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Higher States of Consciousness in the Vedic Psychology of Maharishi Mahesh Yogi: A Theoretical Introduction and Research Review

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Abstract

This paper provides a theoretical introduction and review of research on higher states of consciousness described in the Vedic Psychology of Maharishi Mahesh Yogi. Both cross-sectional and longitudinal studies indicate that practice of the Maharishi Technology of the Unified Field, which includes the Transcendental Meditation (TM) and TM-Sidhi programs, accelerates the rate of development of higher states of consciousness compared to control groups, as assessed by the State of Consciousness Inventory and other measures. Increased frequency of experiences of higher states of consciousness is correlated with: (a) increased alpha and theta EEG coherence, Hoffman reflex recovery, and periods of respiratory suspension during TM practice indicative of a qualitatively distinct state of restful alertness; (b) increased self-actualization, attentional focus, creativity, fluid intelligence, and cognitive-perceptual abilities; (c) increased clarity and frequency of TM-Sidhi performances such as enhanced mind-body coordination and refinement of sensory thresholds; and (d) decreased anxiety, aggression, depression, and introversion. These results support the hypothesis that the Maharishi Technology of the Unified Field unfreezes human development typically fixed at the ordinary level of adult conceptual thought, allowing natural development to higher states of consciousness beyond the known endpoints proposed in current Western psychology.

Many outstanding individuals throughout history have described exalted inner experiences as the most meaningful and fulfilling events in their lives and the source of inspiration for their contribution to humanity. Plato (1901), Hegel (1931), James (1929), and Maslow (1962), among others, have emphasized the importance of such subjective states and have sought to identify their role in understanding the range of human knowledge and experience.

From a developmental perspective, these exalted states may serve as important candidates for the highest stage or "endstate" of human development. A formal description of the endstate is fundamental to developmental theory because it provides a comprehensive basis for understanding the full range of human potential, delineating stages of growth, and evaluating methods to promote growth (Kohlberg & Armon, 1984; Langer, 1969).

A century ago, at the beginning of modern psychology, James (1929) recognized that if exalted inner experiences were as significant as they appeared, they would represent the

pinnacle of human knowledge and aspiration. James approached this subject at a crucial historical turning point between philosophical and scientific approaches to psychological processes. He appreciated the rich inheritance of understanding about consciousness and self-knowledge from both Western and Eastern philosophical traditions, but he also appreciated the value of the systematic empirical approach in the emerging science of psychology. When James attempted to develop an empirical classification of inner experiences, he encountered difficulty in bridging the gap between the typically fleeting and ineffable nature of these experiential states and the demands of repeatability and experimental rigor in empirical research. He concluded that while such experiences were of great personal and even historic significance, scientific psychology should focus on more readily accessible and quantifiable mental states (James, 1890).

Based on intensive personal interviews of exceptional individuals, Maslow (1962, 1976) developed in the 1950s a descriptive theory of self-actualization that emphasized the connection between exalted states, which he called peak or transcendental experiences, and higher levels of human growth. Although his theory contributed significantly to the current popularity of the concept of human potential and stimulated initial research, it has not generated extensive cumulative evidence nor led to formal models of the stages and endstate of human ontogenesis.

Contemporary developmental psychology has continued the search for the endstate of human development through empirical research (Alexander, Langer, & Oetzel, 1987; Commons, Richards, & Armon, 1984). This research has focused largely on describing the stages of growth typically experienced during late adolescence and early adulthood. The stage of adult logical thought, termed *formal operations* (Inhelder & Piaget, 1958; Piaget & Inhelder, 1969), is now most frequently theorized to be the endstate of cognitive development. Several theorists have attempted to characterize higher development by proposing that more complex postformal modes of operational thought can be developed through training in effective utilization of available cognitive resources (e.g., Fischer, Kenny, & Pipp, 1987). However, there has been very little consideration of developmental theories sufficiently far-reaching to incorporate stages of growth suggested by exalted inner experiences of potentially higher states of consciousness.

Until recently, research psychologists avoided serious consideration of such exceptional inner experiences, largely because of the lack of a sufficiently comprehensive theoretical framework to interpret the significance of the reported experiences, the lack of an experimental paradigm to test the verity of the experiences, and the lack of a systematic subjective methodology to replicate the experiences. Although some psychologists have recognized the potential relevance of these subjective experiences to developmental theory, there has been general agreement with James that these states are very rare, transient, and difficult to investigate experimentally. It has been estimated that as little as one-tenth of one percent of the college population may have access to such experiences (Loevinger, 1976, p. 140).

Recent evidence, however, suggests that regular practice of the Maharishi Technology of the Unified Field rapidly accelerates the rate of experiences of higher states of consciousness and may give rise to stable higher stages of development. An extensive body of research accumulated over the past 15 years (Chalmers, Clements, Schenkluhn, & Weinless, in press; Orme-Johnson & Farrow, 1977) indicates this subjective technology systematically produces beneficial physiological, psychological, and behavioral effects expected to be associated with higher stages of human growth (Alexander, Davies, Dillbeck, Dixon, Oetzel, Muehlman, & Orme-Johnson, in press). These findings strongly suggest the Maharishi

Technology of the Unified Field is a major technological advance that provides a much-needed developmental methodology for investigating higher states of consciousness and the full range of human potential.

This subjective methodology is supported by a comprehensive theory of development of consciousness described in the Vedic Psychology of Maharishi Mahesh Yogi (Maharishi, 1986a; Orme-Johnson, Dillbeck, Alexander, van den Berg, & Dillbeck, in press). Maharishi Mahesh Yogi is the founder of the Transcendental Meditation (TM) and TM-Sidhi programs, the Science of Creative Intelligence, and Maharishi Vedic Science (Maharishi, 1966, 1969, 1972, 1977, 1978, 1986a, 1986b).

Maharishi Vedic Psychology is based on the *Veda,* the oldest continuous tradition of knowledge, which emphasizes direct subjective experience in the unfoldment of full human potential. Veda is a Sanskrit word that means pure knowledge. Maharishi (1986a) defines pure knowledge as complete knowledge of the knower, the process of knowing, and the known in their unified state. He has revived this ancient tradition of knowledge and has clarified in contemporary scientific terminology the understanding of all the laws of nature it contains (Dillbeck, 1983; Maharishi, 1972, 1978). This contemporary understanding of the Veda as interpreted by Maharishi is referred to as Maharishi Vedic Science because of its systematic methodology and comprehensive, verifiable description of this knowledge. Whereas modern science focuses primarily on the objects to be known, Maharishi (1986a) states that Vedic Science provides comprehensive knowledge of the knower and process of knowing as well.

We propose that the sequence of higher states of consciousness described in Maharishi Vedic Psychology represents the natural continuation of human development beyond the stage of adult formal operations. We suggest that these exalted states are not mystical in the sense of being momentary experiences which are inherently ineffable or incomprehensible, but may reflect a developmental level of subtlety and comprehensiveness that goes beyond the level which can be readily appreciated within the boundaries of ordinary adult thought. Developmental research has demonstrated that subjects typically have difficulty comprehending the reasoning of individuals functioning at higher stages of development than their own (Kohlberg, 1969; Rest, Turiel, & Kohlberg, 1969).

We are currently engaged in a research program at Maharishi International University to examine in detail the relationship between frequency of these subjective experiences reported by practitioners of the Maharishi Technology of the Unified Field and indicators of advanced human development. This paper reviews research that applies the methods of modern science to test predictions about higher states of consciousness derived from Maharishi Vedic Science. The first section of the paper outlines the theory of development of consciousness described in Maharishi Vedic Psychology. The second section relates Vedic Psychology to developmental theory in current Western psychology and summarizes research on the impact of the Maharishi Technology of the Unified Field on cognitive development. The third section examines research using the State of Consciousness Inventory (SCI), a psychometric instrument designed to assess frequency of experiences of higher states of consciousness based on subjective reports. Findings on the physiological, personality, and cognitive-perceptual correlates of experiences of higher states of consciousness are reviewed in the fourth section. The paper concludes with a discussion relating these empirical findings to the frequency, structure, and correlates of experiences of higher states of consciousness predicted by Maharishi Vedic Psychology.

MAHARISHI VEDIC PSYCHOLOGY OF HUMAN DEVELOPMENT

The theory of human development in Maharishi Vedic Psychology identifies seven states of human consciousness, which include four higher states of consciousness distinct from the three psychophysiologically defined states of waking, dreaming, and sleeping. According to the theory, development of higher states is naturally accelerated through practice of the Maharishi Technology of the Unified Field. This technology includes the TM and TM-Sidhi programs (Maharishi, 1972, 1986a).

The TM technique is described as a simple, natural mental procedure that allows the individual to experience less excited, increasingly refined levels of mental activity and to go beyond all excited states of the mind to the least excited state of mental activity, called *transcendental consciousness* (Maharishi, 1969). The TM-Sidhi program includes advanced mental techniques that enhance mind-body coordination and foster the ability to operate from the level of transcendental consciousness, thus accelerating growth to higher states of consciousness (Maharishi, 1978, 1986a). Transcendental consciousness is central to the theory of seven states of consciousness in Vedic Psychology because it is the basis on which all higher stages of development take place.

Transcendental Consciousness: The Fourth State of Consciousness

A large body of research has indicated that during practice of the TM technique a fourth major state of consciousness, transcendental consciousness, is produced (Chalmers, Clements, Schenkluhn, & Weinless, in press; Orme-Johnson & Farrow, 1977). Wallace's (1970a, 1970b) landmark research was the first to suggest that transcendental consciousness represents a unique state of restful alertness. Recent studies have shown that periods in which subjects indicate experiencing transcendental consciousness during TM practice are highly correlated with enhanced alpha and theta EEG coherence suggestive of higher alertness, and with periods of respiratory suspension and decreased heart rate indicative of physiologic rest (Badawi, Wallace, Orme-Johnson, & Rouzeré, 1984; Orme-Johnson & Haynes, 1981).

