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Editorial

Mirror mirror on the brain; tell me what do they feel? Mirror neurons; the neural wi-fi system for affect sharing

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Mirror Neuron System (MNS)

During an action observation (AO) and action execution, specific group of neural substrates are activated [1]. They provide a neural mechanism for understanding the actions of others called as mirror neurons (MNs) [2]. They also carry out motor grounding, motion ersatz, language and emotion appreciation [1].

Affect Sharing

Mirror neurons discharge not only throughout the self-experience of pain but also during the perception of other people's pain [3]. Neuroimaging studies carried out in humans while experiencing, as well as witnessing pain demonstrates activity in their anterior cingulate cortex (ACC) [4]. The human cingulate cortex contains mirror neurons. These neurons are activated in pain and are reactivated witnessing the pain of others [5,6].

Common Neural Mechanism for Emotional Contagion

Researchers found that during pain experience and observation, the rat brain activates the neurons in anterior cingulate cortex (area 24) which are similar in location, cytoarchitecture, and connectivity to the location of the human cingulate cortex [5]. Studies also reveal that the animals no longer feel the pain of other animals if the mirror neurons are not active [6]. These mirror neurons are the common neural mechanism for emotional contagion in mammals, elucidating the neural basis of human rat intersubjectivity [5].

Conclusion

Studies on the neural basis for emotion sharing is the most momentous step in understanding the mechanism of empathy. As lack of empathy is a main feature in various psychiatric disorders, such as in psychopaths. Indistinct knowledge about mirror neurons, anterior cingulate cortex and their role in emotional contagion and empathy will throw light on reconnoitring the etiology and new-fangled therapeutic possibilities for such disorders.

References

1. Zhang JJ, Fong KN, Welage N, Liu KP. The activation of the mirror neuron system during action observation and action execution with mirror visual feedback in stroke: a systematic review. Neural plasticity. 2018;2018.
2. Mazurek KA, Rouse AG, Schieber MH. Mirror Neuron Populations Represent Sequences of Behavioral Epochs During Both Execution and Observation. Journal of Neuroscience. 2018;38(18):4441-4455.
3. Gallese V, Keysers C, Rizzolatti G. A unifying view of the basis of social cognition. Trends in cognitive sciences. 2004 Sep 1;8(9):396-403.
4. Lamm C, Decety J, Singer T. Meta-analytic evidence for common and distinct neural networks associated with directly experienced pain and empathy for pain. Neuroimage. 2011;54:2492-2502.
5. Carrillo M, Han Y, Migliorati F, Liu M, Gazzola V, Keysers C. Emotional mirror neurons in the rat's

anterior cingulate cortex. Current Biology. 2019 Apr 22;29(8):1301-12.

6. Netherlands Institute for Neuroscience-KNAW. "I feel you: Emotional mirror neurons found in the rat." ScienceDaily. April 2019. Retrieved from www.sciencedaily.com/releases/2019/04/190411115239.html