract presented at the 5th International Congress of Psychophysiology, Budapest, Hungary, 9–13 July, 1990.

Increased Whole Body Serotonin Metabolism; Reduced Mood Disturbance.

436. MACLEAN, C. R. K.; WALTON, K. G.; WENNEBERG, S. R.; LEVITSKY, D. K.; WAZIRI, R.; and SCHNEIDER, R. H. Alterations in plasma serotonin reactivity to laboratory stress after four months practice of the Transcendental Meditation (TM) program. Presented at the Second International Symposium on Serotonin from All Biology and Pharmacology Therapeutics. Houston, TX, September, 1992.

Decreased Baseline Plasma Serotonin Relative to Controls. (In contrast to whole body serotonin metabolism, low plasma serotonin indicates decreased stress and decreased risk of high blood pressure.)

437. MACLEAN, C. R. K.; WALTON, K. G.; WENNEBERG, S. R.; LEVITSKY, D. K.; MANDARINO, J. V.; WAZIRI, R.; and SCHNEIDER, R. H. Altered cortisol response to stress after four months practice of the Transcendental Meditation program. *Society for Neuroscience Abstracts* 18(2): 1541, 1992.

Improved Adaptation to Stress: Reduced Cortisol Levels in Non-Stressful Situations and Enhanced Cortisol Response During Stressful Challenge with Rapid Return to Baseline.

438. LÖLIGER, S. A. Relationship between subjective bliss, 5-hydroxy-3-indoleacetic acid and the collective practice of Maharishi's Transcendental Meditation and TM-Sidhi program. Summary of Doctoral Dissertation, Maharishi International University, U.S.A. *Dissertation Abstracts International* 52(1): 551, 1990.

Increased Serotonin Turnover and Subjective Experience of Bliss during Meditation and in Daily Activity Correlated with the Size of a Group of TM-Sidhi Participants.

439. MACLEAN, C. R. K.; WALTON, K. G.; WENNEBERG, S. R.; LEVITSKY, D. K.; MANDARINO, J. V.; WAZIRI, R.; and SCHNEIDER, R. H. Altered responses of cortisol, GH, TSH, and testosterone to acute stress after four months' practice of Transcendental Meditation (TM). Presented at the New York Academy of Sciences meeting on Brain Corticosteroid Receptors: Studies on the Mechanism, Function, and Neurotoxicity of Corticosteroid Action, Arlington, VA, March 2–5, 1994.

More Adaptive Biochemical Response to Stress: Decreased Baseline Cortisol and Decreased Overall Cortisol During Stress Session; Decreased TSH Response to Stress; Increased GH Response to Stress; Increased Testosterone Response to Stress.

440. INFANTE, J. R.; SAMANIEGO, F.; MARTINEZ, M.; ROLDAN, A.; HORTAS, M.; LOPEZ, E.; CASTEJON, J.; POYATOS, R.; PERAN, F.; and GARRIDO, F. Circadian rhythm alteration by a mental technique for stress reduction. *European Journal of Endocrinology* (formerly *Acta Endocrinologica*) Supplement 2, Vol. 130, Oslo, Norway, 1994.

Biochemical Indications of Decreased Stress (Lower Levels of ACTH; Beta-Endorphin; CD4 Lymphocytes; and Higher Levels of Natural Killer Cells, Implying Increased Protection from Cancer).

### **B: Electrophysiological and Electroencephalographic Changes**

441. LYUBIMOV, N. N. Mobilization of the hidden reserves of the brain. Program Abstracts of the 2nd Russian-Swedish Symposium "New Research in Neurobiology," Brain Research Institute, Russian Academy of Medical Sciences, Moscow, May 19–21, 1992.

Mobilization of the Hidden Reserves of the Brain: Wider Distribution of the Brain's Response to Sensory Input.

442. ORLOVA, T. V.; PETRENKO, E. V.; and LYUBIMOV, N. N. Cerebral control of afferent somatosensory projections. Presented at the International Symposium of Macro and Microlevels of Brain Organization in the Norm and Pathology, Moscow, 1992.

Increased Amplitude of Cortical and Brain Stem Responses to Somatosensory Stimuli.

