

# **Global Impact of the Maharishi Effect from 1974 to 2017: Theory and Research**

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## **SUMMARY**

World peace is the urgent goal of Maharishi Mahesh Yogi's revival of the consciousness-based technologies of ancient Vedic India. Towards this end, Maharishi created a worldwide organisation, founded universities in several countries, and trained over 20,000 teachers of the Transcendental Meditation technique who in turn have taught it to approximately ten million people, which for five decades has increasingly created an influence of harmony in the world. Maharishi's approach to peace is through creating coherence in *collective consciousness*, which he holds to be the fundamental force governing the quality of life in society. The individual is the unit of collective consciousness, with each individual contributing to all collective levels—family, city, state, national, and world.

Reciprocally, each level of collective consciousness influences every individual's mind and behaviour. Therefore, the quality of consciousness of the individuals in society is the grass roots cause of the quality of collective consciousness. Stressed and sleepy individuals not only have poor judgement, make mistakes, and cause suffering for themselves and

family, friends, and associates, they also propagate an influence of stress into collective consciousness that affects everyone in society, inclusive of the entire world. Through Maharishi's Transcendental Meditation technique, the individual mind effortlessly transcends through increasingly subtle levels of thinking to arrive at the completely silent state of pure consciousness at the deepest level of the mind, which is unbounded awareness and infinite peace. Pure consciousness is held to be the direct experience of the transcendental unified field of Natural Law governing all forms and phenomena in the universe.

Extensive research shows that regular experience of it through Maharishi's Transcendental Meditation technique and his advanced Transcendental Meditation-Sidhi program, including Yogic Flying, creates an influence of harmony, not only throughout all levels of the individual's physiology, mind, and social behaviour, but also throughout all levels of collective consciousness with which the individual is associated. The influence of the meditator on his or her family, community, nation, and world enhances lively, creative, and dynamic interactions among the different groups in society. Collective behaviour on every level becomes harmonious and mutually supportive, unifying society into one orderly, evolutionary, balanced structure of natural law. This is called *coherence in collective consciousness*.

Maharishi identifies the basis of war and terrorism as stress in collective consciousness, which is the opposite of coherence. In this view, mistakes, problems, and difficulties within individual lives accumulate as collective stress. When stress in collective consciousness is left to increase unabated, it reaches a phase transition threshold at which point violence breaks out in society, such as in violent crimes, strikes, riots, terrorism, and war. The way to reduce stress in the individual and society and ultimately to end war is to transcend, which is to bring pure consciousness to the awareness of the individual mind and hence into collective consciousness.

Not everyone in society needs to meditate to have this effect. A general principle in science is that the coherent elements of a system have a more powerful effect than the incoherent elements. Extensive, well-controlled empirical research demonstrates that when 1% of a local or national population experiences pure consciousness through the practice of Maharishi's Transcendental Meditation technique or when a group of the square root of 1% of a population experiences it through his Transcendental Meditation and TM-Sidhi program, greater coherence in collective consciousness is propagated, thereby resolving conflict and improving the quality of life of the city, nation, or world. The phenomenon

of 1% of the population practicing the Transcendental Meditation technique improving the quality of life in the larger society is called the *Maharishi Effect*, whereas the effect created by a group of the square root of 1% of the population practicing the Transcendental Meditation and TM-Sidhi program is called the *Extended Maharishi Effect*.

Research carried out internationally by multiple research teams to investigate the theory and research on the Maharishi Effect began in the early 1970s and continues to the present day. Of the 700 studies on the Transcendental Meditation and TM-Sidhi program, more than 50 have investigated its effects on society. These studies have shown such changes as reductions in crime, accidents, mortality, war, and terrorism and improvements in economic indicators and the general quality of life.

Moreover, this body of studies is the only truly experimental research in the history of the social sciences to show such holistic improvements in society on the scales of entire cities, states, nations, and the world. Included in these studies are ones that have experimentally created groups practicing the Transcendental Meditation and Transcendental Meditation-Sidhi program in large populations with the predicted outcomes on specific social indicators, lodged in advance with independent project review boards.

This research has used state-of-the-art statistical methodologies to control for trends and cycles in the data, indicating that the observed changes were new and unpredicted. These studies have controlled for a wide range of demographic, political, environmental, and other variables, ruling out alternative hypotheses. Some studies have used causal analyses, which indicate the causal role of the Transcendental Meditation and Transcendental Meditation-Sidhi programs in causing the measured improvements in society. These findings have been published in leading peer-reviewed scientific journals and presented and published in the proceedings of professional conferences. The current paper has been written to overview the theory and research on this historic phenomenon that is now improving the destiny of humanity.

## **THEORY OF THE MAHARISHI EFFECT**

Just as modern physics has postulated that nature is fundamentally composed of quantum fields that mediate action at a distance (e.g., Joyce, Jain, Khoury & Trodden, 2015; Kojima, Takenaga & Yamashita, 2017), including related phenomena such as non-locality, holism, and non-separability (as discussed earlier by Healey, 1989, 1991, 1994), Maharishi

Mahesh Yogi has postulated that there is a fundamental level of consciousness—Transcendental Consciousness—at the basis of each individual's mind, which is the source of thought located beyond the subtlest level of mental activity.

A direct experience of Transcendental Consciousness is an experience of the unified field of nature's intelligence. Extensive empirical research, to be reviewed in detail by this paper, has demonstrated that individuals experiencing Transcendental Consciousness through the Transcendental Meditation and TM-Sidhi program create coherence in not only their own brain, in the form of 'electroencephalic ordering' or brainwave synchrony and coherence, but in the wider society as well, in the form of harmony, order, and peacefulness. Scientists have named this phenomenon the *Maharishi Effect*, a term that first appears in published literature in the mid-1970s (e.g., Borland & Landrith, 1977; World Government of the Age of Enlightenment, 1977).

Although action-at-a-distance phenomena have not been reliably observed within other contemporary social research, they are now well accepted in the natural sciences, particularly at the microscopic scale (e.g., according to Bell's Theorem [Bradford, 2016]). Phenomena such as gravity and the transmission of radio, television, and microwave signals transmitted at the speed of light are examples of action at a distance that have been investigated at macroscopic scales, but these are not mediated by a non-local quantum field. However, less well-known phenomena displaying the action-at-a-distance principle are, for example, quantum computing and quantum cryptography, both of which lend themselves to a technological future of so-called *quantum communications* (Billings, 2017). To understand these phenomena, physicists have developed the concept of abstract quantum fields that mediate action-at-a-distance effects.

The basic understanding of quantum theory is that material creation is the expression of fluctuations of underlying universal fields, and all bodies and processes are connected at fundamental levels (e.g., Hagelin, 1987, 1989, 1992). Earlier analyses of Maxwell's equations unified electricity, magnetism, and light into the electromagnetic field, Schrödinger's equations unify waves and particles, and Einstein's unification of space and time also contribute to an understanding of unified field theory (e.g., Domash, 1978, pp. 10-21).

Thus, according to the theory, interactions at either a microscopic or macroscopic scale in one place may affect actions or outcomes in another, non-local, distant place, although universal acceptance of the phenomenon has yet to occur and controversy surrounds the theory. Nevertheless,

recent important breakthroughs related to the action-at-a-distance phenomenon at the macroscopic scale include satellite-based quantum entanglement (Yin, Cao, Li, Liao, Zhang, Ren, & Cai, 2017).

### **Collective Consciousness in the Social Sciences**

While contemporary social theory views human beings ‘classically’ as ontologically separate individuals, one of the longest traditions of philosophical thought in the West—the idealist tradition—has maintained, at least implicitly, the connection of human beings on the level of consciousness. The idealist tradition asks rhetorically: how can the objective world, and our collective experience of it, along with our experience of the laws of nature as described by science, be conceived independently of a “knowing the knower” or observer, the “transcendental subject”? (Bronner, 2002, p. 267).

Moreover, several of the founding theorists of modern psychology proposed the concept of consciousness as a field through which individuals may be fundamentally connected. One of the fathers of modern psychology, Gustav Fechner, for example, described a unity or continuity of ‘general consciousness’ underlying the discontinuities of consciousness associated with each individual, accessible in principle simply through lowering the threshold of conscious experience (in James, 1898/1977; see also Hawkins, 2011, for analysis of both Fechner’s and James’ work in ‘transmission theory’, the ‘compounding [effect] of consciousness’, and ‘co-consciousness’, all of which relate to our present topic).

William James, the founder of psychology as an academic discipline, suggested the brain may serve to reflect or *transmit*, rather than *produce*, consciousness, which in turn may be conceived as a transcendental, infinite continuity underlying the phenomenal world (James, 1898/1977). Similarly, Emile Durkheim, considered to be one of the founders of modern sociology, proposed that a ‘conscience collective’ was the essence of the underlying social fabric unifying individuals in society.

This collective conscience or ‘collective consciousness’ was described by Durkheim (1951) as the ‘mind of society’ created when “the consciousness of the individuals, instead of remaining isolated, becomes grouped and combined” (pp. 310-313). More recent analyses of consciousness and its relation to ‘Theories of Everything’ and medicine, as well as other contemporary disciplines, have also been advanced (e.g., Dossey, 2017).

## **Collective Consciousness in the Physical Sciences**

In the 20<sup>th</sup> century, several architects of modern physics were propelled by the implications of their discoveries into what might be described as a 'field theory of consciousness'. For example, more than 30 years ago Arthur Eddington, who provided empirical confirmation of Einstein's *General Theory of Relativity*, wrote that "the idea of a universal Mind or Logos would be, I think, a fairly plausible inference from the present state of scientific theory; at least it is in harmony with it" (Eddington, 1984, p. 221). The astronomer, mathematician, and author James Jeans (1981) proposed:

When we view ourselves in space and time, our consciousnesses are obviously the separate individuals of a particle-picture, but when we pass beyond space and time, they may perhaps form ingredients of a single continuous stream of life.

As it is with light and electricity, so may it be with life; the phenomena may be individuals carrying on separate existences in space and time, while in the deeper reality beyond space and time we may all be members of one body. (p. 204)

Quantum field theory gives consciousness an ontologically fundamental position. As the French physicist Bernard D'Espagnat (1979) wrote 40 years ago: "The doctrine that the world is made up of objects whose existence is independent of human consciousness turns out to be in conflict with quantum mechanics and with the facts established by experiment" (p. 158). Max Planck, Nobel Prize-winning physicist and the father of quantum theory, more directly said, "I regard consciousness as fundamental. I regard matter as derivative from consciousness" (quoted in Dossey, 2017, p. 234).

John Hagelin (1987, 1989, 1992), one of the foremost contributors to unified field theory, has gone further than other physicists in providing a conceptual link between the most recent advances in unified field theory and the precise descriptions of *Natural Law* found in the ancient Vedic tradition of India from which Maharishi has revived his approach to world peace. In this tradition, Natural Law is identified as the 'first law of nature' from which all other laws of nature are derived (World Government of the Age of Enlightenment, 1979).

## **Maharishi's Principles of Collective Consciousness**

The key to comprehending Maharishi's (1986a, 1986b) approach to creating world peace is an understanding of the nature and role of 'collective consciousness'. According to this view, each level and segment of social organization—family, community, city, state, country—is said to have an associated collective consciousness. For example, we can experience a change in collective consciousness when crossing a national border, or when entering a city experiencing civil unrest having arrived from a city at peace.

Individual consciousness is said by Maharishi (1976) to be the basic unit of collective consciousness, generating and influencing collective consciousness and being, in turn, influenced by it. Maharishi (1976) therefore states:

Just as the consciousness of an individual determines the quality of his thought and behavior, so also there exists another type of consciousness for society as a whole; a *collective* consciousness for each family, city, state, or nation, having its own reality and the possibility of growth. The quality of collective consciousness of a society is a direct and sensitive reflection of the level of consciousness of its individual members. (p. 91)

In this way, stressed individuals create stress and tension in collective consciousness, which in turn influences everyone else in society. A palpable influence of stressed collective consciousness is experienced, for example, in a tense office, an unhappy home, or a crime-ridden city. When stress predominates in collective consciousness, collective behaviour automatically becomes cautious and defensive. As a consequence, the turbulence created in the mind of an individual by the anxiety, anger, and dullness in collective consciousness obscures the subtle levels of feeling and creative intuition, and thus social relations become coarse and creativity inhibited.

On the other hand, a harmonious office, happy home, or peaceful city provides a soothing atmosphere that is conducive to trust, cooperation, and creative expression. In Maharishi's view, the different problems in society are expressions of stress throughout the system as a whole, that is in its collective consciousness. For this reason, he states:

All occurrences of violence, negativity and conflict, crises, or problems in any society are just the expression of the growth of stress in collective consciousness. When the level of stress becomes sufficiently great, it bursts out into large-scale violence, war, and civil uprisings necessitating military action. (World Government of the Age of Enlightenment, 1979, p. 38)

Maharishi (1986a) also maintains that terrorism is an expression of stress in collective consciousness.

Whatever may seem to be the cause of the outbursts of terrorism, whatever little excuses there are, these excuses arise on the surface of the human race only from stress in world consciousness, and stress is not seen until it bursts out. The basis of stress in world consciousness is the violation of natural law by the people. The basis of the violation of natural law is the fact that the educational systems do not educate the people to spontaneously think and act according to natural law. (p. 83)

According to this view, if stress in collective consciousness is the cause of conflict, war, and terrorism, then neutralizing stress in the whole society in one operation would be an ideal means for creating peace. The difficulty with achieving peace by any other means (unaided by creating coherence in collective consciousness) is that peace, like war, must be systemic. War has many complex determinants—economic, political, historical, individual, ethnic—that must all be addressed *simultaneously* if peace is to become a stable reality. The elegance of Maharishi's approach to creating peace is that it deals with a social system at once, in its entirety and at its basis, on a unified level through its collective consciousness, which is possible because collective consciousness touches every aspect, every phase, and every level of life in society.

### **Maharishi's Technology to Create Coherence in Collective Consciousness**

How is it possible to have a holistic, beneficial influence on collective consciousness? According to Maharishi, the source of individual mind, and hence, the source of all levels of collective consciousness, is the unified field, the origin of order and intelligence in nature, which has been intuitively comprehended and logically derived by the world's great physicists. More



importantly, the unified field of nature's intelligence can be systematically experienced through the Transcendental Meditation and TM-Sidhi program (Maharishi European Research University, 1982). Of particular note is Maharishi's Transcendental Meditation-Sidhi program, which creates optimum brainwave power and coherence during the advanced practice of Yogic Flying (Orme-Johnson & Gelderloos, 1988; Travis & Orme-Johnson, 1990).

