



7C: Brain Science

Texts

Phineas Gage: A Gruesome but True Story About Brain Science by John Fleischman

Inventing Ourselves: The Secret Life of the Teenage Brain by Sarah-Jayne Blakemore

The Man Who Mistook His Wife for a Hat by Oliver Sacks

Introduction to the Texts

In *Phineas Gage: A Gruesome but True Story About Brain Science*, John Fleischman describes a terrible accident that happened in Vermont in 1848. An explosion caused a long piece of metal to go through the head of a man named Phineas Gage. Amazingly, he survived. Unfortunately, his brain did not work as well as it did before the accident. His behavior changed. Phineas's case changed the way doctors think about the brain.

Many people believe that adolescents are a problem. But in her book *Inventing Ourselves: The Secret Life of the Teenage Brain*, Sarah-Jayne Blakemore says we need to reimagine how we think about young people. Blakemore describes the science of the brain, the important stages of development that we all experience, and what makes teenagers so...different.

In the excerpt from *The Man Who Mistook His Wife for a Hat*, Oliver Sacks discusses people alive today who have brain damage similar to Phineas Gage's.

Background and Context

Phineas Gage

Phineas Gage was injured when an explosion caused a metal rod to go through his skull. The rod, called a tamping iron, was made by a blacksmith. A blacksmith is a worker who shapes metal into objects, such as tools.

At the time of Phineas's accident, there were many things that doctors did not know about medicine. They did not know that bacteria causes infections. When doctors did surgery, they did not always clean their hands or tools. Many people died from bacterial

infections because their immune systems were already weak from surgery. Your immune system is what helps your body fight infection, or heal after illness or injury.

At the time of Phineas's accident, doctors were starting to use anesthesia during surgery. Anesthesia is a medicine that puts people to sleep so that they do not feel pain during surgery.



The Adolescent Brain

The brain is made up of billions of cells called neurons. Neurons move impulses from the body to the brain. They are linked by connections called synapses. Changes in synapses during adolescence help the brain with higher-level thinking and impulse control.

Some of the most important changes that happen in the brain during adolescence involve risk-taking and impulse control. Teenagers take more risks than they did when they were younger. They have fewer restrictions than younger children and they feel a need for new experiences. But the parts of the brain that involve planning and self-control are not fully developed yet.

Word Count: 480

Using Technology to Understand the Brain

Today, scientists use technology to see inside the brain. Magnetic resonance imaging, or MRI, uses powerful magnets and radio waves to scan the body. Brain researchers use MRI to examine the structure of the brain. They can compare scans of different brains to understand how the mind and personality develop over time. MRI can also help diagnose and treat many brain injuries.

Keywords

immune system	impulse control	MRI (magnetic resonance imaging)
anesthesia	neurons	
adolescents		

Sources

- "Anesthesia," Encyclopedia Britannica, britannica.com
- "Functional magnetic resonance imaging," Encyclopedia Britannica, britannica.com
- "Neuron," Encyclopedia Britannica, britannica.com

