

## Heart-Brain Coherence

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### ABSTRACT

**Background:** The heart is mostly considered as a pump of blood with electrical activity. The brain is the center for all kind of emotions. Recent studies have shown that the heart is not acting just as a pump but is also a generator of energy even stronger than the brain and bear neuronal cells acting as brain cells. The interaction of the brain with the heart is the main component of the physiological and psychological coherence.

**Purpose:** The brain-heart interaction should be reviewed for the physiological and psychological coherence.

**Conclusion:** The heart is even stronger center of energy interacting with the brain. Emotions and feelings affect first the heart and with the brain constitute the energetical state of the person. Positive thinking through the heart helps to restore the body electromagnetic coherence.

**Keywords:** Heart, Brain, Heart-brain coherence, Energy medicine, Brain-heart interaction, Intrinsic cardiac plexus

### HEART-BRAIN COHERENCE

The ancient Egyptians believed that the heart, rather than the brain, was the source of human wisdom, as well as emotions, memory and the personality itself. In creating a mummy, they scooped out the brain through the nostrils and threw it away while the heart was considered as the Centre of thought, emotion, and all other nervous function and was left in the body at the time of mummification to ensure its availability at judgment. The heart was thought capable of recording all the good and evil acts performed by a human being during life.

In ancient Egyptian texts two different words are used for the heart, IB and HATY. The heart-IB is identified with the consciousness, with the organ of thoughts and senses, while the heart-HATY often designates the physical heart, the anatomical organ.

Ayurveda, the traditional Indian medicine (TIM) and traditional Chinese medicine (TCM) as well as Tibetan medicine believe that the heart is the Centre of energy and the master of the process of body mind alignment [1-3].

From his book "Wounds in the Head", and similar references in "The Sacred Disease", Hippocrates considered consciousness to reside in the heart. He identified the heart as the most important organ of the body, the seat of intelligence, motion, and sensation and the root of all the faculties of nutrition, life, apprehension, and movement [4].

HRV (heart rate variability) is considered a measure of neurocardiac function that reflects heart- brain interactions and autonomic nervous system (ANS) dynamics [5].

The complexity of heart functioning in physiological as well as psychological and emotional aspects is better understood with the advances in explaining the regulation of HRV. An optimal level of HRV in an organism reflects healthy psychophysiological function and self-regulatory capacity, adaptability, and resilience. The importance of HRV as an index of the functional status of physiological control systems was noted in 1965 when it was found that fetal distress is preceded by reductions in HRV before any change occurring in HR itself [5].

The Heart Math Institute (HMI) by Doc Children as a director and Rollin McCarty as chief scientist and their successful group in Boulder Creek, California has mostly contributed to the scientific understanding of the heart central role in human psychophysiology. HMI research suggests that the heart is the source of wisdom and intelligence and can help to turn into more balanced lives with greater creativity and enhanced intuitive capacities

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and increased personal effectiveness, and improve health by achieving greater fulfillment. For more than 30 years, the Heart Math Institute Research Center has explored the physiological mechanisms by which the heart and brain communicate and how the activity of the heart influences our perceptions, emotions, intuition and health [6].

King of Organs (KOO) International Conferences for Advanced Sciences established by Abdullah Alabdulgader in Hofuf, Saudi Arabia has been realized regularly to explore the no pumping functions of the human heart intelligence [7].

Positive emotions give distinctive HRV pattern compared to negative emotions. Positive emotions have been found to broaden the scope of perception, cognition, and behavior by enhancing faculties such as creativity and intuition [8].

Afferent input from the heart and, the pattern of the heart's rhythm play a key role in emotional experience. The heart's rhythmic beating patterns not only reflect the individual's emotional state, but they also play a direct role in determining emotional experience. At the physiological level, afferent input from the heart is conveyed to the subcortical regions of the brain that are involved in emotional processing and has a significant influence on the activity of these brain centers. Input from the heart not only affects the homeostatic regulatory centers in the brain, but also influences the activity of higher brain centers involved in perceptual, cognitive, and emotional processing, by affecting diverse aspects of our behavior and consciousness experience. Emotions and psychophysiological patterns are reflected in heart rhythm patterns and frequencies. For example, activity in the amygdala has been found to be synchronized to the cardiac cycle [9].