443. SPLITTSTOESSER, W. EEG analysis during meditation: A literature review and experimental study (Original title: Elektroencephalographische Untersuchung bei der Meditation: Literatur und eigene Erfahrung). Unpublished doctoral dissertation, Johannes Gutenberg University, Mainz, Germany, 1983.

EEG Indications of Restful Alertness: Coexistence of High and Low Amplitude Theta Activity with Alpha Activity; Occurrence of Delta Waves with Occasional Overlap by Fast Frequencies; High Amplitude Theta Activity Alternating with Alpha Activity; Increased Intrahemispheric Coherence in the Alpha and Theta Frequency Bands.

444. ORME-JOHNSON, D. W., and GELDERLOOS, P. Topographic EEG brain mapping during Yogic Flying. *International Journal of Neuroscience* 38, 427–434, 1988.

Stabilized Restful Alertness: Alpha Activity During Yogic Flying.

445. TRAVIS, F. T. An empirical test of Maharishi's junction point model of states of consciousness. *Modern Science and Vedic Science* 4(1): 43–56, 1990.

Indication of Pure Consciousness at the Transition between Waking, Sleeping, and

Dreaming: Spreading and Increased Duration of Alpha Activity to the Frontal Cortex.

446. CRANSON, R.; GODDARD, P.; ORME-JOHNSON, D.; and SCHUSTER, D. P300 under conditions of temporal uncertainty and filter attenuation: Reduced latency in long-term practitioners of TM. *Supplement to Psychophysiology* 27:4A, August 1990.

Faster Neurocognitive Processing.

447. TRAVIS, F. T., and ORME-JOHNSON, D. W. EEG coherence and power during Yogic Flying. *International Journal of Neuroscience* 54: 1–12, 1990.

Increased EEG Coherence and Power during Yogic Flying.

448. TRAVIS, F. T. Eyes open and TM EEG patterns after one and eight years of TM practice. *Psychophysiology* 28(3a): S58, (Abstract), 1991.

Higher Baseline Alpha EEG Coherence in Long-Term Meditators.

449. GODDARD, P. H. Transcendental Meditation as an intervention in the aging of neurocognitive function: reduced age-related declines of P300 latencies in elderly practitioners. Summary of Doctoral Dissertation, Maharishi International University, U.S.A. *Dissertation Abstracts International*, 53 (6): 3189B, 1992.

Preservation of Neurocognitive Processing Speed with Age.

450. MISKOV, S. Endogenous evoked potential in subjects practicing Transcendental Meditation. Unpublished doctoral dissertation, Department of Clinical Neurophysiology of the Clinics for Neurology, Psychiatry, Alcoholism and Other Abuses of the Clinical Hospital “Sestre Milosrdnice,” Zagreb University, Zagreb, Croatia, 1992.

Increased Efficiency and Decreased Age-Related Deterioration of Cognitive Information Processing as Measured by Event-Related Potentials.

451. TRAVIS, F. T. The junction point model: A field model of waking, sleeping, and dreaming, relating dream witnessing, the waking/sleeping transition, and Transcendental Meditation in terms of a common psychophysiological state. *Dreaming* 4(2): 91–104, 1994.

Indication of Pure Consciousness at the Transition Between Waking, Sleeping, and Dreaming: Increased Alpha Activity.

452. TRAVIS, F. and MISKOV, S. P300 latency and amplitude during eyes-closed rest and Transcendental Meditation practice. *Psychophysiology* 31:S67, (Abstract), 1994.

Improved Efficiency of Information Transfer in the Brain: Shorter Latencies of Auditory Evoked Potentials (P300).

### **C: Health**

453. ALEXANDER, C. N.; LANGER, E. J.; NEWMAN, R. I.; CHANDLER, H. M.; AND DAVIES, J. L. Transcendental Meditation, mindfulness, and longevity: an experimental study with the elderly. *Journal of Personality and Social Psychology*

57(6): 950–964, 1989.

Benefits for the Elderly Demonstrating Reversal of Aging: Increased Longevity (Higher Survival Rate); Reduction of Systolic Blood Pressure to More Ideal Levels; Improved Mental Health (Improvements on Nurses' Mental Health Ratings); Increased Cognitive Flexibility (Less Premature Cognitive Commitment, Increased Learning Ability on Associate Learning and Greater Perceptual Flexibility); Increased Word Fluency; Improvements in Self-Reported Measures of Behavioral Flexibility and Aging (Greater Ability to Cope with Inconvenience, Reduced Feelings of Being Old, Less Impatience with Others); Greater Sense of Well-Being (Feeling Better During the TM Program, High Interest in the TM Program and High Ratings of the Value of the TM Program; Feeling Better and More Relaxed After the TM Program).