Subjective reports describe the fourth state of consciousness as heightened inner wakefulness accompanied by deep silence and rest, a state in which all activity of feeling, thinking, and perceiving has come to rest, yet awareness remains wide awake with no objective content to experience. Maharishi (1977) characterizes the experience of transcendental consciousness during the TM technique as follows:

> The Transcendental Meditation technique is an effortless procedure for allowing the excitation of the mind to gradually 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 difference, beyond the division of subject and object—transcendental consciousness. (p. 123)

According to Maharishi Vedic Psychology, the TM technique is an effective means of experiencing transcendental consciousness because it employs the natural tendency of the mind to seek experiences of greater intelligence and happiness. During practice of the TM technique, the mind effortlessly and spontaneously attends to increasingly subtle levels of thought because they are progressively more charming. Conscious awareness eventual-

ly comes to identify with transcendental consciousness beyond the finest level of mind because it is the ultimate source of intelligence and inner contentment (Orme-Johnson, Dillbeck et al., in press). Maharishi (1966) explains:

> To go to a field of greater happiness is the natural tendency of the mind. Because in the practice of Transcendental Meditation the conscious mind is set on the way to experience transcendental, absolute being [unchanging pure consciousness], whose nature is bliss-consciousness, the mind finds the way increasingly attractive as it advances in the direction of bliss. (p. 55)

Transcendental consciousness is the most basic ground state of mental activity, not bound by any thoughts or perceptions. It is a state of clear inner wakefulness in which the knower, process of knowing, and known are experienced as one undifferentiated, unified field of consciousness. In the ordinary recursive thinking of the adult waking state, the knower perceives objects of experience as external and separate from himself. The individual self is experienced as localized or bound in time and space. This is why Maharishi (1969) refers to the status of the self experienced in the normal waking state as the *small* or *lower self.* In contrast, in transcendental consciousness, the Self is realized as an unbounded unified field of pure consciousness at the basis of the individual psyche. Maharishi (1969) describes this experience of the Self in transcendental consciousness:

> Self has two connotations: lower self and higher Self. The lower self is that aspect of the personality which deals only with the relative aspect of existence. It comprises the mind that thinks, the intellect that decides, the ego that experiences. This lower self functions only in the relative states of existence—waking, dreaming and deep sleep.... The higher Self is that aspect of the personality which never changes, absolute Being [pure consciousness], which is the very basis of the entire field of relativity, including the lower self.
>
> A man who wants to master himself has to master the lower self first and then the higher Self. Mastering the lower self means taking the mind from the gross fields of existence to the subtler fields, until the subtlest field of relative existence is transcended. (p. 339)

Maharishi (1986a) identifies transcendental consciousness and the higher states of consciousness as *self-referral* states. Self-referral means that the Self is fully awake within itself. Self-referral does not involve the recursive thinking characteristic of the adult waking state in which the knower knows himself only indirectly through the active states of feeling, thinking, and perceiving. Rather, in the least excited, simplest state of the mind, transcendental consciousness, awareness is directly awake to itself as a silent, unified field of pure consciousness.

Transcendental Consciousness as the Unified Field

Maharishi describes transcendental consciousness as a unified field of consciousness at the source not only of the individual psyche but also of all the laws of nature expressed in objective creation. Maharishi (1977) states:

> It is a field of all possibilities where all creative potentialities exist together, infinitely correlated but as yet unexpressed. It is a state of perfect order, the matrix from which all the laws of nature emerge, the source of creative intelligence. (p. 123)

Maharishi (1986a) has identified in the ancient records of the Veda precise descriptions of the structure and dynamics of this unbounded unified field of natural law. These descriptions of the unified field, which previously appeared to be at variance with scientific accounts of nature, have been strikingly supported by current formulations in modern physics. The most comprehensive and successful theories in modern physics, unified quantum field theories, provide a remarkably similar description of an infinitely dynamic, self-interacting, unified field at the basis of physical existence (see Hagelin, 1987).

The most parsimonious explanation for this striking correspondence is that these two traditions of knowledge ultimately identify the same unified field, described from the subjective perspective of ancient Vedic science and recently glimpsed from the objective perspective of modern science (Hagelin, 1986). Vedic Psychology asserts that the unified field of consciousness underlies both objective and subjective existence. The unified field is identified as the *cosmic psyche* in Vedic Psychology because it appears to display the self-referral, self-sufficient, and dynamic properties of consciousness on a universal scale and is held to be the source of the individual psyche as well as objective existence (Maharishi, 1986a; Orme-Johnson, Dillbeck et al., in press).

Transcendental consciousness is initially experienced during the TM technique as a completely silent, self-referral state. Through the TM-Sidhi program the individual is said to fully enliven in awareness the *self-interacting dynamics of consciousness*—the unmanifest interaction of all the impulses of natural law within the unified field (Maharishi, 1986a). Maharishi (1986a, p. 29) states, "The TM-Sidhi program trains the mind to function in this field of pure consciousness." The specific mental formulas or "sutras" employed in this advanced procedure were revived by Maharishi (1978) from the ancient Vedic literature, particularly the *Yoga Sutras of Patanjali* (Aranya, 1977). According to Maharishi, this advanced procedure stimulates specific impulses or laws of nature from within the unified field to create striking positive effects in mind, body, and environment by mental intention alone. According to the physicist John Hagelin, mastery of some of the TM-Sidhi performances involving substantial departure from classical patterns of behavior appears to require that consciousness be capable of functioning from the level of the unified field, because it is only at the scale of super-unification that such effects could be generated (Hagelin, 1987).

Higher States of Development: The Fifth, Sixth, and Seventh States of Consciousness

Maharishi Vedic Psychology holds that contact with and enlivenment of transcendental consciousness fosters development of higher states of consciousness to a natural state of full enlightenment in which the maximum degree of human potential is permanently and spontaneously realized. Enlightenment has been perennially described as an ultimate state of inner peace, fulfillment, and full expression of human potential in which individual awareness becomes identified with the unbounded unified field of consciousness (Orme-Johnson, Dillbeck et al., in press). Regular practice of the Maharishi Technology of the Unified Field is said simultaneously to expand awareness and neutralize accumulated stress in the nervous system, allowing the full potential of the individual to be expressed (Alexander, Davies, Dillbeck et al., in press; Maharishi, 1972; Wallace, 1986).

Cosmic Consciousness

According to Maharishi (1969, 1972), the experience of transcendental consciousness alternating with the ordinary waking state refines and habituates the nervous system to sustain a fifth major state, identified as *cosmic consciousness.* The fifth state is referred to as cosmic because it is all-inclusive; it includes the entire range of experience from the deep silence of transcendental consciousness to the ever-changing states of waking, dreaming, and sleeping. In cosmic consciousness, the ever-changing states of daily life are experienced along with, but separate from, the unbounded inner awareness of transcendental consciousness. The individual develops the ability to spontaneously maintain unbounded inner awareness at the deepest level of the mind even while engaged in mental activity at the more expressed levels of feeling and thinking. When cosmic consciousness is fully developed, unbounded inner awareness is naturally maintained along with all experiences of daily activity and sleep.

The principle which underlies the process of transcending, the natural tendency of the mind to seek fields of greater happiness, is also said to explain the stabilization of cosmic consciousness. The mind naturally seeks to maintain the blissful experience of transcendental consciousness as long as possible. Due to accumulated stress, the nervous system may not initially display sufficient adaptability and functional integration to maintain this silent inner state during daily activity (Orme-Johnson, Dillbeck et al., in press). Through neutralization of stress during the TM technique, the nervous system eventually achieves a stress-free mode of functioning which is capable of spontaneously maintaining the bliss of transcendental consciousness throughout the 24-hour daily cycle. Maharishi (1969) describes this permanent state of bliss consciousness:

> The bliss of this state eliminates the possibility of any sorrow, great or small. No sorrow can enter bliss consciousness, nor can bliss consciousness know any gain greater than itself. This state of self-sufficiency leaves one steadfast in oneself, fulfilled in eternal contentment. (p. 424)

Cosmic consciousness is characterized by a permanent shift to primary identification with unbounded awareness as the essential nature of the Self, rather than with the boundaries of individual thoughts, feelings, and percepts with which one was previously identified. The individual attains complete inner freedom in this state because the boundaries of the individual self no longer overshadow the underlying unified field of its own essential nature as unbounded, pure, transcendental consciousness. Cosmic consciousness is therefore considered the first stable stage of enlightenment. Maharishi (1969) describes the inner freedom experienced in this fifth state of consciousness:

> The state of cosmic consciousness is inclusive of transcendental consciousness as well as consciousness of the relative order; it brings cosmic status to the individual life. When the individual consciousness achieves the status of cosmic existence then, in spite of all the obvious limitations of individuality, a man is ever free, unbounded by any aspect of time, space or causation, ever out of bondage. This state of eternal freedom, set out here in principle, is a result of establishing the mind in the state of transcendental consciousness. (p. 145)

Refined Cosmic Consciousness

Further refinement of mind and body, facilitated by continued practice of the Maharishi Technology of the Unified Field, develops a state of consciousness which has been called

refined cosmic consciousness (Orme-Johnson, Dillbeck et al., in press). This sixth state is characterized by continued refinement of perceptual and affective processes which results in the ability to appreciate the finest manifest level of subjective and objective existence. It is this state of enlightenment in which the individual, while permanently established in the unboundedness of transcendental consciousness, experiences a much deeper appreciation of the profound harmony and grandeur of creation. According to Maharishi Vedic Psychology:

> In this state one appreciates not only the full range of manifest creation, but also the mechanics of creation seen at the junction point between the manifest and its unmanifest source; the predominant subjective experience of this state is an upsurge of waves of devotion, love, and appreciation of the glory of creation (Orme-Johnson, Dillbeck et al., in press, p. 84).

Unity Consciousness

Maharishi (1972) proposes that human development culminates in a seventh state, unity consciousness, held to be the ultimate state of full enlightenment based on optimal functioning of the nervous system. In this highest stage, the absolute status of self-referral has been gained, and every object of perception is spontaneously appreciated or referred to in terms of the unbounded Self. Thus the infinite self-referral nature of the cosmic psyche has been extended to encompass the external as well as the internal fields of life. The entire cosmic existence is realized to be nothing but the Self functioning within itself. Maharishi (1972) describes this pinnacle of human development:

> This seventh state of consciousness could very well be called the unified state of consciousness because in that state, the ultimate value of the object, infinite and unmanifest, is made lively when the conscious mind, being lively in the unbounded value of awareness, falls on the object. The object is cognized in terms of the pure subjective value of unbounded, unmanifest awareness.... In this unified state of consciousness, the experiencer and the object of experience have both been brought to the same level of infinite value and this encompasses the entire phenomenon of perception and action as well. The gulf between the knower and the object of his knowing has been bridged. When the unbounded perceiver is able to cognize the object in its total reality, cognizing the infinite value of the object, which was hitherto unseen, then the perception can be called total or of supreme value. In this state, the full value of knowledge has been gained, and we can finally speak of complete knowledge. (Lesson 23)

DEVELOPMENTAL THEORY IN VEDIC PSYCHOLOGY AND CURRENT WESTERN PSYCHOLOGY

In addition to the theory of seven states of consciousness, Maharishi Vedic Psychology also proposes a theory of levels of mind that describes the structural and functional relationships between consciousness and sensory, cognitive, and affective processes (Maharishi, 1969, 1972; Orme-Johnson, Dillbeck et al., in press). This theory views the human mind as having a hierarchical structure with levels of depth of functioning from gross to subtle to the transcendental foundation of individual mind, the unified field of consciousness. Maharishi Vedic Psychology delineates the following components of the individual psyche in order of progressive subtlety and abstraction: the most expressed level, the senses; that

which directs attention to the objects of sensations, desire; the active thinking level, referred to as mind; the discriminative processes, termed intellect; and the most subtle, integrative function of individuality, the ego. Underlying these levels of the individual psyche is pure consciousness, the cosmic psyche. Maharishi (1969) describes how the levels of mind contribute to behavior:

> Action is performed on the level of the senses but has its origins at the inception of the thinking process. A thought starts from the deepest level of the mind; it is appreciated on the thinking level, where it takes the form of a desire; desire in its turn expresses itself in the form of action. (p. 140)

According to this theory of mind, the individual psyche is a localized manifestation of the cosmic psyche. It is composed of abstract mental structures, each serving specific information processing functions. This functional architecture of the individual mind is increasingly reflected in advanced information processing models in current cognitive psychology (e.g., Norman, 1981). Such models characterize mental structures from shallow sensory processes to deep processes of decision making and higher-order thought. However, these current models have not yet identified the cosmic psyche as the basis of the individual mind.

