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Brain plasticity

Brain plasticity, also known as neuroplasticity, 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 information and create new memories.

Psychologist William James suggested that the brain was perhaps not as unchanging as previously believed way back in 1890. 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 able to rewire itself following damage.

The human brain is composed of approximately 100 billion neurons. Early researchers believed that neurogenesis, or the creation of new neurons, stopped shortly after birth. Today, it is understood that the brain possesses the remarkable capacity to reorganize pathways, create new connections and, in some cases, even create new neurons. Neuroplasticity can vary by age. 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. Environment plays an essential role in the process.

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.

By Kendra Cherry
From http://psychology.about.com/od/biopsychology/f/brain-plasticity.htm

Sum up this article and explain the main ideas using your scientific knowledge