

# Neurophysiology of attention and consequences for psychological disorders

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Perceptual functions are biased flexibly, moment-to-moment, to extract the events that are relevant for our current behavioural goals. Collectively, ‘attention’ refers to the functions that adapt our perception according to our changing goals and motivational states. At its core is the ability to integrate experience over various time-scales in order to extract regularities and build predictions about selective attributes of forthcoming relevant events. As a result, attention strongly influences the types of information that will reach conscious awareness, as well as how that information will be evaluated and encoded in long-term memory.

Ongoing projects in our laboratory explore how different types of expectations are set and how these interact with ongoing perceptual, cognitive and motor functions (<http://bcl.psy.ox.ac.uk/>). We combine behavioural testing with multiple functional and structural brain-imaging methods (MEG, EEG, fMRI, DTI, TMS) to reveal the perceptual consequences of different types of expectations, and to reveal their underlying neural systems and mechanisms.

We are particularly interested in building on our basic scientific understanding of the behavioural and neural working of attention to explore the extent to which deficits in attentional functions contribute to psychological mood disorders and psychiatric conditions. Importantly, emotional states and evaluations also influence the focus of attention; therefore, the two-way interaction between the focus of attention and negative thought patterns is particularly important in determining. How does attention influence current thought patterns? How do thought patterns influence the focus of attention? Understanding this interplay will be highly informative about the mechanisms and consequences of attention as well as the neural and cognitive mechanisms of distorted thought patterns. In addition, it may provide a fruitful and scientifically based approach for therapies of conditions involving distorted thought patterns.

For further information and readings from our laboratory, please visit:

<http://bcl.psy.ox.ac.uk/>

For further information on the Oxford Centre for Human Brain Activity, please visit:

<http://www.ohba.ox.ac.uk/>

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