Cognitive development from birth through early adulthood unfolds in stages from more concrete to increasingly abstract or subtle states. It has been recognized that there is a correspondence between the level of maturation of the nervous system and the level of cognitive development. For example, growth spurts in the brain and proportional increases in EEG alpha production tend to correspond with shifts to higher levels of cognitive-structural development (Epstein, 1974, 1980; Matousek & Peterson, 1973). The structure and style of functioning of the nervous system appear to progress toward increasing differentiation and hierarchical integration (Werner, 1957).

From a developmental perspective, this increasing functional integration of the nervous system during maturation may permit utilization of the deeper levels of mind described by Vedic Psychology. The progressive enlivenment of each subtler level of mind may provide the "deep structure" for the unfoldment of each corresponding higher level of cognitive development. Although all levels of mind contribute to the unfoldment of every thought and developmental stage, the deepest levels of mind and the underlying cosmic psyche typically lie outside the range of full conscious appreciation and use. When conscious awareness begins to function predominantly from a deeper level of mind, stabilization of a corresponding developmental stage would be predicted to occur (Alexander, Davies, Dillbeck et al., in press).

Piaget has identified four basic cognitive-structural stages from birth through adolescence or early adulthood: the sensorimotor stage; the preoperational level dominated by immediate impulse and perception; the concrete mental operations stage; and the level of abstract reflective thought, formal operations (Piaget & Inhelder, 1969). The sequential unfoldment of these stages bears an interesting correspondence to the nature and sequence of increasingly subtle levels of mind described by Vedic Psychology: action and the senses, impression and desire, the active thinking mind, and abstract discriminating intellect, respectively (Maharishi, 1969, 1972; Orme-Johnson, Dillbeck et al., in press). However, Piaget's model ends at the ordinary level of adult conceptual thought and does not consider the possibili-

ty of postconceptual development of higher states of consciousness based upon realization of the cosmic psyche at the source of thought.

According to developmental research, fundamental cognitive, moral, and self-development typically come to a plateau during late adolescence or early adulthood with stabilization of formal operations (Inhelder & Piaget, 1958; Kohlberg, 1969; Redmore & Loevinger, 1979). This freezing of psychological development is generally believed to occur because the central nervous system stops developing during this period (Tanner, 1970). Up to adulthood, physiological maturation appears to permit utilization of deeper cognitive structures for performance of more abstract conceptual thought. Then, the physical nervous system stops developing and fundamental psychological development also typically ceases. The functional interrelationship of mind and body suggests, however, that not only can changes in the nervous system act to change one's level of awareness but changes in level of awareness can in principle act back upon the nervous system to influence physiological development. From this perspective, the TM program can be viewed as a developmental technology for taking awareness to subtler levels of the mind, resulting in further physiological integration and hence unfreezing of the developmental process.

The Effect of the Maharishi Technology of the Unified Field on Cognitive Development

From a developmental perspective, the Maharishi Technology of the Unified Field seems to **be** as fundamental for promoting development beyond the ordinary language-based conceptual level of thought to postconceptual higher states of consciousness as language learning itself is for promoting development beyond the sensorimotor and preconceptual levels of early childhood (Alexander, 1982; Alexander & Bodeker, 1982; Alexander, Davies, Dillbeck et al., in press). The capacity for language use, which may be inherent, is generally recognized to require informal and formal instruction to maximize its contribution to conceptual thought (Bruner, 1966; Gardner, 1983). In the same manner, the capacity to transcend the thinking process in the service of postconceptual development also may be inherent, and may be catalyzed by regular practice of the Maharishi Technology of the Unified Field. This technology promotes postconceptual development by allowing the mind to transcend conceptual thinking to directly experience the content-free state of pure consciousness at the source of thought. Through the repeated process of transcending during TM, conscious awareness expands to function from progressively deeper levels of mind and thereby promotes corresponding psychological growth. In contrast, accumulation of stress produces an excited, "high-noise" style of functioning of the nervous system which may impede the ability to function from finer levels of the mind and thereby may hinder or block human growth at any point in the life-span (Alexander, 1982). Research has shown that the distinctive state of restful alertness produced during the TM technique efficiently neutralizes deep-rooted stress, allowing further human growth (e.g., Alexander, 1982; Jevning, Wilson, & Davidson, 1978; Nidich, Seeman, & Dreskin, 1973; Wallace, 1986).

Recent research indicates that the Maharishi Technology of the Unified Field accelerates cognitive growth in children and unfreezes development typically fixed in adulthood (Alexander, Davies, Dillbeck et al., in press). Children practicing the TM program scored significantly higher on Piagetian measures of cognitive development compared to control group children, even after adjusting for possible demographic differences between the

groups on age, gender, and parental socioeconomic status (Alexander, Kurth, Travis, Warner, & Alexander, in press). Recently Warner (1986) replicated and extended these findings under more rigorous conditions. Controlling for age, verbal IQ, and performance IQ, the TM subjects again scored higher on cognitive-developmental scales than controls. Warner also found significantly greater information processing capacity, reflectivity, and cognitive flexibility in the children who practice the TM technique. Further, a high positive correlation was reported between length of time practicing the TM program and performance on these measures.

Consistent with these findings, new students at Maharishi School of the Age of Enlightenment in Fairfield, Iowa, significantly improved after one year practicing TM compared to population norms on the Iowa Test of Basic Skills in language, reading, and mathematics (Nidich, Nidich, & Rainforth, in press). Cross-sectional and longitudinal testing also indicate that the TM technique may facilitate development of moral reasoning in adolescents and young adults (Kotchabhakdi, Pipatveravat, Kotchabhakdi, Tapanya, & Pornpathkul, 1982; Nidich, 1976). In addition, a number of cognitive processes which typically become fixed in early adulthood have been shown to be enhanced through practice of this technique. For example, longitudinal studies have indicated that compared to controls, practitioners of the TM technique significantly improve on measures of fluid intelligence (Aron, Orme-Johnson, & Brubaker, 1981; Shecter, 1977; Tjoa, 1975; Tjoa, 1977), field independence (Orme-Johnson & Granieri, 1977; Pelletier, 1974), and perceptual flexibility (Dillbeck, 1982).

The TM technique appears to be an effective facilitator of cognitive and personality development even in stressful environments recalcitrant to change. In two samples of adult prison inmates, adjusting for pretest score and relevant demographic covariates, both advanced and new TM subjects showed a highly significant longitudinal improvement on Loevinger's (1976) structural-developmental measure of self or ego development compared to wait-list controls and four other self-improvement groups (Alexander, 1982). An advance of one full stage of self-development for the new meditators over a 1-1/2 year period was equivalent to that of students over a four-year period. This growth took place at an age (26-29 years) and education level (average ninth grade) when such changes are highly unlikely to occur. Assuming the advanced TM subjects started at a comparable level to the new TM group, they appeared to advance two full stages in less than three years, which suggested that there was no apparent upper boundary to their further growth. Two of the advanced meditators attained to Loevinger's highest "integrated" stage, which is very rarely achieved in the normal population (less than 1%), and is described as similar to Maslow's (1962) level of self-actualization.

In another population typically resistant to change, the institutionalized elderly, subjects (average age 81 years) were randomly assigned to treatment and no-treatment groups identical in external structure and expectation-fostering features (Alexander, Davies, Newman, & Chandler, in press). Despite similarity between groups on pretest measures and expectation, the TM group improved most on a variety of indicators known to plateau in adulthood and decline with aging, including learning ability, cognitive flexibility, systolic blood pressure, mental health, and self-rating of behavioral flexibility and aging. After three years, survival rate (longevity) for the TM group was 100%, in contrast to the lower average rate of 76% for the other treatment groups and the 62.5% rate for the remaining 478 residents of the homes for elderly. These findings suggest the Maharishi Technology of the Unified Field may not only unfreeze cognitive-structural development, but reverse age-related

declines that have begun to take place. Also, Wallace, Dillbeck, Jacobe, and Harrington (1982) and Glaser, Brind, Eisner, and Wallace (1986) have found physiological and biochemical evidence for reversal of age-related declines.

REVIEW OF RESEARCH ON THE STATE OF CONSCIOUSNESS INVENTORY

Maharishi Vedic Psychology predicts that development of higher states of consciousness through the Maharishi Technology of the Unified Field results in a wide range of beneficial physiological, personality, cognitive, and behavioral changes indicating greater utilization of human potential. It is proposed that this technology is a powerful catalyst which accelerates the rate, but does not alter its natural sequence of unfoldment, which is held to be universally the same across cultures (Maharishi, 1969; c.f., Kohlberg, 1969, on the role of cultural factors in development). Thus, similar benefits should be associated with the natural occurrence of experiences of higher states of consciousness even among individuals who do not practice this technology. Although such experiences appear to be rare among non-TM practitioners, Vedic Psychology predicts that the essential features of these experiences and their behavioral correlates are the same for people in all cultures who actualize this otherwise dormant potential to experience higher states (Alexander, Davies, Dillbeck et al., in press). To test these predictions, the State of Consciousness Inventory (SCI) (Alexander, 1978; Alexander, 1982) was designed for quantitative assessment of frequency of experiences of higher states of consciousness as defined in Vedic Psychology. The inventory was psychometrically modelled on Rest's (1975) Defining Issues Test questionnaire for measurement of principled moral reasoning. Three separate SCI scales were derived to measure sequentially the higher states of cosmic consciousness, refined cosmic consciousness, and unity consciousness.

Following Jackson's (1970) model of item construction by experts, items were derived primarily from first-person statements generated by experts in Vedic Science. These experts were a sample of instructors of the TM technique who reported frequent experience of such states and had a developed conceptual foundation for their interpretation. Items were also drawn directly from the Vedic literature and Western literature. The items were made more comprehensible and meaningful both to meditators and nonmeditators by editing to remove philosophical jargon and by adjusting word length and imbalances in social desirability. For comparative purposes, additional scales were also constructed to distinguish these experiences from normal waking state, neurotic experience, and schizophrenic experience. Also following Rest's (1975) design, a misleading item scale was included to assess the tendency to endorse misleading or grandiose statements.

The development of the SCI was based on the premise that individuals can have momentary experiences of higher states before they are permanently established in a new stage. The development of higher states of consciousness typically appears to be a gradual process in which experiences of higher states become more frequent until a stable higher stage is reached when the nervous system can maintain a new style of functioning capable of permanently supporting these experiences (e.g., Farrow & Hebert, 1982; Haynes, Hebert, Reber, & Orme-Johnson, 1977; Kesterson, 1986a; Orme-Johnson, Wallace, Dillbeck, Alexander, & Ball, in press).

Research on the Empirical Structure of Experiences of Higher States of Consciousness

In an initial study of 70 nonmeditating college students, a subset of SCI items primarily concerned with cosmic consciousness experience was embedded in a questionnaire with additional normal waking state and pathological experience items (Alexander, 1978). Results indicated that the cosmic consciousness experiences were highly intercorrelated and formed an empirical factor which was distinct from factors corresponding to the other two classes of experience.

In a cross-sectional study of 103 prison inmates with approximately one-third TM practitioners, factor analysis was performed on the scores for each of the face-valid conceptual scales of the SCI (Alexander, 1982). Three independent higher-order factors accounted for 89% of the variance: (1) a higher state of consciousness factor on which cosmic consciousness, refined cosmic consciousness, and unity consciousness scales loaded highly; (2) a neurotic waking state factor; and (3) a schizophrenic factor.

