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Low frequency fluctuation of brain spontaneous activity and obsessive-compulsive symptoms in a large school-age sample

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Abstract

Background: The present study was designed to explore alterations in brain dynamics at rest that are associated with Obsessive Compulsive Symptoms (OCS) in childhood by measuring low frequency fluctuation of spontaneous brain activity in a large school community sample from a developing country.

Method: Resting state functional magnetic resonance imaging data were collected in a sample of 655 children and adolescents (6-15 years old) from the Brazilian 'High Risk Cohort Study for Psychiatric Disorders (HRC)'. OCS were assessed using items from the Compulsion and Obsessions section of the Development and Well-Being Assessment (DAWBA). The correlation between the fractional amplitude of low frequency fluctuations (fALFF) and the number of OCS were explored by using a general linear model, considering fALFF as response variable, OCS score as regressor and age, gender and site as nuisance variables. *Results:* The number of OCS was positively correlated with the fALFF coefficients at the right sensorimotor cortex (pre-motor, primary motor cortex and post-central gyrus) and negatively correlated with the fALFF coefficients at the insula/superior temporal gyrus of both hemispheres. Our results were specific to OCS and not due to associations with overall psychopathology. *Conclusions:* Our results suggest that brain spontaneous activity at rest in the sensorimotor and insular/superior-temporal cortices may be involved in OCS in children. These findings need independent replication and future studies should determine whether brain spontaneous activity changes within these regions might be predictors of risk for obsessive-compulsive disorder later in life.

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