

# Consciousness is Primary: Science of Consciousness for the 21st Century

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## Abstract

In the 20th century, the understanding of matter was transformed from a world of classical objects to a world of probabilities that were excitations of non-material quantum fields. Psychology may be involved in a similar transformation. In the 20th century, psychological models included specific “classical” content such as memories, attention, or emotions. However, some thinkers model consciousness as more field-like. Chalmers asserts that consciousness is an irreducible part of matter, along with time and space. Goff maintains that consciousness permeates reality and is expressed in degrees in different structures. Tononi’s *Integrated Information Theory* posits that consciousness is a fundamental property of any physical system and the degree of consciousness expressed reflects the power of the present state to affect the probability of its past and future states. Nader’s model goes beyond these concepts and postulates that consciousness is a nonmaterial, non-physical reality that exists entirely by itself. It has an ontological existence and generates matter, governs the interaction between material structures and is responsible for individual subjective experiences. This model is supported by direct experience of the field of consciousness, called pure consciousness, during Transcendental Meditation practice. This allows empirical investigation of pure consciousness and of higher states of consciousness when pure consciousness is integrated with daily experiences.

**Keywords:** conscious experience, field of consciousness, panpsychism, Transcendental Meditation, classical, quantum mechanical

## 1. Introduction

In the 20th century, our understanding of the physical universe was transformed from a world of classical objects that interacted in time and space to a world of probabilities that are excitations of underlying quantum fields (Greene, 2010). In this transformation, the diversity of the sensory world was progressively simplified with each step of unification.

This transformation was propelled by earlier insights. In the 17th century, Newton applied his laws of motion to explain Kepler’s description of elliptical orbits of the planets. In the 19th century, Maxwell demonstrated that electricity and magnetism are different manifestations of a single underlying electromagnetic force and can be explained by a single set of equations (Haldane, 1932). In the 20th century, Glashow, Salam and Weinberg theoretically united two of the four fundamental forces, electromagnetism and weak nuclear forces, and by the end of the 20th century, grand unification theories proposed that at extreme energies and temperatures the strong force, electromagnetism, and weak nuclear forces were united (Davies, 1991). Leading field theories in physics such as superstring theories consider elementary particles to be very small strings ( $10^{-35}$  meter) that vibrate at different frequencies representing different particles. The vibrational mode of the string determines a particle’s energy and so mass, and its spin (Calle, 2010, p. 469).

The understanding of consciousness is undergoing a similar transformation. Until recently, psychologists had a largely “classical” view of consciousness. They studied behavior and reportable experience was the criterion for consciousness (Natsoulas, 1997). You are unconscious when you are asleep; you are conscious when you can respond to environmental probes. Neuroscience reduced conscious processing to brain patterns in the search for neural correlates of consciousness-neuronal events and mechanisms that reliably occurred with a mental event (Koch, 2019). Conscious experiences have a clear beginning and clear end and continually change. This is analogous to descriptions of matter in classical physics as discrete particles that interact.

This “classical” view of psychological concepts was delineated by William James, a pioneer in psychology. He probed the nature of conscious experience to see if there was a “abiding principle” of consciousness that underlies the changing “stream of consciousness”(James, 1890/1950). James observed:

If there were no passing states of consciousness, then indeed we might suppose an abiding principle, absolutely one with itself, to be the ceaseless thinker in each one of us. But if the states of consciousness [the stream of changing mental content and sensory experience] be accorded as realities, no such 'substantial' identity in the thinker need be supposed... The logical conclusion seems then to be that the states of consciousness are all that psychology needs to do her work with (James, 1892, p. 202).

James uses the term “states of consciousness” to refer to changing psychological content such as memories, attention, emotions, habit, sensations, perceptions, reasoning and will (James, 1890/1950). His conclusion that “states of consciousness are all that psychology needs” has dominated the field of psychology in the 20th century.

In the 21<sup>st</sup> century, psychology is the midst of a parallel transformation from a classical understanding of consciousness to a field understanding of consciousness. This paper traces this development of understanding of consciousness and explores a model that begins with the assumption that consciousness is all there is.