The heart plays a unique role in synchronizing the activity in multiple systems of the body across different levels of organization in orchestrating the flow of information throughout the psychophysiological network. As the most powerful and consistent generator of rhythmic information patterns in the body, possessing an extensive communication system with the brain than other organs, the heart is in continuous connection with the brain and other bodily organs and systems through multiple pathways: neurologically (through the transmission of neural impulses), biochemically (through hormones and neurotransmitters), biophysically (through pressure and sound waves), and energetically (through electromagnetic field interactions). Of all the organs, the heart generates the largest rhythmic electromagnetic field, approximately 5000 times stronger than that produced by the brain. This field is measured in the nanotesla ranges and can be detected several feet from the body with Superconducting Quantum Interference Device (SQUID) based magnetometers [10].

Rollin McCarty and colleagues in Heart Math Institute have found that the rhythmic patterns in beat-to-beat heart rate

variability reflect emotional states and encode and transmit biologically relevant information patterns via the electromagnetic field radiated into the environment. The heart generates a series of electromagnetic pulses in which the time interval between each beat varies in a complex manner. These pulsing waves of electromagnetic energy give rise to interference patterns when they interact with magnetically polarizable tissues and substances [11].

Park [12] showed that in humans, neural events locked to heartbeats before stimulus onset predict the detection of a faint visual grating in the posterior right inferior parietal lobule and the ventral anterior cingulate cortex, two regions that belong to the same resting state network. Brain rhythms were also found to be synchronized to the cardiac cycle [12].

Consequently, the heart and the brain, forming together a system-wide process, are involved in receiving, processing, and decoding intuitive perception but the heart receives intuitive information before the brain. Thus, the heart may have stronger influence over the body in the interconnection with the brain.

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#### REFERENCES

1. Alabdulgader A (2021) The Ancient Wisdom at Intersection with Modern Cardiac Sciences. *Cardiol Vasc Res* 5(1): 1-13.
2. Ziskind B, Halioua B (2004) La conception du coeur dans l'Egypte ancienne [Concepts of the heart in Ancient Egypt]. *Med Sci (Paris)* 20: 367-373.
3. Hallmann-MA (2004) Papyrus Ebersa. Księga wiedzy medycznej egipcjan z XVI w P.N.E [Ebers Papyrus. The book of medical knowledge of the 16<sup>th</sup> century B.C. Egyptians]. *Arch Hist Filoz Med* 67: 5-14.
4. Cheng TO n(2001) Hippocrates and cardiology. *Am Heart J* 141: 173-183.
5. Shaffer F, McCarty R, Zerr CL (2014) A healthy heart is not a metronome: An integrative review of the heart's anatomy and heart rate variability. *Front Psychol* 5: 1040.
6. McCarty R, Shaffer F (2015) Heart Rate Variability: New Perspectives on Physiological Mechanisms, Assessment of Self-regulatory Capacity, and Health Risk. *Glob Adv Health Med* 4: 46-61.
7. Alabdulgader A (2016) Future of cardiovascular practice: Alert to change or call for revolution. *J Cardiovasc Med Ther* 1: 1.

8. Fredrickson BL, Branigan C (2005) Positive emotions broaden the scope of attention and thought-action repertoires. *Cogn Emot* 19: 313-332.
9. Cameron OG (2002) *Visceral Sensory Neuroscience: Interoception*. New York: Oxford University Press.
10. McCraty R, Childre D (2010) *Coherence: Bridging Personal, Social and Global Health*. *Altern Ther Health Med* 16: 10-24.
11. McCraty R, Atkinson M, Tomasino D, Bradley RT (2009) The coherent heart: Heart-brain interactions, psychophysiological coherence, and the emergence of system-wide order. *Integr Rev* 5: 10-115.
12. Park HD, Correia S, Ducorps A, Baudry CT (2014) Spontaneous fluctuations in neural responses to heartbeats predict visual detection. *Nat Neurosci* 17: 612-618.