University of Zurich UZH

Department of Economics – Neuroeconomics Seminar

April 09, 2020 - 10:00 - 11:00

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Neurocognitive Mechanisms of Valence Decisions in Naturally Ambiguous Facial Expressions

Decoding the valence (i.e., positivity-negativity) from facial expressions of others is a socioemotional process that necessitates integration of cues from multiple sources. My research leverages the valence ambiguity uniquely found in the facial expression of surprise, in order to investigate how bottom-up processing of specific cues (i.e., facial features) interact with top-down processing of complementary information (i.e., contextual cues) when making valence decisions.

Here, I will present a series of studies employing social cognitive, neuroimaging, and computational approaches, which collectively demonstrate that the human amygdala, via communicating with the nucleus accumbens and the ventral prefrontal cortex, is capable of encoding the pure effects of valence, independent of arousal or emotional category. I will also offer a model-based approach to defining a trait-like individual difference measure that represents one's sensitivity to contextual cues during valence decision making. Context sensitivity is associated with frontolimbic pathways that connect the amygdala and the ventral prefrontal cortex, a neural circuitry that underpins the manipulation and integration of affective cues.

These findings lend support to a more general framework that the capacity for efficient crosstalk between the amygdala and the prefrontal cortex is important for the successful management of socioemotional information, and suggest that context sensitivity may be useful in indexing individualized affective processing style and explicating its association with mental health outcomes.