### 1.1 Literature Review

Chalmers set a platform for this discussion of consciousness by delineating *easy* and *hard* problems of consciousness (Chalmers, 1995; Chalmers, 2010). *Easy* problems include sensory processing, attention, emotions, control of behavior, and reasoning. These would fall under James’s use of the phrase “states of consciousness.” Chalmers observed that the *easy* problems can be explained in terms of computation and associated brain activation.

The *hard* problem of consciousness is the problem of experience—why are we conscious of mental processes? We can explain the structure and functioning of distributed brain modules—the connectome—that are active during various cognitive tasks (Bertolero & Bassett, 2019). But this only explains *how* we behave, not why we *feel*. It is an “explanatory gap”: we can measure the firing of pain fibers, but do not know why we experience pain (Levine, 1983; Papineau, 2011).

Research into *hard* problems of consciousness must ask questions that go beyond James’s “passing states of consciousness,” beyond neural correlates of consciousness and beyond studying discrete classical states of mind. Chalmers calls for radical models to move the science of consciousness forward. We will review four radical models and end with one that could be a model for a science of consciousness in this century.

#### 1.1.1 Hoffman: Conscious Agents

Hoffman proposes a theory of perception starting with the experiencer, rather than with the objective world and computational brain networks. While perception is an *easy* problem of consciousness, Hoffman takes a new angle. He states that a theory of objects first requires a theory of subjects (Hoffman & Prakesh, 2014). He proposes conscious *agents* who use three *processes*: perception (conscious experience), decision (behavioral choice), and action (interacting with the world). Hoffman models every property of consciousness in terms of properties of conscious agents (Hoffman, 2019).

Hoffman’s model, while starting with the subject, appears to be treating the subject as a discrete particle—an “agent” who experiences the world, makes decisions, and takes actions. He models the behavior of discrete individual conscious agents interacting with the world—classical particles—rather than a model of consciousness itself and what it feels like to have an experience or to make a decision.

#### 1.1.2 Chalmers: Consciousness is Fundamental

Cognitive science is stopped by the explanatory gap—where does brain functioning end and consciousness experience begin? Chalmers posited if you cannot explain consciousness in terms of the existing fundamentals of physics, then you need to consider the possibility that consciousness may be “...an irreducible entity (similar to such physical properties as time, mass, and space) that exists at a fundamental level and cannot be understood as the sum of its parts” (Chalmers, 1997).

Chalmers suggests that consciousness is universal and every system—living and non-living—would have some degree of consciousness. All animate and inanimate matter would have a raw, subjective feeling, some primitive precursor to consciousness (Chalmers, 2010).

### 1.1.3 Goff: Panpsychism

Goff echoes Chalmers' idea that consciousness may pervade the universe. This is termed panpsychism—pan (all) psychism (mind or psyche), which asserts that consciousness permeates reality, rather than just being a unique feature of human subjective experience (Cook, 2020). Goff suggests that consciousness is a fundamental constituent of the universe, present in every particle of physical matter. It does not mean that all things reflect on their ongoing behavior—the electron does not wish to be a proton. Rather, all of matter has a simple form of experience. Goff explains (Goff, 2019):

Panpsychists tend not to think that literally everything is conscious. They believe that the fundamental constituents of the physical world are conscious, but they need not believe that every random arrangement of conscious particles results in something that is consciousness in its own right...panpsychists do not believe that consciousness like ours is everywhere. (p. 113)

With the assertion that consciousness pervades the universe, Chalmers and Goff have extended the boundaries of conceptual models of cognitive science. The next theory provides an empirical foundation for this assertion.

### 1.1.4 Tononi: Integrated Information Theory

Tononi is a psychiatrist and a neuroscientist. He defines consciousness as the capacity of a system to integrate information, as determined by the number of cause/effect relationships among the elements of that system (Tononi, 2004, 2012). In his Integration Information theory, consciousness is a fundamental property of any physical system, and the degree of consciousness of a system reflects how the "...current state specifies its cause (its input) and its effect (its output)" (Koch, 2019, p. 25).

