

The Heart, Mind and Spirit

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Introduction

The concept of mind is of central importance for psychiatrists and psychologists. However, little attention has been paid in most formal textbooks to this important issue, which is usually studied under the section of 'Philosophical aspects of psychiatry/psychology'. The practicing psychiatrist should have some working model of the mind to help him understanding his patient's problems (Salem, 2004). This review discusses some aspects of the components of mind, which is only one step on a long road.

In many cultures throughout history, the heart has been considered the source of emotions, passion and wisdom. Also, people used to feel that they experienced the feeling or sensation of love and other emotional states in the area of the heart. However, in the past, scientists emphasized the role of the brain in the head as being responsible for such experiences. Interestingly, recent studies have explored physiological mechanisms by which the heart communicates with the brain, thereby influencing information processing, perceptions, emotions and health. These studies provided the scientific basis to explain how and why the heart affects mental clarity, creativity and emotional balance. In this review, I shall try to summarize and integrate the interesting findings in this area.

Heart and emotions

It is long known that changes in emotions are accompanied by predictable changes in the heart rate, blood pressure, respiration and digestion. So, when we are aroused, the sympathetic division of the autonomic nervous system energizes us for fight or flight, and in more quiet times, the parasympathetic component cools us down. In this view, it was assumed that the autonomic nervous system and the physiological responses moved in concert with the brain's response to a given stimulus (Rein, Atkinson, et al, 1995).

The heart and brain

However, following several years of research, it was observed that, the heart communicates with the brain in ways that significantly affect how we perceive and react to the world. It was found that, the heart seemed to have its own peculiar logic that frequently diverged from the direction of the autonomic nervous system. The heart appeared to be sending meaningful messages to the brain that it not only understood, but also obeyed (Lacey and Lacey, 1978). Later, neurophysiologists discovered a neural pathway and mechanism whereby input from the heart to the brain could inhibit or facilitate the brain's electrical activity (McCraty, 2002)

The brain in the heart:

After extensive research, Armour (1994) introduced the concept of functional 'heart brain'. His work revealed that the heart has a complex intrinsic nervous system that is sufficiently sophisticated to qualify as a 'little brain' in its own right. The heart's brain is an intricate network of several types of neurons, neurotransmitters, proteins and support cells similar to those found in the brain proper. Its elaborate circuitry enables it to act independently of the cranial brain – to learn, remember, and even feel and sense. The heart's nervous system contains around 40,000 neurons, called sensory neurites (Armour, 1991). Information from the heart - including feeling sensations - is sent to the brain through several afferents. These afferent nerve pathways enter the brain at the area of the medulla, and cascade up into the higher centres of the brain, where they may influence perception, decision making and other cognitive processes (Armour, 2004).

Thus, it was revealed that the heart has its own intrinsic nervous system that operates and processes information independently of the brain or nervous system. This is what allows a heart transplant to work. Normally, the heart communicates with the brain via nerve fibres running through the vagus nerve and the spinal column. In a heart transplant, these nerve connections do not reconnect for an extended period of time; in the meantime, the transplanted heart is able to function in its new host only through the capacity of its intact, intrinsic nervous system (Murphy, et al, 2000)

The heart's magnetic field:

Research has also revealed that the heart communicates information to the brain and throughout the body via electromagnetic field interactions. The heart generates the body's most powerful and most extensive rhythmic electromagnetic field. The heart's magnetic component is about 500 times stronger than the brain's magnetic field and can be detected several feet away from the body. It was proposed that, this heart field acts as a carrier wave for information that provides a global synchronizing signal for the entire body (McCraty, Bradley & Tomasino, 2004)

Heart field interactions between individuals

There is now evidence that a subtle yet influential electromagnetic or 'energetic' communication system operates just below our conscious awareness. Energetic interactions possibly contribute to the 'magnetic' attractions or repulsions that occur between individuals, and also affect social relationships. It was also found that one person's brain waves can synchronize to another person's heart (McCraty, 2004).