Although all three higher consciousness scales loaded highly on the same factor, this does not necessarily imply that they refer to the same set of experiences. The first-order correlations of the scale for cosmic consciousness with the scales for refined cosmic consciousness and unity consciousness were .25 and .30, respectively; the correlation of the scales for refined cosmic consciousness and unity consciousness was .40. This suggests that the three scales may represent empirically correlated, though not redundant, sets of experience that share a common underlying factor structure distinct from the structures corresponding to neurotic waking or schizophrenic experience. Vedic Psychology suggests that this common underlying factor may be experience of transcendental consciousness, the ground state underlying all higher states of consciousness (Maharishi, 1972).

In a longitudinal follow-up study of the same inmate group (Alexander, 1982), factor analysis of a subset of SCI items was performed separately for the same subjects at pretest and posttest. Higher state of consciousness face-valid items formed an empirical factor that was again conceptually and empirically distinct from waking and pathological experience. Further, the empirical structure of the higher state of consciousness factor proved to be highly stable from pretest to posttest over an average 15-month period.

In Jedrczak, Clements, and Alexander's (1986) sample of 104 advanced TM and TM-Sidhi program participants from Great Britain, scores on SCI scales for transcendental consciousness, cosmic consciousness, and unity consciousness were also highly correlated. In addition, the frequency of experience of the three separate higher states of consciousness was consistent with the developmental sequence proposed by Vedic Psychology. Experiences of transcendental consciousness occurred with greater frequency than did experiences of cosmic consciousness, which in turn occurred with greater frequency than experiences of unity consciousness. Experiences of the next higher stage beyond the modal level for a subject occurred with more frequency than did experiences of states further removed from the modal level of experience. In all of the above studies that contained a waking state scale, reports of ordinary waking experience took place with greater frequency on the average than did experiences of higher states of consciousness. In samples that included only TM practitioners, however, the relative ratio of experiences of higher states was higher, and there were individual TM practitioners who reported experience of higher states with greater frequency than usual waking state.

Increased Frequency of Higher State of Consciousness Experiences in Practitioners of the Maharishi Technology of the Unified Field

Consistent cross-sectional and longitudinal findings of a significant positive correlation between practice of the Maharishi Technology of the Unified Field and increased frequency of experiences of higher states of consciousness are summarized in Table 1. In light of the relatively high intercorrelation between higher state of awareness items or scales, frequency of higher state experience is assessed, unless stated otherwise, by factor score or some other composite index of SCI higher state items or scales.

In the cross-sectional study of the inmate population (Alexander, 1982) described above, active long-term TM practitioners reported greater frequency of experiences of higher states than subjects interested and subjects not-interested in learning TM. Regularity in meditation in advanced practitioners also was highly correlated with frequency of experi-

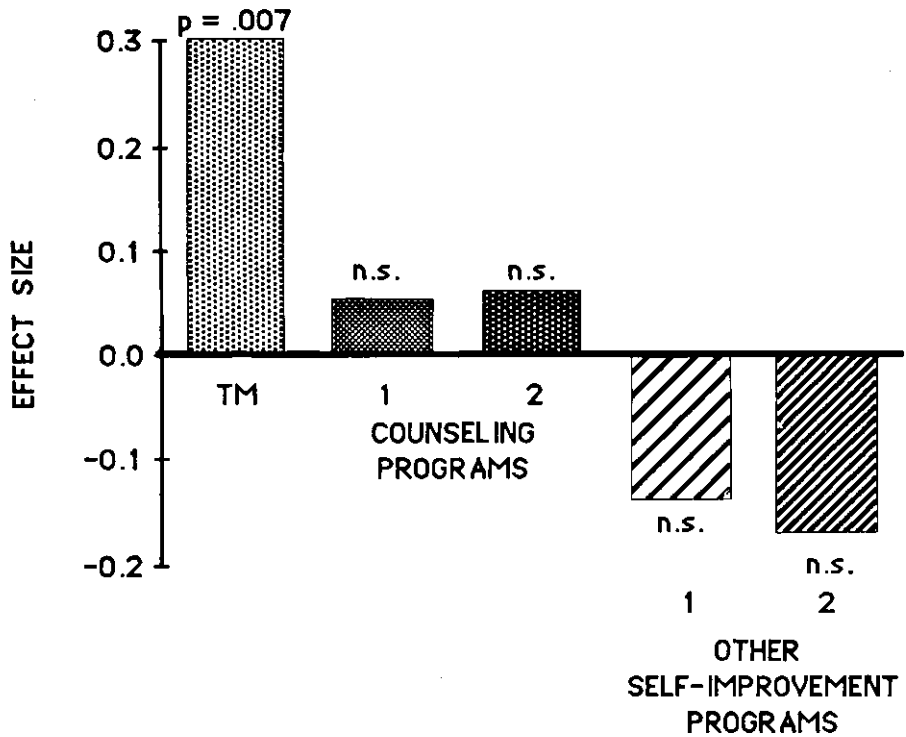

Figure 1. Increased frequency of experiences of higher states of consciousness (effect size expressed as a point biserial correlation) is plotted as a function of participation in the Transcendental Meditation (TM) program, two counseling programs, and two other self-improvement programs over an average 15-month period in an inmate population, adjusting for relevant demographic covariates. Active practitioners of the TM program increased significantly in frequency of experiences of higher states of consciousness in comparison to a wait-list control group and a not-interested group. In contrast, the active members of the other four programs did not change significantly relative to comparable control groups.

ences of higher states. In the longitudinal follow-up, both new and advanced TM samples increased significantly in experiences of higher states of consciousness in comparison to wait-list controls, non-active practitioners, and non-practitioners. These cross-sectional and longitudinal findings were significant even when statistically controlling for potential demographic self-selection factors that may otherwise have biased the outcome. As shown in Figure 1, in contrast to the positive longitudinal outcome for the TM samples, comparable samples from two counseling programs and two other self-improvement groups did not improve relative to non-practitioners of these respective programs.

In the large sample of advanced practitioners of the Maharishi Technology of the Unified Field from Great Britain (Jedrczak et al., 1986), number of months practice of the TM and TM-Sidhi programs was also significantly correlated with frequency of experience of higher states of consciousness, as measured by an SCI short form. The correlation was more significant when any subjects with misleading item responses were eliminated from the sample. A second cross-sectional study using an SCI short form with another British sample (Jedrczak & Alexander, 1986) compared the frequency of experiences of higher states of consciousness in 15 long-term practitioners of the Maharishi Technology of the Unified Field (an average 10.2 years TM practice and 5.6 years practice of the advanced TM-Sidhi program) with the frequency of such experiences in 14 shorter-term practitioners (2.5 years TM practice) and with 15 nonmeditating control subjects. The groups were matched on gender and were comparable in age and education. According to retrospective report, the baseline level of experience of higher states in the two TM groups before learning the practice was similar to that of the nonmeditating control. Further, the meditating groups and control group did not significantly differ in their low level of response to misleading items.

As predicted, however, there was a highly significant difference in the frequency of experiences of cosmic consciousness and unity consciousness in the long-term and shorter-term meditators combined, in comparison to the nonmeditating controls. Also, the advanced TM group reported more frequent experiences of both cosmic consciousness and unity consciousness than the shorter-term group, who in turn had more experiences of cosmic consciousness and a trend toward more experiences of unity consciousness than the nonmeditating controls. In comparison to their retrospective baseline levels of experience before learning the TM technique, the long-term and short-term TM groups increased significantly in frequency of experiences of higher states, as shown in Figure 2.

One might anticipate that due to expectation or desire, meditators might respond more to grandiose or highly positive sounding but misleading items. It appears, however, that a tendency to respond to such misleading statements on the SCI did not substantially inflate the response rate of TM practitioners relative to nonmeditators. In the United States samples (Alexander, 1982), TM practitioners did not score significantly higher than nonmeditators on the misleading items scale. In the Great Britain study with the larger sample (Jedrczak et al., 1986), data for subjects who scored relatively high on the misleading items scale were removed prior to statistical analyses. In the smaller British sample (Jedrczak & Alexander, 1986), again the meditating groups did not score significantly higher than the nonmeditating group on misleading items.

In the large cross-sectional British sample, cosmic consciousness experiences occurred with greater frequency than unity consciousness experiences, but in the smaller British sample the apparent rates of cosmic consciousness and unity consciousness experiences were relatively similar within groups. This latter finding could be due to the particular items

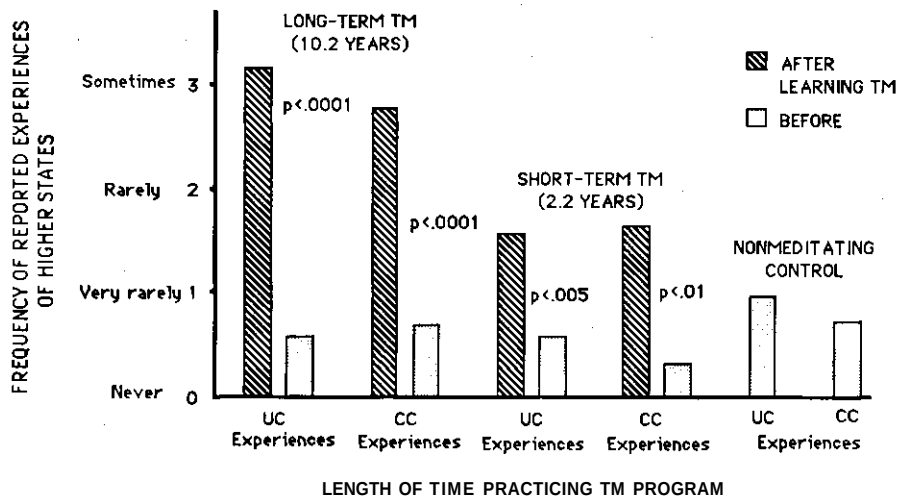

Figure 2. Frequency of experiences of unity consciousness (UC) and cosmic consciousness (CC) reported as a function of length of time practicing the TM program. Experiences of higher states increased significantly with length of time practicing the Transcendental Meditation and TM-Sidhi program in comparison to retrospective reports of frequency of these experiences before starting the program and reports from a nonmeditating control group. Long-term TM practitioners (10.2 years average) reported more frequent experiences of higher states of consciousness than did short-term (2.2 years average) practitioners, who in turn reported more frequent experiences of higher states that did non-practitioners.

selected from the SCI to measure states of consciousness or similar measurement constraints, or it may be specific to the small sample under investigation. Nevertheless, it may be that some subjects have experiences that span several levels of higher development simultaneously. In the measurement of self and moral development in the usual waking state range, scores often span several levels of development in their distribution around one central stage (Loevinger, 1976; Rest, Turiel, & Kohlberg, 1969). This may be especially the case for subjects whose rate of development through higher states of consciousness is being rapidly enhanced through the Maharishi Technology of the Unified Field. The advanced TM-Sidhi program is designed not only to develop cosmic consciousness through stabilizing the experience of transcendental consciousness, but also simultaneously to promote growth to unity consciousness by enhancing coherence in mind-body coordination and accelerating the infusion of pure consciousness into thought and behavior. It would be expected, however, that the higher stages of consciousness would fully stabilize according to the predicted sequence.

