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SCHIZOPHRENIA Factsheet

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What is the temporal lobe?

The temporal lobe is structurally divided into the superior, middle, inferior and medial gyri. The superior temporal gyrus comprises the primary auditory cortex, while nearby temporal regions function in higher level auditory processing, including speech and language. Inferior temporal regions are involved in higher level visual processing. Associated regions include the fusiform gyrus (involved in face processing) and the parahippocampal gyrus, which processes scenes. The medial temporal lobe comprises the hippocampus and is thought be involved in the formation and propagation of memory.

What is the evidence for changes in the temporal lobe?

Structural changes

Moderate to high quality evidence suggests reduced grey matter in the temporal lobe in people with schizophrenia, particularly in the superior temporal gyrus, fusiform gyrus, medial temporal gyrus, and occipito-temporal gyrus. People with first-episode schizophrenia show the greatest reductions in the superior and inferior temporal and transverse gyri. Moderate quality evidence suggests schizophrenia is associated with significant reductions in white matter integrity in the temporal lobe, including middle and superior temporal gyri, as well as the entorhinal and fusiform gyri. Moderate to low quality evidence suggests an absence of normal leftward asymmetry in the planum temporale and excess rightward asymmetry in the superior temporal gyrus (particularly posterior). High quality evidence suggests greater reductions over time in temporal grey matter and white matter in people with schizophrenia compared to controls. Moderate quality evidence suggests reductions in the grey matter volume in the superior temporal gyrus were associated with increased severity of auditory hallucinations.

Functional changes

Moderate quality evidence suggests increased functional activity in people with schizophrenia in the left middle temporal gyrus during episodic memory encoding; the parahippocampal and medial temporal gyri during episodic memory retrieval; the superior temporal gyrus during working memory tasks; and the right superior temporal gyrus during executive functioning tasks. Reduced activation in the medial temporo-occipital gyrus (fusiform gyrus) is found during memory retrieval tasks. Moderate to low quality evidence suggests reduced phosphomonoester and increased phosphodiester levels in the temporal lobe, with no consistent differences in these metabolites in people with chronic schizophrenia, although N-acetyl aspartate may be decreased in chronic patients. Moderate quality evidence suggests no differences in D2/D3 receptor availability between unmedicated patients and controls.

For more information see the technical table

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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 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**.

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