

Neuroplasticity
absorbs the changes
that the brain goes
through afflicted by
vari...

[Health & Medicine](#)



Our brain is one of the finer organs in our body, but just like any other organ, it is made up of chemicals, cells, and tissue. Another name for plasticity is neuroplasticity. A great analogy to use about the brain is that it operates like a computer. The brain plays a magnificent yet very important role in our body. Without our brain, we are useless to an everyday moving life. It has control of everything in how we move, how we perceive the world, cognition, and it also helps one decide whether or not they want chocolate ice-cream or mint ice-cream, and so on. Brain plasticity is referring to how it is able to change throughout life. Mental processes and brain mechanisms are dynamic in nature, and change as a human ages. We as living organisms with plasticity can adapt to endogenous changes that result from injury or disease to exogenous changes driven by environmental and experimental facts. Brain plasticity is a must for both short-term adaptation and long-term behavioral change. As we age, our brain will continue to alter.

Cognitive Growth and Decline

Neuroplasticity is seen to occur most first in early childhood. That is when the brain is adapting and developing quickly. This regularly leads up to rapid development plasticity and changes in the brain to allow it to learn, and memorize. Secondly, is not so common. This occurs when a person suffers from brain injury. The brain then tries to allow its undamaged regions to make up for the losses in its daily function. As we all know, neurons grow and continue to make millions of connections. It is possible for the brain to recover from injury at a much younger age because when children are growing more neurons branch out and seek for more connections. When one is much younger or in adulthood they are growing. Usually they are learning

new things, experiencing many exciting things as well. Then most people think that when one hits older adulthood one's cognition declines. For example, some older people start to forget simple factors of a daily routine " but what recent research has shown is that under the right circumstances, the power of brain plasticity can help adult minds grow. Although certain brain machinery tends to decline with age, there are steps people can take to tap into plasticity and reinvigorate that machinery. We just have to keep our brains fit with a series of targeted brain plasticity exercises" (Dr. Merzenich¹).

Adult Neural Stability:

The brain's structure is constantly being generated with new neurons and other brain cells. These things are happening because of our behaviors and our own individual associations with others such as work, and playing. The reason we use the analogy like a computer is because our brain can go from one thing to the next fairly quickly. Though the brain is not a stabling function thing, it has changes, and it has to have changes because how could we hold hold a certain amount of information or plasticity. Summing that up, it helps people deal with every day things in life. Another thing to add is structural plasticity helps repair damages. Minor or major injuries to any aspect of the body has the capacity to heal itself. If we did not have much space for healing, a lot of us would be in danger. Of course if something dies off, for the most part something new grows back. This also help generate and provide new cells. Recently, the brain was considered unique in its lack of ability to repair itself once it had matured to adulthood. Researchers were convinced that " once development was ended, the fonts

of growth and regeneration of the axons and dendrites dried up irrevocably. In the adult center the nerve paths are something fixed and immutable, nothing may be regenerated" (S. Ramon y Cajal, 1928).

Plasticity and brain injury:

When someone has injured their brain, it is the brain's job to reconnect, and regenerate the new connections with neurons, and throw out the damaged ones. For example, if a surgeon suffers a stroke, his left hand is paralyzed. "During his rehabilitation, his good arm and hand are immobilized, and he is set to cleaning tables. The task is at first impossible. Slowly the bad arm remembers how to move. He then learns to write again, and play tennis: the functions of the brain areas killed in the stroke have transferred themselves to healthy regions" (Michelon 1). The best way to get healthy neurons moving in your brain again is through activity. The more one constantly works out the brain, the connections between intact neurons will reconnect. This is possible in any brain injury that occurs.

Plasticity, Learning, and Memory

In the brain "plasticity IS the capacity of the brain to change with learning" (Michelon 1). As we grow older, our brain is constantly changing and growing. There is a time period where the connections in our brain become fixed and it is a matter of time in age where humans will "lose" brain cells". In reality, people would think that is true. In recent studies it shows that the brain never stops changing. "This evidence comes from a number of different observations. In a study of London taxi drivers who are learning some 25, 000 streets, researchers found that compared with bus drivers (who had a fixed route), taxi drivers' brains changed, with more brain cells

<https://assignbuster.com/neuroplasticity-absorbs-the-changes-that-the-brain-goes-through-afflicted-by-various-factors/>

growing in one part of their brain that is related to knowledge of maps. This study shows that the brain is an active neurological mechanism and not just a warehouse for cells. The brain is more than a reserve gas tank, switching from tank A to tank B, but has 'plasticity', a flexibility that can change the capacity and function of specific areas" (Garrette 1). This is because the hippocampus is using complex spatial information in order to navigate efficiently. Taxi drivers have to navigate around London whereas bus drivers follow a limited set of routes. Learning abstract information can change some plasticity in the brain. Plasticity can be found in those who speak more than one language. Similar to those who are very good at playing music. Of course, these things take plenty practice to get good at and that is why the left back part of the brain is larger than those who are not musicians or who don't speak another language. Learning difficult things can change the brain. It is a good challenge to it. In research " by looking at the brains of German medical students three months before their medical exam and right after the exam, then comparing them to brains of students who were not studying for exam, students' brains showed changes in regions known to be involved in memory retrieval and learning." (Garrette 1). This evidence proves the brain can " regenerate throughout life" (Gerrette 1). It is possible to make one's brain stronger by doing many tasks. Thanks to technology today, there are many abstract games or puzzles to do on the internet. Not only do you need mental training, physical training as well. It does feel nice to work out every once in a while but step outside the box. Train your brain a new language, learn the violin, write with your left hand if you originally write with your

right hand, there are so many activities out there today that that are available and is something new to try.

Conclusion

Neural plasticity is the ability to develop an individual's learning process. The human brain is not a permanently fixed structure. It will have changes throughout one's life. Yes, plasticity of the brain does decrease with age but no matter the environment someone is in, the brain will adapt, and continue to change on its own. Experiences are a factor as well, and it will only improve the growth of the brain.