Differential connectivity gradient along the human hippocampal longitudinal axis with resting state networks

Joan Tarrida, Universitat de Barcelona
E-mail address: jtarrivi7@gmail.com.

The hippocampus (HPC) can evoke large-scale influences on cortical activity as it it receives convergent information from sensory and limbic cortices before sending reciprocal divergent projections back to a wide range of distributed cortical areas. However, HPC play a differential pivotal role in several cognitive processes along the longitudinal axis. For instance, the Anterior HPC (aHPC) supports the memory retrieval of global representations, pattern completion and motivational processing, while the Posterior HPC (pHPC) is associated with local representations and pattern separation.

Here, we examined whether differential functional connectivity existed along the longitudinal axes of the HPC in healthy humans with two brain-wide cortico-cortical resting state networks known to correlate to sensory, memory, and learning task performance: the Default Mode and the Salience network. These networks were identified by using Independent Component analysis and the strength of connectivity within the network was calculated voxel-wise. The results show a gradient in the strength of connectivity along the longitudinal axis, being more positive in the pHPC than the aHPC. These findings indicat the existence of differential hippocampo-cortical connectivity patterns during resting state. Functional implications of these graded connectivity are discussed

This is a joint work with Lluís Fuentemilla and Estela Cámara.