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MIRROR NEURON DYSFUNCTION AND EGO-BOUNDARY DISTURBANCES IN SCHIZOPHRENIA

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Introduction: Ego-boundary disturbance (EBD) in schizophrenia is a unique psychopathological cluster characterized by passivity experiences (involving thoughts, actions, emotions and sensations) attributed by patients to some external agency. Aberrant mirror neuron activation may explain impaired self-monitoring and agency attribution underlying these 'first rank' symptoms.
Aims: We aim to study mirror neuron activity (MNA) in schizophrenia patients with and without EBD using transcranial magnetic stimulation (TMS).
Methods: 50 right-handed schizophrenia patients (DSM IV) were evaluated using the Mini-International Neuropsychiatric Interview and the Positive & Negative Syndrome Scale. They completed a TMS experiment to assess putative premotor MNA. Motor evoked potential (MEP) was recorded in the right first dorsal interosseous muscle (FDI) with (a) 120% of resting motor threshold (RMT) and (b) stimulus intensity set to evoke MEP of 1 millivolt amplitude (MT1). These were done in 3 states: actual observation of an action using the FDI, virtual-observation (video) of this action and resting state. The difference of MEP between resting to action-observation states formed the measure of MNA.
Results: MNA measured using MT1 and 120% RMT paradigms for real-observation was significantly lower in the 18 patients with EBD (thought-broadcast/withdrawal/insertion, made-act/impulse/affect and somatic passivity) than the 32 patients without EBD (t=2.75, p=0.009; t=2.41, p=0.02 respectively for the two paradigms). The two groups did not differ on age, gender, education and total symptom scores.
Conclusions: Schizophrenia patients with EBD have lower premotor MNA. This highlights the role of MNA dysfunction in the pathophysiology of this unique and intriguing symptom cluster in schizophrenia.

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