Thus, by raising or improving individual consciousness, by creating greater coherence in brain physiology, those individuals who practice the Transcendental Meditation and TM-Sidhi program become less stressed and more coherent in their own thoughts and actions, thereby generating an influence of coherence in collective consciousness. This prevents social violence while at the same time creating an atmosphere in which a more ideal society can spontaneously emerge (Cavanaugh & Dillbeck, 2017a, 2017b, 2017c; Dillbeck & Cavanaugh, 2016, 2017). Furthermore, the theory holds that only a small proportion of people in society experiencing the unified field are needed to neutralize stress in collective consciousness because coherence is more powerful than incoherence.

Implicit in this view are a number of assumptions regarding the nature of the human mind, the nature of Natural Law, and the relationship between the mind and Natural Law at their most fundamental levels of structure and function.

***Transcendental Consciousness at the basis of the mind.*** The first assumption is that individual consciousness is structured in layers from gross to subtle, from sensory and cognitive processes to finer processes of intellect and feeling, to the sense of self (i.e., one's holistic conception of their identity as an individual, the 'ego'), to the subtlest level, which is the abstract universal level underlying every individual mind, Transcendental Consciousness, the basis of all processes of the mind. Whereas the more expressed levels of the mind—perception, cognition, decision making, feelings, and sense of self—are familiar to psychologists and lay persons, Transcendental Consciousness is less commonly appreciated and needs explanation.

It is called 'transcendental' consciousness because it is 'beyond', or transcendental to, all other levels of the mind. It is also called 'pure' consciousness because it is consciousness in its essential nature, unmodified and unmediated by experience. By analogy, pure consciousness can be likened to an ocean and mental activity to the waves on the surface of the ocean. When localized waves settle down, the unbounded ocean (i.e., Transcendental Consciousness) is experienced.

Transcendental Consciousness is also called the Self, large 'S', because it is the universal Self within every person, in contrast to the small 's' self, which is a person's unique individuality or ego. Transcendental Consciousness is therefore said to be the knower/observer/experiencer within each of us. In traditional Vedic language, it is described as *Ātmā*, the unbounded, undivided, universal Self of everyone (Maharishi, 1993).

Maharishi has brought to light this ancient understanding about the structure of the mind, with Transcendental Consciousness at its basis, to explain the full range of human experience and to locate the most important level of the mind as the source of thought within us all, the home of Natural Law. Indeed, Transcendental Consciousness has been comprehensively described in many branches of literature recorded by the Vedic tradition, for example in the *Bhagavad-Gītā*, *Upanishads*, and *Upāṅgas*, each of which specialises in providing detailed descriptions of, and explanations for, the state of Transcendental Consciousness (e.g., Maharishi, 1967; Dillbeck, 1988, 1991; Pearson, 2012; Sands, 2017). By way of example, the *Bhagavad-Gītā* declares Transcendental Consciousness to be "eternal, all-pervading, stable, immovable, ever the same" (Maharishi, 1967, p. 73).

This hierarchical structure of the mind has gained recognition in modern psychology. For example, it has been shown that the Vedic structure of the mind can explain the sequence of human cognitive development from sensory-motor processes (i.e., engagement with the material world) to logical reasoning to higher states of consciousness (Alexander, Davies, Dixon, Dillbeck, Oetzel, Drucker, Muehlman, & Orme-Johnson, 1990). This sequence has been described as the development from 'outer' to 'inner' levels of the mind.

***Experiencing Transcendental Consciousness.*** The first assumption of Maharishi's theory of world peace is that Transcendental Consciousness exists at the basis of the mind. The second is that it can be experienced. Due to its unmanifest, silent, and subtle nature, Transcendental Consciousness ordinarily remains hidden or 'transcendental' to conscious experience because the conscious experiencing mind is 'object-referral', meaning that the observer, which is the Self, is looking outward onto the objects of the sensory world and in observing them, does not observe itself, just as we do not observe our glasses when looking through them. Even during introspection, in which the mind explores its own contents and operations, consciousness does not observe its own essential nature as Transcendental Consciousness. Rather, it is observing contents and operations, i.e., the thoughts, feelings, discriminative processes, and other

denizens of subjective life. The endless and bewildering supply and array of conscious activities experienced-observed during introspection are the reason that understanding consciousness is generally held to be the most difficult problem in nature, the so-called 'hard problem' of consciousness (e.g., Brogaard & Gratzia, 2016).

During introspection, the mind has a tripartite division of observer observing the observed. Said another way, the mind is divided into knower, known, and the processes of knowing which connect the two, the observed or known being the mind's own activities and contents. Therefore, it is *in principle* impossible for the thinking mind to experience Transcendental Consciousness. A technique is needed in order for Transcendental Consciousness, the knower or Self, to experience/observe/know itself, i.e., to transcend its own activities and become self-referral. In this state, the knower is knowing itself rather than being object-referral in which it only knows something outside of itself.

Maharishi's Transcendental Meditation is a simple and natural mental technique that allows the mind to move from an 'object-referral state' to a 'self-referral state'. Maharishi (1976) explains it this way:

The Transcendental Meditation technique is an effortless procedure for allowing the excitations of the mind to settle down until the least excited state of mind is reached. This is a state of inner wakefulness with no object of thought or perception, just pure consciousness aware of its own unbounded nature; It is wholeness, aware of itself, devoid of differences, beyond the division of subject and object—Transcendental Consciousness. It is a field of all possibilities, where all creative potentialities exist together, infinitely correlated yet unexpressed. It is a state of perfect order, the matrix from where all the laws of nature emerge. (p. 123)

Maharishi (1986b) further describes the self-referral state of Transcendental Consciousness as:

The awareness is open to itself, and therefore the awareness knows itself. Because awareness knows itself it is the knower, it is the known, and it is the process of knowing. This is the state of pure consciousness, wide-awake in its own nature, and completely self-referral. This is pure consciousness, Transcendental Consciousness. (p. 29)

Maharishi (1986b) explains that self-referral consciousness, being the source of nature's creative intelligence, creates field-effects of coherence in collective consciousness.

When consciousness is flowing out into the field of thoughts and activity, it identifies itself with many things [i.e., it is object-referral], and this is how experience takes place. Consciousness coming back onto itself gains an integrated state, because consciousness in itself is completely integrated. This is pure consciousness, or Transcendental Consciousness [i.e., it is self-referral]. From this basic level of life emerge all fields of existence, all kinds of intelligence. This self-sufficient, self-referral state of consciousness is the basis of the phenomenon of coherence that radiates from such assemblies [of practitioners of Transcendental Meditation and TM-Sidhi program] and influences the whole world consciousness. (p. 25)

Coherence means coordinated activity: the functions and structures of every part of a system perfectly reinforce the whole, and the whole supports all the parts. Indeed, Maharishi, along with Nobel Laureates such as Ilya Prigogine and Brian Josephson and researchers at Maharishi European Research University (e.g., 1978), has examined the phenomenon of coherence in physical and social systems, and has considered such laws of nature as those described by the Third Law of Thermodynamics in physics, the Josephson Effect, *entrainment* in brain physiology, the *inflammatory response* in medicine, *catalysis* in chemistry, and the Meissner Effect (Anderson, 1958) to explain the Maharishi Effect (World Government of the Age of Enlightenment, 1978a, pp. 8-11, 1979, pp. 24-33).

With respect to the individual, coherence means physiological, psychological, and sociological integration producing health, happiness, and right action, as research on individuals practicing the Transcendental Meditation program has shown (e.g., Alexander, 2011). Because collective consciousness arises from the individuals in any given society, when they become more coherent so too does collective consciousness, and through this influence, society as a whole becomes more orderly, harmonious, and peaceful.

***The purpose of Natural Law.*** Given that the unified field of Natural Law is understood to be a universal field of consciousness, as envisioned by many of the great pioneers of modern physics, and given that it can be directly experienced in the self-referral state of one's own consciousness,

why or how would this experience produce coherence in the individual and in society? An implicit assumption in this view is that Natural Law has a fundamental purpose, which is to structure coherence as defined above for the individual and collective.

In this view, the unified field of Natural Law is held to be the source of coherence in nature, having properties such as perfect order, harmonizing, integrating, and self-sufficiency (Hagelin, 1992). When the individual experiences the source of order in nature in Transcendental Consciousness, this experience holistically organizes all physiological and psychological processes of the individual. The mechanics of how this transformation takes place is based on a fundamental quality of Transcendental Consciousness, which is bliss (Maharishi, 1996). Because the silent basis of the mind is bliss, the mind is effortlessly and automatically drawn to the bliss of Transcendental Consciousness during the Transcendental Meditation technique (Maharishi, 1966, pp. 55-56).

As the physiology and psychology of the individual become progressively restructured to become more coherent through regular practice of the Transcendental Meditation technique, the individual's life becomes increasingly more blissful, which automatically draws personal evolution onward to higher levels. As the individual interacts with the environment through classical channels of the senses and usual modes of communication, as well as through field-effects of action at a distance, society becomes more coherent and hence blissful. In this view, coherence and bliss are different aspects of the same phenomenon, Transcendental Consciousness, the unified field.

Whereas the observed universe is created from the unmanifest, self-referral dynamics of the unified field of nature's intelligence, the purpose of this self-referral activity is self-knowledge of the entire range of the unified field from infinity to a point, self-knowledge of the full range of its bliss (Maharishi, 1986b). This evolution of coherence/self-knowledge/bliss is possible because the human nervous system has the capacity to support the experience of the unified field of nature's intelligence as Transcendental Consciousness, not only during meditation but during activity as well.

Thus, the most basic purpose of human life, Maharishi (1966, p. 80) has stated, is the expansion of happiness. It may be remarkable for a scientist to think that the human nervous system is not just an accidental outcome of the evolution of physical matter (perhaps an unsatisfying and epistemologically problematic point of view), but rather it is nature's

instrument through which it can know itself in its entirety, and when it does, life is lived in perfection for the individual and society.

From this perspective, all human activities are fundamentally for expanding self-knowledge and happiness. As the human mind looks into the finest fundamental structure of the quantum world or out onto galaxies, for example, it is ultimately looking for itself. Anything we do increases our self-knowledge, and if it increases our happiness, it is nature's signal that we are evolving in the direction of greater self-knowledge, greater coherence, more bliss, knowledge of the unified field within us and outside us.

***Higher states of consciousness.*** Maharishi has explained that higher states of consciousness are higher states of self-knowledge, a sequential development resulting from greater experience of Transcendental Consciousness, the unified field of Natural Law (Maharishi, 1967; Orme-Johnson, 1988a, 1988b); these themes have also been explored in Goodman, Walton, Orme-Johnson, & Boyer (2003).

There are seven states of consciousness, of which the first three are the familiar states of waking, dreaming, and sleeping. Transcendental Consciousness is the fourth, and the three 'higher states of consciousness'—Cosmic Consciousness, God Consciousness and Unity Consciousness—are a sequence of stable states of enlightenment in which one increasingly experiences and expresses the unified field of nature's intelligence (Alexander & Boyer, 1989).

In the fourth state of human consciousness, Transcendental Consciousness, the unified field of nature's intelligence is experienced to the exclusion of all other experience, and active phases of the mind are inhibited at that time. In the fifth state, Cosmic Consciousness, further neurological refinement allows transcendental bliss consciousness, the Self, to be experienced as a stable background or witness throughout the cycle of waking, dreaming, and sleep. The mind becomes permeated with bliss in Cosmic Consciousness, which cultures the mind to appreciate the most refined, celestial levels of perception, giving rise to a tidal wave of love and devotion for the creation and its creator, hence the name God Consciousness.

Through further neurophysiological refinement, the seventh state of consciousness, Unity Consciousness, dawns in which even the environment, previously conceived to be objective and external, is now appreciated in terms of the Self. This is the climax of self-knowledge; it represents a state of consciousness in which all phases of existence,

subjective and objective, are appreciated to be nothing other than the unified field of nature's intelligence, one's own Self moving within itself.

One of the *Mahavakyas* (or great sayings) of the Upanishads declares of this state of realisation: *I am That* (unbounded Transcendental Consciousness), *Thou art That* (the objects of my perception are composed of that Transcendental Consciousness), and *All This is That* (all manifest creation is similarly nothing other than that unbounded, unified field of nature's intelligence). This is said to be the grand, holistic (or *Brahman*) realisation of knowledge in higher states of consciousness. In this state of consciousness, the Self is recognised to be nothing other than the totality of creation, or in the language of Vedic India: *Ayam Ātmā Brahma, This individual soul is Brahma, Totality* (Maharishi, 1994).

The practical significance of this evolution of human consciousness is that as self-knowledge grows, one becomes increasingly in tune with the invincible, evolutionary power of Natural Law, because the Self *is* the unified field of Natural Law. In Maharishi's view (1986b), sickness, suffering, conflict, and all other negativity in the individual and society stem from not being in accord with Natural Law due to lack of experiential and intellectual knowledge that fundamentally one's nature is pure consciousness. Stress in the individual and collective consciousness is the consequence of life not being in accord with Natural Law, and as noted above, stress in collective consciousness is the cause of war. Thus, in Maharishi's approach to world peace, Self-knowledge, along with the bliss that it affords and the coherence that it creates in collective consciousness, brings life in accord with Natural Law, thereby creating peace in society.

Maharishi has brought to light that several thousand years ago *Patanjali* referred to this approach to peace in his *Yoga Sūtras* (2.35, from which the Transcendental Meditation-Sidhi program is derived) in his statement *Tat sannidhau vairātyagah*, which translates as "in the vicinity of coherence [i.e., Yoga], hostile tendencies are eliminated" (Egenes, 2010; Maharishi Vedic University, 2008, pp. 13-14). Maharishi (1986b) explains that this influence of coherence spreads because Transcendental Consciousness is a state of infinite correlation:

This transcendental level of nature's functioning is the level of infinite correlation. When the group awareness is brought in attunement with that level, then a very intensified influence of coherence radiates and a great richness is created. Infinite correlation is a quality of the transcendental level of nature's functioning from where orderliness governs the universe. (p. 75)

The real genius of Maharishi's theory of collective consciousness is that it is empirically testable in actual regional and international conflicts. Maharishi (1991, p. 276) maintains that his 'Absolute Theory' of consciousness is not man-made but is an immutable law of nature, yet it is still open to testability with profound application to peace, which sets it apart from all other theories and approaches.