The Integrated Information Theory does not start from the brain and ask how it gives rise to experience. Instead, it starts from essential phenomenological properties of experience (five *axioms*) and derives the cause–effect power of the physical substrate of that experience (five *postulates*). Cause–effect power is the degree that the present state affects the probability of its own past and future states and is denoted by  $\Phi$  (Tononi et al., 2016). Thus, consciousness would be graded and according to this theory can even occur in simple systems.

Tononi's five phenomenological axioms are qualitative dimensions of experience. They are first-person data. The five axioms are: 1) *intrinsic existence* (existing on its own independent of external observers), 2) *composition* (structured in phenomenologically distinct layers, i.e., sensory processing, thinking, and feeling), 3) *information* (specific set of cause-effect relations), 4) *integration* (is unified and cannot be reduced to smaller sub-systems) and 5) *exclusion* (specific set of distinct features). Corresponding to these axioms that are based on subjective experience are five postulates that specify the cause/effect power of the physical system itself. The five postulates describe cause/effect power as being 1) irreducible, 2) maximal at a point, and being able: 3) to act upon itself, 4) to link the functioning of parts within the whole, and 5) to generate specific outcomes (Tononi & Koch, 2015).

The measure of Integrated Information,  $\Phi$ , increases exponentially as the number of nodes being considered expands. Thus, research has used a proxy measure for  $\Phi$ —the brain's response to perturbation by transcranial magnetic stimulation, as measured by effective connectivity among functionally specialized brain regions (Tononi, 2004).

During waking, an initial response at the transcranial magnetic stimulation site was followed by a sequence of waves that moved to connected cortical areas several centimeters away. During slow wave sleep, transcranial magnetic stimulation over the motor areas led to a stronger initial response that was rapidly extinguished and did not propagate beyond the stimulation site (Massimini et al., 2005). Thus, the fading of consciousness during certain stages of sleep may be related to a breakdown in cortical effective connectivity (Kung et al., 2019; Tononi & Massimini, 2008).

EEG was also measured in six subjects during wakefulness and loss of consciousness (LOC) induced by the benzodiazepine midazolam. Again, during waking the response to transcranial magnetic stimulation moved out in waves from the stimulation site. During loss of consciousness, the response again broke down (Ferrarelli et al., 2010). Breakdown of cortical effective connectivity, a proxy for information integration, appears to be a common feature of loss of consciousness.

The next model goes beyond these models. It posits that consciousness exists entirely by itself, that consciousness give rise to matter and functions through it.

### 1.1.5 Nader: Consciousness is Primary

While materialist models begin with the assumption that matter is primary; Nader starts with the assumption that consciousness is primary (Nader, 2015).

I postulate that there is a primordial consciousness—a nonmaterial, non-physical reality—that is neither classical nor quantum-mechanical, neither a phenomenon nor an epiphenomenon, that exists entirely by itself. It exists in absolute terms and does not depend on anything else for its existence. (p. 2)

Nader's model expands the concept of consciousness from "classical" mental changing events to a fundamental field that exists by itself. In the following discussion, to keep these two concepts of consciousness separate, *classical mental events* will be referred to as conscious experience or individual consciousness and the *fundamental field of consciousness* that exists will be referred to as pure consciousness—*pure* meaning unmixed with mental content (see below).

Nader's model is as far away from classical psychological concepts like memory and perception as unified field theories in physics are from classical Newtonian mechanics. Many psychologists may object to the statement that "consciousness is primary and exists entirely by itself." They might state that they have never isolated pure consciousness in their personal experience or in the laboratory. This was William James's objection in 1890:

It is difficult for me to detect in the activity [of my mind] any purely spiritual element at all. Whenever my introspective glance succeeds in turning round quickly enough to catch one of these manifestations of spontaneity in the act, all it can ever feel distinctly is some bodily process, for the most part taking place within the head. (James, 1890/1950, p. 300)

While the experience of pure consciousness is seldom reported during ordinary waking experiences, it is reported during a meditation practice, Transcendental Meditation. The Transcendental Meditation technique is discussed in detail in the next section.

