



ADHD & the Brain

No. 121; February 2017

Attention-Deficit/Hyperactivity Disorder (ADHD) is a condition where people have difficulty with inattention, hyperactivity, impulsivity, regulating their mood, and organization. For example, a child or teen with ADHD may have trouble in school and home with paying attention, concentrating, losing things, following directions, sitting still, acting without thinking, or getting mad and frustrated easily.

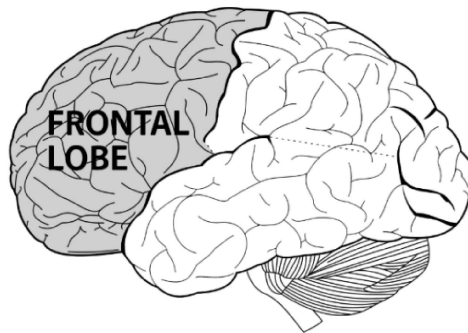
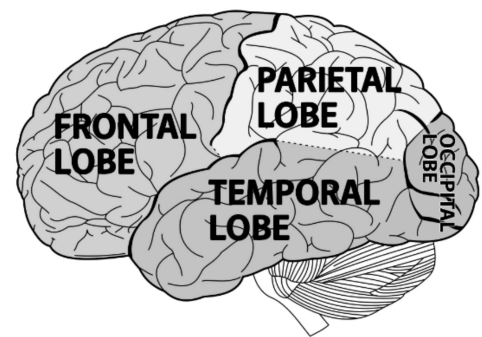
ADHD is a brain disorder. Scientists have shown that there are differences in the brains of children with ADHD and that some of these differences change as a child ages and matures.

Brain Structure

Research has shown that some structures in the brain in children with ADHD can be smaller than those areas of the brain in children without ADHD.

The brain is an organ that controls thinking, feeling, and behavior. The brain is divided into sections called lobes.

The front of the brain behind the forehead is the frontal lobe. The frontal lobe is the part of the brain that helps people to organize, plan, pay attention, and make decisions. Parts of the frontal lobe may mature a few years later in people with ADHD.



The frontal lobe is the area of the brain responsible for:

- Problem Solving
- Memory
- Language
- Motivation
- Judgment
- Impulse control
- Social behavior

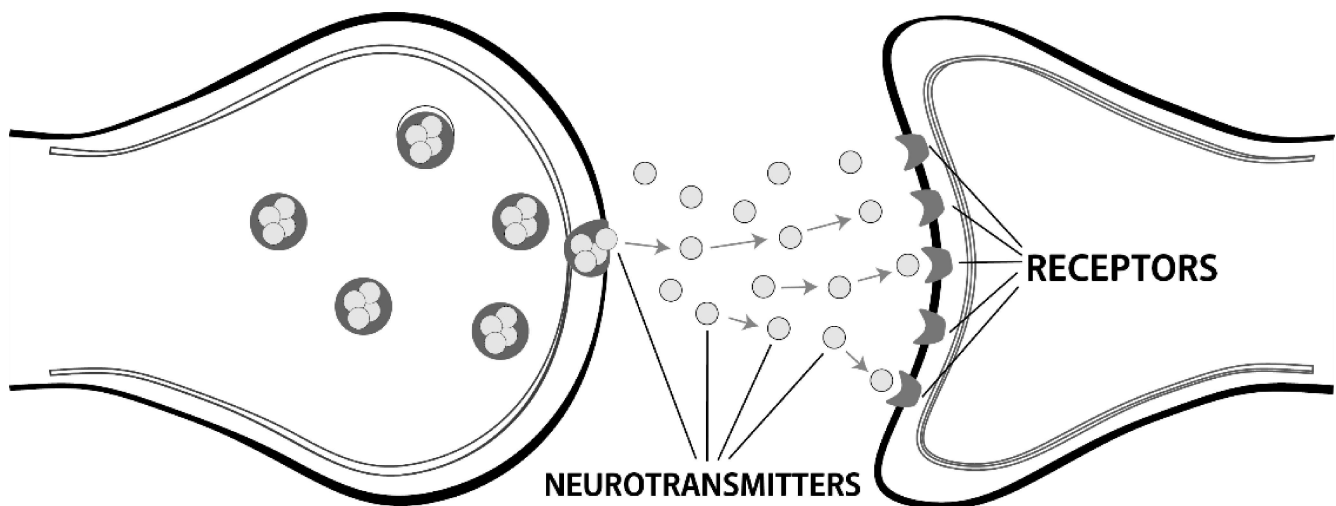
- Planning
- Decision-making
- Attention
- Ability to delay gratification
- Time perception

Networks

The brain is made up of nerve cells called neurons that transmit signals in the brain. Signals travel through the brain in groups of nerve cells called "networks." Researchers have identified several major networks that work differently in people with ADHD. These networks are involved in reward, focus, planning, attention, shifting between tasks, and movement.

Neurotransmitters

There are chemicals that help to transmit signals from one nerve cell to the next throughout the networks in the brain. These chemicals are called neurotransmitters. Dopamine and norepinephrine are two neurotransmitters that may play a role in ADHD.



While scientists have shown that there are differences in the brain size, networks, neurotransmitters, and brain development of children with ADHD, they do not fully understand how these differences lead to the cause and the symptoms of ADHD. Treatments for ADHD are thought to work in part by altering the levels of the neurotransmitters and changing how the networks function.

If your child has problems with attention, hyperactivity, or impulsivity, talk to your pediatrician or family doctor. They can perform an evaluation and start treatment or help with a referral to a qualified mental health professional.

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