

Mindfulness in Behavioral Health

Series Editor: Nirbhay N. Singh

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Exploring Frontiers of the Mind-Brain Relationship

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*To Angélica, Caio, and Laura, gifts of life
who give meaning to my life and reasons
to try to be a better human being every
single day.*

*To my parents, Hélio and Elizabeth,
who gave me not only the gift of life,
but have also been models of life,
and unlimited sources of support
and love.*

A.M.A.

*To my beloved parents, Dalva and Fernando,
who have taught me about Life and Love.*

F.S.S.

Foreword

Human beings are naturally curious and seek a coherent understanding of life and its mysteries. The possibility of life after death is the most ancient of all mysteries, as shown by the burial rituals of the earliest *Homo sapiens* (Sussman and Cloninger 2011). In fact, wonder about spirituality emerged along with the development of narrative language, art, and science. Human art, science, and spirituality are all basic expressions of the self-aware consciousness that is unique to modern human beings (Cloninger 2004, 2007; Sussman and Cloninger 2011). Hence, a fundamental characteristic of human beings is our need to explore and understand the frontiers of the relationships among body, thought, and spirituality.

Human beings have been aptly described as “evolution conscious of itself” in the insightful words of the anthropologist Sir Julian Huxley (1959). Accordingly, it is natural for human beings to try to understand the nature of the cosmos and their place within it in order to know how to satisfy their needs and live well in health and happiness. In order to live our whole life well, it is necessary to recognize that the conscious experience of human beings includes learning how to adapt in a wide range of circumstances. In fact, human beings need to adapt to five major types of situations: sexual, material, emotional, intellectual, and spiritual (Cloninger 2004). Among these five adaptive situations, spirituality is the most recently evolved and its evolution may be incomplete, thereby resulting in marked differences between different people in traits like altruism and gifts like clairvoyance or extrasensory perception. Spirituality is defined as the search for what is beyond human existence (Cloninger 2007). Direct personal experience of the transcendent is a part of most people’s lives. Most people have had peak experiences of inseparability or oceanic feelings regardless of their religious beliefs or doubts (Cloninger 2004; Hay 2007). For example, most people report that they “sometimes have felt like I was part of something with no limits or boundaries in time and space” or “often feel so connected to the people around me that it is like there is no separation between us.” Furthermore, people spend more time in prayer or meditation than they do having sex (Cloninger 2004; Hamer 2004). The fact that such self-transcendent experiences are such a frequent and inspiring aspect of human life suggests that science can never

understand human nature well without investigating self-transcendent phenomena. Reconnecting science and spirituality is important for having a rational and comprehensive understanding of humanity and the world (Walach and Rech 2005).

Human spiritual needs have raised perennial questions about how to understand near-death experiences and the possibilities of life after death, such as reincarnation, wandering spirits of the dead, and states of spiritual possession or mediumship. These basic spiritual questions have great implications for our outlook on life, so it is not surprising that the suggested answers have led to much speculation and controversy. For example, Freud expressed doubt in any belief in an afterlife because it could be explained as seeking satisfaction from a wishful fantasy. However, his skepticism about human spirituality was based on a logical error (Cloninger 2007). Just because we desire something does not mean it is untrue or wishful fantasy. People often desire food to satisfy their material hunger, but that does not mean that food is not real. The desires and needs of human beings exist because they serve a real function. The maturity of a human being requires integration of the full range of their sexual, material, emotional, intellectual, and spiritual needs in a coherent reality-based manner (Cloninger 2006).

What people believe and the assumptions they make about life and human nature are highly dependent on cultural influences. People who live in a single culture or who reject inquiry into other cultures can have a difficult time recognizing the narrow influence of their particular culture on their thinking. Actually, the materialistic assumptions that are dominant in modern Western cultures are atypical of other modern human cultures. Around the world belief in wandering spirits and reincarnation are commonplace and not associated with any evidence of wishful fantasy (Stevenson 1983). Such facts do not tell us that such spiritual phenomena are true, but only that different cultures make different assumptions. As a result, a scientific person needs to establish reliable facts about spiritual phenomena and to test alternative ways of explaining the facts.