How does a field which is posited to be "all that there is" and "does not depend on anything else for its existence" create matter? It is as if one hard problem has been substituted for another. To follow the logic of this argument, I ask readers to temporarily suspend their understanding of consciousness as only being part of a human experience, or from the opposite point of view that "consciousness like ours is everywhere."

## 2. Discussion of the Model: Consciousness is Primary

So far, one might conclude that a model based on the concept that consciousness is primary is a dualistic model—consciousness exists by itself, matter exists by itself, and consciousness interacts with the physiology in some way. Nader does discuss how the field of pure consciousness interacts with matter (see below). However, he also systematically describes how pure consciousness interacts with itself to create "waves" within its structure that interact and generate the forces and particles that science measures (Maharishi Mahesh Yogi, 1994; Nader, 2000; Wells et al., 2020).

### 2.1 Pure Consciousness is Conscious

Nader's first axiom is that pure consciousness exists entirely by itself. Pure consciousness is a singularity, whose function, according to the second axiom, is to relate other things to itself—to be conscious. Maharishi Mahesh Yogi (1994) explains that when pure consciousness is awake to itself it has nothing to be awake to but itself. Thus, pure consciousness becomes simultaneously the subject and object of experience as well as the link between them. The state of singularity then exists in two states—as singularity and as the togetherness of the subject, object, and the link between.

Nader named these three phases as the observer, observed and observing (Nader, 2015, p. 4). The simultaneous presence of pure consciousness as singularity and pure consciousness as the observer, observed and observing creates a continuous flow between these two states—one and three. This back and forth flow interacts with itself and creates structures within pure consciousness (Maharishi Mahesh Yogi, 1994), identified as the sequences of sounds that have been cognized and recorded in the Vedic literature (Nader, 2000, p. 14-15). This description derived from the Vedic tradition, a subjective tradition of knowledge, is similar to descriptions from physics of very small strings ( $10^{-35}$  meter) vibrating at different frequencies within a single unified field and being expressed as a particle's energy and so mass and spin (Calle, 2010).

One could place this model under the category of Idealism, which maintains that the universe is fundamentally mental, and all concrete facts are grounded in mental facts (Chalmers, 2020). Nader postulates that pure consciousness is fundamental and pervades the universe, but also that matter exists and is real in relation to consciousness as "bits of consciousness."

### 2.1.1 Bits of Consciousness

Nader defines a “bit of consciousness” as a unit that includes some quality of observer, some quality of observing and some quality of observed. Nader states:

Observerhood is the ability to sense, detect, feel, witness, in short, to experience anything. A Geiger counter, for example, will have an Observerhood quality as a particle detector that measures ionizing radiation, but, from an everyday point of view, a Geiger counter is not said to have consciousness. However, the togetherness of the Geiger counter, the ionizing radiation, and the measuring process is an example of what we will call a Bit of Consciousness (Nader, 2015, p. 10).

On a more human level, we have different values of Observerhood—rested or alert, sleepy or unresponsive, anxious, or worried, and different values of observed and observing. These would lead to qualitatively different bits of consciousness

Bits of consciousness define different forms of life with different degrees of conscious experience. This discussion is similar to Tononi’s assertion that different levels of subjective experience (Observer) and varied levels of integration of the structure of the experiencing entity (Observing) would yield different levels of Integrated Information. So, for Tononi as well, consciousness would be graded and could occur in simple systems.

### 2.1.2 How Consciousness Interacts with the Brain

Nader maintains that matter is real only in terms of a bit of consciousness—a triplet of observer, observing, and observed (Nader, 2015, p. 3). Thus, matter and consciousness are intimately interconnected. Yet how does consciousness which is outside of time and space interact with a concrete object in time and space? In terms of our discussion of brain and consciousness, where does pure consciousness, a field, touch the brain?