The following section summarises some of the most important and recent studies on the Maharishi Effect, and updates previous review studies on this topic (e.g., Cavanaugh, 1992; Dillbeck, Cavanaugh, Glenn, Orme-Johnson, & Mittlefehldt, 1987; Global Country of World Peace, 2006; Hagelin, 1992; Orme-Johnson, 1992; Orme-Johnson & Dillbeck, 1987). The Maharishi Effect in this context can be described most broadly as the creation of coherence, orderliness, and harmony in collective consciousness through the *field effect* of consciousness, i.e., through the action-at-a-distance principle, by individuals or groups practicing Maharishi's Transcendental Meditation or TM-Sidhi program.

## **EMPIRICAL RESEARCH ON THE MAHARISHI EFFECT**

The availability of the Transcendental Meditation and TM-Sidhi program, a technology to directly influence collective consciousness, and the measurable effects of its influence have opened the door to research in collective consciousness. What in the 1970s and 1980s was a novel but developing research initiative has grown since then into a fully fledged and globally comprehensive research program conducted at some of the world's most prestigious institutions.

This research program has now indicated that the practice of this set of specific mental techniques for enhancing social harmony and reducing tension can quickly and significantly reduce levels of crime and violence, even at national and international levels, and improve other measures of societal quality of life (e.g., Cavanaugh & Dillbeck, 2017a, 2017b, 2017c; Dillbeck, 1990; Dillbeck, Banus, Polanzi, & Landrith, 1988; Dillbeck & Cavanaugh, 2016, 2017; Dillbeck et al., 1987; Orme-Johnson, Alexander, & Davies, 1990; Orme-Johnson, Alexander, Davies, Chandler, & Larimore, 1988; Orme-Johnson & Dillbeck, 1987).

This review of Maharishi Effect research is organised into three parts. Part 1 reviews studies on the effects of 1% or more of the population practicing the Transcendental Meditation technique on the quality of life of the entire society. The 1% is the predicted threshold number of meditators needed to create a phase transition to increase order in society.



In these 1% studies, the meditators were distributed throughout society and meditated individually wherever they happened to be. This phenomenon is called the Maharishi Effect. Part 2 reviews studies on the societal effects of people practicing the Transcendental Meditation and the more advanced TM-Sidhi program together in a group. It is predicted that the square root of 1% of the population participating together in group practice of the Transcendental Meditation and TM-Sidhi program is sufficient to improve the quality of life in the entire population. As noted above, this is called the Extended Maharishi Effect. Part 3 reviews studies in which the Maharishi Effect and Extended Maharishi Effect have been applied to reduce armed conflict and create peace on the national and international levels.

## **Part 1: The Maharishi Effect**

### ***The Discovery of the Maharishi Effect***

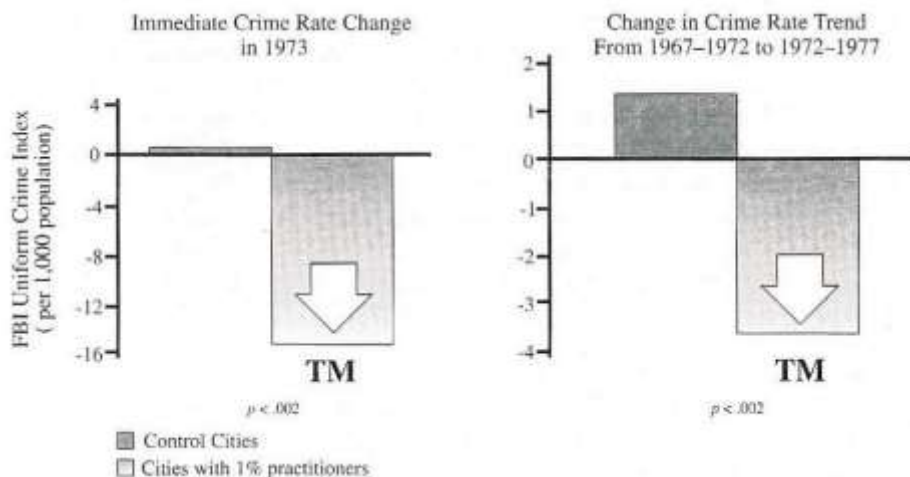
In the early 1960s, Maharishi predicted that as little as 1% of a population practicing the Transcendental Meditation technique would create an influence of harmony, order, and coherence throughout the entire society. To this end, Maharishi (1978) stated:

Whenever one percent of the people in any community practise Transcendental Meditation, balance in nature increases, accidents become less, and all the collective values, which we call social values of society, become more positive. Individuals become incapable of thinking wrong things. Their thinking changes in favor of society. Crime rate falls, sickness becomes less, and all other negative aspects of life diminish. (p. 163)

Maharishi predicted that a few could affect the many based on the principle of coherence in physics, in which the coherent elements in a system are much greater than the incoherent elements (Borland & Landrith, 1977; Hagelin, 1987, 1989; Orme-Johnson et al., 1988). Research on the Maharishi Effect began in 1974, when researcher Garland Landrith of Maharishi International University (MIU, renamed Maharishi University of Management in 1995) tested Maharishi's prediction on crime rate in four Midwestern cities where 1% of the population had learned the Transcendental Meditation technique. Landrith initially reported that 1973 crime rates decreased significantly the year after each city became

'1% cities' when compared with other cities of similar size and geographic location. Using publicly available data from the Federal Bureau of Investigation's *Uniform Crime Index*, Borland and Landrith (1977) expanded the study to include 11 cities with a population over 25,000 which had 1% of their population practicing Transcendental Meditation and showed that when 1% of a city population practices the Transcendental Meditation technique, crime in the city decreases by an average of almost 16% relative to controls ( $p < .002$ ).

By using data from local police for cities with 10,000 population, the investigation was expanded to include 24 cities that had reached 1% of their population practicing Transcendental Meditation in 1972 with a finding of a similarly significant reduction in crime rate ( $p < .002$ ) (Dillbeck, Landrith, & Orme-Johnson, 1981). This replication study not only found that crime rate decreased the year after the 1% threshold was reached (Figure 1, left-hand chart), but also found the crime rate trend was lower for those cities over the following six years, when controlling for total population, geographic region, college population, unemployment rate, median education level, stability of residence, percentage of persons 15-29 years old in the population, and a number of other variables relevant to crime rate ( $p < .002$ ), as shown in Figure 1 (right-hand chart).



**Figure 1: Left-hand chart** Immediate change in crime rates; **Right-hand chart** crime rate trends in U.S. cities through the Maharishi Effect.

Hatchard (1989) also provided correlational evidence of an association between the number of people practicing Transcendental Meditation and

decreased crime in Greater Cleveland during 1973, further supporting the theory. Other references appeared in the literature defining the Maharishi Effect (World Government of the Age of Enlightenment, 1978a), in which groups of practitioners of the Transcendental Meditation and TM-Sidhi program in one place create coherence and order in collective consciousness in another contiguous or discontiguous location.

Examples include practitioners of Transcendental Meditation in Los Angeles affecting crime in San Bernadino based on a 'Maharishi Effect Ratio', and practitioners of the Transcendental Meditation and TM-Sidhi program throughout Asia having a peaceful influence on China (World Government of the Age of Enlightenment, 1978a, pp. 3-4).

This early investigation of coherent outcomes 'at a distance' cited the Josephson Effect of quantum tunneling and non-locality of the superfluid quantum state as possible parallels in physics which might explain this 'extended' phenomenon (World Government of the Age of Enlightenment, 1978a, pp. 2-11). However, further research was required to investigate the *causal* relationship between practice of the Transcendental Meditation technique and an increase of coherence and harmony throughout society.

### ***Causal Analysis***

The most comprehensive studies of the Maharishi Effect at the city level employed causal analyses of crime trends over a period of seven years in random samples of 160 U.S. cities and 50 Standard Statistical Metropolitan Areas (SSMAs), the latter representing approximately half the urban population of the U.S.

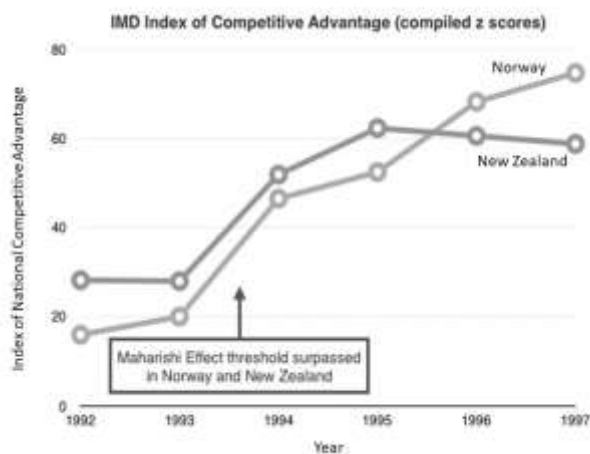
These two studies, which were published in an article *The Journal of Mind and Behavior* (Dillbeck et al., 1987, 1988) and tested the field model of consciousness and its relation to social change, found that cities and metropolitan areas with higher proportions of meditators in 1973 had reduced crime trends for the next six years. Conversely, in neither study did the level of crime predict the number of meditators in the population in future years.

Thus, the proportion of people in the population practicing the Transcendental Meditation technique apparently influenced crime rate, but changes in crime rate did not influence how many were practicing Transcendental Meditation, suggesting that practice of Transcendental Meditation was the causal element in the correlation between the two. Both studies statistically controlled for the demographic variables known

to influence crime, and a significant and stable causal structure was found for both samples: the 160 cities and the 50 SSMA.

### ***Quality of Life and Economic Performance Indicators in New Zealand and Norway***

A recent study investigated the impact of the Maharishi Effect in New Zealand and Norway (Hatchard & Cavanaugh, 2017a, 2017b). At the end of 1993 the population of New Zealand was 3,525,000, with 35,593 persons instructed in the Transcendental Meditation technique, thus representing 1% of the total population. Similarly, the population of Norway was 4,287,000 in 1992, and the number instructed in the Transcendental Meditation in Norway by January 1988 was recorded as 37,000 to 38,000 with the extended range accounted for by a small recording error. Subsequently 2,925 new individuals participated in the Transcendental Meditation program before the end of 1993. There were also over 400 advanced Transcendental Meditation-Sidhi practitioners, some of whom practiced in groups, generating sufficient additional coherence to pass the Maharishi Effect threshold.



**Figure 2:** Index scores for New Zealand and Norway, 1992-1997.

Results indicate that scores for both New Zealand and Norway on the *Index of National Competitive Advantage* increased significantly compared to 44 other developed nations when they passed the predicted coherence group threshold necessary to generate the Maharishi Effect. This was shown by

sophisticated cross-country panel regression analysis, which met rigorous statistical tests of validity (robust to serially correlated errors, heteroskedasticity, and contemporaneous correlation of residuals).

Index scores for New Zealand and Norway in Figure 2 show the changes that occurred for both countries between 1993 and 1994 when the Maharishi Effect was generated ( $p < 3 \times 10^{-15}$  or a three in 100 trillion likelihood that the observed change occurred by chance). Subsidiary analysis of data from the Organisation for Economic Co-operation and Development (OECD) confirmed that the observed changes were unusually broad-based ( $p < 6.5 \times 10^{-8}$ ), sustained, and balanced in nature, with five years of high growth, low unemployment, and low inflation.

Taken as a whole, the findings suggest a prescription for balanced and sustained growth based on a method to enhance quality of life and innovation in the population. This and other data related to improved quality of life and enhanced economic performance has been demonstrated not only in New Zealand and Norway but also in Cambodia, Mozambique, and the U.S. (Hatchard & Cavanaugh, 2009).

## **Part 2: Extended Maharishi Effect—Effects of Groups of $\sqrt{1\%}$ of a Population Practicing the Transcendental Meditation and TM-Sidhi Program**

A major breakthrough in Maharishi Effect research came in 1976 with the development of the more powerful Transcendental Meditation-Sidhi program. The power of this program on impacting collective consciousness was discovered in 1978 during Maharishi's *Ideal Society Campaign*, which was conducted in selected states and provinces of 20 countries (World Government of the Age of Enlightenment, 1978b, pp. 13-21).

Maharishi sent teams of teachers of Transcendental Meditation to these countries in order to inspire 1% of the local population to learn the technique and thereby create an 'ideal society'. As it happened, these teachers practiced the Transcendental Meditation-Sidhi program together in groups, particularly the powerful Yogic Flying technique. Neurophysiological and cognitive studies showing that Yogic Flying increases coherence in the individual predicts that it may also have more potent effects on creating coherence in collective consciousness.

A study also found that Yogic Flying increases EEG alpha power during the dynamic activity of hopping, indicating that the restful alertness gained during meditation is being integrated with activity (Orme-Johnson & Gelderloos, 1988). Total brain integration also increases during Yogic

Flying at the moment of liftoff as indicated by increased EEG coherence across all frequency bands and among all cortical regions (Travis & Orme-Johnson, 1990). A comparable two-year study found that intelligence, choice reaction time, and stability of attention increased longitudinally through the practice of the Transcendental Meditation and TM-Sidhi program, including Yogic Flying (Cranson, Orme-Johnson, Gackenbach, Dillbeck, Jones, & Alexander, 1991).

During the Ideal Society Campaign, it was discovered that groups on the order of the square root of 1% of a population collectively practicing the Transcendental Meditation-Sidhi program, including Yogic Flying, were sufficient to produce a measurable and holistic influence of harmony and integration in the entire population.

The supposition that such a small number of coherent elements within a system could affect the behaviour of the entire system was derived from an understanding of coherent systems in physics, in which the combined intensity of coherent elements is proportional to the square of the number of elements (Hagelin, 1987, p. 65).

This occurrence in social science has been named *Super-Radiance*, after the superradiance phenomenon discovered in lasers which accounts for the so-called 'ensemble behaviour', or coherent 'collective' behaviour, of a small number of atoms in a beam of light, as predicted by Robert Dickie in 1954 (e.g., Chumakov, et al. Baron, Sergueev, Strohm, Leupold, Shvyd'ko, Smirnov, Ruffer, Inubushi, Yabashi, & Tono, 2017).

