

M. Kyriakopoulos<sup>1</sup>

<sup>1</sup>Department of Child and Adolescent Psychiatry, Institute of Psychiatry King's College London, London, United Kingdom

---

## Background

Disruption within the working memory (WM) network is an integral feature of schizophrenia. The WM network, and the dorsolateral prefrontal cortex (DLPFC) in particular, undergo significant remodeling in late adolescence. Our aim was to determine whether DLPFC activation and functional connectivity related to WM are differentially affected over time in patients with early-onset schizophrenia (EOS) and healthy individuals.

## Methods

The study sample included 45 youths; 25 EOS patients and 20 matched healthy individuals. They were scanned with 1.5T scanner whilst performing the WM task N-back at two time-points 3 years apart. Within-group effects in WM and the interaction between time and diagnosis were tested. Psychophysiological interaction analysis was used to examine DLPFC connectivity at baseline and follow-up.

## Results

EOS patients showed reduced activation compared to healthy adolescents at baseline in the left DLPFC, bilateral ACC and right frontal operculum and at follow-up, in the right frontopolar and the left DLPFC. In healthy controls the DLPFC showed increased positive connections compared to EOS patients with the ACC, the inferior parietal lobule and the middle occipital gyrus at baseline and with the superior temporal gyrus and the intraparietal lobule at follow-up as well as increased within connectivity at both time-points. Prefrontal connectivity increased with time in both healthy individuals and EOS patients. However, the loss of prefrontal connectivity associated with EOS was not eliminated at the follow-up.

## Conclusions

EOS is associated with sustained deficits in prefrontal connectivity. The normal trajectory of prefrontal connectivity changes may be disrupted in EOS.