Nader suggests that the synapse may be the interface between brain and consciousness (Nader, 2000, p. 207). Action potentials move across the synapse with a probability of 0.2-0.4. Being a probabilistic phenomenon it could be inherently quantum mechanical (Beck, 2008). As the flow of information across neural networks is quantum mechanical, it could be influenced by a field of consciousness, possibly in the thalamo-cortical and brain stem systems that are part of a “dynamic core” necessary for conscious experience (Edelman & Tonon, 2000; Tononi & Edelman, 1998; Travis, 2012).

Other researchers discuss the quantum mechanical nature of the synapse. Beck and Eccles posit that neurotransmitter vesicles are in a meta-stable grid—all are ready to be deposited into the synaptic cleft. Activation of a specific vesicle after an action potential may reflect shifting of quantum probability amplitudes (Beck & Eccles 1992). Stapp posits that lateral dispersion of calcium ions into the synaptic bulb is restricted by the narrow size of the calcium channels. This leads to a quantum mixture of many classical states in superposition (Stapp, 2007).

Hameroff and Penrose have described how quantum effects occurring within the microtubules of the cell might contribute to conscious experience. They suggest that the coupling between mass and deformations of space-time in the microtubules might cause an objective collapse of the wave function to classical states (Penrose, 1996), which they claim creates “moments of conscious experience” cascading forward into a conscious state (Hameroff & Penrose, 2014). However, this model doesn’t explain how bottom-up combination of countless quantum events—estimated to be  $1 \times 10^{22}$  operations/second in each of the  $10^{10}$  neurons in the brain—might add up to discrete and systematically changing patterns of conscious content (Coleman, 2014; Travis, 2012).

### 2.2 Transcendental Meditation: To Explore Pure Consciousness

Experiences of pure consciousness during Transcendental Meditation practice give phenomenological support to the tenets of this model. The Transcendental Meditation technique is designed for transcending, a process of letting the attention move from active thinking to more quiet levels of mind in which thoughts are secondary and ultimately disappearing and self-awareness is primary (Maharishi Mahesh Yogi, 1969; Travis & Pearson, 2000). The silent awake state experienced during Transcendental Meditation practice is described as an experience of “pure consciousness” unaccompanied by feelings, thoughts, or perceptions (Maharishi Mahesh Yogi, 1969; Nader, 2013). The experience of pure consciousness is not a state of thinking, but a state of Being, where the “experiencer is left awake by itself in full awareness of itself without any experience of an object” (Maharishi Mahesh Yogi, 1963, p. 4).

Descriptions of experiences during Transcendental Meditation practice were analyzed from 52 college students, who had practiced the TM technique for a few months to over 8 years. All reports described a state in which

thinking, feeling, and individual intention were missing, but self-awareness remained. A content analysis of these descriptions yielded three themes—absence of time, space, and body sense (Travis & Pearson, 2000). Note that the experience of pure consciousness was not described in terms of distorted content—strong emotions, or vivid visual, auditory, and tactile sensations. Rather, it was described by the absence of time, space, and body-sense, the customary framework that defines waking experiences.

The Transcendental Meditation technique is rooted in the texts of Yoga from the Vedic literature. You find, “Yoga is the complete settling of the activity of the mind,” in Yoga Sutra I2 (Egenes, 2012, p. 47); “The Self is without sound, without touch and without form. . . You will know the Self when your senses are still, your mind is at peace, and your heart is pure,” in Katha Upanishad (Reddy et al., 1999, p. 31); and “Be without the three gunas [forces responsible for action], O Arjuna, freed from duality, ever firm in purity, independent of possessions, possessed of the Self,” in the Bhagavad Gita II 45 (Maharishi Mahesh Yogi, 1969, p. 126). The experience of Transcendental Meditation is different from experiences during other meditation practices. Other meditation practices that are currently popular such as Vipassana or mindfulness practices are from the Buddhist tradition and are structured to gain control over the mind—to develop your ability to focus on one thing or to be aware of moment-by-moment changes in experience (Travis, 2021; Travis & Shear, 2010).