More formally, the Maharishi Effect, when created by the square root of 1% of a population collectively practicing the Transcendental Meditation-Sidhi program, specifically Yogic Flying, in a group is called the *Extended Maharishi Effect* (e.g., Maharishi, 1995, pp. 316-317; Maharishi Vedic University, 1991, pp. 184-185). The square root of 1% of a population is a relatively small number, making controlled studies, even on the national and international levels, possible.

For example, the square root of 1% of the U.S. population is currently 1,800 (i.e.,  $\sqrt{1\%}$  of 323 million), and the square root of 1% of the world's population is currently approximately 8,600 (i.e.,  $\sqrt{1\%}$  of 7.5 billion). Generally, time series methodology has been used in these studies to assess the associations between changes in the size of the groups with changes in objective quality of life indicators, controlling for seasonal variations, trends, other variables, and events occurring at that time, which might potentially explain the measured effects.

### ***Extended Maharishi Effect on the City Level***

Research has now demonstrated this effect on the city, state, national, and international levels. Studies in cities have documented reduced homicides and violent crimes and improved economic confidence in Washington, D.C. (Lanford, 1989a, 1989b), as well as reduced crime in two other national capital regions, Metro Manila in the Philippines, and the Union Territory of Delhi in India (Dillbeck, et al., 1987). The phenomenon of reduced crime in the vicinity of group practice of the Transcendental Meditation and TM-Sidhi program has also been demonstrated in the city of Merseyside, United Kingdom (Hatchard, Deans, Cavanaugh, & Orme-Johnson, 1996).

**Washington, D.C. Demonstration Project.** One of the most significant and rigorously designed studies on the Maharishi Effect was conducted by Hagelin, Rainforth, Orme-Johnson, Cavanaugh, Alexander, Shatkin, Davies, and Ross (1999) in Washington, D.C. The study used a prospective experimental design to test the pre-stated hypothesis that a group of Transcendental Meditation and TM-Sidhi program practitioners assembled in Washington, D.C. for seven weeks would have a measurable and positive effect on the crime rate and quality of life in that city, then one of the most dangerous cities in the United States. A 27-member Project Review Board, composed of independent scientists and qualified citizens, approved the research protocols of the study and monitored the research process.

Weekly crime data was collected from the District of Columbia Metropolitan Police Department, which is the source of the Federal Bureau of Investigation's *Uniform Crime Reports* for Washington, D.C. Statistical analysis considered and controlled the effect of weather on crime, impact of daylight versus night-time on crime, and historical trends and annual crime patterns in the District of Columbia, as well as crime in neighbouring cities. The researchers report that, consistent with previous research, three categories of violent crime—homicide, rape, and assault, what are called HRA crime—were shown to correlate with temperature, following annual temperature cycles.

Controlling for temperature, findings from this study indicate that HRA crime decreased significantly during the demonstration period and these decreases corresponded with the size of the group. The maximum reduction of HRA crime was 23.3% ( $p = 2 \times 10^{-9}$ ) in 1993 and 24.6% ( $p = 3 \times 10^{-5}$ ) when tested against a baseline of 1988-1993 HRA data.

Robberies did not decrease significantly, but when both HRA crimes and robberies were analysed together the combination of all crime

decreased by 15.6% ( $p = .0008$ ). These findings could not be accounted for by an increase in police staffing or other variables. The study found that the high temperatures during the study (August) would predict more crime, yet crime decreased from the predicted level.

This demonstration project in Washington, D.C. also predicted in advance to the project review board that, in addition to reducing crime, the large group in Washington would improve the general quality of life in the city as measured by five other indicators of social stress: emergency psychiatric calls, hospital trauma cases, complaints against the police, accidental deaths, and a social stress index of the four variables. Time series structural break analysis indicated that all five variables showed significantly changed trends in the predicted direction toward greater positivity after the start of the project (Goodman, Orme-Johnson, Rainforth, & Goodman, 1997).

Moreover, the effects of the group extended beyond Washington to the national level. President Clinton's approval ratings and media positivity toward the President also began to improve, reversing prior downward trends. In addition, when the group was present in Washington, creating more coherence in the collective consciousness, the voting patterns in the U.S. Senate and House of Representatives showed more bipartisan cooperation. Data sets of all Senate and all House roll-call votes in 1993 were divided into three periods: before, during, and after the group assembled, and scaled utilizing Rice's (1925) Index of Likeness. Statistically significant results indicated that in contrast to the divisiveness that marked the spring voting patterns, the summer and fall voting patterns for both Senate and House reflected greater bipartisanship (Goodman, Goodman, & Orme-Johnson, 2006).

This phenomenon of coherence in collective consciousness influencing government leaders will be taken up again in the last section on the Global Maharishi Effect, in which the heads of state in the U.S. and Soviet Union became more positive towards each other when there were groups large enough to have a predicted effect on the whole world.

### ***Extended Maharishi Effect on the State Level***

The Extended Maharishi Effect has also been demonstrated on the level of states and provinces. It was, in fact, first discovered in the state of Rhode Island in the U.S. when group practice of the Transcendental Meditation and TM-Sidhi program was found to be associated with reductions not only in crime but also in improvements in a broad quality of life index that



included mortality rate, auto accident rate, traffic fatality rate, pollution, unemployment rate, beer consumption rate, and cigarette consumption rate (Dillbeck, Foss, & Zimmerman, 1989).

Similarly, a group in Puerto Rico was associated with reductions in crime, which could not be explained by changes in police procedures (Dillbeck, Mittlefehldt et al., 1989). A study in the state of Iowa in the U.S. found significant and meaningful reductions in monthly rates of unemployment, crime, and traffic fatalities during 1979 to 1986 associated with the size of the group participating in the Transcendental Meditation and TM-Sidhi program at MIU in Fairfield, Iowa. When the group reached the requisite  $\sqrt{1\%}$  threshold for Iowa, crime rate showed an immediate decrease the same month (lag 0). Unemployment and traffic fatalities decreased the next month (lag 1), indicating that changes in the group size led changes in quality of life, supporting a causal interpretation (Reeks, 1990). These studies have been summarised by Dillbeck et al. (1987; c.f. Maharishi Mahesh Yogi, 1986b, p. 76).

### ***Extended Maharishi Effect on the National Level***

The Extended Maharishi Effect has been demonstrated to improve the national quality of life in the Netherlands, U.S., Canada, Australia, the Philippines, and Cambodia. In the Netherlands, in three different one-month experimental periods during 1979 and 1981, groups of Transcendental Meditation and TM-Sidhi participants of more than the  $\sqrt{1\%}$  of the Dutch population (i.e., 376 participants) were formed. During the experimental periods, crime, and accident rates decreased significantly compared with the same months in the previous ten years (Burgmans, Burg, van den Langenkam, & Verstegen, 1989). Auto accidents, crime, and violent deaths also decreased in the U.S., Australia, and Canada when  $\sqrt{1\%}$  groups were formed (Assimakis & Dillbeck, 1995; Dillbeck, 1990; Dillbeck, Larimore, & Wallace, 1989; Gowing, 2011). In the U.S., a group of 2,500 Transcendental Meditation and TM-Sidhi participants assembled in Amherst, Massachusetts, for six weeks in the summer of 1979. Compared with the same months in the six previous and two subsequent years there were significant reductions in traffic fatalities, violent crimes, air traffic fatalities, overall fatalities in 14 categories, and increases in stock prices during the experimental period (Davies & Alexander, 1989).

In Great Britain, in 1982 and 1983, during several peak sizes of the Transcendental Meditation and TM-Sidhi groups, the All Shares Index of 750 largest companies in Great Britain increased significantly compared

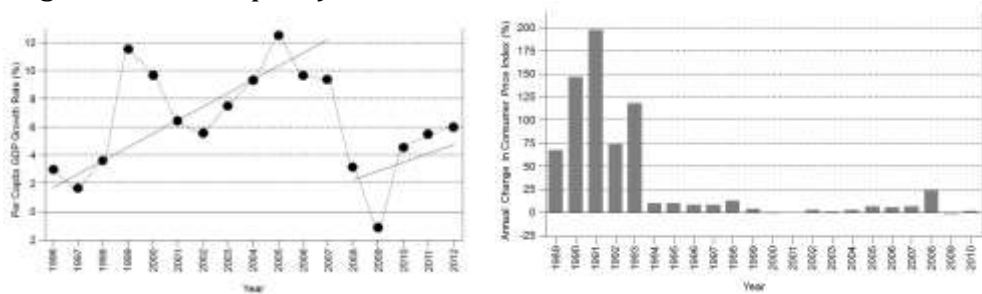
with the seven-day periods immediately before and after the experimental periods and compared to all other trading days. This indicates the capacity of the Extended Maharishi Effect to increase national economic confidence and optimism at a time of economic recession (Beresford & Clements, 1989). Similarly, Cavanaugh and colleagues found reductions in inflation and unemployment in the U.S. associated with group practice of the Transcendental Meditation and TM-Sidhi program (Cavanaugh, 1987; Cavanaugh & King, 1988; Cavanaugh, King, & Ertuna, 1989).

**Maharishi Vedic University in Cambodia.** In conjunction with the Ministry of Education, Youth, and Sport of the Royal Government of Cambodia, Maharishi Vedic University (MVU) was established in January 1993 (Fergusson & Bonshek, 2017) with financial and administrative support from the Australian Aid for Cambodia Fund.

As a result, between 1993 and 2008 at any one time (excluding vacations) 200+ undergraduate students practiced the Transcendental Meditation and TM-Sidhi program in a group twice a day as part of their curriculum. This number approached or exceeded the  $\sqrt{1\%}$  the population needed to create the Maharishi Effect in Cambodia, which was 265 students. Social Impact Assessment research, in which lifecycle and comparison data (in this case, comparison data with Thailand, Vietnam, and Lao PDR) and baseline data for preceding and subsequent periods were used as controlling variables in a study of Cambodian economic and social well-being. The study was conducted for the period 1980-2015 (Fergusson, 2016a, 2016b).

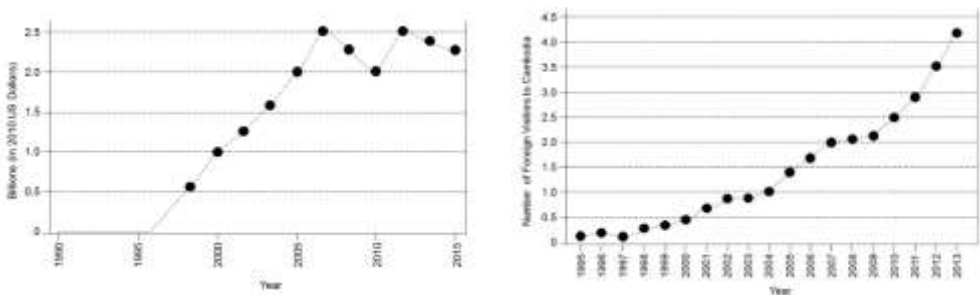
Cambodia was the poorest country of the 42 poorest countries in the world based on income levels in 1990 (Maharishi Vedic University, 1991, pp. 98-101) and the poorest of all 152 countries in the early 1990s. However, after implementation of the Transcendental Meditation and TM-Sidhi program, Cambodia's gross domestic product (GDP) growth rates averaged 8.9% until 2008, and the World Bank reported that Cambodia's industrial sector GDP growth rates equalled as much as 30% per year after the late 1990s. As shown in Figure 14 (left-hand chart), annual per capita GDP growth rate also ranged between 6% and 7% per year during this period for an overall increase of 179% between 1996 and 2008 (World Bank, 2015). During this period, the percentage of undernourished people in Cambodia fell from 30% of the population in 1993 when MVU was established to 18% by 2008, a 40% reduction in undernourishment. The percentage of the population living in poverty also fell from 45% to 21% during the same period, and other measures indicated a decrease in poverty of 63% between 1994 and 2008, resulting in Cambodia by 2010

being ranked 63<sup>rd</sup> out of 152 on the international scale of poverty, a jump of 89 places in under one generation. These outcomes prompted the World Bank to ask rhetorically in 2014: “where have all the poor gone?” (Fergusson, 2016b, p. 96).



**Figure 14:** Left-hand chart Cambodia’s annual per capita GDP growth rate between 1996 and 2012, with trend lines between 1996 and 2007 and between 2008 and 2012; Right-hand chart Cambodia annual percent change in consumer price index between 1990 and 2001.

Moreover, of the 47 poorest countries in the world in 2002, Cambodia was one of only 17 countries to achieve 90% or more of its target for reducing the percentage of its population who are undernourished, one of 16 to achieve target rates for enrolments in primary education, one of 21 to achieve target infant mortality rates, one of 13 to achieve maternal mortality rates, and one of 20 to achieve improvements in access to clean drinking water.



**Figure 15:** Left-hand chart Cambodia’s annual apparel manufacturing revenue in billions of dollars derived from exports to the U.S. between 1990 and 2015 (World Bank Group, 2015, p. 18); Right-hand chart number of foreign visitors in millions to Cambodia between 1995 and 2013 (World Bank, 2015).

As shown in Figure 14 (right-hand chart), Cambodia also experienced a reduction of inflation from an average 114% per annum before the group was formed to around 0-10% per annum after (International Monetary Fund, 2105, p. 179); exports grew from 2.5% of all Asian exports to 12% during the period.

Similarly, Figure 15 (left-hand chart) shows total apparel export revenue to the U.S. grew from zero in 1993 to \$2.5 billion per year by 2008, and rice production increased from Cambodia (formerly the 'rice basket' of Asia) being a net importer of 100,000 tonnes of rice per year at the start of the period to a production of 7.0 million tonnes in 2008. By 2010, Cambodia had a rice surplus of 51,000 tonnes, most of it exported to Thailand, Vietnam, China, Russia, and the European Union.

Health and education data bear out these general trends. During the period there was a 51% decrease in infant mortality (thereby averting 308,000 infant deaths), a 58% decrease in young child mortality, and a 47% decline in maternal mortality (thereby averting 70,000 maternal deaths). Primary school enrolments increased from 1.3 million students before MVU to 2.65 by 2006, a 105% increase when compared to Lao PDR, whose primary enrolments barely changed over the same period. The growth in primary education in Cambodia is 'significant', according to UNESCO (2011, p. 33).

