NeuRA
Discover. Conquer. Cure.

SCHIZOPHRENIA LIBRARY

# SCHIZOPHRENIA Factsheet

**October 2020**

## What is the parietal lobe?

The parietal cortex is located posterior to the frontal lobe. It is structurally divided into the superior, middle and inferior gyri. The most anterior portion of the parietal lobe forms the postcentral gyrus, the somatosensory cortex. Posterior to this are the parietal association regions and the visual regions of the posterior parietal cortex involved in visuospatial processing.

## What is the evidence for changes in the parietal lobe?

*Structural changes*

Moderate to high quality evidence found decreased parietal grey matter volume in medicated people with schizophrenia compared to controls. There were reductions in the left inferior parietal gyrus in chronic patients, and reductions in bilateral postcentral gyrus of both chronic and first-episode patients. Reductions in the right postcentral gyrus were greater in people with chronic schizophrenia than in people with first-episode schizophrenia. Reductions in parietal white matter were found over time (1-10 years). Parietal grey matter reductions over time were found only in first-episode patients. Increased antipsychotic dose was associated with decreased parietal lobe volume over time (>2 years).

*Functional changes*

Moderate quality evidence found decreased activation in the precuneus of people with schizophrenia while at rest compared to controls at rest. Relatives of people with schizophrenia also showed decreased resting-state activity in the left precuneus.

During hallucinations, there was increased activity in the postcentral gyrus and the inferior parietal lobule of people with schizophrenia. During episodic memory encoding and executive functioning tasks, there was decreased activity in the right inferior parietal lobe compared to controls. The left inferior parietal cortex of people with schizophrenia showed increased activity during executive functioning and theory of mind tasks and decreased activity during cognitive control tasks. The right inferior parietal cortex of people with schizophrenia showed increased activity during theory of mind tasks, and the left postcentral gyrus showed increased activity during episodic memory encoding. Bilateral superior parietal gyri showed increased activity during timing tasks and increased activity in the parietal cortex in general during inhibition and emotion tasks. Compared to people with an autism spectrum disorder, there was increased activity during face emotion recognition in the left inferior parietal region of people with schizophrenia. After cognitive remediation, moderate to low quality evidence found increased activity in the right superior parietal lobe and the right postcentral gyrus.

In relatives of people with schizophrenia, there was increased activity in the left inferior parietal gyrus and the left precuneus during executive functioning and working memory tasks, and increased activity in the right parietal precuneus and the right inferior parietal lobule during cognitive tasks. There was decreased activity in relatives in the right parietal cortex during executive functioning tasks. During emotion tasks, there was increased activity in relatives in the left sub-gyral parietal region and the left precuneus, and decreased activity in the right inferior parietal lobule.

**For more information see the technical table**

NeuRA
Discover. Conquer. Cure.

*NeuRA (Neuroscience Research Australia) is one of the largest independent medical and clinical research institutes in Australia and an international leader in neurological research.*

*Diseases of the brain and nervous system pose the greatest health, economic and social burden of any disease group because they are chronic, debilitating and have no known cures.*

*Medical research is the cornerstone of efforts to advance the health and wellbeing of families and the community. Our dedicated scientists are focussed on transforming their research into significant and practical enefits for all patients.*

*While we hope you find this information useful, it is always important to discuss any questions about schizophrenia or its treatment with your doctor or other health care provider.*

## HOW YOUR SUPPORT HELPS

We are able to make significant advances due to the generosity of countless people. Your donation allows us to continue to work towards transforming lives. For information on how you can support our research, phone **1300 888 019** or make a secure donation at **neura.edu.au/donate/schizophrenia**.

NeuRA (Neuroscience Research Australia) Foundation
**T** 1300 888 019 **F** +61 2 9399 1082
ABN 57 008 429 961

**Margarete Ainsworth Building**
Barker Street, Randwick NSW 2031
PO Box 1165 Randwick Sydney NSW 2031 Australia

neura.edu.au