According to Vedic Psychology, the most unambiguous subjective criterion for identifying the first stage of enlightenment, cosmic consciousness, is the report of *witnessing* deep sleep, the experience of the inner wakefulness of transcendental consciousness along with sleep (Maharishi, 1969, 1972). Evidence of witnessing sleep has recently been provided by two surveys of regular practitioners of the Maharishi Technology of the Unified Field. Orme-Johnson and Edwards (1982) obtained reports of witnessing deep sleep in a survey given to a group of 235 volunteer students and staff at Maharishi International University in Fairfield, Iowa who practiced the TM and TM-Sidhi programs. Eight percent of the sample

reported regular experiences of clear inner awareness of transcendental consciousness throughout a night's sleep, 7% reported frequent experiences, 40% reported experiences once a week or sporadically, 27% reported having the experience once or twice, and 17% reported either vague or no experiences of witnessing deep sleep. Consistent with this finding, more recently 82.5% of meditating freshmen at the same university reported the experience of witnessing dreaming or sleep at least once (Gackenbach, Cranson, & Alexander, 1986).

Recently there have been descriptions in the psychological literature of a phenomenon called lucid dreaming or actively thinking about the fact that one is dreaming while dreaming (Laberge, 1985). Although this phenomenon may in certain respects appear to be similar to the experience of witnessing dreaming, there are important differences between these two types of experience. Lucid dreaming is a state in which volitional, discriminative, and memory processes of the waking state are active along with the illusory imagery associated with dreaming. The psychophysiological correlates of lucid dreaming show increases in somatic arousal indices suggesting increases in cognitive processing, rather than the restful alertness of transcendental consciousness (Alexander, Boyer, & Orme-Johnson, 1985; Alexander, Cranson, Boyer, & Orme-Johnson, 1986). It is Gakenbach's impression in surveying thousands of people on lucid dreaming that only a very small percentage report the spontaneous experience of a state which may have been transcendental consciousness; whereas in some groups sampled, all the subjects reported having had a lucid dream experience (cited in Alexander et al., 1986).

TABLE 1

CROSS-SECTIONAL AND LONGITUDINAL FINDINGS ON THE EFFECT OF THE MAHARISHI TECHNOLOGY OF THE UNIFIED FIELD ON FREQUENCY OF EXPERIENCES OF HIGHER STATES OF CONSCIOUSNESS (HSC)

Experimental Design	Effect Size[a]	p Level[b]	Total df	Study
Cross-sectional comparison on HSC in active long-term TM members vs. *Ss* interested and not interested in learning TM	$r_{pb} = .37$	$< .0001$	96	Alexander (1982)
Positive longitudinal (13 months) change on HSC in active long-term TM members vs. wait-list controls, nonactive members, and nonmembers	$r_{pb} = .30$	$< .01$	66	Alexander (1982)
Positive longitudinal (17 months) changes on HSC in active new TM members vs. wait-list controls, nonactive members, and nonmembers	$r_{pb} = .35$	$< .001$	66	Alexander (1982)
Association of regularity of TM practice with HSC	$r = .54$	$< .0005$	38	Alexander (1982)

TABLE 1 (continued)

CROSS-SECTIONAL AND LONGITUDINAL FINDINGS ON THE EFFECT OF THE MAHARISHI TECHNOLOGY OF THE UNIFIED FIELD ON FREQUENCY OF EXPERIENCES OF HIGHER STATES OF CONSCIOUSNESS (HSC)

Experimental Design	Effect Size[a]	p Level[b]	Total df	Study
Association of length of time practicing TM and TM-Sidhi program with frequency of HSC	r = .20 r = .29 (excluding any *Ss* misleading responses)	< .025 < .01	102 74	Jedrczak, Clements, & Alexander (1986)
Cross-sectional comparison of frequency of HSC in long- and short-term TM groups vs. a nonmeditating control group	r_{pb} = .55 (CC experiences)[c]	< .0001	42	Jedrczak & Alexander (1986)
	r_{pb} = .45 (UC experiences)[c]	< .001	42	
Frequency of HSC in long-term TM (10.2 years) in comparison to their reported level prior to learning TM technique	r_{pb} = .91 (CC experiences)[c]	< .0001	14	Jedrczak & Alexander (1986)
	r_{pb} = .92 (UC experiences)[c]	< .0001	14	
Frequency of HSC in short-term TM (2.5 years) in comparison to their reported level prior to learning TM technique	r_{pb} = .70 (CC experiences)[c]	< .005	13	Jedrczak & Alexander (1986)
	r_{pb} = .61 (UC experiences)[c]	< .01	13	

[a]Although specific statistical tests employed included ANOVA and ANCOVA, all outcomes not already expressed as correlations are converted into point biserial correlations (r_{pb}), which provide a measure of "effect size" independent of sample size, and hence permit comparison of treatment effect sizes across studies. The r_{pb} is equivalent in its statistical interpretation to the Pearson correlation coefficient. An $r_{pb} \geq .38$ is considered a large effect size in the behavioral sciences, an $r_{pb} \geq .25$ a medium effect size, an $r_{pb} \geq .10$ a small effect size (Cohen, 1977).

[b]Because of the clear directionality of prediction in the context of this review, all tests of significance are consistently reported as one-tailed.

[c]CC = cosmic consciousness experiences; UC = unity consciousness experiences

Physiological, Personality, and Cognitive-Perceptual Correlates of Experiences of Higher States of Consciousness

The research described in this section shows that, in both meditating and nonmeditating samples, frequency of experiences of higher states of consciousness is significantly correlated with higher performance on a wide range of physiological, personality, and cognitive-perceptual measures. These data are summarized in Figure 3.

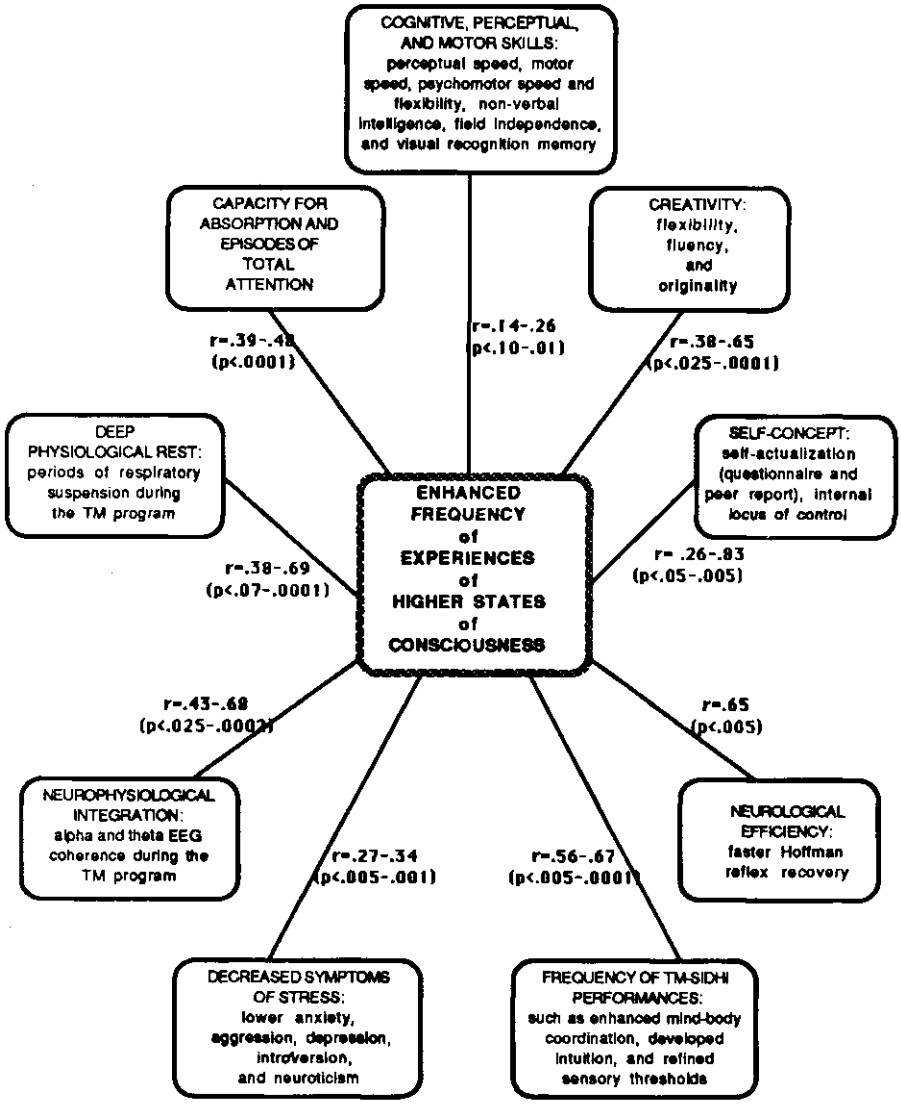

Figure 3. A number of studies have found a significant correlation between enhanced frequency of experiences of higher states of consciousness from transcendental consciousness through unity consciousness with the following: periods of respiratory suspension, increased alpha and theta EEG coherence, and faster Hoffman (H) reflex recovery during practice of the Transcendental Meditation technique; increased capacity for absorption, self-actualization, internal locus of control, and decreased symptoms of stress; improved ability on measures of creativity and cognitive, perceptual, and motor skills; and frequency of TM-Sidhi performances, such as enhanced mind-body coordination, intuition and sensory threshold.

Physiological Correlates of Experiences of Higher States of Consciousness

Consistent with Maharishi's (1969) original prediction, a recent literature review indicates that experience of transcendental consciousness during TM practice represents a unique state of restful alertness. This state is distinguishable from the three ordinary states of consciousness on over twenty psychophysiological parameters (Alexander et al., 1986). Specific sub-periods during the practice of the TM technique, in which transcendental consciousness is clearly experienced, appear to be characterized by more intensified changes of the same physiological parameters that change throughout the entire TM session.

Responding specifically to the question whether transcendental consciousness is physiologically distinct from ordinary relaxed waking state (Holmes, 1984), Orme-Johnson and Dillbeck (1986) conducted an exhaustive meta-analysis which showed that TM practice produced twice the statistical effect size **of** resting with eyes closed on basal galvanic skin resistance (GSR), oxygen consumption, respiration rate, and plasma lactate. In addition, plasma **Cortisol,** a stress-related hormone, has been found to decrease and serotonergic turnover, indicative of relaxation, has been shown to increase during TM practice compared to resting with eyes closed (Bujatti & Riederer, 1976; Jevning, Pirkle, & Wilson, 1977; Jevning, Wilson, & Davidson, 1978; Walton et al., 1986). Further, Alexander and Larimore (in press) showed that the electrophysiological characteristics during practice of the TM technique were clearly distinct from those of the restful stages of sleep, and that only minimal amounts of stage 2-4 sleep take place during TM sessions.

Extending Wallace's (1970a, 1970b) original research on reduction in metabolic rate as measured by oxygen consumption during TM, recent studies report actual periods of respiratory suspension during the practice (Badawi, Wallace, Orme-Johnson, & Rouzere, 1984; Farrow & Hebert, 1982; Gallois, 1984; Kesterson, 1985a, 1985b; Wolkove, Kreisman, Darragh, Cohen, & Frank, 1984). This marked change in respiratory pattern appears to be a sensitive indicator of periods of clear experience of transcendental consciousness during TM practice. In a sample of 40 European and American young adult long-term participants in the Maharishi Technology of the Unified Field, reports **of** transcendental consciousness during TM practice, indicated by button press immediately following the experience, were highly correlated with periods up to 53 seconds of natural respiratory breath suspension (Farrow & Hebert, 1982). In contrast, periods of respiratory suspension were rarely observed in relaxing control subjects. In an intensive repeated measures investigation of a single advanced TM meditator (Farrow & Hebert, 1982), periods of transcendental consciousness were also significantly associated with alpha, theta, and beta EEG coherence, decreased heart rate, heightened basal GSR, and more stable phasic GSR. Table 2 summarizes the findings reported in this section on the physiological correlates of experiences of higher states of consciousness.