454. SCHNEIDER, R. H.; ALEXANDER, C. N.; and WALLACE, R. K. In search of an optimal behavioral treatment for hypertension: A review and focus on Transcendental Meditation. In *Personality, Elevated Blood Pressure, and Essential Hypertension.*, eds. E. H. Johnson, W. D. Gentry, and S. Julius, pp. 291–316. Washington, D. C.: Hemisphere Publishing Corp., 1992.

Reduction of High Blood Pressure.

455. BLASDELL, K. S. Acute immunoreactivity, Transcendental Meditation, and Type A/B behavior. Abstract of Doctoral Dissertation, Department of Physiological and Biological Sciences, Maharishi International University, U.S.A. *Dissertation Abstracts International* 50(10): 4806B, 1990.

Improved Immune Response to Stress.

456. HARATANI, T., and HENMI, T. Effects of Transcendental Meditation (TM) on the mental health of industrial workers. *Japanese Journal of Industrial Health* 32(7): 346, 1990.

Improvements in General Physical and Mental Well-Being in Industrial Workers: Decreased Physical Complaints; Decreased Impulsive Tendency; Reduced Emotional Instability; and Decreased Neurotic Tendency.

457. HARATANI, T., and HENMI, T. Effects of Transcendental Meditation (TM) on the health behavior of industrial workers. *Japanese Journal of Public Health* 37 (10): 729, 1990.

Improved Sleep and Decreased Smoking in Industrial Workers: Decreased Time to Fall Asleep; Reduced Waking During the Night; Decreased Smoking; Fewer Cigarettes Smoked per Day.

458. HERRON, R. E. The impact of Transcendental Meditation practice on medical expenditures. Summary of Doctoral Dissertation, Department of Management, Maharishi International University, U.S.A. *Dissertation Abstracts International* 53(12): 4219A, 1993.

Decreased Medical Care Expenditures; Greatest Savings for Elderly and High Cost People.

459. WENNEBERG, S. R.; SCHNEIDER, R. H.; MACLEAN, C. R. K.; LEVITSKY, D. K.; WALTON, K. G.; MANDARINO, J.; and WAZIRI, R. The effect of

Transcendental Meditation on ambulatory blood pressure and cardiovascular reactivity. Presented at the 52nd Annual Meeting of the American Psychosomatic Society, Boston, MA, April 13–16, 1994.

More Ideal Levels of Blood Pressure in Normotensive Subjects: Decreased Mean Diastolic Ambulatory Blood Pressure.

460. SCHNEIDER, R. H.; NIDICH, S.; SHARMA, H.; ROBINSON, C.; FOSTER, G.; NIDICH, R.; GOODMAN, R.; ALEXANDER, C. Effects of the Transcendental Meditation program on lipid peroxide levels in community-dwelling older adults. Presented at the Third International Congress of Behavioral Medicine, Amsterdam, The Netherlands, 6–9 July 1994.

Prevention of Disease: Lower Levels of Free Radicals in the Elderly.

## **PART II: PSYCHOLOGY**

### **A: Intelligence, Learning, and Academic Performance**

461. CRANSON, R. W.; ORME-JOHNSON, D. W.; GACKENBACH, J.; DILLBECK, M. C.; JONES, C. H.; and ALEXANDER, C. N. Transcendental Meditation and improved performance on intelligence-related measures: A longitudinal study. *Personality and Individual Differences* 12(10): 1105–1116, 1991.

Improvements in General Intelligence Measured by Psychometric Tests and Choice Reaction Time.

462. HEINSTEDT, E. Divergent production: An “intuitive” cognitive style. Licentiate Dissertation, Lund University, Sweden, 1990.

Decreased Arousal; Broad Attention; Increased Perceptual and Conceptual Flexibility.

463. FERGUSON, L. C. Field independence and art achievement in meditating and nonmeditating college students. *Perceptual and Motor Skills* 75: 1171–1175, 1992.

