

The neurobiology of beliefs in dynamic social interaction

Abstract

It is often said that the only constant in life is change. While this philosophical notion likely applies to any living organism, it most aptly describes the challenges we face in our ever-changing social environment. However, despite converging efforts in neuroeconomics and social cognitive neuroscience, the question as to how the human brain enables us to meet those challenges is an ongoing endeavor, and far from being resolved.

Clearly, we do not change fundamentally as we navigate our social lives, because personality traits and social preferences are presumed to be rather stable. So what is it then that allows for short-term flexibility in social interactions? One key aspect is certainly our fundamental ability to update beliefs about others, and to change our behavior in line with those updates. For instance, trust violations may change our beliefs about the trustworthiness of a business partner, and feedback about prevailing social norms may change what we consider to be a socially appropriate action. Social feedback can also affect the beliefs about one's social standing, and change whether we engage in further status competition.

The notion of change can be tracked down to the level of neurotransmitters and neuroendocrine systems. For example, there is substantial evidence that striatal dopamine encodes the probability of expected rewards by signaling the difference between expected and obtained rewards, which led to speculations that dopamine may be a neurochemical correlate of belief updating. This may apply to hormones as well. For instance, testosterone secretion is known to respond readily to social context changes - such as the reordering of social hierarchies following competitive encounters.

To elucidate the neurobiology underlying belief updating the project will rely on a radically interdisciplinary approach, combining research areas such as mathematics, behavioral economics and social cognition with neuroscientific methods such as pharmacological manipulations of hormone and neurotransmitter systems, brain lesions studies and brain imaging. In doing so, this project will pave the way for a new wave of research focusing on what basic neurobiological systems enable us to adapt our behaviors and decisions in a dynamically changing social world.

Scientific disciplines:

301401 - Brain research (30%) | 301210 - Psychopharmacology (30%) | 501011 - Cognitive psychology (20%) | 502045 - Behavioural economics (20%)

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Further links about the involved persons and regarding the project you can find at

https://archiv.wtf.at/programmes/vienna_research_groups/VRG13-007