The results of this study were supported and extended in another investigation of 54 European and American advanced practitioners **of** the TM program, 31 nonmeditator relaxation controls, and 30 voluntary breath-holding subjects (Badawi et al., 1984). Again it was found that subjective reports of transcendental consciousness during TM practice tended to be associated with periods **of** natural respiratory suspension. These periods were accompanied by a significant increase in total EEG coherence over all frequency bands in comparison to periods immediately prior and subsequent to meditation. In contrast, the voluntary breath-holding group did not significantly change in level of EEG coherence during forced periods of breath holding.

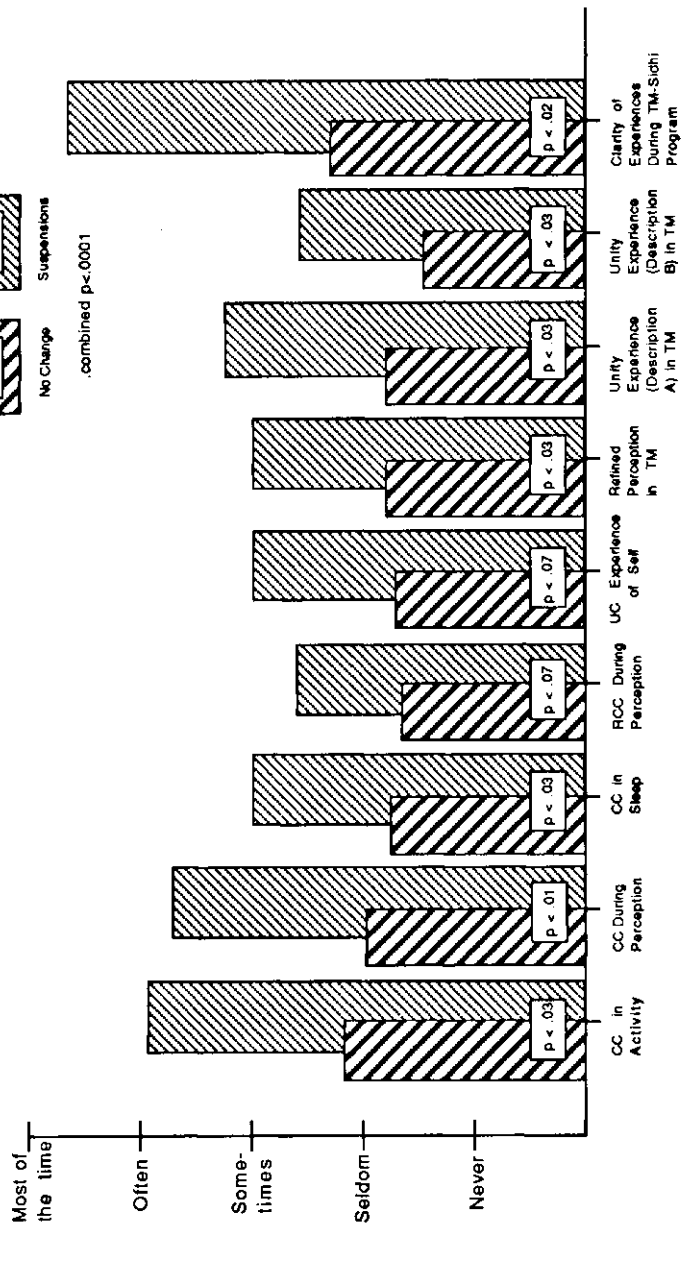

Figure 4. Frequency of experiences of higher states of consciousness are plotted as a function of whether the subjects displayed periods of breath suspension during the practice of TM. The breath suspension group reported significantly more experiences of cosmic consciousness (CC), refined cosmic consciousness (RCC), unity consciousness (UC) and clear TM-Sidhi performances.

Based on the prior findings of respiratory suspension, Kesterson (1985a) conducted an in-depth study of breathing patterns in 84 practitioners of the TM and TM-Sidhi programs. He found that decreased frequency of breathing during TM practice was correlated with number of years practice of this program. Utilizing a short form of the SCI scale, a number of higher state of consciousness items were found significantly to discriminate between subjects showing frequent spontaneous respiratory suspensions and those not showing this pattern, as shown in Figure 4. Subjects displaying respiratory suspensions reported more frequent refined perception and unity type experiences during TM practice and more frequent cosmic consciousness experiences during daily activity and sleep. This may suggest that advanced experiences of higher states initially occur during the practice and gradually become stabilized in daily activity.

A highly distinctive state of rest during practice of TM is further indicated by decrease in minute ventilation, respiratory quotient, 0_2 metabolism, $C0_2$ production in arterial blood, and decreased sensitivity to high levels of $C0_2$ pumped into the ambient air during meditation (Jevning, Wilson, & Guich, 1984; Jevning, Wilson, Pirkle, O'Halloran, & Walsh, 1983; Kesterson, 1985a; Singh, 1984; Wolkove et al., 1984).

The repeated finding of acute and longitudinal increases in EEG coherence between and within the cerebral hemispheres during TM practice provides striking evidence for a major neurophysiological reorganization indicating heightened alertness. These changes are not observed during relaxation with eyes closed (Dillbeck & Bronson, 1981; Haynes et al., 1977; Levine, 1976; Orme-Johnson, 1977; Orme-Johnson, Clements, Haynes, & Badawi, 1977; Orme-Johnson & Haynes, 1981; Orme-Johnson, Wallace et al., in press). EEG coherence is considered a sensitive indicator of the degree of long-range spatial order in cortical activity measured from different points on the scalp (Orme-Johnson & Haynes, 1981).

Haynes et al. (1977) found that reports of clear experience of transcendental consciousness during TM practice were associated with higher bi-frontal alpha EEG coherence, and with faster rate of Hoffman reflex recovery considered as a measure of neurological efficiency. Similarly, Orme-Johnson and Haynes (1981) found that subjects who reported clear experience of transcendental consciousness and the TM-Sidhi performances showed significantly higher alpha and theta EEG coherence in frontal and central regions than did subjects who did not report such experiences. Another study (Orme-Johnson, Wallace, et al., in press) found reports of cosmic consciousness experiences to be significantly correlated with homolateral left and homolateral right alpha EEG coherence. Self-report of the cosmic consciousness experiences of witnessing during sleep was also highly correlated with alpha coherence averaged across bi-frontal, bi-central, right frontal-central, and left frontal-central areas of the brain (Orme-Johnson et al., 1977).

Higher EEG coherence is associated with post-meditation behaviors clearly indicative of further development. Bifrontal alpha coherence was found to be significantly correlated with measurement of a postulated highest stage of moral reasoning (Nidich, Ryncarz, Abrams, Orme-Johnson, & Wallace, 1983). Increased bifrontal EEG coherence was significantly correlated with enhanced verbal and figural creativity; increased frontal-central EEG coherence was significantly correlated with increased fluid intelligence, principled moral reasoning, grade point average, and decreased neuroticism in advanced TM practitioners (Orme-Johnson et al., in press). Interestingly, heightened EEG coherence in TM practitioners has also been associated with superior performance on such abilities as motor speed and flexibility, that typically decline with aging (Beresford, Jedrczak, Toomey, & Clements, in press).

Heightened alertness through practice of the Maharishi Technology of the Unified Field in comparison to simple relaxation is further suggested by enhanced H-reflex motor neuron recovery, especially in subjects with clear experience of transcendental consciousness (Haynes et al., 1977); longer amplitudes and shorter latencies of visual evoked cortical response (Banquet & Lesevre, 1980); marked increase in plasma arginine vasopressin which is associated with improved learning and memory (O'Halloran, Jevning, Wilson, Skowsky, & Alexander, 1985); and increased blood flow to the brain (Jevning, Wilson, Smith, & Morton, 1978). Maharishi (1978) has specifically predicted that a new biochemical substance—traditionally identified in the Vedic literature as "soma"—is produced in the development of higher states of consciousness (see also Wallace, 1986). Walton et al. (1986) have been conducting intensive research to identify biochemical changes associated with the development of higher states of consciousness. They have isolated a previously unidentified biochemical substance, referred to as "substance M," which appears to increase during practice of the Maharishi Technology of the Unified Field. Preliminary evidence suggests that this substance may be a naturally occurring anti-depressant agent which could influence level of psychological well-being.

Finally, there is evidence for a qualitative difference in EEG during sleep for advanced TM participants who report cosmic consciousness experiences. A pilot study of sleep in advanced TM practitioners showed that these subjects had shorter and less frequent dream phases, and required far less sleep at night than meditating control subjects without these experiences. Some subjects, who frequently reported witnessing, simultaneously exhibited slow wave activity and rhythmic beta in light sleep, and delta waves and alpha spindles during deep sleep (Banquet & Sailhan, 1977). These dual states of faster wave activity along with slower wave activity may reflect the maintenance of inner wakefulness during sleep. Consistent with this interpretation, one subject could voluntarily press a button indicating the onset of K complexes of stage II sleep or delta trains of stage III sleep.

TABLE 2

PHYSIOLOGICAL CORRELATES OF EXPERIENCES OF HIGHER STATES OF CONSCIOUSNESS (HSC)

Variable	Correlation with Frequency of HSC[a]	p Level[b]	df	Sample Composition	Study
	(TC during TM practice)				
Respiratory suspension		< .0001	9	TM and TM-Sidhi	Farrow & Hebert (1982)
Respiratory suspension		< .0001	15	TM and TM-Sidhi	Kesterson (1986a)
Decreased heart rate	F = 92.55	< .001	2,14	repeated measures on one advanced subject	Farrow & Hebert (1982)
Alpha EEG coherence	F = 3.26	< .001	17,170		
Theta EEG coherence	F = 2.71	< .001	17,170		
Beta EEG coherence	F = 2.08	< .01	17,170		

TABLE 2 (continued)

PHYSIOLOGICAL CORRELATES OF EXPERIENCES OF HIGHER STATES OF CONSCIOUSNESS (HSC)

Variable	Correlation with Frequency of HSC[a]	p Level[b]	df	Sample Composition	Study
GSR:					
Higher basal	$F = 9.76$	$< .001$	17,170		
Decreased phasic	$F = 4.16$	$< .001$	17,170		
Bifrontal alpha EEG coherence	$r = .43$	$< .005$	21	TM and TM-Sidhi	Haynes et al. (1977)
Faster rate of Hoffman reflex recovery	$r = .65$	$< .005$	13		
Total alpha EEG coherence	$r_{pb} = .69$	$< .0005$	20	TM and TM-Sidhi	Orme-Johnson & Haynes (1981)
Total theta EEG coherence	$r_{pb} = .50$	$< .01$	20		
Total alpha EEG coherence (CC experiences)[c]	$r = .64$	$< .005$	13	TM and TM-Sidhi	Orme-Johnson, et al. (1977)
Simultaneous slow-wave and rhythmic beta (CC experience during light sleep)[c]				TM and TM-Sidhi	Banquet & Sailhan (1977)
Simultaneous delta and alpha spindles (CC experience during deep sleep)[c]					
Homolateral left alpha EEG coherence	$r = .32$	$< .025$	35	TM	Orme-Johnson, Wallace, et al. (in press)
Homolateral right alpha EEG coherence	$r = .30$	$< .025$			

[a] Outcomes not already expressed as correlations are generally converted into point biserial correlations (r_{pb}), which provide a measure of "effect size" independent of sample size, and hence permit comparison of effect sizes (i.e., degree of association between frequency of HSC and other variables) across studies. The r_{pb} is equivalent in its statistical interpretation to the Pearson correlation coefficient. An $r_{pb} \geq .38$ is considered a large effect size in the behavioral sciences, an $r_{pb} \geq .25$ a medium effect size, and an $r_{pb} \geq .10$ a small effect size (Cohen, 1977).

