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Resting-state fMRI: Comparing default mode network connectivity between normal and low auditory working memory groups (Conference Paper) [\(Open Access\)](#)

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Abstract

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The relationship between resting effective connectivity (EC) among default mode network (DMN) regions and auditory working memory (AWM) performance is still poorly understood. In this work, resting-state functional magnetic resonance imaging (rsfMRI) was used to determine the optimum connectivity model between posterior cingulate cortex (PCC) and medial prefrontal cortex (mPFC) in 40 healthy male volunteers. In low and normal working memory groups of subjects. Correlation between EC with AWM performance and AWM-capacity was also studied. The participants were divided into two groups which are normal and low AWM-capacity groups based on Malay Version Auditory Verbal Learning Test. The AWM performance was assessed using a word-based backward recall task. Both assessments were conducted outside the MRI scanner. The participants were scanned using a 3-T MRI system and the data were analyzed using statistical parametric mapping (SPM12) and spectral Dynamic Causal Modelling (spDCM). Results revealed that PCC and mPFC were significantly interconnected in both groups. Group analyses showed that the connection between PCC and mPFC exhibits an anti-correlated network. The results also indicated that the AWM performance and AWM-capacity were not associated with EC. These findings suggest that EC at rest between the two regions may not significantly influence cognitive abilities important for this AWM task. © Published under licence by IOP Publishing Ltd.

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Engineering uncontrolled terms

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