Inhibiting the right temporoparietal junction triggers diametric effects of autism and psychosis traits on mentalizing.

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Abstract

Theory of Mind (ToM -or mentalizing) is the ability to understand and make inferences about the mental state of oneself and others. While different levels of autism and psychosis traits may be present in the same individual, several neuroimaging studies have also reported opposite effects of these traits on the performance of ToM tasks and on the activation of brain regions underpinning mentalizing. The diametric model suggests that autism is associated with deficits in mentalizing, while psychosis, conversely, represents a hyper-theory of mind. The present study uses repetitive transcranial magnetic stimulation (rTMS) to inhibit the activity of the right ventral posterior temporoparietal junction (rvpTPJ), an area recently associated with mentalizing and which appears to be more active in individuals prone to psychosis. Participants will complete the Autism-Spectrum Quotient (AQ) and the Community Assessment of Psychic Experiences (CAPE) questionnaires to measure autism and psychosis trait expression, respectively. Mentalizing will be assessed with the Movie for the Assessment of Social Cognition (MASC) task, which consists of a correct response scale and three error types: undermentalizing, overmentalizing and no mentalizing. In line with previous research, we expect significant associations between ASD and undermentalizing and between SSD and overmentalizing. We also expect the SSD group to experience a performance impairment in the MASC task, while under the effects of rvpTPJ stimulation, whereas the ASD group should be unaffected. These findings would support the diametric model and would confirm the key role of the rvpTPJ in mentalizing. Furthermore, they would open the door to a new line of research for possible treatments to enhance mentalizing performance using neurostimulation to excite the rvpTPJ in ASD and to inhibit it in SSD.