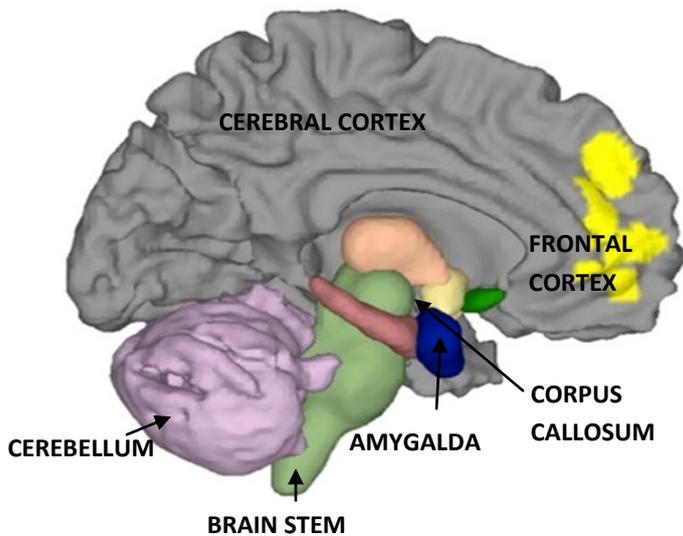


# The Brain Game

## The brain, adolescence and mental illness

### The brain

The human brain is an amazing organ. It controls memory and learning, the senses (hearing, sight, smell, taste, and touch), reasoning and emotions. It also controls other parts of the body, including muscles, breathing and the heartbeat.



The brain is made of specialised cells called neurons, along with other structures. These neurons (and there are about 80 billion of them in your brain!) form complex networks with one another and send chemical messages down these pathways when you need to respond to something.

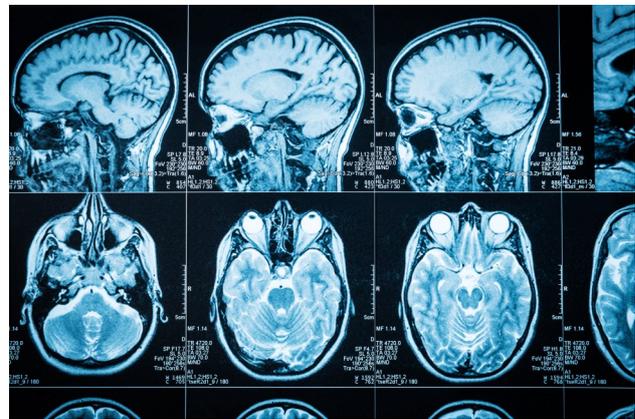
Scientists have known for many decades that the brain is highly adaptable. The networks neurons form are not fixed—when you learn new things you make new connections. The brain also removes any networks that aren't used in sufficient quantity—this is called synaptic pruning and is thought to 'fine



tune' the brain's functioning. Most synaptic pruning happens in your teenage years (adolescence) and occurs mostly in the grey matter of the brain, which is involved in thought and memory processing.

### So what has happened with the brain in mental illness?

Scientists don't fully know. There are special types of scans—neuroimaging—that allow scientists to see the brain and its activity but in most cases of mental illness the images don't look any different between someone who has a mental illness versus someone who doesn't.



The brain is so complex that there could be lots of different reasons why mental illness occurs. For some mental illnesses, it's possible that the brain over pruned itself during adolescence and lost important network connections. Scientists think other mental illnesses may be due to faults occurring with the types or quantities of the chemical messages (neurotransmitters) needed in the brain. Other experts believe mental illness could be due to certain neurones forming connections with one another that they shouldn't have done.

Scientists are hopeful that their research will increase our understanding of mental health in the coming years. What we can already say is that mental illness is caused by something going wrong in the brain, exactly the same as heart attacks being caused by something going wrong in the heart.