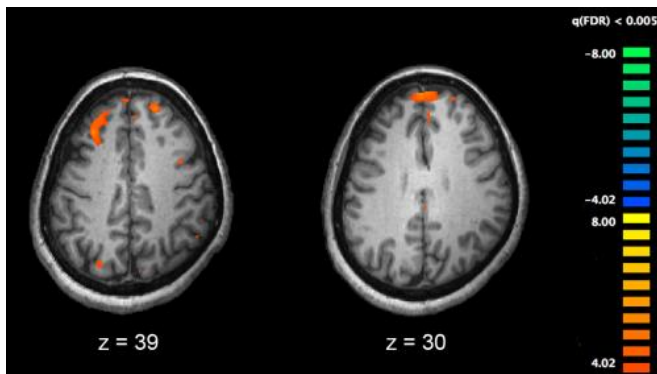


Functional brain network predicts real-life social network in individuals with schizophrenia, social anhedonia

3 June 2021, by Zhang Nannan



Functional magnetic resonance imaging (fMRI) and other brain imaging technologies allow for the study of differences in brain activity in people diagnosed with schizophrenia. The image shows two levels of the brain, with areas that were more active in healthy controls than in schizophrenia patients shown in orange, during an fMRI study of working memory. Credit: Kim J, Matthews NL, Park S./PLoS One.

Schizophrenia is a brain and neurodevelopmental disorder. Previous studies on schizophrenia have mainly focused on the identification of sub-networks associating with social cognitions such as mentalizing people's intention and understanding their emotion. However, few studies have examined the social brain network and its role in the formation of various social dysfunctions in patients with schizophrenia.

On the other hand, individuals with social anhedonia, i.e, diminished ability to experience pleasure from [social life](#), are also reported to exhibit altered brain functional connectivity and social dysfunction. There is a big gap of knowledge to understanding the social brain network in these individuals. Studying the social brain network is important to understand social dysfunction in

schizophrenia spectrum disorders.

Recently, Dr. Raymond Chan's team from the Institute of Psychology of the Chinese Academy of Sciences and his collaborators have specifically examined the neural correlation of social brain network and real-life social network size in [patients](#) with schizophrenia and individuals with social anhedonia.

They first constructed a social brain network based on regions of interests identified from the open access database, the NeuroSynth, to build up the template for analysis. They then recruited independent samples comprising 30 patients with schizophrenia and 28 healthy controls, and 33 individuals with social anhedonia and 32 healthy controls to undertake resting-state functional brain scans. They also completed a set of checklists to measure real-life social network size.

The findings showed that only patients with schizophrenia, but not individuals with social anhedonia, exhibited deficits in their real-life social network size. At the neural level, patients with schizophrenia and individuals with social anhedonia showed a reverse pattern of functional connectivity. In particular, patients with schizophrenia exhibited decreased segregation and functional connectivity in their social brain network, while individuals with social anhedonia exhibited an increased segregation and functional connectivity of their social brain network.

Moreover, sparse canonical correlation analysis indicated that both patients with schizophrenia and individuals with social anhedonia showed reduced correlation between the social brain network and real-life social network size characteristics compared with their corresponding healthy controls.

Taken together, the study shows specific results on the neural correlation of social brain network and real-life social network size in both patients with schizophrenia and individuals with social anhedonia. In particular, both patients with established schizophrenia and individuals with subclinical features such as social anhedonia exhibit alteration in segregation and functional connectivity within the general social brain network and diminished correlation with real-life social network size characteristics.

Dr. Chan's team is now undertaking a series of studies to further examine the predictive function of these altered social brain networks to real-life in patients with schizophrenia. Their findings may have an important implication to guide the development of non-pharmacological interventions for social function deficits in patients with schizophrenia spectrum disorders.

This study is now available online on *Schizophrenia Research* with the title of "Social [brain network](#) correlates with real-life social [network](#) in individuals with [schizophrenia](#) and social [anhedonia](#)."

More information: Yi-jing Zhang et al, Social brain network correlates with real-life social network in individuals with schizophrenia and social anhedonia, *Schizophrenia Research* (2021). DOI: [10.1016/j.schres.2021.05.016](https://doi.org/10.1016/j.schres.2021.05.016)

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