Field Independence Correlated to College Art Achievement; Higher Field Independence.

464. FERGUSON, L. C. Field independence, Transcendental Meditation and achievement in college art: A reexamination. *Perceptual and Motor Skills* 77:1104–1106, 1993.

Growth of a Stable Internal Frame of Reference: Higher Level of Field Independence; Correlation of Field Independence with Grade-Point Average and Art Achievement.

465. SO KAM–TIM. Testing and improving intelligence and creativity in the Chinese culture with Maharishi’s Vedic Psychology: Toward a holistic & universal assessment. Doctoral Dissertation, Department of Psychology, Maharishi International University, 1995.

Increased Creativity (Increased Ability to Interpret and Associate Freely, Increased Productive Imagination); Increased Fluid Intelligence (Increased Ability to

Perceive Complex Relations, More Effective Use of Short Term Memory, Improved Ability to Reason Abstractly); Decreased Inspection Time (Increased Speed of Information Processing, Decreased Noise in the Information Processing System, Increased Focus); Increased Field Independence (Greater Ability to Differentiate Experience, Greater Cognitive Clarity, Broad Comprehension and Improved Ability to Focus); Increased Constructive Thinking (Improved Emotional Coping, Improved Behavioral Coping, Improvements on Categorical Thinking—Increased Flexibility of Attitude and Increased Tolerance of Others); Decreased State and Trait Anxiety.

### **B: Development of Personality**

466. ALEXANDER, C. N.; RAINFORTH, M. V.; and GELDERLOOS, P. Transcendental Meditation, self-actualization, and psychological health: A conceptual overview and statistical meta-analysis. *Journal of Social Behavior and Personality* 6(5), 189–247, 1991.

Most Effective Means of Increasing Self-Actualization.

467. CHANDLER, H. M. Transcendental Meditation and awakening wisdom: A 10-year longitudinal study of self-development (meditation). *Dissertation Abstracts International* 51(10): 5048B, 1990.

Growth of Wisdom: Increased Ego Development—Improved Affective Functioning and Cognitive Development.

468. AHLSTROM, H. H. Transcendental Meditation, adaptation mechanisms and valuations. Doctoral dissertation, Maharishi International University, 1991.

Increased Psychological Health and Orientation Towards Positive Values.

469. ALEXANDER, C. N.; HEATON, D. P.; and CHANDLER, H. M. Advanced human development in the Vedic Psychology of Maharishi Mahesh Yogi: Theory and research. In *Transcendence and Mature Thought in Adulthood*, eds. M. E. Miller and S. R. Cook-Greuter, pp. 39–70. Lanham, MD: Rowman & Littlefield Publishers, 1994.

This paper presents subjective experiences, theory, and research on Maharishi's Seven States of Consciousness. It provides a conceptual model showing how the higher states of consciousness in Maharishi's Vedic Psychology extend beyond the developmental stages of modern psychology and meet all the criteria of advanced development.

## **PART III: SOCIOLOGY**

### **A: Rehabilitation: Drugs and Alcohol**

470. ALEXANDER, C. N.; ROBINSON, P.; and RAINFORTH, M. Treating and preventing alcohol, nicotine, and drug abuse through Transcendental Meditation: A review and statistical meta-analysis. *Alcoholism Treatment Quarterly* 11: 13–87, 1994.



Meta-analysis of 198 Studies: the Transcendental Meditation program is Uniquely Effective for Treatment and Prevention of Drug, Alcohol, and Cigarette Abuse.

471. ROYER, A. The role of the Transcendental Meditation technique in promoting smoking cessation: A longitudinal study. *Alcoholism Treatment Quarterly* 11: 219–236, 1994.

Increased Smoking Quit Rate Over a Two-Year Period.

#### **B: Rehabilitation: Prisons—Case Histories**

- 472 ANKLESARIA, F., and KING, M. S. The nation-wide implementation of Maharishi's integrated system of rehabilitation in Senegal—A case study. In *Scientific Research on Maharishi's Integrated System of Rehabilitation*, eds. F. Anklesaria and M. S. King. Fairfield, IA: MIU Press, 1993.

Almost Complete Cessation of Fights Between Inmates, Very Sharp Reduction in Irritability and Aggressiveness; Improvement in Health; Decrease in the Number of Medical Consultations—as much as 70–80%; Marked Decrease in Drug Consumption; Improvement in Sleep; Reduced National Recidivism.