[b] Because of the clear directionality of prediction in the context of this review, all tests of significance are consistently reported as one-tailed.

[c] TC = transcendental consciousness experiences, CC = cosmic consciousness experiences.

Personality Correlates of Experiences of Higher States of Consciousness

It has been shown that nonmeditating subjects report experiences of higher states of consciousness less frequently than meditating samples (e.g., Jedrczak & Alexander, in review). As predicted, however, nonmeditating subjects who do report such experiences score more positively on measures of personality than other nonmeditating subjects. Higher self-actualization as independently judged by peers was observed in subjects who reported at least once the higher state experience of witnessing dreaming compared to those who did not (Alexander, 1979). Similarly, subjects who reported witnessing dreaming attained superior self-actualization scores on the Personal Orientation Inventory subscales for inner-directedness, self-actualizing value, existentiality, feeling reactivity, spontaneity, self-regard, synergy, acceptance of aggression, and capacity for intimate contact (Gomes, 1981). Table 3 summarizes the findings reported in this section on the personality correlates of experiences of higher states of consciousness.

Alexander (1978) also found that more frequent experience of higher states was significantly correlated with increased capacity for episodes of total attention and enhanced perception of the self, as indicated by higher scores on Tellegen's Absorption Scale and maintenance of inner sense of self during stressful situations. Frequency of higher state experiences has also been associated with higher scores on Rotter's measure of internal locus of control and with decreased self-report of disharmony, rigidity, and lack of humor (Vogelman, 1978). In the Alexander (1978) and Vogelman (1978) studies, higher state of consciousness items, dealing mainly with cosmic consciousness experience, formed an empirical factor that was clearly opposite to a pathological experience factor.

Interestingly, Alexander (1978) found that experience of higher states was uncorrelated with hypnotizability, as measured by the Harvard Group Scale of Hypnotic Susceptibility, even though both higher state experience and hypnotizability (Tellegen & Atkinson, 1974) tend to be associated with capacity for absorption. Subjects who experience higher states more frequently appear to have a greater capacity for attention, but apparently are not more susceptible to hypnotic suggestion.

In a study of 90 college students in Australia that included 25 TM meditators (Davies, 1974, 1977), greater frequency of self-report experience of transcendental consciousness was found to be correlated with higher self-actualization scores on the Personal Orientation Inventory and lower trait anxiety on the State-Trait Anxiety Inventory. Frequency of other nonordinary high imagery experiences of complete relaxation were not significantly correlated with these measures.

In the study with inmates that included approximately one-third meditators (Alexander, 1982), more frequent higher state of consciousness experiences on the SCI was significantly correlated with Tellegen's Absorption Scale, increased participation in constructive social and work activities, and plans to join such activities. Higher score on the SCI was also correlated with lower score on anxiety, aggression, depression, and introversion, as measured by the Special Hospitals Assessment of Personality and Socialization. Finally, factor analysis showed that experience of higher states of consciousness was clearly negatively correlated with self-report of pathological experiences.

Cognitive-Perceptual Correlates of Experiences of Higher States of Consciousness

The only study of cognitive variables in a nonmeditating sample using the SCI found

TABLE 3

PERSONALITY CORRELATES OF FREQUENCY OF EXPERIENCES OF HIGHER STATES OF CONSCIOUSNESS (HSC)

Variable	Correlation with Frequency of HSC[a]	p Level[b]	df	Sample Composition	Study
Self-actualization (peer rated)	$r_{pb} = .39$	$< .05$	21	non-TM	Alexander (1979)
Self-actualization (Personal Orientation Inventory, POI)	$r_c = .83$	$< .005$	12	non-TM	Gomes (1981)
Self-actualization (POI)	$r_{pb} = .26$	$< .01$	88	combined TM and non-TM	Davies (1974)
Maintenance of inner sense of self during stressful situations	$r = .33$	$< .005$	68	non-TM	Alexander (1978)
Internal locus of control (Rotter)	$r = .34$	$< .05$	31	non-TM	Vogelman (1978)
Capacity for absorption and total attention (Tellegen Absorption Scale, TAS)	$r = .48$	$< .0001$	68	non-TM	Alexander (1978)
Capacity for absorption and total attention (TAS)	$r = .39$	$< .0001$	91	TM and non-TM	Alexander (1982)
Hypnotizability (Harvard scale)	$r = .03$	NS	68	non-TM	Alexander (1978)
Participation in constructive social and work activities	$r = .27$	$< .005$	101	TM and non-TM	Alexander (1982)
Plans to participate in additional constructive social and work activities	$r = .46$	$< .0001$	101	TM and non-TM	Alexander (1982)
Lower levels of:					
Trait anxiety (State-Trait Anxiety Inventory)	$r_{pb} = .34$	$< .001$	88	TM and non-TM	Davies (1974)
Anxiety (Special Hospitals Assessment of Personality and Socialization, SHAPS)	$r = .29$	$< .005$	100	TM and non-TM	Alexander (1982)
Aggression (SHAPS)	$r = .29$	$< .005$			
Depression (SHAPS)	$r = .27$	$< .005$			
Introversion (SHAPS)	$r = .28$	$< .005$			

[a]Outcomes not already expressed as correlations are generally converted into point biserial correlations (r_{pb}), which provide a measure of "effect size" independent of sample size, and hence permit comparison of effect sizes (i.e., degree of association between frequency of HSC and other variables) across studies. The r_{pb} is equivalent in its statistical interpretation to the Pearson correlation coefficient. An $r_{pb} \geq .38$ is considered a large effect size in the behavioral sciences, an $r_{pb} \geq .25$ a medium effect size, and an $r_{pb} \geq .10$ a small effect size (Cohen, 1977).

[b]Because of the clear directionality of prediction in the context of this review, all tests of significance are consistently reported as one-tailed.

[c]TC = transcendental consciousness experiences, CC = cosmic consciousness experiences.

that a positive score on a factor measuring higher states of experience was significantly correlated with creativity as measured by Wallach and Kogan's Test of Improbable Situations (Vogelman, 1978). Table 4 summarizes the findings reported in this section on the cognitive-perceptual correlates of experiences of higher states of consciousness.

In the large British sample of advanced TM and TM-Sidhi participants (Jedrczak et al., 1986), frequency of higher state experiences, especially on the cosmic consciousness scale, was significantly correlated with several performance measures of cognitive skill. Higher state experience was most highly correlated with frequency of clear TM-Sidhi experiences such as developed intuition, refined sensory thresholds, and enhanced mind-body coordination. Frequency of higher state experiences was also positively associated with fluency score for unusual uses on Torrance's Test of Creative Thinking, perceptual speed on the matching objects test from the Kit of Factor-Referenced Cognitive Tests (FRCT), psychomotor speed and flexibility on the opposites tests of the Test of Behavioral Rigidity, Botwinick and Storandt's line-crossing test of motor speed, the WAIS digit symbol test of nonverbal intelligence, a hidden figures test of field independence (FRCT), and a test of visual recognition memory for meaningless shapes (FRCT).

In another sample of 22 advanced participants in the TM and TM-Sidhi programs, clarity of experience of transcendental consciousness was highly associated with the fluency subscale of Torrance's Test of Creative Thinking (Orme-Johnson & Haynes, 1981). In a second sample drawn from the same population (Orme-Johnson et al., 1977), cosmic consciousness experience of witnessing deep sleep was highly correlated with clarity of transcending during TM practice and with more frequent experience of the TM-Sidhi performances, as well as with three subtests of the Torrance Test of Creative Thinking including novel uses, fluency, and originality. Also, Kesterson (1986a) found that reported frequency of clear TM-Sidhi experiences was an indicator that very clearly distinguished between the subjects who displayed respiratory suspension during TM and those who did not. Subjects in the respiratory suspension group reported having clear experiences most of the time during the advanced TM-Sidhi program in contrast to lower rates for the non-suspension group.

The TM-Sidhi performances are not only subjectively interesting phenomena, their effects can also be objectively documented. For example, experiments have reported that practice of the TM-Sidhi sutra designed to enhance auditory ability may improve hearing threshold (Clements & Milstein, 1977) and increase efficiency of brainstem auditory evoked response (McEvoy, Frumpkin, & Harkins, 1980). More importantly, dramatic positive societal effects have been repeatedly shown when even a very small proportion of the society collectively practices the TM-Sidhi program (Alexander, Abou Nader et al., in press; Dillbeck, Foss, & Zimmerman, in press; Orme-Johnson, Cavanaugh et al., in press).

TABLE 4

COGNITIVE-PERCEPTUAL CORRELATES OF FREQUENCY OF EXPERIENCES OF HIGHER STATES OF CONSCIOUSNESS (HSC)

Variable	Correlation with Frequency of HSC[a]	p Level[b]	df	Sample Composition	Study
Creativity (Wallach and Kogan's Test of Improbable Situations)	$r = .55$	$< .0005$	31	non-TM	Vogelman (1978)
Fluency (Torrance Test of Creative Thinking, TTCT)	$r = .38$ (CC experiences)[c]	$< .0001$	102	TM and TM-Sidhi	Jedrczak et al. (in review)
Fluency (TTCT)	$r_{pb} = .54$ (TC experiences)[c]	$< .005$	20	TM and TM-Sidhi	Orme-Johnson & Haynes (1981)
Creativity (TTCT):	(CC experiences)[c]		13	TM and TM-Sidhi	Orme-Johnson et al. (1977)
Novel uses	$r = .65$	$< .005$			
Fluency	$r = .56$	$< .025$			
Originality	$r = .51$	$< .05$			
Flexibility	$r = .37$	NS			
Enhanced TM-Sidhi performance (mind-body coordination)	$r = .67$ (CC experiences)[c]	$< .005$	13	TM and TM-Sidhi	Orme-Johnson et al. (1977)
Enhanced TM-Sidhi performance	$r = .56$[d] (TC experiences)[c]	$< .0001$	102	TM and TM-Sidhi	Jedrzcak et al. (1986)
Enhanced TM-Sidhi performance	$r = .59$ (with respiratory suspension group having HSC's)	$< .02$	15	TM and TM-Sidhi	Kesterson (1985a)
Perceptual speed (matching objects test from Kit of Factor Referenced Cognitive Tests, FRCT)	$r = .25$[d] (CC experiences)[c]	$< .01$	102	TM and TM-Sidhi	Jedrczak et al. (1986)
Psychomotor speed (opposites test of Test of Behavioral Rigidity, TBR)	$r = .24$[d] (CC experiences)[c]	$< .01$			
Flexibility (TBR)	$r = .23$[d] (TC experiences)[c]	$< .01$			
Motor speed (Botwinick and Storandt's line crossing test)	$r = .23$[d] (CC experiences)[c]	$< .01$			
Nonverbal intelligence (WAIS digit symbol test)	$r = .21$[d] (CC experiences)[c]	$< .025$			
Field Independence (hidden figures test, FRCT)	$r = .17$[d] (CC experiences)[c]	$< .05$			

TABLE 4 (continued)

COGNITIVE-PERCEPTUAL CORRELATES OF FREQUENCY OF EXPERIENCES OF HIGHER STATES OF CONSCIOUSNESS (HSC)

Variable	Correlation with Frequency of HSC[a]	p Level[b]	df	Sample Composition	Study
Visual recognition memory (FRCT)	r = .14 (CC experiences)[c]	< .10			

[a]Outcomes not already expressed as correlations are generally converted into point biserial correlations (r_{pb}), which provide a measure of "effect size" independent of sample size, and hence permit comparison of effect sizes (i.e., degree of association between frequency of HSC and other variables) across studies. The r_{pb} is equivalent in its statistical interpretation to the Pearson correlation coefficient. An $r_{pb} \geq .38$ is considered a large effect size in the behavioral sciences, an $r_{pb} \geq .25$ a medium effect size, and an $r_{pb} \geq .10$ a small effect size (Cohen, 1977).

