

What Is Brain Plasticity?



S. T. Yiap / Getty Images

Brain plasticity, also known as neuroplasticity or cortical remapping, is a term that refers to the brain's ability to change and adapt as a result of experience. Up until the 1960s, researchers believed that changes in the [brain](#) could only take place during

infancy and childhood. By early adulthood, it was believed that the brain's physical structure was permanent.

Modern research has demonstrated that the brain continues to create new neural pathways and alter existing ones in order to adapt to new experiences, learn new w memories.

h on Brain

- 1 **What Is Brain Plasticity?**
- 2 **10 Quick Facts About the Brain**
- 3 **Adult Neurogenesis: Can We Grow New Brain Cells...**
- 4 **Does Drinking Alcohol Really Kill Brain Cells?**
- 5 **How Many Neurons Are in the Brain?**

Take the Free Chakra Test to Find Out Which of Your Chakras Are Weak

- [Brain](#)
- [Psychology](#)
- [More About Brain](#)
- [Human Brain Neurons](#)
- [Cortex in Brain](#)

that the brain was perhaps not as unchanging as previously believed way back in 1890. In his book *The Principles of Psychology*, he wrote, "Organic matter, especially nervous tissue, seems endowed with a very extraordinary degree of plasticity." However, this idea went largely ignored for many years.

In the 1920s, researcher Karl Lashley provided evidence of changes in the neural pathways of rhesus monkeys. By the 1960s, researchers began to explore cases in which older adults who had suffered massive strokes were able to regain functioning, demonstrating that the brain was much more malleable than

previously believed. Modern researchers have also found evidence that the brain is

reserved.
NXG15BANNR15 (07/15)

PSYCHOLOGY CATEGORIES

- Psychology Dictionary: Terms from A to Z ▶
- Branches of Psychology ▶
- Psychology 101: The Basics ▶
- Careers in Psychology ▶
- Psychology Quizzes ▶
- Behavioral Psychology ▶
- Personality Psychology ▶
- Developmental Psychology ▶
- Cognitive Psychology ▶
- Social Psychology ▶

able to rewire itself following damage.

Ads

3 Worst Foods for Thyroid

medixselect.com

The One Thing You Should Be Eating For Your Thyroid Every Morning.

capacity to reorganize pathways, create new connections and, in some cases, even create new neurons.

According to the website *Neuroscience for Kids*, there are four key facts about neuroplasticity:

1. **It can vary by age;** while plasticity occurs throughout the lifetime, certain types of changes are more predominant during specific life ages.
2. **It involves a variety of processes;** plasticity is ongoing throughout life and involves brain cells other than neurons, including glial and vascular cells.
3. **It can happen for two different reasons;** as a result of learning, experience and memory formation, or as a result of damage to the brain.
4. **Environment plays an essential role in the process,** but genetics can also have an influence.

The first few years of a child's life are a time of rapid brain growth. At birth, every neuron in the cerebral cortex has an estimated 2,500 synapses; by age of three, this number has grown to a whopping 15,000 synapses per neuron.

The average adult, however, has about half that number of synapses. Why? Because as we gain new experiences, some connections are strengthened while others are eliminated. This process is known as synaptic pruning. Neurons that are used frequently develop stronger connections and those that are rarely or never used eventually die. By developing new connections and pruning away weak ones, the brain is able to adapt to the changing environment.

Types of Brain Plasticity

- **Functional Plasticity:** Refers to the brain's ability to move functions from a damaged area of the brain to other undamaged areas.
- **Structural Plasticity:** Refers to the brain's ability to actually change its physical structure as a result of learning.

References

Dojode, Norman (2007). *The Brain That Changes Itself: Stories of Personal Triumph from the frontiers of brain science*. New York: Viking.

Gopnic, A., Meltzoff, A., Kuhl, P. (1999). *The Scientist in the Crib: What Early Learning Tells Us About the Mind*, New York, NY: HarperCollins Publishers.

Hockenbury, D., & Hockenbury, S. E. (2007). *Discovering Psychology*. New York, NY: Worth Publishers.

Neuroscience for Kids. (n.d.) Brain plasticity: What is it. <http://faculty.washington.edu/chudler/plast.html>

History of Psychology ▶

Psychology Research Methods ▶

Psychotherapy ▶

Academic Resources for Psychology Students ▶

Psychology Basics ▶

Psychology Theories ▶

Psychology Experiments and Research Methods ▶

Updated Articles and Resources ▶

Expert Videos ▶

10 Quick Facts About the Brain



Image: Oli Kellett / Getty Images

By [Kendra Cherry](#)

There are still many mysteries about the human brain, but researchers have uncovered a number of interesting facts about how the brain works. Here are ten quick facts to get you started on the path to a better understanding of the brain.

1. The average adult human brain weighs approximately 3 pounds.
2. The human brain is composed of approximately 75 percent water.
3. The average weight of a newborn human infant brain is about 350 to 400 grams.
4. Recent estimates suggest that the average adult brain contains approximately 86 billion neurons.
5. Only about 10 percent of the brain is made up of neurons; the other 90 percent is mostly composed of glial cells. Glial cells perform a range of functions, including acting as a "glue" to hold neurons together. They also perform housekeeping functions by cleaning up excess neurotransmitters and supporting synaptic growth.
6. The brain continues to form new connections between neurons throughout life. Old beliefs suggested that the brain was fairly set in stone early in life, but neuroscientists now know that the brain never stops changing.
7. Among children and adults between the ages of 1 and 44, traumatic brain injury is the leading cause of disability and death.
8. The most common causes of traumatic brain injury include falls, motor vehicles crashes, and assaults.
9. The average size of the human brain has decreased by about 9 cubic inches over the past 5,000 years.
10. The brain uses a lot of energy.

While it represents only about 2 percent of the body's total weight, it requires about 20 percent of the body's oxygen and 25 percent of the body's glucose.

Learn more about the brain:

- [The Anatomy of the Brain](#)
- [How Big Is the Brain?](#)
- [Do We Really Only Use 10 Percent of Our Brain?](#)
- [What Is Brain Plasticity?](#)

References:

Brain Trauma Foundation. (n.d.). TBI statistics: Facts about TBI in the USA. Retrieved from <https://www.braintrauma.org/tbi-faqs/tbi-statistics/>

Chudler, E. H. (n.d.). Brain facts and figures. Retrieved from <http://faculty.washington.edu/chudler/facts.html>

Pappas, S. (2011, February 18). 10 things you didn't know about the brain. Live Science. Retrieved from <http://www.livescience.com/12916-10-facts-human-brain.html>

Related Articles

- **How Many Neurons Are in the Brain?**
- **What Are Glial Cells?**
- **Just How Big Is the Human Brain?**
- **Right Brain versus Left Brain**

[See More ▶](#)