#### **C: Productivity and Quality of Life**

473. Implementation of the Transcendental Meditation program for Brazilian army officers and cadets. Official Report No. 271-A/2/DEP, National Academy of Officers, Ministry of the Army, Rio de Janeiro, Brazil, 29 December 1991.

Increased Capacity of Attention; Improved Memory of Details; Increased Ability to Carry out Orders; Increased Physical Strength; Reduced Baseline Heart Rate.

474. ANKLESARIA, F., and KING, M. S. Developing the full potential of police officers: Maharishi's integrated system of rehabilitation in the Brazilian military police forces. In *Scientific Research on Maharishi's Integrated System of Rehabilitation*, eds. F. Anklesaria and M. S. King. Fairfield, IA: MIU Press, 1993.

Improved Health, Decreased Disciplinary Problems and an Improved Public Image.

475. ALEXANDER, C. N.; SWANSON, G. C.; RAINFORTH, M. V.; CARLISLE, T. W.; TODD, C. C.; and OATES, R. M. Effects of the Transcendental Meditation program on stress reduction, health, and employee development: A prospective study in two occupational settings. *Anxiety, Stress and Coping: An International Journal* 6: 245–262, 1993.

Reduced Anxiety, Insomnia, Fatigue, Cigarette and Hard Liquor Use; Improved Health, Employee Effectiveness, Job Satisfaction, and Job Relationships.

476. BROOME, V. J. Relationship between participation in Transcendental Meditation and the functionality of marriage. Masters thesis, University of the Witwatersrand, Johannesburg, South Africa, 1989.

Improved Marital Functionality (Overall Positive Couple Agreement, Marital

Satisfaction, Personality Issues, Communication, Marital Cohesion and Marital Adaptability.)

*The following papers in this section document the growth of coherence in the collective consciousness of states, nations, and the world.*

477. ASSIMAKIS, P. D., AND DILLBECK, M. C. Time series analysis of improved quality of life in Canada: Social change, collective consciousness, and the TM-Sidhi program. *Psychological Reports* 1995 (In press).  
Improved Quality of National Life: Improvements on a Weekly Index Including Motor Vehicle Fatalities, Homicide, and Suicide (Canada, 1983–1985); Reductions of Weekly Fatalities Due to Accidents Other than Motor Vehicle Fatalities (Canada, 1983–1985); Improvements on a Monthly Index Including Violent Fatalities (Motor Vehicle Fatalities, Homicide, and Suicide), Cigarette Consumption, and Worker-Days Lost in Strikes (Canada, 1972–1986).
478. GELDERLOOS, P.; CAVANAUGH, K. L.; AND DAVIES, J. L. (1990). The dynamics of U.S.-Soviet relations, 1979–1986: Effects of reducing social stress through the Transcendental Meditation and TM-Sidhi program. In *Proceedings of the American Statistical Association, Social Statistics Section*, Alexandria, VA.  
Improved U.S.A.—Soviet Relations: Improved U.S.A. Statements and Actions Towards the U.S.S.R. and Improved U.S.S.R. Statements and Actions Towards the U.S.A. (U.S.A. and U.S.S.R., 1979–1986).
479. ORME-JOHNSON, D. W.; ALEXANDER, C. N.; and DAVIES, J. L. The effects of the Maharishi Technology of the Unified Field: Reply to a methodological critique. *Journal of Conflict Resolution* 34(2): 756–768, 1990.  
Strong Replication of Original Research Methodology.
480. REEKS, D. L. Improved quality of life in Iowa through the Maharishi Effect. Abstract of Doctoral Dissertation, Maharishi International University, U.S.A. *Dissertation Abstracts International* 51(12), 1991.  
Reduced Unemployment, Traffic Fatalities, and Crime Rate (Iowa, 1979–1986).
481. HATCHARD, G. D.; DEANS, A. J.; CAVANAUGH, K. L.; and ORME-JOHNSON, D. W. The Maharishi Effect: A model for social improvement: Time series analysis of a phase transition to reduced crime in Merseyside metropolitan area. *Psychology, Crime, and Law* (1995, in press). Also presented by invitation to the Annual Conference of the British Psychological Society on Criminal and Legal Psychology, 1–3 March, 1993, Harrogate, England.  
Decreased Crime Rate (Merseyside, England, 1988–1991).
482. HAGELIN, J. S.; ORME-JOHNSON, D. W.; RAINFORTH, M.; CAVANAUGH, K.; and ALEXANDER, C. N. Results of the national demonstration project to reduce violent crime and improve governmental effectiveness in Washington, D. C. *Institute of Science, Technology and Public Policy Technical Report* 94:1, 1994.  
Decreased Violent Crime Rate (Washington, D.C., June and July, 1993); Increased

Popular Support for U.S. President.