Similarly, secondary school enrolments increased from 300,000 children in 1990 to 800,000 children in 2006, a 160% increase over 16 years. The Royal Government of Cambodia spent 10.9% of its total budget on education in 1994 growing to 20.8% by 2010. This compares favourably to Vietnam, which spent 5.7% of its budget on education in 2008. UNESCO (2011, p. 103) maintains the Cambodian government annual education budget grew by 17% between 1999 and 2008, whereas the growth in the education budgets of Thailand was 7%. Even after the Global Financial Crisis, the Cambodian government increased education spending. UNESCO (2011, p. 227) specifically highlighted the fact that entry into the last grade of primary school in Cambodia increased from 41% in 1999 to 79% in 2008 due to the decline in civil unrest. As shown in Figure 15 (right-hand chart), as a result of the greater harmony, order, and coherence and reduced violence in Cambodia during the MVU years, the number of foreign visitors increased from 200,000 per year to 2.0 million per year in 2008, an increase of 900% (World Bank, 2015).

Research also showed that since the introduction of Maharishi's Transcendental Meditation and TM-Sidhi program, war deaths declined from 268 per year in 1993 to 14 in 2011. A number of alternate hypotheses

were advanced by the studies, including the role of the United Nations Transitional Authority in Cambodia and its elections held in 1993, the shift to a market economy from a centralised, planned economy in 1995, and the role of foreign aid in these observed changes. However, each hypothesis could not adequately account for all the reported changes. Indeed, the United Nations own report said it *failed to bring peace to Cambodia*. The shifts in economic policy, which may have stimulated the economy, occurred *after* the implementation of the group at MVU. Some changes in economic indicators, such as inflation, coincided with formation of the group and occurred *prior* to changes in economic policy, and foreign aid *declined* after 1995. Thus, each of these alternate explanations lends support to a causal explanation for the group at MVU generating an influence of coherence in Cambodia.

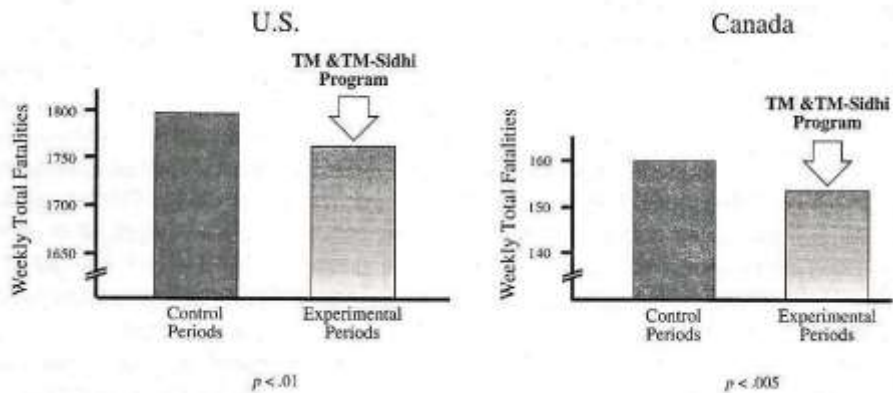
Moreover, from 1990 to 1998 a total of 70 nations sought to change their system of government to a multi-party democracy. Of these, 33 nations did not experience war either before or after their transition to democracy, nine had civil war both before and after elections, and 26 nations had no war prior to democratic elections but bloody civil conflict soon thereafter. Only three nations out of 70 during this period had war *before*, but peace *after*, democratic elections—Cambodia, Mozambique, and Namibia.

#### **Establishment of a National Coherence-Creating Group in the U.S.**

Since 1979, a group of Transcendental Meditation and TM-Sidhi participants, ranging in size from a few hundred practitioners to over 8,000, has gathered twice a day at Maharishi University of Management (MUM) in Fairfield, Iowa, for the purpose of creating coherence in U.S. and world collective consciousness. A study published in *Social Indicators Research* found a significant effect of the MUM group on U.S. violent deaths per week (i.e., homicides, suicides, and traffic fatalities) from 1979 to 1985 (Dillbeck, 1990). The square root of 1% of the U.S. population in 1985 was approximately 1,550 practitioners at the time, and Dillbeck's study found when the group's size increased from zero to 1,550 there was a measurable decrease of 106 fatalities per week in the U.S. or 5,500 fewer fatalities per year.

The study used time series analysis that controlled for seasonal fluctuations, fatality trends, and drifts in the data. Similar time series analyses found reductions in violent deaths in Canada when a threshold of 1,600 practitioners in North America was reached (Assimakis, 1989; Assimakis & Dillbeck, 1995; Dillbeck & Rainforth, 2011). These findings are summarised in Figure 3. As mentioned earlier, using a similar research

design, in a series of papers presented at the Business and Economics Statistics Section of the *American Statistical Association*, Cavanaugh and his collaborators reported significant reductions in the Misery Index of inflation and unemployment for both the U.S. and Canada, controlling for a number of economic factors. (Cavanaugh, 1987; Cavanaugh & King, 1988; Cavanaugh, King, & Ertuna, 1989).



**Figure 3: Left-hand chart** Decreased fatalities in the United States and **Right-hand chart** in Canada between 1979 and 1985 as a result of the group practice of the Transcendental Meditation and TM-Sidhi program.

A study of the effects of the group program at Maharishi International University on the quality of life in the U.S. for the 25-year period from 1960 through 1984 used an equally weighted composite index of 12 social indicators from the fields of crime, justice, health, education, economic welfare, creativity, marital stability, and safety (Orme-Johnson, Gelderloos, & Dillbeck, 1988). The magnitude of the Extended Maharishi Effect was estimated by the *Maharishi Effect Index*, which considers the percentage of Transcendental Meditation participants distributed throughout the United States as well as the square root of the number of Transcendental Meditation and TM-Sidhi participants in the group at Maharishi International University.

Analysis of this quality-of-life index showed a virtually continuous downward trend in overall quality of life in the U.S. from 1960 to 1975. This negative trend began to level off starting in 1975, the year that Maharishi inaugurated the Dawn of the Age of Enlightenment (Maharishi, 1975). During the years 1982 to 1984, when the group of Transcendental Meditation and TM-Sidhi program participants at MIU was large enough to have the predicted effect on national consciousness, there was a dramatic

increase in U.S. quality of life. The total improvement of 7.17% on the Maharishi Effect Index over this three-year period was 5.2 times greater than any three-year improvement in the previous 22 years. Clearly, an unprecedented change in recent U.S. history had occurred.

A further analysis of different quality-of-life variables used a multivariate method of analysis of covariance structures (e.g., Jöreskog & Sörbom, 1979; Long 1983) implemented by the LISREL VI program (Jöreskog & Sörbom, 1986). The covariance structure model combines factor analysis and structural equation causal modeling to assess the impact of independent variables on a set of *latent* variables underlying a group of *observed* variables. Two quality-of-life factors were found, a general factor and a second factor. The MIU group practice of the Transcendental Meditation and TM-Sidhi program had a significant effect on both factors, accounting for 80.4% of the variance of the general factor and 60.3% of the secondary factor (Orme-Johnson, Gelderloos, & Dillbeck, 1988).

These studies provide strong evidentiary support that the MIU 'Super-Radiance group' had a significant impact on the quality of life in the U.S. during this time as seen in a reduction of deaths due to suicides, homicides, and traffic fatalities (Dillbeck, 1990), a reduction in inflation and unemployment (Cavanaugh, 1987; Cavanaugh & King, 1988; Cavanaugh et al., 1989), and an improvement in general U.S. quality of life (Orme-Johnson, Gelderloos, & Dillbeck, 1988).

**Invincible America Assembly.** The Invincible America Assembly (IAA) was a group that from 2007 to 2010 exceeded or approached the  $\sqrt{1\%}$  of the U.S. population (approximately 1,725 participants in 2007) located at Maharishi University of Management. The group was sustained for these four years, made possible by a grant from Drs. Howard and Alice Settle. Studies of the effects of the IAA on the quality of life in the U.S. by Drs. Michael Dillbeck and Kenneth Cavanaugh, published in a series of five peer-reviewed papers, are some of the most robust, tightly controlled, and far-reaching scientific investigations of the extended Maharishi Effect to date (Cavanaugh & Dillbeck, 2017a, 2017b, 2017c; Dillbeck & Cavanaugh, 2016, 2017).

For their study, which employed time series regression analysis using a broken-trend impact-assessment model, Dillbeck and Cavanaugh (2016) studied changes in trend of social indicators from the baseline period (2003 to 2006), when the group size was low, to the experimental period (2007 to 2011), when the numbers were high. It can be seen in Figure 4 that during the baseline period, the number of participants in the

Transcendental Meditation and TM-Sidhi program declined from 750 in 2003 to about 391 by June 2006. Then, due to the grant from the Settles, the numbers rose quickly between 2006 and 2007. They remained high at an average of approximately 1,750 during the experimental period from 2007 to 2011, as shown in Figure 4. The number required to generate the Maharishi Effect in the U.S., according to the  $\sqrt{1\%}$  formula, was approximately 1,725 in 2007, based on a population of 297 million at that time.



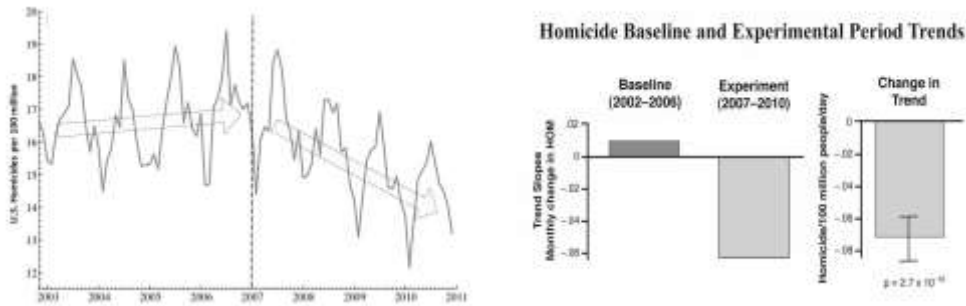
**Figure 4:** Invincible America Assembly group size between 2002 and 2011.

The hypothesis for the study stated that: “a significant reduction in the trend rate of growth of homicide and violent crime [and other variables] would occur beginning with the onset of the intervention period in January 2007” (Dillbeck & Cavanaugh, 2016, p. 5). While the hypothesis was directional, all statistical tests were reported at the two-tailed level, a conservative approach.

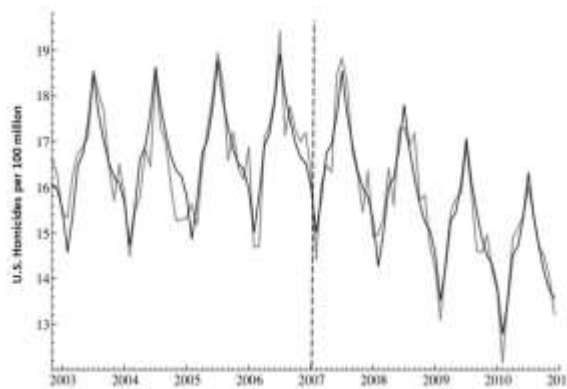
Figure 5 shows the U.S. homicide rate based on the Federal Bureau of Investigation’s *Uniform Crime Report* data from 206 cities throughout the country with a population greater than 100,000 (representing a total population of 61 million people) during the baseline period (left of dotted line) and after the group of participants in the Assembly exceeded the requisite number (right of the dotted line).

During the experimental phase, the homicide rate was reduced by 21.2% relative to the baseline average rate and, as a consequence, the researchers estimated that 8,157 fatalities due to homicide in the U.S. were averted. The likelihood of this observed reduction in homicide rates being due to chance was a highly significant  $p = 2.7 \times 10^{-16}$  (Dillbeck & Cavanaugh, 2016).



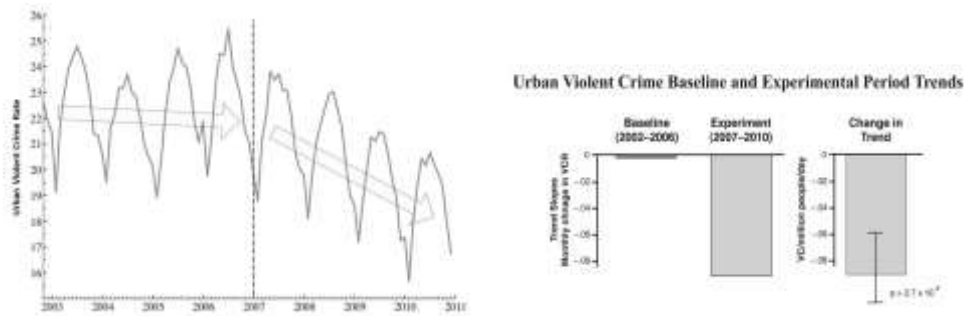


**Figure 5:** Left-hand chart U.S. homicide rates with trend arrows during the baseline period (left of vertical dotted line) and after the group of participants in the Assembly exceeded the requisite number (right of dotted line); Right-hand chart trend slopes of monthly changes in U.S. homicide rates during the baseline and experimental periods and change in trend for homicides per 100 million people per day.



**Figure 6:** U.S. homicide rate prediction of the statistical model (dark line) versus actual data (light line).

Using baseline data as the control, Figure 6 shows what the time series regression model predicted would happen in 2007 when the size of the group practicing the Transcendental Meditation and TM-Sidhi program exceeding 1,725 was included in the model. When the MUM group was included in the model, it accurately predicted the downward trend seen to the right of the vertical dotted line. The correlation coefficient between predicted trends and actual trends of 0.936 and the squared correlation of  $R^2 = 0.876$  indicates that the model predicted 88% of the variance in the data.



**Figure 7: Left-hand chart** U.S. violent crime rates with trend arrows during the baseline period (left of dotted line) and after the group of participants in the Assembly exceeded the requisite number (right of dotted line); **Right-hand chart** trend slopes of monthly changes in U.S. violent crime rates during the baseline and experimental periods and change in trend for violent crimes per million people per day.

