This experiment explores the oscillatory relationship between two important top-down processes: prediction and attention. Prediction allows the brain to use past experience to make ‘informed guesses’ about future events, while attention gives priority to events that are relevant for organismic goals. Both should overall result in more effective neural processing. Prediction means top-down signals result in earlier deployment but overall reduction of bottom-up resources: if there is a high probability that the events red-square, blue-circle, yellow-star will occur in succession, they can be treated as a single complex event structure, ‘chunk’ or even ‘word’. Attention means that neural resources can be efficiently allocated to only the most goal-relevant and information rich dimensions of experience, for example, the yellow-star or chunk that matters.

Clearly, there should be some interaction between these processes. Effective allocation of attention often relies on expectations regarding the identity and information value of upcoming events. If predictive processes reduce the need for bottom-up neural resources, does this in turn reduce the boost or the efficiency of attention? If green stars are relevant for our task and, after seeing a red-square, blue-circle, our brain anticipates a yellow star, does prediction reduce while attention boosts signal transfer up the cortical hierarchy? Or do these two factors make use of different, complementary rather than competitive neural mechanisms?