Psychotic Disorders

Psychotic disorders, such as schizophrenia and schizoaffective disorder, involve hallucinations and delusions. They also come with executive functioning, movement, and memory issues that can majorly impact daily life.

Parts of the brain that are affected by psychotic disorders

Frontal Lobe Involved with behavior, emotions, reactions, motivation

Cingulate Cortex Connects structures involved with emotions and pain

Basal Ganglia Involved with movement, habits, emotions

Affects emotional instability, depression

Parietal Lobe Involved with locating things

Temporal Lobe Involved with telling what things are

Occipital Lobe involved with vision

Affects hallucinations

Thalamus Sends information to other parts of the brain

Affects executive functioning issues

Midbrain Involved with regulating movement

Cerebellum Involved with memory, motor skills

Affects memory, control of movement

Hallucinations

Hallucinations involve experiencing things that are not present in reality. They can involve many senses, including vision, hearing, smell, taste, and touch. Hallucinations affect the same parts of the brain that reality affect. Although a hallucination may seem absurd to an outside observer, the hallucinations are still very real for the person experiencing them, even if they know they are experiencing is not "real".

Further Reading

The Brain by BrainFacts.org, 2022. https://www.brainfacts.org/3d-brain#intro=false&focus=Brain

An interactive digital 3D brain

Foundations of Neuroscience by Casey Henley, 2021. https://openbooks.lib.msu.edu/neuroscience/

A free textbook about how the brain works

Psychiatric medication A to Z by Mind, 2022. https://www.mind.org.uk/information-support/drugs-and-treatments/medication/drug-names-a-z/

A list of medications and their side effects

Nursing Pharmacology by Chippewa Valley Technical College, 2020. https://wtcs.pressbooks.pub/pharmacology/

A free textbook about medications are processed in the body

DSM-5, 2013.

The diagnostic manual for all mental disorders. It is not open access but can likely be found at your local library

Medications often used for psychosis

Psychosis seems connected to dopamine, a neurotransmitter that is tied to motivation. People undergoing psychosis typically have too much dopamine in their system, so antipsychotics lower the amount of dopamine in the brain.

Dopamine also controls movement, which is why people undergoing psychosis may also lose control of movements. This is also why many antipsychotics can affect muscle control.

Typical Antipsychotics

- Blocks dopamine receptors
- Can reduce hallucinations
- Can cause muscle issues

Atypical Antipsychotics

- Blocks dopamine receptors in thalamus, hypothalamus, frontal lobe, basal ganglia
  - Affects motivation
  - Can reduce hallucinations
  - Can cause muscle issues
- Inhibits norepinephrine release
  - Calms the fight or flight part of the brain
- Activates serotonin receptors
  - Helps mood

Neurotransmitters: How Does the Brain Talk to Itself?

Parts of the brain will release chemicals that tell other parts of the brain what to do. Some chemicals will make the brain more active or calm it down, and some are connected with certain moods.

Serotonin involved with mood
Norepinephrine involved with excitement, "fight or flight" response
Dopamine involved with motivation and movement
Glutamate involved with increasing brain function
GABA involved with calming brain function

What is executive functioning?

Executive functioning is the little voice in your head that controls your actions. It is involved with many things, such as self-control and working memory.

If you see these symptoms in yourself or a loved one, see a medical professional. You can text your zip code to 898211 to find local resources. If you are in an active crisis, call 911.

Works Cited

Schneiderman, J. S., Hazlett, E. A., Chu, K.-W., Zhang, J., Goodman, C. R., Newmark, R. E., Torosjan, Y., Canfield, E. L., Entis, J., Mitropoulou, V., Tang, C. Y., Friedman, J., & Buchsbaum, M. S. (2011). Brodmann area analysis of white matter anisotropy and age in schizophrenia. Schizophrenia Research, 130(1), 57–67. https://doi.org/10.1016/j.schres.2011.04.027

Tomasi, D., & Volkow, N. D. (2014). Mapping Small-World Properties through Development in the Human Brain: Disruption in Schizophrenia. PloS One, 9(4), e96176–e96176. https://doi.org/10.1371/journal.pone.0096176 Available at https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0096176&type=printable

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