[b]Because of the clear directionality of prediction in the context of this review, all tests of significance are consistently reported as one-tailed.

[c]TC = transcendental consciousness experiences, CC = cosmic consciousness experiences.

[d]Each cognitive, perceptual and motor skill (Jedrczak et al., 1986) was significantly correlated typically with more than one SCI higher state scale (TC, CC, UC scales were included). Only the highest SCI scale correlation is reported in table 2.

DISCUSSION OF FINDINGS ON HIGHER STATES OF CONSCIOUSNESS PREDICTED BY VEDIC PSYCHOLOGY

The research applying the State of Consciousness Inventory indicates that the higher state experience items of the SCI form a conceptually meaningful factor that is empirically distinct from waking or pathological classes of experiences. This higher states factor remains relatively stable across time and different samples. These findings support the substantive and structural validity of the SCI and hence contribute to establishing the validity of the underlying developmental process that the SCI attempts to measure. The results of the largest cross-sectional study (Jedrczak et al., 1986) are consistent with the developmental sequence proposed in Maharishi's theory of seven states of consciousness; further testing of the sequentiality of higher states will be provided by longitudinal investigation. The findings reported in this paper demonstrate the potential empirical usefulness of the SCI. To identify advanced individuals for more intensive investigation, it is recommended that multiple measures be applied in the selection of subjects. In addition to the SCI, the investigator should consider measuring alpha EEG coherence, physiological quiescence as indicated by respiratory suspension, and peer report. Intensive longitudinal investigations of subjects who meet these selection criteria are needed to identify definitively the physiological, psychological, and behavioral profile of each higher state of consciousness.

It is interesting to note that nonmeditating samples with apparently no prior intellectual exposure to Vedic Psychology reported experiences of higher states, although much less frequently than practitioners of the Maharishi Technology of the Unified Field. When

the various experiences of higher states of consciousness are consistently found to weigh highly on the same distinctive underlying factor even for nonmeditating samples, it is unlikely that this empirical outcome is due to the subjects' anticipatory set or prior intellectual exposure to the concept of higher states of consciousness. This finding supports the claim that such experiences reflect naturally occurring and universal developmental stages that do not require adoption of a particular belief system for their experience. The Maharishi Technology of the Unified Field appears to be a developmental technology capable of systematically increasing the frequency of experience of higher states even among populations recalcitrant to change, such as adult prisoners. Cross-sectional and longitudinal studies indicated that regular practice of the Maharishi Technology of the Unified Field increases experience of higher states in comparison to participation in other treatment and control groups.

The studies reviewed above include samples from the United States, Europe, and Australia. Additional research indicates that the Maharishi Technology of the Unified Field produces similar effects across widely differing cultural and geographical locations such as India, Israel, and Singapore (Agarwal & Kharbanda, in press; Cooper & Aygen, 1979; Kotchabhakdi, Pipatveravat, Kotchabhakdi, Tapanya, & Pornpathkul, 1982; Yee & Dissanayake, in press). These findings suggest that higher states of consciousness become universally available to human experience under appropriate developmental conditions, as provided through the Maharishi Technology of the Unified Field.

If higher states of consciousness reflect development beyond the ordinary endpoint of adult logical thought proposed by Piaget, then especially those aspects of cognition that concern originality and fluency in creative thinking should be promoted. Arlin (1975) has proposed that, while formal operational thought is devoted to logical solutions to already posed problems, postformal operational thought would be capable of "problem-finding" or originality in the posing of new problems and perspectives (see also Gardner, 1987; Getzels & Csikszentimilhalyi, 1976). In four different studies of subjects practicing the Maharishi Technology of the Unified Field, performance measures of creativity were found to be significantly associated with more frequent experiences of higher states.

In addition, the two findings on enhanced capacity for absorption support the view that experience of higher states may be associated with a postconceptual orientation. Tellegen's absorption scale clearly links capacity for episodes of total attention to nonpropositional modes of processing information (Tellegen & Atkinson, 1974). Many of the items on this scale are concerned with the ability to process conceptual information visually or through other sensory modes, and to respond to others and the larger environment on an intuitive or feeling level. This does not imply that individuals who more frequently experience higher states lose the ability to reason analytically. Rather, this ability appears to become supplemented by and integrated with new modes of gaining and processing knowledge of self and world. It has been shown repeatedly that the TM technique promotes intelligence growth rate, a measure related to analytic reasoning.

According to Maharishi Vedic Psychology, mastery of the TM-Sidhi performances not only accelerates growth of higher states of consciousness but also provides a direct and distinctive test of the level of consciousness already developed (Orme-Johnson, Dillbeck et al., in press). This is because degree of clarity and success in TM-Sidhi performances is said to be a function of the degree to which one can already operate from the level of transcendental consciousness.

Maharishi (1978) has stated that TM-Sidhi abilities should not be regarded as "supernormal" but rather as normal competencies that naturally unfold in the course of development of higher states of consciousness (see also Wallace, 1986). The capacities to walk, talk, and even learn mathematics (Gelman, 1986) appear to be innate, but they only unfold at certain points in the life cycle under appropriate conditions. Although it would be supernormal for a newborn in Piaget's sensory-motor stage to display any of these capacities, it would be quite natural for a concrete operational child within a school setting to excel in all these abilities. Similarly, functioning from a formal operational level, a number of the TM-Sidhi performances would be virtually impossible to perform. However, once the individual has begun regularly to experience the unified field of consciousness through the TM technique, it may be quite natural to learn how to think and act from the unified field to produce the TM-Sidhi phenomena (see discussions of the TM-Sidhi abilities in Hagelin, 1986; Orme-Johnson & Dillbeck et al., in press).

Research supports the prediction that mastery of TM-Sidhi performances is both a distinctive indicator and facilitator of growth of higher states of consciousness. In two studies, reported frequency of clear TM-Sidhi experiences was the best predictor of subjective experiences of higher states. In a third study, subjects who displayed both respiratory suspension during TM and experiences of higher states were more likely to report clear experiences during the TM-Sidhi program. Further, longitudinal investigation indicates that the TM and TM-Sidhi programs accelerate growth more than TM alone on a number of parameters known to be highly associated with experience of higher states of consciousness—including alpha EEG coherence, paired Hoffman reflex recovery, and creative thinking (Orme-Johnson, Wallace et al., in press; Wallace, Mills, Orme-Johnson, & Dillbeck, 1983).

Maslow (1962, 1976) postulated self-actualization as the optimal state of individual self-development. According to this theory, the self-actualized person displays the highest level of personality integration, motivational development, self-regard, and a tendency for peak or transcendental experience. Maharishi (1969, 1972) describes the basis of higher states of consciousness as transcendental consciousness, the inner experience of an unbounded, universal Self, the cosmic psyche, beyond the boundaries of the individual self. The first higher stage of consciousness, cosmic consciousness, is characterized by permanent experience of transcendental consciousness and primary identification of awareness with the cosmic psyche rather than with individual thoughts, feelings, or percepts, no matter how elevated they may be. The Maharishi Technology of the Unified Field appears to unfreeze and facilitate development through a self-actualization transition to permanent higher states of consciousness (Alexander, Davies, Dillbeck et al., in press).

The prediction that growth to higher states of consciousness should be accompanied by further development of the self is supported by: the three results on enhanced self-actualization, the two outcomes on increased capacity for absorption or total attention believed to be associated with expanded conception of the self, and the findings of a higher level of internal locus of control and maintenance of an inner sense of self under stressful conditions among subjects who more frequently experience higher states. Also, a large number of studies have consistently indicated that practice of the TM program is directly associated with enhancement of self-actualization as measured by standardized scales (e.g., Davies, 1974; Ferguson & Gowan, 1977; Hjelle, 1974; Nidich, Seeman, & Dreskin, 1973; Shecter, 1977). Especially encouraging in this regard was the longitudinal finding that TM practitioners even in an inmate population may advance to the highest levels of ego or self development as measured by standardized scales (Alexander, 1982).

Neurophysiological maturation is closely associated with cognitive development in the child and young adult. Marked enhancement of EEG coherence generated across frequency and hemispheric location during the practice of the Maharishi Technology of the Unified Field may reflect a further functional reorganization of brain activity, indicating increased neurophysiological integration necessary to support development of higher states of consciousness (c.f., Orme-Johnson, Wallace et al., in press). This proposition is also supported by the repeated finding of higher EEG coherence in subjects who more frequently report the experience of higher states, and especially by marked coherence during subperiods of TM practice that correspond to the subjective report of transcendental consciousness. There is growing evidence that enhanced EEG coherence in meditators is associated with behaviors clearly indicative of further human development, including enhanced fluid intelligence, principled moral reasoning, concept formation, creativity, and clearer experience of TM-Sidhi performances.

Negative or stress-related symptoms were consistently found to be lower in subjects who reported more frequent experience of higher states. Increased frequency of experiences of higher states was correlated with lower anxiety, disharmony, and aggression and less frequent neurotic and schizophrenic experiences. These findings are consistent with the prediction of Vedic Psychology that accumulation of stress, measured psychologically or physiologically, will tend to block further human development, and elimination of stress may help to unfreeze human development.

The goal of the Maharishi Technology of the Unified Field is simultaneously to neutralize stress and expand awareness to optimize growth to higher stages of consciousness. To the extent that this technology succeeds in achieving this goal, the outcomes associated with the practice should be identical to those accompanying natural development to higher states of consciousness. This has been shown to be the case. All of the beneficial behaviors associated with more frequent experience of higher states of consciousness reported in the above studies, including increased creativity and self-actualization, and decreased anxiety and aggression, have also been repeatedly shown to result from regular practice of the Transcendental Meditation and TM-Sidhi programs (Chalmers et al., in press; Orme-Johnson & Farrow, 1977).

CONCLUSION

The findings reported in this paper demonstrate that the empirical structure and frequency of experiences of higher states of consciousness and their beneficial behavioral correlates support the theory of development described in the Vedic Psychology of Maharishi Mahesh Yogi. These results provide evidence for the hypothesis that the Maharishi Technology of the Unified Field acts to unfreeze human development and promotes the natural growth of higher states of consciousness beyond the endpoints of human development proposed in current Western psychology.

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