

## Vision Science Colloquium – External Guests

Summer Semester 2024

Time: Tuesday, 16.15 – 17.45

Location: Lecture Building X: X-E1-200

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

Date	Speaker	Title	Abstract
07.05.24 X-01-200	<b>Uwe Mattler</b> (University of Göttingen)	<b>Priming effects of masked stimuli: The role of the masking procedure.</b>	One approach to investigate stimulus processing outside of consciousness employs masking paradigms which make a commonly visible stimulus invisible. Priming effects of masked stimuli have been taken as evidence for the view that given specific circumstances stimuli can be processed although they are not consciously perceived. Dissociation paradigms have been developed which provide evidence for a dissociation of processing routes that do or do not result in conscious perception of the stimuli that can produce various effects irrespective of whether they are consciously perceived or not. Later investigations, however, revealed that priming effects of masked stimuli depend on the type of masking paradigm that is used to abandon conscious perception of the effective stimuli. Different effects of specific masking procedures on conscious perception and on priming effects shed new light on the processing of visual stimuli in general. Most recent findings accord with the view that backward masking interferes with stimulus processing for conscious perception while forward masking affects stimulus processing on the route to priming effects.
25.06.24 X-E1-200	<b>Timo Stein</b> (Brain and Cognition, Department of Psychology, University of Amsterdam)	<b>Refining models of (un)conscious information processing: Improving theories of consciousness</b>	In the dynamic field of consciousness science, recent years have witnessed a surge of interest, marked by competition among various theories of consciousness. Amidst these competing theories, a common thread has emerged—the idea that distinct stages of neural information processing exist, depending on the strength of sensory input and the availability of top-down attention. Although the resulting "four-stage model" is central to major theories of consciousness, empirical evidence for the hypothesized neural processes at all four stages has been lacking. Here, I demonstrate how time-resolved EEG decoding of different visual features can be used to concurrently characterize feedforward and recurrent processing at all stages of the model. Another key challenge in consciousness science relates to the "measurement problem"—disagreements about how to measure consciousness. I provide evidence that the hypothesized extent of conscious vs. unconscious processing is determined by the measurement approach, using data from visual detection paradigms and fMRI as examples. Different measurement approaches result in different estimates of the functional and neural correlates of consciousness, contributing to a lack of convergence on a single theoretical framework that explains conscious experience. These findings underscore the need for conceptual and methodological reform in consciousness science. By addressing these challenges, we can pave the way for a unified theory of consciousness.