

mind wandering. Neuroimaging analysis revealed higher weighted degree connectivity associated with both forms of mind wandering, implicating core regions of the default network and the left temporal pole. We observed topological connectivity differences within the default network: intentional mind wandering was associated with degree connectivity in posterior regions, whereas unintentional mind wandering showed greater involvement of prefrontal areas. **Conclusions:** In this study, we highlight patterns of resting-state network connectivity associated with intentional and unintentional mind wandering, and provide novel evidence of a link between mind wandering and creativity. These findings represent a promising step towards understanding the neurocognitive mechanisms that underlie productive mind wandering and demonstrate its relevance for the study of creative thinking.

Categories: Cognitive Neuroscience

Keyword 1: creativity

Keyword 2: neuroimaging; functional connectivity

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3 Mind-Wandering in Neuropsychiatric Diseases of Ageing

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Objective: Disruptions to mind-wandering are common across neuropsychiatric disorders. Whilst the large-scale brain networks associated with mind-wandering are increasingly well understood, we know very little about what neurobiological mechanisms trigger a mind-wandering episode and sustain the mind-wandering brain state.

From a clinical perspective, we aimed to understand dysfunctional mind-wandering in neuropsychiatric diseases of ageing: frontotemporal dementia, Alzheimer's disease and Parkinson's disease. We also tested the hypothesis that mind-wandering relates to visual hallucinations in Parkinson's disease. From a theoretical perspective, we advance the hypothesis that the hippocampal sharp wave-ripple is a compelling candidate for a brain state that can trigger mind-wandering episodes. The

occurrence of the sharp wave-ripple is heavily dependent on hippocampal neuromodulatory tone. Neuromodulatory systems that regulate the sharp wave-ripple may be crucial for understanding the disruption to mind-wandering in neuropsychiatric disease.

Participants and Methods: We developed a thought-sampling task to probe mind-wandering in neuropsychiatric diseases of ageing. To explore brain patterns related to mind-wandering, we used multi-modal neuroimaging (i.e., resting state and structural scans). In separate studies, we applied these techniques in frontotemporal dementia and Alzheimer's disease; and in Parkinson's patients with and without visual hallucinations.

Results: We showed reduced mind-wandering in frontotemporal dementia, associated with functional and structural changes across the default network. In Parkinson's disease, we also found a reduction in mind-wandering compared with healthy controls. However, in patients with visual hallucinations, mind-wandering was preserved and associated with increased connectivity between the default network and early visual regions.

Conclusions: Together, disrupted mind-wandering occurs in neuropsychiatric diseases of ageing. It may contribute to some of the more recognisable symptoms in these conditions, including apathy and hallucinations. These findings also provide a unique clinical validation of current brain network models of mind-wandering that have been developed in healthy populations. Neuromodulatory influences over mind-wandering have implications for treating impairments in this process across neuropsychiatric conditions.

Categories: Cognitive Neuroscience

Keyword 1: aging disorders

Keyword 2: awareness

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4 Minds at Rest: Characterizing Clinical and Demographic Sources of Variability in Spontaneous Cognition During the Resting State.

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