The main principles of this model that consciousness is primary are also found in the Vedic literature, particularly Vedanta, which describes the relationship between the field of pure consciousness and individual life (Maharishi Mahesh Yogi, 1969, p. 368-369). Both the Transcendental Meditation technique and the dynamics of pure consciousness have been brought to light and expounded by Maharishi Mahesh Yogi in his Maharishi Vedic Science (Maharishi Mahesh Yogi, 1994).

### 3. Predictions of the Model: Consciousness is primary

The existence of pure consciousness brings up the possibility of stable states of consciousness that are fundamentally different than waking, dreaming, and sleeping. The word *state* is often used to mean a temporary experience and contrasts with the term *trait* which refers to a stable experience over time. In this paper, state is used in a different way. It refers to a stable constellation of experiences such as sleep state, dreaming state and waking state.

#### 3.1 Higher States of Consciousness

A higher state of consciousness, according to Alexander, would meet these criteria: 1) “Be as far from conceptual representational thought as symbolic representation is beyond the sensorimotor domain,” 2) “Require major neurophysiological maturation,” and 3) “Resolve the fundamental epistemological and ontological constraint of abstract reasoning level—that the reflective knower cannot directly know itself.” (Alexander, 1990, p. 288). The possibility of states of consciousness beyond waking, dreaming and sleeping arises because the experience of pure consciousness is not just a philosophical construction, but is a direct experience during Transcendental Meditation practice as described earlier (Travis, 2018). This discussion is based on the model of higher states of consciousness delineated by Maharishi Mahesh Yogi in his Maharishi Vedic Science (Maharishi Mahesh Yogi, 1994, 1997; Travis, 2014).

##### 3.1.1 Transcendental Consciousness: A fourth State of Consciousness.

The experience of pure consciousness is fundamentally different than waking, sleeping, or dreaming. Figure 1 presents a two-by-two grid that compares these states of consciousness in terms of the presence/absence of the Observer and of the Observed. This figure is adapted from (Travis, 2014, p. 2)

In Figure 1, the experience of pure consciousness is called Transcendental Consciousness—a state of consciousness beyond ordinary thinking (Maharishi Mahesh Yogi, 1969; Travis & Pearson, 2000). We see in this figure that the observer–observed relationship during Transcendental Consciousness is completely different than during waking, sleeping, or dreaming. In sleeping, there is no sense of observer and no observed; in waking, there is a sense of observer that is identified with changing content (observed); in dreaming, vivid dream images dominate experience and sense of self is fragile if existing at all. Transcendental Consciousness is qualitatively different from the other three. It is a state in which the observer is awake to itself—a state of being rather than thinking. The observer is not qualified by changing experiences, as in waking state.

		Observer	
		Present	Absent
Observed	Present	Waking	Dreaming
	Absent	Transcendental Consciousness	Sleeping

Figure 1. Two by Two grid of States of Consciousness

*Note:* Each state of consciousness—waking, sleeping, dreaming and Transcendental Consciousness—are characterized by a unique relation of subject (observer) and object (Observed).

Transcendental Consciousness is a fourth state of consciousness. The observer/observed relation during this state is different than that of waking, dreaming, or sleeping. In the Vedic literature it is called *Turiya Chetana* (Maharishi Mahesh Yogi, 1997). Physiologically Transcendental Consciousness is distinguished from eyes closed rest by slower breath rates, skin conductance response at the onset of breath changes, and high frontal alpha coherence (Travis & Pearson, 2000; Travis & Shear, 2010; Travis & Wallace, 1997).

### 3.1.2 Cosmic Consciousness: A fifth State of Consciousness

Transcendental Consciousness during TM practice generally occurs for many seconds at a time spontaneously throughout the practice. By alternating Transcendental Consciousness during TM practice with daily life, the experience of Transcendental Consciousness begins to be integrated with waking, dreaming, and sleeping. Now the rest of sleep, illusory dream images, and changing waking experiences come and go on a continuum of inner self-awareness (Maharishi Mahesh Yogi, 1969; Travis, 2011). In the Vedic tradition, this state is known as a fifth state of consciousness, called *Turiyatit Chetana* or Cosmic Consciousness (Maharishi Mahesh Yogi, 1997). In Cosmic Consciousness, all activity is on the surface of life; deep within is immovable silence, uninvolved with ongoing experience. Maharishi Mahesh Yogi describes Cosmic Consciousness in the following way:

