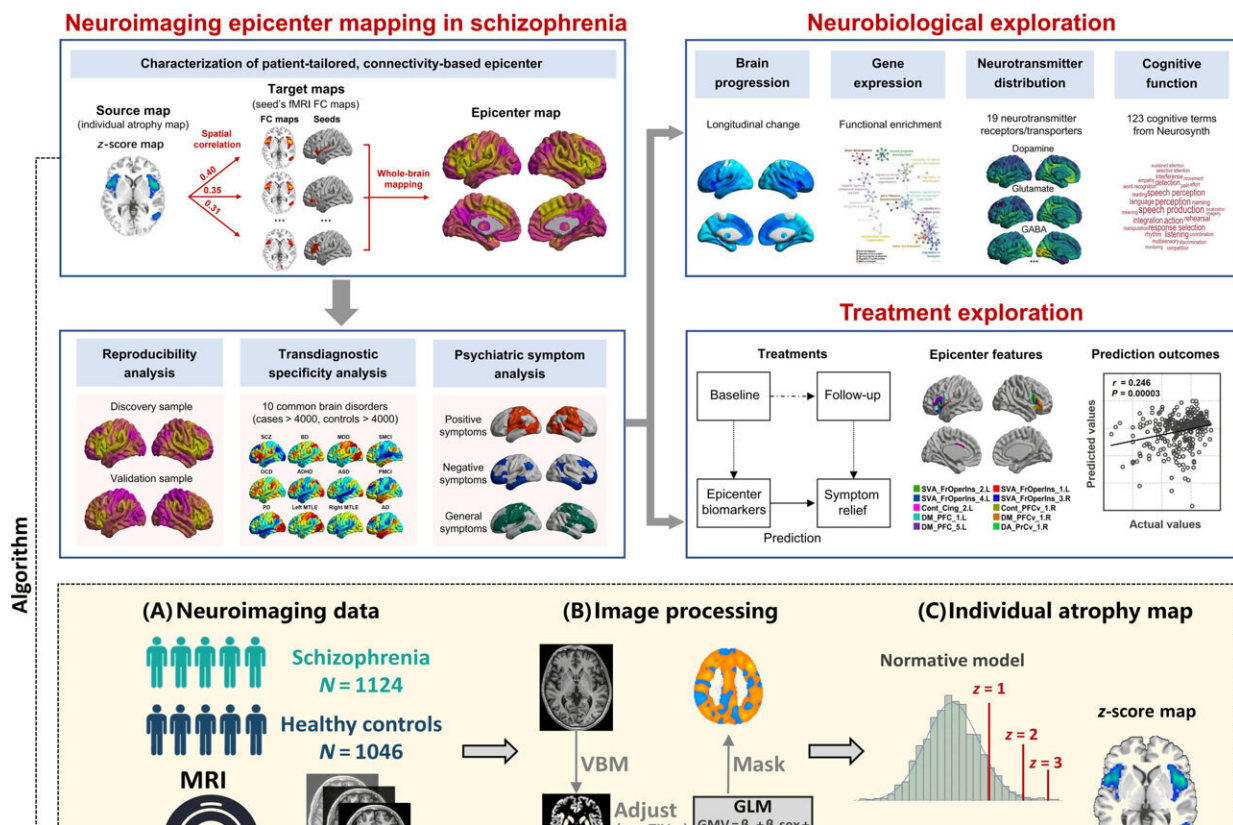


Study on origins of schizophrenia in the brain offers hope for targeted treatments, better diagnosis

July 16 2024, by Claire Loewen



Experimental design and methodology of epicenter mapping. Credit: *Science Advances* (2024). DOI: 10.1126/sciadv.adk6063

A group of scientists are hopeful their research findings about how

schizophrenia originates and develops over time in the brain will pave the way for targeted treatments and better diagnosis of the serious mental health condition.

In a [study](#) published in *Science Advances*, the researchers said they used a new method called "epicenter mapping," to analyze [brain scans](#) from 1,124 people with [schizophrenia](#).

It allowed the researchers to identify two regions of the brain where structural abnormalities in people with schizophrenia are most likely to start: Broca's area and the frontoinsula cortex. These areas govern language and emotional processing.

The researchers also found, despite identifying those two common areas, the illness can also develop in other regions of the brain.

"This tells us that everyone suffering from this condition has a unique starting point that may explain the differences in symptoms," said Dr. Lena Palaniyappan, Professor of Psychiatry at McGill University and one of the lead authors of the study.

"But there is a common process that results in a more diffuse, though subtle, changes in [brain structure](#)," he added. "This insight provides an important clue to the age-old question of whether schizophrenia is one illness or many illnesses."

Matching patients with the right treatment

Schizophrenia can present differently in patients, often making it unclear which [treatment options](#) are best. For example, while there are a few treatments available to prevent the worsening of difficulties associated with psychosis, the researchers say it can be hard to know which patients will benefit from the different treatments.

"By using techniques like epicenter mapping, we can identify which parts of the brain are most affected, even before noticeable symptoms appear. This information can then help us to identify patients who are likely to do better with specific treatments," said Jianfeng Feng, Professor of Institute of Science and Technology for Brain-inspired Intelligence (ISTBI) of Fudan University and Computer Science at University of Warwick, who led the consortium behind this work.

While pinpointing brain abnormalities could change the course of treatment, one major problem is that not everyone with psychosis gets a brain scan.

"Collecting good quality MRI data as a byproduct of routine health care for [mental illnesses](#) such as schizophrenia can help us overcome selection bias in neuroimaging studies. Implementing this will provide clear directions for [clinical practice](#)," said Yuchao Jiang, post-doctoral researcher from Fudan University, who co-led this work with Dr. Palaniyappan.

Patients with psychosis often face unemployment and [social exclusion](#) due to problems with speech and communication. The researchers say they hope their study prompts [clinical trials](#) that use epicenter mapping to better match patients to treatments, especially those focused on language and communication.

More information: Yuchao Jiang et al, Neuroimaging epicenters as potential sites of onset of the neuroanatomical pathology in schizophrenia, *Science Advances* (2024). [DOI: 10.1126/sciadv.adk6063](https://doi.org/10.1126/sciadv.adk6063)

Provided by McGill University

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