



Impact-Trajectoires Conference Series

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"Interhemispheric Balance: Dynamic Changes of Spatial Representations»

Visuo-spatial attention is a cognitive process by which behaviorally relevant information is selected according to its location in space. This spatial selection mechanism is thought to rely on a balanced relationship between the two hemispheres, which is directly responsible for equal attentional distribution to both the left and the right sides of space. Disruptions of the interhemispheric equilibrium cause the well-known neglect syndrome, in which only one side of space gains access to conscious perception and the other one is neglected from processing. Support for this model of attention comes from neuropsychological evidence as well as studies in which neglect-like behavior is induced in healthy individuals through prism adaptation and transcranial magnetic stimulation (TMS). Traditionally this model suggests a rivalrous relationship between the left and right hemispheres as driving visuo-spatial attention. In my talk, I argue against the rivalry hypothesis, and suggest that the relationship between the left and right hemispheres is more nuanced. I will provide evidence for this argument by demonstrating changes associated with disturbances of the interhemispheric equilibrium, at both macro (whole brain) and micro (within the parietal cortex) level, induced by prism adaptation and TMS in healthy individuals. I will then further explore the possible mechanism of the attentional modulation induced by prism adaptation and its implication for neurodegenerative diseases such as Parkinson's disease. Evidence will be drawn from a set of behavioral and neuroimaging (fMRI) experiments, combined with noninvasive brain stimulation (TMS).