



# NeuRA

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## SCHIZOPHRENIA Factsheet

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### What is the occipital lobe?

The occipital lobe is located at the posterior section of the brain and primarily comprises the brain's visual cortices. There are two streams of visual information through the visual primary and association cortices, which deal separately with broad object details and motion, and fine detail and colours.

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

#### Structural changes

Moderate to high quality evidence found reductions in occipital grey matter in people with schizophrenia compared to controls. Increased antipsychotic dose was associated with decreased occipital grey matter over time, and decreases were associated with lower overall functioning. Moderate to low quality evidence also found a higher frequency of abnormal (reversed) asymmetry in the occipital lobe. White matter tracts were reduced in the bilateral inferior fronto-occipital fasciculus and bilateral optic radiation.

First-degree relatives of people with schizophrenia showed decreased left fusiform gyrus and increased right cuneus compared to controls. People at clinical high-risk for psychosis showed increased right fusiform gyrus compared to controls.

#### Functional changes

Moderate quality evidence found reduced activation in the left middle occipital gyrus of people with schizophrenia compared to controls during executive functioning tasks. First-degree relatives of people with schizophrenia also showed reduced activation during executive functioning tasks. There was reduced activation in the left middle occipital gyrus and the right inferior occipital gyrus during timing tasks, and increased activation in the occipital cortex during inhibition tasks in people with schizophrenia compared to controls.

During memory tasks, people with schizophrenia showed reduced activation in the right lingual gyrus during episodic memory encoding, and reduced activation in the right cuneus and fusiform gyrus during episodic memory retrieval. During emotion tasks, there was reduced activation in the bilateral fusiform gyrus during explicit emotion tasks and reduced activation in the right middle occipital gyri during implicit emotion tasks. During threat processing, there was reduced activation in the left fusiform gyrus during explicit threat processing and reduced activation in the fusiform gyrus extending into the cerebellum lobule IV/VI during implicit threat processing. During theory of mind tasks, there was decreased activation in the right lingual gyrus, the medial occipitoparietal, and the left lateral occipitotemporal regions.

Compared to people with bipolar disorder, moderate quality evidence found people with schizophrenia showed increased activation in bilateral cuneus during facial affect processing. Compared to people with an autism spectrum disorder, moderate quality evidence found increased activation in people with schizophrenia in the right inferior occipital region during face emotion recognition.

Moderate quality evidence found no difference in NAA or GABA levels between people with schizophrenia and controls.

#### Structural and functional changes

Moderate quality evidence found decreased grey matter volume and decreased functional activity in the left fusiform gyrus of drug-free patients. There was also decreased grey matter volume and increased functional activity in the left fusiform gyrus and the right lingual gyrus.

For more information see the technical table



## NeuRA

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*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 benefits 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](http://neura.edu.au/donate/schizophrenia).