Some of our greatest scientists have been intensely preoccupied with understanding spiritual phenomena, including Newton and Wallace. At the end of the nineteenth century, there was widespread interest in spiritual phenomena among academics until many supposed mediums were exposed as frauds (Kottler 1974). Since then there has been great resistance among academics to even consider the possible reality of life after death as suggested by mediums and clairvoyants. Only the most courageous of empirical scientists like Hans Eysenck (Eysenck and Sargent 1993) and Ian Stevenson (1983) have been outspoken about their findings supporting paranormal abilities like extrasensory perception or recall of past lives. Although there are notable exceptions like Francis Collins (2006), most leading scientists today are highly materialistic and reject belief in anything transcendent, such as belief in God or life after death (Larson and Witham 1998). As a result, there is great social pressure among scientists to reduce all scientific explanations to material mechanisms and to reject consideration of any phenomena that cannot be explained by materialistic mechanisms as an impossible foolishness or the result of inadequate scientific rigor in observation. Despite persistent pressure from materialists (Larson and Witham 1998), an increasing majority of people in the general population have a spiritual

awareness of something beyond human existence, even if they are not religious (Hay 2007). Whereas nearly 75% of the academic elite reject transcendent phenomena, more than 85% of the general population accepts them (Larson and Witham 1998; Ecklund and Long 2011). Interestingly, the rejection of transcendent phenomena by academics is related to their social background, rather than their intelligence and expertise (Ecklund and Long 2011; Evans and Evans 2008).

In any culture, the healthiest and happiest individuals have a “creative” personality configuration characterized by high development of Self-directedness, Cooperativeness, and Self-transcendence as measured by the Temperament and Character Inventory (Cloninger 2004; Cloninger and Zohar 2011). Despite this, longitudinal studies in secular cultures show that Self-directedness and Cooperativeness increase, but Self-transcendence decreases, between adolescence and age 45. Then between 45 and 65 years of age people increase in Self-transcendence again as they learn to cope with suffering and death (Cloninger 2003). That is, the influence of secular culture often works to reduce Self-transcendence up to middle age, even though self-transcendence is characterized by being more unified in one’s perspective on life and happier for all configurations of other personality traits (Cloninger and Zohar 2011). In the general population, poor development of Self-transcendence is characterized by unhappiness, reduced self-worth, and feelings of emptiness and alienation from other people and the world as a whole. Neglect of transcendent phenomena in science is also likely to have a high cost, particularly in efforts to reduce consciousness to the zombie-like state of physical mechanisms alone in which subjectivity, self-directedness, and free will are regarded as illusory (Cloninger et al. 1993).

Fortunately, substantive progress is being made at a philosophical and empirical level to redress the explanatory gap between physical and subjective accounts of consciousness in the understanding of mind-body relationships. The courageous academic contributors to this book point out that his Highness, The Materialistic Emperor, is wearing no clothes – that is, the promise of reductionistic materialism to explain everything has been made repeatedly but without success.

Nevertheless, the burden on alternative paradigms is to show the greater utility and explanatory power of more general models that allow for the three components of human beings – body, thoughts (“mind 1”), and psyche (“mind 2”) (Cloninger 2004). In Chalmers’s terminology, “mind 1” refers to intellectual reasoning based on semantic learning, whereas “mind 2” refers to creativity, free will, giftedness, and other self-transcendent abilities like extrasensory perception (ESP) (Chalmers 1996). The greatest problem of alternative models has always been the fact that paranormal phenomena often involve veridical functions along with wishful fantasy and/or fraud. Of course it is a logical error to conclude nothing is real because some examples are not, but how can scientists exclude the noise of specious claims by some people who falsely proclaim paranormal abilities?

When I was developing a measure of spirituality called the Self-transcendence scale as a component of the Temperament and Character inventory (Cloninger et al. 1993), I was chagrined to find that belief in paranormal abilities like ESP was a reliable indicator of high Self-transcendence. The belief in ESP is as characteristic of

Self-transcendence as are peak-experiences of boundlessness and inseparability (Cloninger 2004). I considered just eliminating such paranormal items to avoid criticism from materialists, but chose to respect the truth and reliability of my findings by describing the phenomena I was observing in an open-minded way. I am glad that I did so because otherwise I might have overlooked or misunderstood some clinically important phenomena about the expression of spirituality.

