Indices of repetitive behaviour are correlated with patterns of intrinsic functional connectivity in youth with autism spectrum disorder


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ABSTRACT: The purpose of the current study was to examine how repetitive behaviour in Autism Spectrum Disorder (ASD) is related to intrinsic functional connectivity patterns in a number of large-scale, neural networks. Resting-state fMRI scans from thirty subjects with ASD and thirty-two age-matched, typically developing control subjects were analysed. Seed-to-voxel and ROI-to-ROI functional connectivity analyses were used to examine resting-state connectivity in a number of cortical and subcortical neural networks. Bivariate correlation analysis was performed to examine the relationship between repetitive behaviour scores from the Repetitive Behaviour Scale – Revised and intrinsic functional connectivity in ASD subjects. Compared to control subjects, ASD subjects displayed marked over-connectivity of the thalamus with several cortical sensory processing areas, as well as over-connectivity of the basal ganglia with somatosensory and motor cortices. Within the ASD group, significant correlations were found between functional connectivity patterns and total RBS-R scores as well as one principal component analysis-derived score from the RBS-R. These results suggest that thalamocortical resting-state connectivity is altered in individuals with ASD, and that resting-state functional connectivity is associated with ASD symptomatology.

KEYWORDS: autism spectrum disorder; repetitive behaviour; resting-state functional magnetic resonance imaging; intrinsic functional connectivity
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