



Editorial

## Spirituality and Cognitive Neurosciences

## Espiritualidad y neurociencias cognitivas

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Spirituality is a word derived from Greek and is composed of the voice *spiritus* meaning breath, *-alis*, which refers to that which relates to and the suffix *-lity* indicating quality. Spirituality is the knowledge, acceptance, or cultivation of one's essence. For Aristotle, it is the highest form of activity of the spirit, thinking about thinking, the pleasure of theorizing... Spirituality is the inner life. Expressions and practices of spirituality are personal; it is how you understand the world and the universe within yourself.

Many confuse religiosity with spirituality, but they are not interchangeable, religiosity is a belief system about a higher power and/or transcendent forces. There are many who consider themselves spiritual and not at all religious and others religious and not at all spiritual.

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Cognitive neurosciences are born from the conjunction of cognitive psychology and neurosciences, describing the models of cognitive functions, and interrelating them with the neuroanatomical bases through methods such as structural and functional neuroimaging, neurophysiological functional networks, and brain magnetic stimulation.

Until recently, work on the neurobiological basis of spirituality has been very scarce, probably due to the historical dichotomy between spirit and matter.

### *Neurobiology of spirituality*

Most studies exploring the neurobiology of spirituality have been devoted to exploring meditation (Yoga, Tibetan meditation) through functional neuroimaging (PET-Positron Emission Tomography, MRI-Magnetic Resonance Imaging and SPECT-Single Photon Emission Computerized Tomography). These studies report prefrontal activation and parietal hypo activation. Prefrontal and cingulate activation is related to the volitional aspects of meditation and religious experiences. Hyperfunction of the medial prefrontal cortex is related to hyper-religiosity (Mohandas, 2008).

### *Spirituality and Mental Health*

In 2022 we published a systematic review on spirituality and mental health in older adults. We reviewed 102 studies that investigated 79 918 adults over 60. The results show that high spirituality is associated with lower anxious and depressive symptoms and with greater satisfaction and meaning in life, social relationships, and psychological well-being. In longitudinal analysis, subjects with high spirituality and intrinsic religiosity had lower prevalence of depressive symptoms and feelings of death and better cognitive health status (Coelho-Júnior et al., 2020).

The study of spirituality from the cognitive neurosciences is a major challenge both because of its neurobiological basis and its implications for mental health in health and illness. Understanding this relationship between spirituality and our brain is one of the many opportunities for cognitive neurosciences.

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