University of Zurich[UZH]

Department of Economics – Neuroeconomics Seminar

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Meta-Motivation: Understanding and Leveraging Motivation as a Neural Context for Adaptive Memory

Motivation guides and animates behavior based on representations from memory. The role of motivation in reinforcement learning has long been well studied, particularly in animal paradigms that require extrinsic incentives; yet neuroscience is, ironically, only recently coming to study how motivation guides memory, including the assembly of complex models of the world and the pursuit of knowledge – motives that guide science itself. The last several years have seen an explosion of methods for examining the biology of human cognition and behavior and relating it to rich traditions and findings in animals. In particular, the ability to quantify neural activity associated with distinct motivational states using functional neuroimaging now offers exciting insights into neuromodulatory systems associated with motivation and the neural foundations of adaptive memory formation. These biological findings, in turn, point to new behavioral predictions and questions about learning and memory. The work of the Adcock laboratory is to understand how motivation shapes memory formation and to help leverage that understanding to improve education and learning-based therapies. In this presentation, I will review our recent work guided by hypotheses grounded in both animal models and human clinical insights, selectively targeting the neural architecture of motivational states during memory formation, to understand how they influence both maladaptive ideas and successful human adaptation.