

Rhythms in Cognition: Revisiting the Evidence

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Everyday experience may arise from a fundamentally discrete sampling of our sensory environment, just like a movie consists of still frames shown in rapid succession. Already [Bishop](#) (1932, Am J Physiol Leg) suggested such a sampling process. He further identified rhythmic brain activity as the phasic neural analogue of a shutter mechanism subserving discrete sampling. Although it contrasts starkly with our intuition of a continuous perceptual flow, the sampling idea has been reiterated over the past 90 years. Ever-more precise recordings of human brain activity and novel analysis techniques have seen an unprecedented surge of interest over the last decade. Consequently, we have come to see brain rhythms as the neural implementation of perceptual sampling and the basis of cognitive functions such as attention, memory and language. In an interesting twist however, more recent negative findings on the role of pre-stimulus oscillatory phase on perception suggest that support for discrete sampling as a fundamental mechanism remains equivocal.

In our Special Issue, we call for methodologically principled studies, irrespective of their outcome, to provide us with the most detailed picture to-date as to the conditions under which perceptual sampling, and its consequences for cognition, can (not) be observed. These studies can be original contributions, replication attempts, pre-registered studies or file-drawer experiments that have to follow a thorough methodology and thus allow clear interpretations also of negative findings. We further welcome dedicated reviews, opinion pieces and methodological advances. Studies can address perceptual sampling in vision, audition or other senses by testing its impact on neuro-physiological or behavioural performance measures (psychophysics). Authors are encouraged to make their data



openly accessible along with their experimental and analysis codes in order to foster reproducibility and transparency. We invite human studies adopting neuroimaging (EEG, iEEG, MEG, fMRI) and neurostimulation techniques (tES, TMS, sensory entrainment). Animal studies will be a highly welcome supplement.

We are very much looking forward to your submissions to our EJM Special Issue “Rhythms in Cognition: Revisiting the Evidence”.

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