

Swiss Center for Affective Sciences

Shared representations and self-other distinction as two essential components of empathy

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LECTURE

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Campus Biotech

Room 144.165
9, chemin des Mines
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My talk aims to provide an overview of recent social neuroscience research targeting the neural mechanisms of empathy. In the first part, I will review evidence showing that empathy for pain recruits neural networks overlapping with those underpinning the first-hand experience of pain. While this has been interpreted to indicate that empathy relies on “shared representations”, similarity of neural activations alone is insufficient to indicate equivalence of representations. To obtain more conclusive evidence on whether empathy indeed recruits functionally similar neural processes, we therefore performed a series of behavioral, ERP, fMRI and psychopharmacological studies aiming to show that experimentally reducing the first-hand experience of pain (by means of placebo analgesia) equivalently reduces empathy for pain, and that this is supported by similar neural networks and neurochemical mechanisms. Our data indeed show that placebo analgesia reduces empathy for pain, and that this is accompanied with matching ERP and fMRI activation changes in the “shared” empathy for pain network identified previously. Moreover, blocking placebo analgesia by means of an opioid antagonist also blocks the effects of placebo analgesia on empathy. This provides more direct and mechanistic evidence that empathy indeed relies on functionally equivalent processes as first-hand emotion experiences, supporting claims that empathy consists in some sort of “embodied simulation” of the affective state of others. In the second part of my talk, I will focus on another aspect that is crucial for the experience of empathy, which is self-other distinction (S-O-D). I will present results from a series of behavioral, fMRI, and TMS experiments showing that the right supramarginal gyrus (an area adjacent but distinct to what has classically been labeled as the “right temporo-parietal junction”) is causally involved in self-other distinction and, more specifically, in overcoming emotion egocentricity. I will then demonstrate how the experience of acute psychosocial stress affects self-other distinction, and report recent behavioral and fMRI findings showing that a. there are profound gender differences in how stress affects S-O-D, with females and males becoming less or more egocentric under stress, respectively; b. that one mechanism for the higher egocentricity in men seems to be that stress triggers a stronger self-centered aversive response in them when witnessing the pain of others, as indicated by fMRI ■

Swiss Doctoral School in Affective Sciences

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