High Self-transcendence is characterized by creativity and wisdom when it is combined with high Self-directedness, but it is characterized by magical thinking and perceptual aberrations when combined with low Self-directedness (Cloninger 2004; Smith et al. 2008). In other words, appreciation of the wonders and mysteries of life always promotes good feelings, but some thoughts that make a person feel good can be wishful self-deceptions. Consequently, paranormal experiences can be produced by either healthy extraversion or unhealthy psychoticism using the terminology of Hans Eysenck (Eysenck and Sargent 1993). For people to enjoy realistic and productive lives, they must combine imaginative inquiry with rigorous reality testing, as do creative artists, scientists, and mystics. Likewise for reproducible results in science, people who report paranormal experiences need to be screened for the maturity and integration of their personality.

The dual nature of Self-transcendence is at the crux of the scientific challenge of studying spiritual phenomena about consciousness. There are genuine and reproducible transcendent phenomena to be understood, but there is also much superstition and deception. The insincere make it difficult and challenging to identify the sincere, but it is a severe error of logic to dismiss what is real because of some examples of fraud or fantasy. Some instances of spiritual phenomena are difficult to dismiss by an open-minded person, as documented throughout this courageous and informative book. Edgar Cayce, for example, is a particularly well-documented case of paranormal (i.e., transcendent) giftedness (Evans and Evans 2008). It is important to recognize that even such outstanding examples are not perfectly accurate, just as observers of real life events are not consistently precise.

It is useful to remember Plato's allegory of the cave in which most observers are like prisoners doomed to observing shadows of representations of reality, whereas only a few find their way to a direct and undistorted vision of reality (Plato 1977). This book on the exploration of the frontiers of the mind-body relationship brings together some precious observations about the fundamental mystery of the nature of consciousness. It is fascinating to read regardless of one's current beliefs about spirituality and mind-body phenomena. Its merit is not in the justification of definitive conclusions, but rather the opposite. It raises many questions that serve to invite each of us to be more aware of the uncertainty of our preconceptions about consciousness. Fortunately, the reader can rest assured that speculative reason can be disciplined by scientific rigor to specify testable questions about reproducible phenomena.

This book on the frontiers of mind-body relationships is a scholarly embodiment of creative and open-minded science. All open-minded people are clearly reminded that strict materialism is a specious and inadequate paradigm – the unhealthy and naked emperor of our scientific era. To restore balance to scientific inquiry, we need

only recognize that the consciousness of human beings has a triune nature, one that has developed hierarchically over our long evolutionary history, including procedural learning of habits and skills in our early vertebrate ancestors, semantic learning of symbols and facts in anthropoid apes and early humans, and self-aware learning of narrative language, art, science, and spirituality in modern human beings (Sussman and Cloninger 2011; Cloninger 2009).

In my own opinion, we can best serve scientific truth by open-minded inquiry into the powerful interactions among material, cognitive, and spiritual mechanisms because the ternary components of consciousness never operate in isolation from one another (Cloninger and Cloninger 2011). A scientist cannot control what s/he does not measure or chooses to ignore by denial of its reality. In contrast, we can avoid the pitfalls of reductionism by using an integrative psychobiological approach, thereby staying alert to the full range of phenomena that can inform us about the triune nature of human consciousness.

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Preface

The understanding of mind and consciousness is one of the most exciting and challenging enterprises in the human's quest for comprehension of ourselves and of the universe as a whole. Chiefly, what is the nature of the mind and its relationship with the brain? What is it that makes us human and provides us with the qualities and skills that make us what we are? What is the source of the experience of ourselves? In spite of their importance, these questions remained largely neglected by philosophy and science during most part of the twentieth century. However, in the last 2 decades, there has been an exciting revival of interest in this subject in the academic milieu.

