The impressionable social self of schizophrenia
Neural correlates of self-other confusion after social interaction
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Introduction
Social interactions require rapid, real-time information integration and performative application of dynamic social information, which can be especially difficult for patients with schizophrenia. Their difficulty processing social information could lie in challenges extracting the information or in updating their actions to accommodate the new information, resulting in behaviors that may appear rigid or inappropriate. Disruptions may be reflected in neural processes. This study examined the effects of social interaction on the self-identities of patients with schizophrenia compared to a cohort of matched controls.

Methods

Within-subject contrasts created using wholebrain clusterwise subtractions:
1. (Self-Primed)/Overall-Font
2. (Self-Primed)/Overall-Font
3. (Self-Primed)/Social-Interaction-Font
4. (Primed-Primed)/Social-Interaction-Font
5. Self(Overall-Social Interaction)
6. Self(Social Interaction-Overall)
7. Overall(Social Interaction)
8. Overall(Social Interaction-Overall).

Controlled


Perfomative Flexibility in Controls
Perfomative Flexibility in Patients

Behavioral Results

Social Values Schema Scale: 12 self-construal values, 12 opposite construal values, 10-point Likert scale. Previously normalized and validated.

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Functional Associations by Region

dmPFC: dorsomedial prefrontal cortex
Facilitates top-down social processing of self and others (Lieberman, 2007).

PCC: posterior cingulate cortex
Associated with self-identity and self-referential stimuli (Chiao et al., 2009, 2010).

ACC: anterior cingulate cortex
Associated with processing the emotions of others and personally relevant information (Adolph et al., 2017).

PHG: Parahippocampal Gyrus
Facilitates with social context interpretation and is a known region of disruption in psychosis (Rasmussen et al., 2017).

STG: Superior Temporal Gyrus
Associated with semantic and emotional meaning and a known area of disruption in psychosis (Brone et al., 2011).

Discussion

Controls suppress social values when interacting with the stranger whereas patients with schizophrenia augment the opposite values, simultaneously holding two sets of social values. They display evidence of atypical social flexibility on both performative and neural measures, resulting in confusion between self and other. Patients appear to correctly extract social information, as evidenced by their modified responses on the SVS Scale. However, they integrate the information atypically.

Disruptions to activity in the dmPFC, PCC, ACC, PHG, and STG appear to correspond with their behavioral conflation of self and other. Generally higher activity is interpreted as increased workload while lower activity may indicated disruptions. Accordingly, the paired, reduced PCC and ACC activity in patients may reflect the entanglement of the self. These findings suggest distinct neurobehavioral differences during social learning in patients with schizophrenia.

References