#### **PART IV: THEORETICAL AND REVIEW PAPERS**

##### **A: Physiology**

483. JEVNING, R.; WALLACE, R. K.; and BEIDEBACH, M. The physiology of meditation: A review. A wakeful hypometabolic integrated response. *Neuroscience and Biobehavioral Reviews* 16: 415-424, 1992.

Based upon a wide spectrum of physiological data on Transcendental Meditation made available by previous research, the authors hypothesize that meditation is an integrated response with peripheral circulatory and metabolic changes subserving increased central nervous activity, and discuss probable objective markers of clear experience of samadhi or pure consciousness as the subjectively identifiable goal of meditation.

484. WALLACE, R. K. The physiology of higher states of consciousness. Paper presented at the Conference on Higher States of Consciousness: Theoretical and experimental perspectives, Chicago, August, 1991.

The author delineates the empirically measurable physiological correlates of higher states of consciousness.

485. ORME-JOHNSON, D. W. Transcendental Meditation as a technique to increase neural, cognitive and behavioral plasticity. *Proceedings of the Conference on Restorative Neurophysiology*, Irkutsk, Russia, August 1992.

The author reviews research in support of the hypothesis that regular practice of the Transcendental Meditation technique increases the flexibility of the nervous system and improves general adaptive ability.

486. WALTON, K. G., and LEVITSKY, D. A neuroendocrine mechanism for the reduction of drug use and addictions by Transcendental Meditation. *Alcoholism Treatment Quarterly* 11: 89-117, 1994.

Neurochemical Substrate of Chronic Stress and its Contribution to the Development of Drug Addiction. Explains how the Transcendental Meditation Program Normalizes Physiological Imbalances Involved in Addiction; Improved Balance and Well-Being.

487. ALEXANDER, C. N.; ROBINSON, P.; ORME-JOHNSON, D. W.; SCHNEIDER, R. H.; and WALTON, K. G. The effects of Transcendental Meditation compared to other methods of relaxation in reducing risk factors, morbidity, and mortality. *Homeostasis* 35: 4/5, 243-263, 1994.

This paper reviews four meta-analyses, which show the superiority of Maharishi's Transcendental Meditation and TM-Sidhi program compared to other relaxation and meditation techniques in producing deep rest, decreasing anxiety, increasing self-actualization, and decreasing substance abuse (cigarettes, drugs, alcohol). It also reviews individual well-controlled studies which support the conclusion of the

meta-analyses. In addition, it provides a theoretical mechanism of the effects of Maharishi's Transcendental Meditation and TM-Sidhi program in terms of normalization of the biochemical effects of stress.

### **B: Education**

488. JONES, C. H. The impact of Maharishi's Vedic Science based education in higher education: The example of Maharishi International University. *Modern Science and Vedic Science* 3(2): 155–199, 1989.

The author suggests that holistic development of students occurs as a result of implementing the technologies of Maharishi Mahesh Yogi's Vedic Science such as the Transcendental Meditation and TM-Sidhi program, and teaching techniques based on the principles of Maharishi's Vedic Science.

489. DOW, M. A. Preparing the student to succeed at calculus. *Modern Science and Vedic Science* 6 (1): 1995.

The author suggests that learning calculus involves three aspects: knower, known, and process of knowing. Today's calculus reform deals admirably with the last two aspects but leaves the development of the student's full mental capacity, the knower, largely to chance. The practice of Maharishi's Transcendental Meditation technique at MIU develops the knower and thereby gives at least two distinct advantages: a relaxed, alert mind and an experiential framework for feeling at home with the limit process.