. . . [in Cosmic Consciousness] Being is permanently lived as separate from activity. Then a man realizes that his Self is different from the mind which is engaged with thoughts and desires. It is now his experience that the mind, which had been identified with desires, is mainly identified with the Self. He experiences the desires of the mind as lying outside himself, whereas he used to experience himself as completely involved with desires. On the surface of the mind desires certainly continue, but deep within the mind they no longer exist, for the depths of the mind are transformed into the nature of the Self. All the desires which were present in the mind have been thrown upward, as it were, they have gone to the surface, and within the mind the finest intellect gains an unshakeable, immovable status. (Maharishi Mahesh Yogi, 1969, p. 151)

In Cosmic Consciousness, the immovability of inner silence becomes the predominant element of experience because it does not change, while outer activity leaves less and less of a mark because it is always changing.

Physiologically, subjects reporting Cosmic Consciousness are marked by high levels of alpha power along with delta power during deep sleep, supporting the reported experience of inner Transcendental Consciousness during sleep (Mason et al., 1997). During challenging computer games, subjects reporting Cosmic Consciousness exhibit higher brain integration—higher broad band frontal coherence, higher global alpha power and more appropriate brain activation patterns (Travis et al., 2002). Those subjects compared to controls also have greater emotional stability, more openness to experience, and decreased anxiety (Travis et al., 2004).

## 4. Practical Application of This Model

This broader theoretical model of consciousness can be applied to practical life. For instance, it provides a deeper basis for rehabilitation than existing models (Travis, 2015). Behavioral modification works on the level of manipulating behavior. Cognitive Behavioral Therapy works on the level of changing patterns of thinking to change behavior (Leahy, 1996). Compassion-focused therapy encourages people to develop compassion toward themselves and other people to help promote mental and emotional healing (Gilbert, 2014).

The model that consciousness is primary begins with the experience of pure consciousness, which has immediate (state) and long term (trait) effects. Research has investigated clinical effects of Transcendental Meditation practice. TM practice is characterized by the reduction in sympathetic activation (fight-or-flight system) as measured by two direct measures of sympathetic activity—skin conductance and plasma lactate—and an indirect measure, lower breath rates (Dillbeck & Orme-Johnson, 1987). Over time, individuals practicing the TM technique have lower anxiety levels (Eppley et al., 1989; Orme-Johnson & Barnes, 2013), lower stress reactivity (Orme-Johnson, 1973; Travis et al., 2009), lower incidents of stress related diseases such as hypertension and

diabetes (Paul-Labrador et al., 2006; Schneider et al., 2005), lower medical usage (Herron & Cavanaugh, 2005; Orme-Johnson, 1987) and greater reduction in PTSD symptoms (Bandy et al., 2020; Brooks & Scarano, 1985; Nidich et al., 2018; Rees et al., 2013). In addition, one gains a new perspective of oneself and your place in the world as measured by greater openness to experience (Travis et al., 2004), higher levels of ego development (Chandler et al., 2005; Travis et al., 2004), growth of self-actualization (Alexander et al., 1991) and more frequent experiences of higher states of consciousness (Travis et al., 2004).

The experience of pure consciousness is beneficial on its own. In addition, it supports traditional rehabilitation interventions that primarily work on the feeling level, thinking level or behavioral levels (Alexander et al., 2003); see (O'Connell & Bevvino, 2015)

## 5. Conclusion

In conclusion, the “classical” understanding of psychology that consciousness is conscious experience is being extended to embrace consciousness as a field of pure consciousness that exists entirely by itself and does not depend on anything else for its existence. This model is not just philosophy but includes a meditation technique, Transcendental Meditation, to directly experience pure consciousness. This field model of consciousness 1) provides an answer to the “hard problem” of how the brain produces consciousness, 2) delineates higher states of consciousness that substantially extends the end point of human development, and 3) gives a new basis for rehabilitation.

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