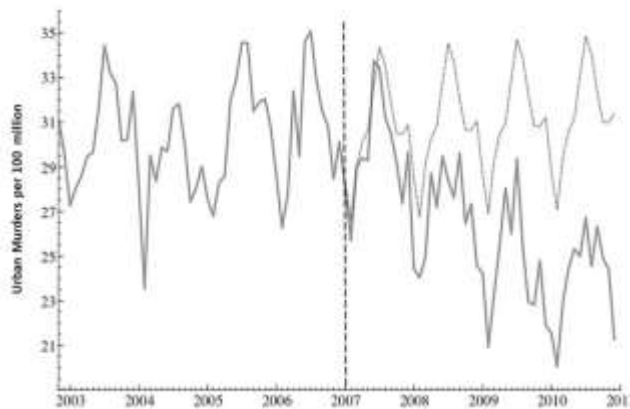
This indicates that the statistical model was a very accurate predictor of the actual phenomenon, lending further evidence that the Transcendental Meditation and TM-Sidhi group was the causal factor in the remarkable reduction in U.S. homicides at that time.

A second aspect of the study examined violent crime data between 2001 and 2010 derived from the Federal Bureau of Investigation’s *Uniform Crime Report* system. Violent crime is a broad category which includes murder and non-negligent manslaughter, forcible rape, aggravated assault, and robbery. Figure 7 shows the violent crime rate based on FBI uniform crime report data from 206 U.S. cities during the baseline period (left of dotted line) and after the group of participants in the Assembly exceeded the requisite number (right of the dotted line). During the experimental phase of the research, violent crime rate was reduced by 18.5% relative to the baseline average and researchers estimated 186,774 crimes were averted. The likelihood of this observed reduction in violent crime being due to chance was a highly significant  $p = 2.7 \times 10^{-8}$  (Dillbeck & Cavanaugh, 2016).

The researchers concluded from this phase of research that, as hypothesized, there was a statistically and practically significant shift in national homicide and violent crime trends in the direction of reduced rates of crime for each of the variables beginning with the onset of the experimental period and the number of participants in the group practice of the Transcendental Meditation and TM-Sidhi program when it exceeded

the requisite 1,725. The authors also report, “Diagnostic tests indicate that key statistical assumptions of the analysis are satisfied. Alternative hypotheses are considered for the apparent effect of macro-level social behavioral change without micro-level behavioral interaction” (Dillbeck & Cavanaugh, 2016, p. 1).

Separately, the authors studied the murder rate. The FBI terminology defining murder reflects culpability and denotes a premeditated assault leading to death. Using a four-year prospective quasi-experiment, as before the researchers considered the relation of ‘forecast’ U.S. murder rate, as predicted by time series analysis, and actual data in the experimental period (Cavanaugh & Dillbeck, 2017a, 2017b). They found that murder, like the more general category of violent crime, displays strong monthly seasonality, with peaks in the hottest months (Julys) and troughs in the coldest months (Januarys). The underlying general trend during the baseline months was slightly rising and shifted significantly to a declining trend in the experimental period starting in January 2007, as shown in Figure 8.



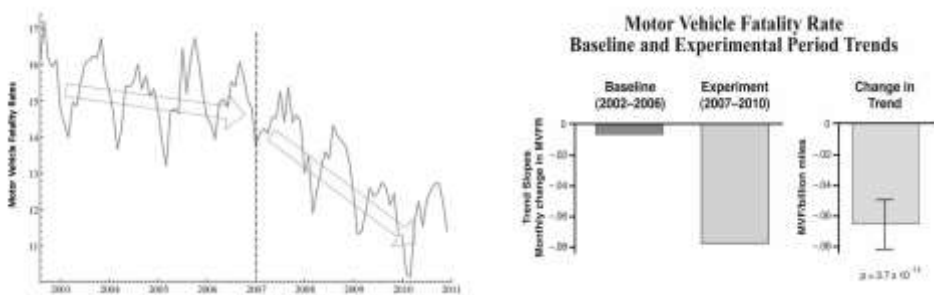
**Figure 8:** U.S. monthly murder rate during the baseline and experimental periods through to 2011 (solid line) and its statistical forecast for the experimental period (top dotted line to the right of the vertical line) had the Maharishi Effect not occurred.

During the experimental period, the actual murder rate declined faster than predicted by its baseline trend and moved increasingly below its forecasted values, which are based on baseline data. The reduction in trend was highly significant ( $p = 1 \times 10^{-13}$ ). This shift in trend implies a 28.4%

decrease in murder rates relative to the baseline average, or 7.1% annually between 2007-2011 with an estimated 4,136 murders averted.

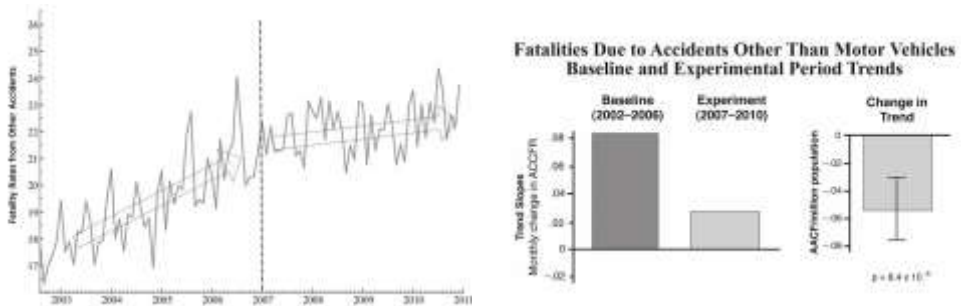
Using essentially the same research design and controls, Cavanaugh and Dillbeck (2017c) also tested the hypothesis that practice of the Transcendental Meditation and TM-Sidhi program by the Invincible America Assembly group between 2007 and 2010 would be sufficient to increase 'conscious alertness' in the larger U.S. population, as measured by reduced rates of motor vehicle fatalities and fatalities due to other accidents. Monthly data for 2002–2010 was analysed using intervention analysis to test for decreased trends in accident rates during the experimental period of 2007–2010. During the experimental period, the trend in the rate of vehicular traffic fatalities per billion miles driven decreased significantly ( $p = 3.7 \times 10^{-13}$ ). The reduction in trend implies a total decrease of fatality rate of 20.6% relative to the baseline average, with an estimated 19,435 fatalities averted between 2007 and 2010, as shown in Figure 9.

Similarly, a downward shift in trend in fatalities from other accidents was also observed during the experimental period ( $p < 8.4 \times 10^{-6}$ ), with the fatality rate decreasing by 13.5% relative to the baseline average, resulting in an estimated 16,759 fatalities averted, as shown in Figure 10. Controlling for pre-intervention trends, seasonality, and autocorrelation, significant shifts in trend, at the predicted time and in the predicted direction, were evident in both series.



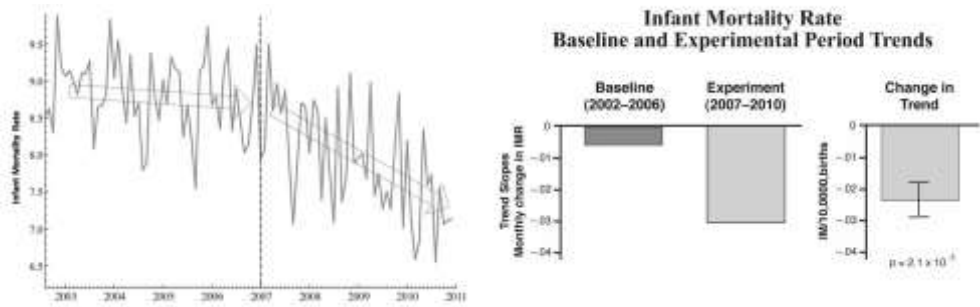
**Figure 9: Left-hand chart** U.S. motor vehicle fatality rates with trend arrows during the baseline period (left of dotted line) and after the group of participants in the Assembly exceeded the requisite number (right of dotted line); **Right-hand chart** trend slopes of monthly changes in motor vehicle fatality rates during the baseline and experimental periods and change in trend for fatalities per billion miles.

These trend shifts indicate an average annual decline of 5.24% in motor vehicle fatalities controlling for vehicle miles travelled, and 3.38% in other accidental fatalities between 2007 and 2010. Thus, the researchers concluded that the Maharishi Effect mechanism for these collective phenomena occurred independently of behavioural interactions, a conclusion discussed in the light of possible alternative hypotheses.



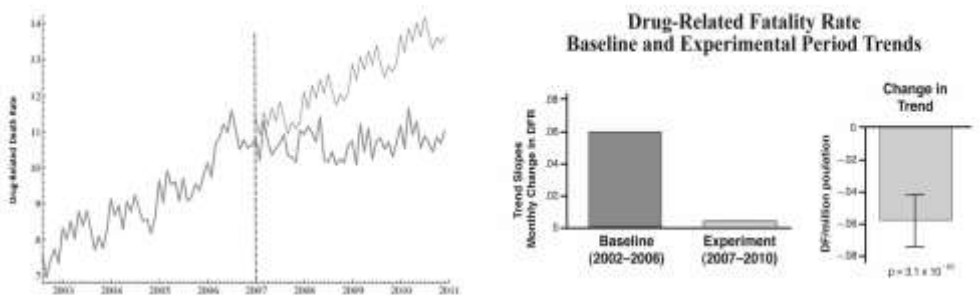
**Figure 10: Left-hand chart** U.S. fatality rates from other accidents with trend arrows during the baseline period (left of dotted line) and after the group of participants in the Assembly exceeded the requisite number (right of dotted line); **Right-hand chart** trend slopes of monthly changes in U.S. other accident fatality rates during the baseline and experimental periods and change in trend for fatalities per million population.

In the final installment of research outcomes relative to the Invincible America Assembly, Dillbeck and Cavanaugh (2017) tested the prediction that group practice of the Transcendental Meditation and TM-Sidhi program by participants in the Assembly would be sufficient to reduce collective stress in the larger U.S. population, reflected in two stress-related health indicators: infant mortality rate and drug-related fatality rate. Based on theoretical prediction and prior research, from January 2007 through 2010 (i.e., the experimental period) evidence of the Maharishi Effect should be measurable when compared to the baseline period of 2002–2006. As in the other analyses, changes in rates of these two indicators during the intervention period were estimated from 2002 through 2010 data using a broken-trend intervention model with time series regression methods. Significant changes in trend for both U.S. infant mortality rate and drug-related fatality rate were evident at the predicted time and in the predicted direction, controlling for preintervention trends, seasonality, and autocorrelation.



**Figure 11: Left-hand chart** U.S. infant mortality rate with trend arrows during the baseline period (left of dotted line) and after the group of participants in the Assembly exceeded the requisite number (right of dotted line); **Right-hand chart** trend slopes of monthly changes in U.S. infant mortality rates during the baseline and experimental periods and change in trend for infant mortality per 10,000 births.

Results from this analysis indicated that during the experimental period, there was a significant acceleration in the already declining baseline trend for the rate of infant mortality, with the infant mortality rate decreasing by 12.5% relative to the baseline average ( $p = 2.1 \times 10^{-5}$ ), implying an estimated 992 infant mortalities averted between 2007 and 2010, as shown in Figure 11.

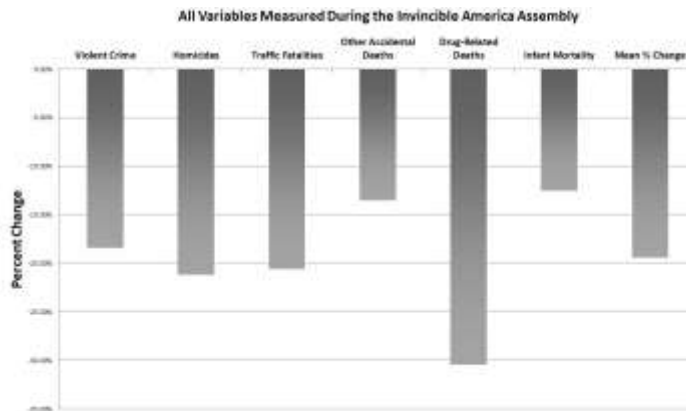


**Figure 12: Left-hand chart** U.S. drug-related fatality rate during the baseline period (left of dotted line). To the right of the dotted line shows what happened after the group of participants in the Assembly exceeded the requisite  $\sqrt{1\%}$  of the U.S. population. The light line shows the statistical forecast of what would have happened if drug related deaths continued increasing as they had been in previous years. The dark line shows the

actual data of reduced trend after the MUM group reached the  $\sqrt{1\%}$  U.S. threshold; **Right-hand chart** Trend slopes of monthly changes in U.S. drug-related death rates during the baseline and experimental periods and change in trend for death rates per million population.

Similarly, the analysis of the rate of drug-related fatalities revealed a significant downward shift during the experimental period of the rising baseline trend of the fatality rate, with drug-related mortality decreasing by 30.4% relative to the baseline average ( $p = 3.1 \times 10^{-10}$ ), with an estimated 26,425 drug-related deaths averted 2007 through 2010, as shown in Figure 12.

The changes in trends were both statistically and practically significant, indicating an average annual decline of 3.12% in infant mortality rate and 7.61% in drug-related fatality rate. Diagnostic tests indicate it is unlikely that the statistical results are attributable to spurious regression. The mechanism for these collective effects is discussed below in view of possible alternative hypotheses.



**Figure 13:** Six U.S. social variables during the baseline and experimental periods.

Figure 13 shows the changes in trends during the experimental period across all six variables—violent crime rates, homicide rates, traffic fatality rates, rate of fatalities from non-vehicular accidents, rates of drug-related deaths, and infant mortality rates—viewed collectively (derived from Dillbeck & Cavanaugh, 2016, 2017, and Cavanaugh & Dillbeck, 2017a, 2017b, 2017c). The difference between baseline and experimental periods is striking, with a mean 19% decrease across all variables.

**Discussion of Alternative Hypotheses.** Most factors that influence violent crime change slowly over time, whereas the effect of the IAA was immediate and predicted in advance. Examples of slow changing factors are: places—community factors, such as poverty, lack of economic opportunities, residential instability, and social networks, that influence a community's ability to control behaviour; and people—individuals prone to criminal activity, such as young adult males ages 18-24. In contrast, the present study predicted and found rapid reductions in crime and other variables beginning at a specific point in time when the  $\sqrt{1\%}$  of the U.S. population was exceeded independent of place or people. The following is a summary of alternative hypotheses that have been ruled out for this research.