### **C: Maharishi's Vedic Science: Physics**

490. HAGELIN, J. S. The physics of immortality. Paper presented at Isthmus Institute Conference, Dallas, TX, April, 1991.

The author suggests that physiological growth towards immortality is possible when experience of the unified field of all the laws of nature is maintained.

### **D: Maharishi's Vedic Psychology**

491. DILLBECK, M. C., and ALEXANDER, C. N. Higher states of consciousness: Maharishi Mahesh Yogi's Vedic Psychology of human development. *The Journal of Mind and Behavior* 10(4): 307–334, 1989.

The authors suggest that adult development to higher states of consciousness beyond the experience of waking, dreaming and sleeping results from growth of maintenance of the experience of the Self.

492. DILLBECK, M. C. The concept of self in the *Bhagavad-Gita* and in the Vedic Psychology of Maharishi Mahesh Yogi: A further note on testability. *Psychologia—An International Journal of Psychology in the Orient* 33: 50–56, 1990.

This paper points out that in the *Bhagavad-Gita* the subjective experience of transcendental or pure consciousness (“Self”) is described as having effects that have been measured through extensive scientific research on Maharishi’s Transcendental Meditation program.

493. GELDERLOOS, P. Maharishi’s Vedic Psychology: Alleviate suffering by enlivening bliss—reconnect the partial values of life with the wholeness of life. Paper presented at the International Symposium on Meditation, Psychotherapy, and Health, Noordwijkerhout, The Netherlands, 16–18 March 1990.

This paper explains how Maharishi’s Vedic Psychology is the fulfillment of psychotherapy and reviews scientific research indicating that Maharishi’s Transcendental Meditation and TM-Sidhi program improve individual and collective physical and mental health.

494. DILLBECK, M. C. The Bhagavad-Gita: A case study in Maharishi’s Vedic Psychology. *Modern Science and Vedic Science* 4(2), 96–134, 1991.

The author analyzes the Bhagavad-Gita as a model case study from the Vedic literature providing knowledge of the full range of human development from ignorance to enlightenment.

495. ALEXANDER, C. N. Transcendental Meditation. In *Encyclopedia of Psychology* (2nd edition), ed. R. J. Corsini, pp. 545–46. New York: Wiley Interscience, 1994.

The author presents a basic introduction to Transcendental Meditation and the scientific research on it.

#### **E. Business and Industry**

496. ALEXANDER, C. N.; HEATON, D. P.; and CHANDLER, H. M. Promoting adult psychological development: Implications for management education. *Proceedings of the Association of Management, Human Resource Management* 2, 133–137, Orlando, Florida, August 1990.

Promotion of Psychological Development (Ego Development, Field Independence and Intelligence).

497. GUSTAVSSON, B., and HARUNG, H. S. Organizational learning based on transforming collective consciousness. *The Learning Organization* 1: 33–40, 1994.

The authors suggest that the level of development of consciousness is primary in determining continuous learning of an individual and the organization.

498. SCHMIDT-WILK, J. Developing consciousness in organizations: The Transcendental Meditation program in business. *Journal of Business and Psychology* 10 (4): 1995 (in press).

A review of research on the application of Maharishi’s Transcendental Meditation program in the workplace indicates: improved employee health; increased job and life satisfaction; improved job performance and productivity; increased job stability; and improved interpersonal relations. These results are discussed from a model of developing consciousness of the individual and developing corporate consciousness.

**F: Rehabilitation: Drugs and Alcohol**

499. GELDERLOOS, P.; WALTON, K. G.; ORME-JOHNSON, D. W.; and ALEXANDER, C. N. Effectiveness of the Transcendental Meditation program in preventing and treating substance misuse: A review. *International Journal of the Addictions* 26: 293–325, 1991.

The authors review research indicating decreased substance abuse among students, chronic users, and prison inmates.

500. ORME-JOHNSON, D. W. Transcendental Meditation as an epidemiological approach to drug and alcohol abuse: Theory, research, and financial impact evaluation. *Alcoholism Treatment Quarterly* 11: 119–168, 1994.

The author focuses on the contributions of the Transcendental Meditation program to resolving broader social problems associated with addiction. He proposes that drug and alcohol abuse are symptoms of a general stress-addiction-crime epidemic in society. He then reviews impressive sociological research findings showing how societal disorder—experienced as crime, drug abuse, political conflict, and economic instability—can be substantially reduced through the cost effective programs of Transcendental Meditation and Maharishi Ayur-Veda.

