University of Zurich[UZH]

Department of Economics – Neuroeconomics Seminar

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The computational architecture of self-beliefs

Metacognition, the ability to reflect on our own cognition and mental states, is a critical component of behavioral control. Despite a focus in cognitive and computational neuroscience on the formation of “local” confidence in isolated decisions, a major determinant of human behaviour is not only “local” confidence, but also an overall sense of confidence about our abilities and skills which I refer to as “global” self-beliefs.
I will first present behavioral and neural evidence that humans can incorporate local confidence to form self-beliefs over time, while also pervasively underestimating their performance in the absence of feedback. I will further show that local and global metacognitive judgements vary across different domains, suggesting that metacognition operates across several hierarchical levels.
I will then focus on how self-beliefs influence downstream behavior. Self-beliefs have a widespread impact on professional, social, and psychiatric trajectories. To put it simply, individuals who do not believe in themselves are unlikely to try very hard in the first place. However, individuals are not simply more or less confident (in themselves), but confident that for a given amount of effort invested, they could achieve a given level of performance: their 'self-efficacy'. I will propose to formalize individuals' beliefs about self-efficacy as subjective functions characterizing how effort translates into expected performance in a computational framework. The central hypothesis is that distorted self-efficacy beliefs may jointly explain why individuals with depression report lower confidence in their abilities, believe that effort investments will make little difference in terms of outcomes, and exhibit apathy.