Communication via hormones: the heart as a hormonal gland

Another component of the heart-brain communication system was provided by researchers studying the hormonal system. The heart was reclassified as an endocrine gland when, in 1983, a hormone produced and released by the heart called atrial natriuretic factor (ANF) was isolated. This hormone exerts its effect on the blood vessels, on the kidneys, the adrenal glands, and on a large number of regulatory regions in the brain. It was also found that the heart contains a cell type known as ‘intrinsic cardiac adrenergic’ (ICA) cells. These cells release noradrenaline and dopamine neurotransmitters, once thought to be produced only by neurons in the CNS. More recently, it was discovered that the heart also secretes oxytocin, commonly referred to as the ‘love’ or bonding hormone. In addition to its functions in childbirth and lactation, recent evidence indicates that this hormone is also involved in cognition, tolerance, adaptation, complex sexual and maternal behaviours, learning social cues and the establishment of enduring pair bonds. Concentrations of oxytocin in the heart were found to be as high as those found in the brain (Cantin & Genest, 1986).

Increasing psychophysiological coherence

Data indicate that when heart rhythm patterns are coherent, the neural information sent to the brain facilitates cortical function. This effect is often experienced as heightened mental clarity, improved decision making and increased creativity. Additionally, coherent input from the heart tends to facilitate the experience of positive feeling states. This may explain why most people associate love and other positive feelings with the heart and why many people actually feel or sense these emotions in the area of the heart. So, the heart seems to be intimately involved in the generation of psychophysiological coherence (Tille et al, 1996, & McCraty, 2000).

The heart and amygdala

Research has shown that the heart’s afferent neurological signals directly affect activity in the amygdala and associated nuclei, an important emotional processing centre in the brain. The amygdala is the key brain centre that coordinates behavioural, immunological, and neuroendocrine responses to environmental threats. It compares incoming emotional signals with stored emotional memories, and accordingly makes instantaneous decisions about the level of perceived threat. Due to its extensive connections to the limbic system, it is able to take over the neural pathways, activating the autonomic nervous system and emotional response before the higher brain centres receive the sensory information (Rein, McCraty and Atkinson, 1995 & McCraty et al, 1995).

The heart and intuition

A very interesting research finding has been that the heart is involved in the processing and decoding of intuitive information (McCraty, Atkinson & Bradley, 2004). Previous data suggests that the heart’s field was directly involved in intuitive perception, through its coupling to an energetic information field

outside the bounds of space and time (Childre & McCraty, 2001). Using a rigorous experimental design; there was evidence that both the heart and brain receive and respond to information about a future event before the event actually happens. Even more surprising was that the heart appeared to receive this intuitive information before the brain (McCraty, Atkinson & Bradley, 2004).

Discussion

It has long been thought that conscious awareness originates in the brain alone. Recent scientific studies suggest that consciousness emerges from the brain and body acting together (Popper & Eccles, 2000). As has been shown, a growing body of evidence now suggests that the heart plays a particularly significant role in this process. The above findings indicate that, the heart is far more than a simple pump. In fact, it is seen now as a highly complex, self-organizing information processing centre with its own functional 'brain' that communicates with, and influences, the cranial brain via the nervous system, hormonal system and other pathways. The involvement of the heart with intuitive functions is another interesting piece of information. However, as persons with transplanted hearts can function normally, the heart can be considered here as a medium or tool, for an underlying more sophisticated integrating system that has the capacity to carry the personal identity of the individual. These new visions might give better understanding to the concept of mind as a multi-component unit that is not only interacting with the physical environment through demonstrable means, but also has the capacity to communicate with the cosmic universe through non-physical pathways (Lorimer, 2001). This gives rise to the concept of the spirit as the non-physical element, or the field, of the mind that can communicate with the cosmos outside the constraints of space and time. The evidence for such communication comes from the reported phenomena of extra-sensory perception (telepathy, precognition, and clairvoyance), psycho-kinesis, psychic healing and religious experiences (Radin, 1997 & Henry, 2005).

Possibly further advancement in quantum physics may one day give us further insight into how we can formulate this new model of the heart, mind and spirit.

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