**G: Rehabilitation: Prisons**

501. KING, M. S. The theoretical foundations and practical validation of Maharishi's integrated system of rehabilitation. In *Scientific Research on Maharishi's Integrated System of Rehabilitation*, eds. F. Anklesaria and M. S. King. Fairfield, IA: MIU Press, 1993.

This paper outlines the theoretical foundations of Maharishi's Integrated System of Rehabilitation. It shows how this theory of rehabilitation is validated by extensive scientific research and by personal experience of meditating offenders. The author suggests that this system of rehabilitation offers a solution to key problems within the field of rehabilitation, including recidivism, the measurement of rehabilitation, and the means of rehabilitation.

502. KIMBLE, C. J. Transcendental Meditation in the youth authority. *Youth Authority Quarterly* 28, 1975.

Benefits experienced by Meditating Wards of the Youth Authority in California.

**H: Maharishi Effect: World Peace**

503. CAVANAUGH, K. L.; KING, K. D.; and TITUS, B. D. Improving the national economy through alliance with nature's government: Effects of the group practice of Maharishi's Transcendental Meditation and TM-Sidhi program. *Modern Science and Vedic Science* 4(1): 3–41, 1990.

Improved National Economy: Decreased Index of Inflation and Unemployment.

504. ORME-JOHNSON, D. W. Introduction to the proceedings of the conference on approaches to creating a stable world peace. *Modern Science and Vedic Science* 5(1-2): 1–30, 1992.

This paper is an introduction to a peace conference held at MIU, which summarizes the presentations of the conference participants and presents an overview of Maharishi's approach to world peace.

505. HAGELIN, J. S. Achieving world peace through a new science and technology. *Modern Science and Vedic Science* 5(1-2): 48–75, 1992.

This paper examines scientific evidence for a new technology of world peace based on the unified field of natural law and considers its practical utilization through extended field effects of consciousness.

506. ALEXANDER, C. N. Peaceful body, peaceful mind, peaceful world. *Modern Science and Vedic Science* 5(1-2): 150–164, 1992.

This paper outlines the development of peace within the individual and explains how this development forms the basis of creating peace in the world.

507. ORME-JOHNSON, D. W. Theory and research on conflict resolution through the Maharishi Effect. *Modern Science and Vedic Science* 5(1-2): 76–98, 1992.

This paper presents the Maharishi Effect as the basis for a practical program to create world peace and describes scientific research demonstrating the effectiveness of this program in generating coherence and peace on all levels of collective life.

508. MORRIS, B. Maharishi's Vedic Science and Technology: The only means to create world peace. *Modern Science and Vedic Science* 5(1-2): 199–207, 1992.

This paper analyzes the mechanics through which the experience of transcendental consciousness creates peace in both individual and collective consciousness. The paper also emphasizes the urgency of establishing groups of world peace professionals to create peace for the world.

### Endnotes

<sup>1</sup>The terms in parentheses are taken from the manual of the psychological test employed in order to clarify the characteristics measured by the test.

<sup>2</sup>In Volumes 2, 3, and 4, studies on the TM-Sidhi program appear according to their results under the appropriate headings of Parts I, II, and III of each volume.

<sup>3</sup>The terms in brackets are taken from the manual of the psychological test employed in order to clarify the characteristics measured by the test.

<sup>4</sup>The terms in brackets are taken from the manual of the psychological test employed in order to clarify the characteristics measured by the test.

<sup>5</sup>Included in the research reviewed in this paper are findings which are not presented

elsewhere in the Collected Papers, Volumes 1–4, and are therefore listed here.

<sup>6</sup>The terms in brackets are taken from the manual of the psychological test employed in order to clarify the characteristics measured by the test.

<sup>7</sup>In order to evaluate the effects of the Taste of Utopia Assembly, 17 Dec.–6 Jan. 1984, Maharishi International University, Fairfield, Iowa, U.S.A., data were gathered by the authors of this study from a) requests sent to a sample of countries on every continent; b) requests for crime statistics sent to all the world's major cities; c) international organizations; and d) the world's news media. Presented are the results of the analysis of the data obtained at the time of publication.