**Unemployment** increased during the experimental period, yet crime decreased. According to Richard Rosenfeld, past president of the American Society of Criminology, the recession of December 2007 to June 2009 was the first time that rates of violent crime failed to rise during a substantial U.S. economic downturn since the Second World War. Thus, rising unemployment cannot explain the measured decreases in homicides and violent crime rates over the years 2007-2010.

**Prison population.** During the experimental period, prison admissions were slowing relative to releases, reducing the growth of the U.S. prison population. The decrease in prison population would normally predict an increase in crime, rather than the decrease that actually occurred. Also, according to the U.S. Bureau of Justice Statistics, total U.S. incarceration (i.e., prisons and jails) peaked in 2008 and declined through 2010.

**Percent of youths 18 to 25** predicts increased crime. However, during the intervention period there was an increase in this population, yet crime decreased.

**Higher temperature.** Recent research indicates that higher temperatures are associated with significant increases in interpersonal violence, yet crime decreased during the experimental period even though temperatures reached record highs. Moreover, crime decreased in all months compared to the same months in previous years. This indicates that during the experimental period crime decreased across all temperature conditions, ranging from the hottest months (Julys) to the coldest months (Januarys).

**Policing strategies.** More effective policing strategies may also contribute to reduced rates of homicide and violent crime in some cities; however, cities around the United States would have had to implement



more effective policing strategies almost simultaneously in 2007, which did not happen. Moreover, improved police strategies would be specific to crime only and would not explain decreases observed during the experimental period in infant mortality, drug-related deaths, traffic accident deaths, and deaths due to other kinds of accidents, which were all also observed to decrease during the experimental period.

**Surveillance technology.** Increased use of surveillance technology may have a deterrent effect, particularly on property crime, but violent crime and homicide, to which impulsiveness and alcohol and drug use contribute significantly, may be more resistant to these types of deterrence effects (Roizen, 1997). A nearly simultaneous implementation of new surveillance technologies in cities around the United States would be required to serve as an alternative explanation of the measured effects on crime and would not explain decreases in infant mortality, motor vehicle fatalities, and other measures.

**Social media.** A high level of interconnectedness within and between societies has emerged in the past two decades because of the rise of social media and more instant communication of events nationally and internationally. However, the increased use of social media cannot explain the present results because previous research from the 1980s and 1990s, before the boom in social media, also demonstrated the  $\sqrt{1\%}$  effect, so the effect during those years cannot be attributed to the effect of social media (e.g., Dillbeck, 1990).

Moreover, in the present U.S. studies, from 27% to 50% of the group in different years were young, trained experts from India who had little interaction with the U.S. and international social environment because the majority of this group were not English speakers and because to physically and culturally care for their welfare, separate campus facilities were provided, and the campus had little Internet or social media access. A follow-up study of the Invincible America Assembly for the years 2011 and 2016 found that when the size of the group decreased due to loss of funding, reaching less than 500 by 2016, U.S. murder rates began to increase again (Orme-Johnson, 2017).

Dillbeck and Cavanaugh (2017b, p. 33) conclude that “the findings [of these studies related to homicide and violent crime] suggest both that the intervention studied here—the group practice of the TM-Sidhi program by  $\sqrt{1\%}$  of the population—is effective in reducing violence in urban areas, and that this reduction is not mitigated in more violence-prone areas of the U.S. Therefore, we urge those responsible for government and national strength to replicate and subsequently apply these findings. One of the

most effective settings for doing so is the military, where large groups of individuals are already supported together for the purpose of national strength”.

### **Part 3: Conflict Resolution**

In this section we review studies that have applied the Maharishi Effect and Extended Maharishi Effect to resolve regional, national, and international conflicts.

**Lebanese Village.** In 1984, a prospective social experiment was conducted in the background of the Lebanese civil war. The Transcendental Meditation technique was taught to one percent of a village of 10,000 in the focal region of the war (i.e., Baskinta in Lebanon). There was a complete cessation of hostilities in the village, as measured by incoming shells, property damage, and casualties. In contrast there were worsening trends in the surrounding control villages. Baskinta also improved in social, economic, and ecological conditions after one percent of the population learned the Transcendental Meditation technique, as indicated by improved crop yields, increased social and sporting activities, and accelerated municipal development (Abou Nader, Alexander, & Davies, 1989).

This study demonstrated that teaching the Transcendental Meditation program to 1% of a population of a city can protect the city from the ravages of war. However, because the stresses and other factors that produce war involve interactions within and between entire nations, conflict resolution and prevention need to be on the national and international levels, ultimately creating coherence for the whole world. For this, it is much more feasible to use the Extended Maharishi Effect, which only requires engaging the square root of one percent of a population in group practice of the Transcendental Meditation and TM-Sidhi program, including Yogic Flying. The following sections describe research using this approach.

**The World Peace Project.** Immediately following the discovery of the Extended Maharishi Effect in late 1978, Maharishi decided to apply it to resolve conflicts in the international arena (World Government of the Age of Enlightenment, 1979). More than 1,400 experts in the Transcendental Meditation and TM-Sidhi program were sent for approximately two months (November and December 1978) to several trouble spots of the world, including Central America (Nicaragua), the Middle East (Lebanon), Southern Africa (Rhodesia-Zimbabwe and Zambia),

and to Southeast Asia (Thailand), as well as to surrounding countries. Their effect was studied using an independent data base, the *Conflict and Peace Data Bank* (COPDAB), 1948-1978: Daily Aggregations (Azar, 1982). The COPDAB file is the largest daily data bank in the world coding for conflict in international affairs, including data from over 70 major news sources.

During the World Peace Project, the percentage of hostile actions between countries as well as between factions within the trouble spots decreased 36% relative to the baseline period, and cooperative events increased by 37%. The proportional reduction in hostile acts in these trouble-spot countries was twice as great as the change at that time in the rest of the world, which was used as a control (Orme-Johnson, Dillbeck, Bousquet, & Alexander, 1989).

The COPDAB data also showed that the type of events shifted significantly from military issues (e.g., troop deployment, security pacts, defense treaties, wars, prisoner-of-war releases or exchanges, guerrilla raids, etc.) to non-military issues (e.g., cultural, economic, political order, legal, human environmental, physical environmental, and natural resources). Thus, conflict decreased for the time that the groups of Maharishi's Transcendental Meditation and TM-Sidhi participants were in or near the trouble spot areas. Moreover, cooperation increased, and balance was restored as seen in increased non-military interactions. This finding can be interpreted as a shift in the focus of collective consciousness from destruction toward cooperative interaction as stresses in collective consciousness began to be neutralized and coherence increased.

**International Peace Project in the Middle East.** A major experimental test of the application of the Maharishi Effect to resolve international conflicts took place in 1983 in Israel during the war in Lebanon for a two-month period (August and September) (Orme-Johnson, Alexander et al., 1988). The project, designed to simultaneously measure the impact of group practice of the Transcendental Meditation and TM-Sidhi program on quality of life in Israel and the war in Lebanon, was funded in part through a grant in honor of William Ellinghaus, then president of American Telephone and Telegraph Company, from the *Fund for Higher Education*.

Predictions were lodged in advance with scientists in the U.S. and Israel. The variables, such as traffic accidents, crime rate, and fires, all of which are major problems in Israel, were selected to measure quality of life because they had been used in previous experiments. As a measure of the war in Lebanon, two war variables—war deaths and war intensity—were derived by content analysis of a major newspaper and other media

sources using a scaling method modeled after Azar (1982). Other variables included the Israeli national stock market and the national mood from content analysis of a major newspaper. All variables were derived from publicly available data sources. The independent variable, the group size of Transcendental Meditation and TM-Sidhi participants, was sent on three different occasions to members of the review board before any of the data analysis was undertaken.



**Figure 16:** The number of participants in the Transcendental Meditation-Sidhi program over a 61-day period and its association to a composite index of quality of life.

During the first two weeks, the number of participants rose gradually in response to a call for the project, and then remained high for a 13-day period, after which they fluctuated. The 13-day high period was created at an arbitrarily selected time in order to approximate as closely as practical a true random-assignment experiment. During this 13-day period, war deaths were a mean of 1.5 per day compared with a mean of 33.7 per day for the 13-day periods immediately before and after the experimental period.

As shown in Figure 16, the overall composite index composed of all the variables mentioned above, and the size of the coherence-creating group closely track one another. Statistical analysis using the Box-Jenkins (1976) ARIMA (auto-regressive, integrated, moving averages) time series methods of transfer functions showed that change in the size of the coherence creating group significantly led change in the composite index by one day, controlling for any seasonal fluctuations in the data, as well as controlling for changes in weather and holidays. This means that the up and down variations in size of the coherence creating group were followed

by a corresponding variation in the overall quality of life in the region, supporting a causal interpretation.

Using two time-series methods—transfer function and impact assessment—all the individual and composite variables were found to be statistically significant. Of particular interest was an index of the war in Lebanon, computed as the arithmetic mean of the normalized (Z-transformed) war deaths and war intensity variables. This variable was subjected to an exhaustive time series analysis and the results were verified using 14 alternative specifications of the ‘noise’ model. The noise model is the mathematical model of the dependent variable (the index of war) that statistically removes all cycles, trends, and drifts from the data (hence reducing its noise with respect to any time-dependent structure it may have had; that is, by removing spurious effects so that the effect of the independent variable can be accurately evaluated).

Then the independent variable (i.e., the coherence creating group) was entered into the equation to see if it had an independent effect on the war. Because cycles in sociological data are statistical (i.e., stochastic) rather than exact, there can usually be alternative ways of modeling, i.e., there may be alternative specifications of the noise model. One objective criteria of ‘best’ model is minimization of the *Akaike Information Criterion* (AIC) (Akaike, 1973), which provides the model with the optimal balance between the opposing goals of parsimony and model fit when evaluating model order and model structure. The model with the lowest AIC indicates the model that gives the best prediction with the least numbers of parameters (Larimore, 1983, 1986; Larimore & Mehra, 1985).

By analyzing 14 alternative noise models of the war index, the author’s found that the better the noise model (i.e., the lower the AIC) the more highly statistically significant was the effect of the coherence creating group on reducing the war. This finding indicates that the observed effect was not spuriously due to one particular noise model only. Moreover, this analysis showed that as more of the background variation in the index of war was accounted for by better noise models, the more clearly the effect of the coherence creating group emerged from the data ( $t = 5.0, p < .0001$  for the best model). There were several interesting aspects about this data which support a causal interpretation that increasing the size of the coherence creating group *caused* a reduction in the war in Lebanon.

- 1) During the arbitrarily selected period when the group size was experimentally increased by offering incentives to course participants, the war in Lebanon subsided dramatically.

- 2) The results of time series analyses were robust with respect to different specifications of the noise model and the best model yielded the most significant effect, as noted above. This shows that the reduction in hostilities during days when the coherence creating group increased was not due to a spurious correspondence of changes in the size of the coherence creating group due to already existent cycles or trends in the data, nor was it due to any unknown variable(s) that might be causing these variations.
- 3) The 15 out of 61 total days when the group was largest were randomly distributed over the experiment, yet there were 76% fewer war deaths during these days compared to the 15 days when the group was smallest.
- 4) The results could not be accounted for by holidays or temperature, whose effects were accounted for by entering them as separate control variables in the time series analysis.
- 5) None of the dependent variables systematically led in time the changes in the size of the coherence creating group, whereas the group size did lead changes in many of the dependent variables, suggesting causality, because the cause must precede or be at the same time as the effect. In the case of the index of war variables there was a same day (lag 0) effect, indicating that the war decreased on the same day that the coherence creating group increased. In this case, it is significant to note that the group met in the morning and early afternoon, whereas if hostilities occurred, they usually did so in the evening. Thus, even for lag 0, the meditator variable generally preceded the fighting in Lebanon by several hours. On days when the size of the coherence-creating group increased, fighting was less a few hours later.

These different results support a causal interpretation of the findings, indicating that the Maharishi Effect caused the reduction in armed conflicts and improvements in quality of life (Orme-Johnson, Alexander et al., 1988, p. 804; Orme-Johnson, Alexander, & Davies, 1990).

Another significant finding of this study was that when the individual variables were combined into a composite index, the results were the clearest. For example, as can be seen in Figure 16, the overall composite index of all variables closely tracked the size of the coherence-creating

group. Adding the individual variables together is a type of signal averaging that enhances their common variance by canceling out differences between variables and adding together changes that they have in common. As a result, the composite of all the variables most clearly shows their common variance. The finding that changes in the composite variable correspond most clearly to changes in the coherence-creating group size is strong empirical evidence that the common variance underlying these diverse social processes was in fact generated by the coherence creating group functioning at a fundamental level of Natural Law (Orme-Johnson, Alexander et al., 1988, p. 806).

**Cultural, Military, Political, and Climatic Events in Israel.** More recent research has investigated the Maharishi Effect phenomenon and cultural, military, political, and climatic events in Israel (Orme-Johnson, 2016). The study first considered the effects of various salient events in Israel on the Overall quality of life index, which were used in previous research (i.e., Orme-Johnson, Alexander et al., 1988). The Overall index is the arithmetic mean of the normalized (*Z*-transformed) crime, auto accidents, fires, national mood, the stock market, and the war intensity in Lebanon. Vacations had a large effect on improving the Overall index (effect size  $d = 1.25$ ,  $p < .00001$ ). Summer heat and the resignation of Prime Minister Begin had a moderate to strong effects on decreasing the index ( $ds = -.78$  and  $-.89$ , respectively,  $p < .004$ ). These findings validate that the index was sensitive to a variety of events, and therefore is a good reflection of the collective consciousness of the country.

The effect of the Transcendental Meditation and TM-Sidhi group on the Overall index was stronger than any of the cultural, military, political, or climatic events studied (effect size  $d = 1.64$ ,  $p < .00001$ ). Moreover, as noted in a previous paper, the effect of the group on the index was robust under different conditions, during workdays as well as during vacations, during hot days as well as cool days, before as well as after the Israeli military withdrawal from Lebanon, and during the Begin resignation period as well as at other times ( $p$ 's ranged from .003 to .0000001). These results support the theory that the Maharishi Effect operates on the fundamental level of the unified field of Natural Law, which is transcendental to and independent of relative changing values of cultural, political, military, and climatic events.