Discoveries in neuroscience and neurotechnology, in particular, have provided a unique window through which we can glance into the intricate workings of the human brain. Even though these technologies have evolved, they have also shown the fundamental limitations that currently exist in our understanding of the human mind. As put by the philosopher of mind David Chalmers (1995), despite the extraordinary advances of neuroscience, explaining conscious experience “poses the most baffling problems in the science of the mind” (p.200).

However, many people, even in the academic world, think that these questions have been already answered. They believe that the human brain is the answer, that mind does not exist, or it is just the product (for some, an epiphenomenon, an ineffective by-product) of brain chemistry and electric activity. Many also see the brain as an entity that can see, hear, think, feel, and make decisions. However, those seem to be unwarranted conclusions. As put by the neuroscientist Eccles (Popper and Eccles 1977:225):

There is a general tendency to overplay the scientific knowledge of the brain, which, regrettably, also is done by many scientists and scientific writers. For example, we are told that the brain ‘sees’ lines, angles (...) and that therefore we will soon be able to explain how a whole picture is ‘seen’ (...). But this statement is misleading. All that is known to happen in the brain is that neurons of the visual cortex are caused to fire trains of impulse in response to some specific visual input.

A similar complaint was made by another couple composed of a philosopher and a neuroscientist who consider “the ascription of psychological – in particular, cognitive and cogitative – attributes to the brain is (...) a source of much (...) confusion.

(...) the great discoveries of neuroscience *do not require* this misconceived form of explanation” (Bennett and Hacker 2003:3–4).

Although reductionist materialism is a hypothesis worth pursuing, it is not a “scientific fact,” as many believe. However, several reductionists accept that it is not yet a “scientifically proven fact,” but it will become one soon. This belief that “at some unspecified time in the future” (p.205), it will be scientifically shown how brain generates mind is what Popper and Eccles called *promissory materialism*.

Of course that reductionism is a legitimate working theory regarding the mind-brain problem, however if it is hastily taken as the final and definitive answer, it might lead to a dogmatic and premature closure of this quest, which is one of the most important challenges to human knowledge. This approach is a dangerous epistemological posture, since the bare fact is that we are far from actually understand and explain mind. Using the terminology of the philosopher of science Thomas Kuhn (1970), we could say that we are in a preparadigmatic phase regarding the mind-brain problem. A preparadigmatic period is when there is no consensual acceptance by the scientific community of a specific paradigm (a framework of key theories, instruments, values and metaphysical assumptions for a given academic discipline) (Bird 2009). We have several candidates to be the scientific paradigm for the study of consciousness, but none have actually achieved that point yet, characterizing the field as an immature science.

One of the adverse consequences of the premature acceptance of a theory is that finding confirmatory examples of almost any theory is an easy task (Popper 1995). Much data is usually presented to support that mind has been fully explained as a product of brain activity. This often includes examples of psychophysiological concomitance and showing that brain injury or a neurophysiological change is often followed by some alteration in mind. However, as William James (1898) demonstrated more than a century ago, these data can also be accommodated by a *transmission theory* in which brain acts as a filter, having a “permissive or transmissive function” (p.291), acting as “an organ for limiting and determining to a certain form a consciousness elsewhere produced” (p.294). Also, as put by Chalmers (1995), studying neural correlates of consciousness, it is not the same as explaining consciousness or how and why these processes might give rise to conscious experience. There is an “*explanatory gap* between the functions and experience, and we need an explanatory bridge to cross it” (p.203).

According to the philosopher of science Karl Popper, to truly test a theory, we should be committed to look for evidence that could possibly falsify that theory. A good scientific theory withstands vigorous attempts to find contrary evidence. However, Kuhn (1970) showed that scientists usually are not able to recognize phenomena not allowed by the paradigm they are committed to:

Can it conceivably be an accident, for example, that Western astronomers first saw change in the previously immutable heavens during the half-century after Copernicus’ new paradigm was proposed? The Chinese, whose cosmological beliefs did not preclude celestial change, had recorded the appearance of many new stars in the heaven at a much earlier date (Kuhn 1970, p. 116).