Vision Science Colloquium – External Guests

Winter Semester 2024
Time: Tuesday, 16.15 – 17.45
Location: T0-145

Organization: Werner Schneider (Neurocognitive Psychology, & CITEC, Bielefeld University)

Date	Speaker	Title	Abstract
15.04.25 16:15-17:45 X-E0-224	**Alexander Soutschek** (Ludwig-Maximilians-Universität, Munich)	**Neural Basis of Decision Making - At the Intersection of Motivation and Cognition**	Our daily life permanently requires us to make decisions, for example when we have to decide which meal we choose for lunch or how much mental effort we are willing to invest for writing a scientific article. Decisions are influenced by both cognitive (e.g., impulse control) and motivational (e.g., our goals and values) factors. In my talk, I will present current research on two determinants of decisions: metacognition and aversion to mental effort. In the first part, I provide insights into the brain networks enabling us to have accurate metacognitive knowledge about our own cognitive processes and demonstrate that metacognition plays a crucial role in shaping behavior in both healthy and clinical populations. In the second part, I provide evidence that mental work (e.g., tasks requiring working memory or attention) is subjectively perceived as strenuous by individuals (aversion to mental effort) and that enduring mental effort leads to motivational fatigue. Decisions to engage in effortful goal-directed cognition rely on cost-benefit trade-offs computed by the striatum and anterior cingulate cortex, whereas motivational fatigue after mental work may result from metabolic changes in the lateral prefrontal cortex. Together, I present novel insights into the neuro-cognitive mechanisms underlying decision making, which may also improve our understanding of the neural underpinnings of decision making deficits in clinical disorders.
01.07.25 16:15-17:45 X-E0-224	**Floris De Lange** (Donders, Njmwegen)	**Predictive computations in the human brain**	We perceive the world by rapidly transforming streams of meaningless sensory signals into meaningful tokens, such as hearing the word 'brain' or seeing an apple. How can our brain do this so quickly, efficiently, and robustly? The key that may unlock this ability is prediction: The brain is constantly forming predictions of its input, which are compared with incoming information to update predictions, in a virtuous cycle. In my talk, I will discuss how the brain may implement prediction, drawing on behavioral and neuroimaging evidence. I will also discuss recent work using neuroscience-inspired AI algorithms (Artificial Neural Networks, ANNs), as models of neural information processing to understand predictive processing in more natural worlds.
08.07.25 16:15-17:45 X-E0-224	**Anna Schubö** (Philipps-Universität Marburg)	**tba**	**tba**
15.07.25 16:15-17:45 X-E0-224	**Thomas Schenk** (Ludwig-Maximilians-Universität, München)	**tba**	**tba**