The next phase in the study used factor analysis. Factor analysis mathematically analyses the pattern of correlations among a set of different observed variables to infer a few unseen underlying unifying factors or latent variables that explain much of the diversity that is

observed among the different measures. For example, in this study in the Middle East, factor analysis reduced the seven observed variables to two factors that explained 57% of the variance in the factors (Orme-Johnson, 2016). Factor 1 reflected war deaths, war intensity, the national mood, and stock prices, while factor 2 reflected crime, fires, and auto accidents. The Begin resignation and the withdrawal of the Israeli army had a negative impact on Factor 1.

That is, during that period war increased and stock prices and national mood declined. This means that the country went into a kind of depression, with stock prices falling and the national mood turning negative during the two-week period of Prime Minister Begin's resignation. The withdrawal of the Israeli army was related to the Begin resignation because, while the government had to reorganize at that time, they withdrew their army from an aggressive position deep within Lebanon to a defensive position of only defending their own border. This manoeuvre was widely approved of by the international community.

Vacations and temperature changes, on the other hand, had no significant effect on Factor 1. This means that the war, stock market, and national mood were independent of the daily changes in temperature, weekends, and holidays. However, vacations, cool days, and the military withdrawal were associated with improvements in Factor 2 (fewer crimes, auto accidents, and fires. During vacations, when the weather was nice, and while the government was reforming, people were nicer and more cautious, committing fewer crimes and making fewer accidents and fires.

Only the Transcendental Meditation and TM-Sidhi group had a significant and positive effect on both Factors 1 and 2. Its effect on Factor 1 was over twice as strong as that on Factor 2 ( $d = 1.52, p < .0000004$  and  $d = .67, p < .01$ , respectively). Why did practice of the Transcendental Meditation technique have a stronger effect on Factor 1? Factor 1 may be interpreted as a *collective-actor* dimension of social indicators, which reflects the motivations and actions of society as a whole. For example, war, a Factor 1 variable, represents actions taken on behalf of the nation as a whole. In contrast, crime, a Factor 2 variable, represents actions taken by individuals within society committed on their own behalf.

The behaviours for war and crime may be similar in both cases: armed aggression. However, one is aggression by the whole society while the other is aggression by an individual within society. Similarly, the stock market and the national mood reflect the nation as a whole. Thus, Factor 1 reflects a deeper reality underlying war deaths, war intensity, stock prices, and national mood, namely that they are all manifestations of a collective



organism, if you will. It is this collective entity that is most influenced by the group practicing the Transcendental Meditation and TM-Sidhi program.

In contrast, Factor 2 appears to represent *individual-actor* variables, which reflect individually motivated behaviours in society, as indicated by criminal behaviour, driving skill, and domestic fires. These behaviours represent actions of the individual, by the individual, for the individual. This interpretation of the results suggests the effect of the Transcendental Meditation and TM-Sidhi group was stronger on society (in this case, Israel) as a holistic entity than on the personal behaviour of individuals within that society.

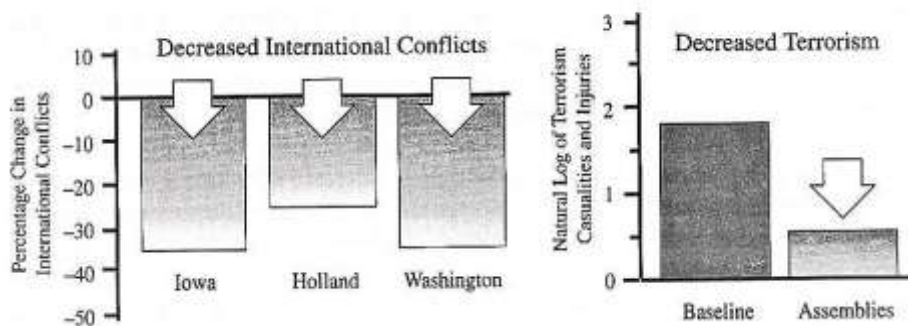
This conclusion supports Maharishi's view that this technology operates from the unified field level of Natural Law. The levels of consciousness from universal to localized individuals can be visualized in terms of a Venn diagram. The largest circle encompassing everything would represent the unified field of consciousness, pure consciousness, the Self of all beings. Within that would be national consciousnesses and within each of those the consciousnesses of the individual citizens within the nations. When a sufficient number of individuals in society directly experience the unified field within themselves through the Transcendental Meditation and TM-Sidhi program, it enlivens coherence on the universal level, which first influences the nation, and secondarily affects the individuals within the nation.

**Replication of Reduced War in Lebanon.** Experimental replication is the most powerful test of the reliability of a new discovery. The above results on the Lebanon war have now been replicated *seven* times with a statistical probability of less than  $10^{-19}$ , or one in ten million trillion that the results were due to chance (Davies, 1992; Davies & Alexander, 2005). These studies found that during the seven coherence-creating assemblies large enough to have a predicted impact on the war in Lebanon war fatalities decreased by an average of 71%, war injuries decreased by 68%, and cooperation among antagonists increased by 66%. The degree of statistical significance of this finding is unheard of in even the physical sciences, lending strong support to the reliability and legitimacy of the theory and empirical evidence of the Maharishi Effect and Extended Maharishi Effect. In the next section we turn to studies on the global level.

**Global Maharishi Effect.** Research showing that coherence creating groups can reliably quell regional conflict makes it imperative to establish groups large enough to create coherence for the whole world. After seeing the results of the first study in the Middle East, even before the evidence of extensive replication was amassed, Maharishi in late 1983 inspired his

international organisation to create an assembly of 7,000 practitioners of the Transcendental Meditation and TM-Sidhi program, then the square root of 1% of the world's population, to give the world a 'Taste of Utopia' (Maharishi International University, 1984).

In addition, he initiated a tradition of holding large 'World Peace Assemblies' every quarter in the hopes of raising world consciousness and demonstrating effects that would inspire world leadership to establish permanent coherence-creating groups as a sustained peace-keeping force in every country. A study of the effects of these assemblies on worldwide international conflicts, terrorism, and economic confidence was presented at the *American Political Science Association* and *American Psychological Association* in 1989 and 1990, respectively (Orme-Johnson, Dillbeck, Alexander, Chandler, & Cranson, 1989; Orme-Johnson, Cavanaugh, Alexander, Gelderloos, Dillbeck, Lanford, & Abou Nader, 1989) and was supplemented by the work on international conflict and preventing terrorism of Orme-Johnson, Dillbeck, and Alexander (2003).



**Figure 17:** Impact of three World Peace Assemblies in Iowa, Holland, and Washington, D.C. on **Left-hand chart** international conflicts and **Right-hand chart** terrorism.

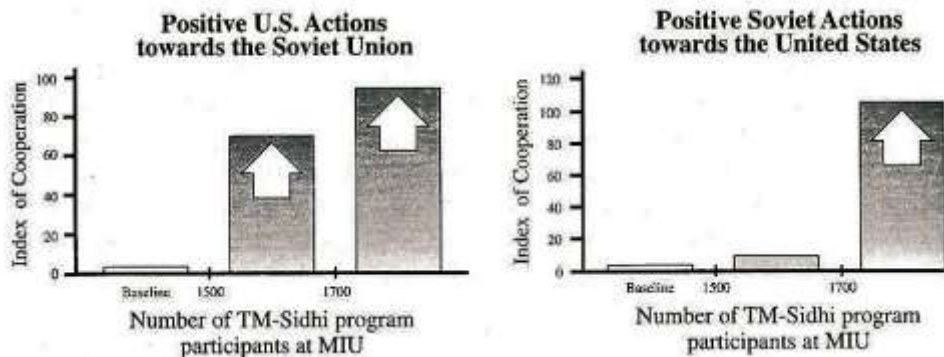
As shown in Figure 17, this study found that on the three occasions when World Peace Assemblies held at Maharishi International University in Iowa, in Holland, and in Washington, D.C., approached the 7,000 threshold needed for global coherence, international conflicts decreased by more than 30%, according to a content analysis of the *New York Times* and *London Times*, and that international terrorism decreased by more than 70%, using data compiled by the Rand Corporation (Orme-Johnson, Dillbeck, & Alexander, 2003).

In addition, the World Index of international stock prices in the 19 major industrial countries increased significantly, indicating increased economic confidence. As in other studies, time series analysis ruled out the possibility that the results were spuriously due to cycles, trends, or drifts in the measures used. The study also showed that the results were not due to changes that usually occur during the year-end holiday seasons when two of the assemblies were held (Cavanaugh, Orme-Johnson, & Gelderloos, 1989).

**Improved U.S.-Soviet Relations.** The most dramatic political change of the twentieth century is the warming of relations between the superpowers with its enormous worldwide implications. In some of the studies reviewed above, the Maharishi Effect had a calming effect in trouble-spot areas in which the Americans and Soviets were involved on opposite sides, indicating indirectly and sometimes directly that coherence-creating groups soothed the relations between the superpowers (Orme-Johnson et al. 1988). This evidence is further strengthened by studies of the statements of heads of state. According to Maharishi's principles of collective consciousness, the statements of a head of state reflect the quality of national collective consciousness in that country because the head of state is the "innocent mirror of national consciousness" (Maharishi, 1976, p. ?). For example, one study analyzed statements aggregated weekly by the then President of the United States (i.e., President Reagan) published by the U.S. Government's Office of the Federal Register of National Archives and Records Administration in the *Weekly Compilation of Presidential Documents* from April 1985 to September 1987. Box-Tiao impact assessment analysis revealed a highly significant effect of the collective practice of the Transcendental Meditation and TM-Sidhi program at Maharishi International University on improving U.S.-Soviet relations (Gelderloos, Frid, & Xue, 1989; Gelderloos, Frid, Goddard, Xue, & Loliger, 1988). When the number of participants in the group was largest (1,865 or more), there was an immediate improvement in the President's statements that same week. Smaller group sizes (1,765 to 1,864) also had a positive effect, but in the following week. These findings indicate that increased coherence in U.S. national consciousness through the Maharishi Effect was reflected in the increased positivity of President Reagan's statements about the USSR.

Another study on the effects of the MIU Super-Radiance group on U.S.-Soviet relations used data from the *Zurich Project on East-West Relations*, which tracked U.S.-Soviet relations by content analysis of news events from 1979 to 1986 (Gelderloos, Cavanaugh, & Davies, 1990, 2011). The

study divided the size of the group into quartiles: less than 1,100 participants; 1,100-1,500 participants; 1,500-1,700 participants; and above 1,700 participants. When the group size reached the threshold of the square root of 1% of the U.S. population (i.e., 1,500-1,700 participants), U.S. actions towards the Soviets were demonstrably and significantly more positive (i.e., more cordial, friendlier, and constructive).



**Figure 18: Left-hand chart** Relation of large coherence-creating groups and actions of U.S. towards the Soviet Union, and **Right-hand chart** actions of the Soviet Union towards the United States.

As shown in Figure 18, U.S. behaviour towards the Soviet Union became even more positive when the group was over 1,700 participants. Moreover, Soviet Union behaviour towards the U.S. also became significantly more positive when the group was over 1,700 (Gelderloos et al., 1990, 2011). This data is the first empirical demonstration of why East-West relations suddenly and unexpectedly improved at that time.

A follow-up study (Cavanaugh & Gelderloos, 1991, 2011) found an even larger improvement in Soviet behaviour toward the United States during and shortly following large, global World Peace Assemblies in which the number of participants approached or exceeded the number required to create the Global Maharishi Effect: 7,000, the square root of 1% of the world's population at that time. The significant improvement in Soviet actions toward the U.S. was 63% larger than the improvement found in Gelderloos et al. (1990, 2011) for all peace-creating groups of 1,700 or more.

The Maharishi Effect on an international scale, the Global Maharishi Effect, represents a global rise in coherence in world consciousness through sufficiently large groups of individuals practicing Maharishi's

Transcendental Meditation and TM-Sidhi program together at the same time. Creating coherence in national and world consciousness has dramatically changed the historical destiny of our time.

## **CONCLUSION**

Only a technology that operates from the unified field of nature's intelligence could be powerful enough and unifying enough to bring harmony to all the diversity of cultures and political systems in the world. Just as quantum field theory has provided a deeper level of analysis of physical phenomena which complements the value of the classical level of analysis, so too a deeper level of analysis of social phenomena is possible which complements the behavioural levels of analysis of contemporary social science theory. Studies of the Maharishi Effect provide empirical demonstration of the efficacy of such an approach.

Methodologically, the studies on the Maharishi Effect are the first experimental research in history to repeatedly demonstrate improvements in the quality of life on the city, state, national, and world levels and to resolve real conflicts on national and international scales. These studies have used state-of-the-art statistical methodologies. There is no other research program in the conflict resolution literature that is more directly relevant and more rigorously validated for creating world peace than Maharishi's. The studies have been replicated on many different populations across a variety of measures in virtually all of the world's major conflicts.

The studies are not 'cherry picking' instances in which only positive outcomes were found. They have included all the 1% cities (Borland & Landrith, 1977; Dillbeck et al., 1981), the entire period of the MIU/MUM coherence-creating group since its inception in 1979 in studies of violent death and inflation/unemployment (e.g., Dillbeck, 1990; Cavanaugh, 1987), and all cases in which the size of a group was large enough to have a predicted impact on the Lebanon war (e.g., Davies & Alexander, 2005) or on the world (Orme-Johnson, Dillbeck, & Alexander, 2003). With all of this evidence and profound theory, if this technology of peace is not being implemented it can only be because all the stakeholders do not yet appreciate that it would benefit everyone, all factions of society in all nations. The people of the world deeply desire peace and prosperity for themselves and for the generations to come. Here is an easily implemented, scientifically proven path to a bright future for humanity of universal harmony, mutual respect, peace, health, justice, prosperity, and joy.

Maharishi (1986b, pp. 21-24) outlined three simple steps to permanent world peace. First step: Create coherence in world consciousness through establishing a permanent group of 7,000 to 10,000 experts in Maharishi's Transcendental Meditation and TM-Sidhi program. For safety, such large groups should be established on every continent. Second step: Create coherence in national consciousness in every country by establishing a coherence-creating group numbering the square root of one percent of that nation's population. Third step: Create coherence in each city by establishing a coherence-creating group numbering the square root of one percent of each city's population in every country. As Maharishi (1986b, p. 163) has commented:

Whether it's done by individuals in the continent or by governments, whoever creates the groups of 7,000 will have the flag of eureka! for world peace. I don't see any other effective program for world peace.

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