

HOW STRESS AFFECTS YOUR BRAIN



We have all experienced stress in our life. When we encounter a stressor, our brain and body respond by triggering a series of chemical reactions that prepare us to engage in a "fight or flight response" from the stressor. This activates the amygdala, or "fear center" of the brain, and causes a series of events. These include the production of the stress hormone cortisol, an increase in glucose levels, an increased heart rate, and an increase in blood flow to the muscles in the arms and legs. After the threat has passed, then the body will eventually return to normal. Stress is not all bad for your brain. Moderate stress can improve brain performance by giving us a burst of extra energy or help with focus. Just as playing a competitive sport or to speak in public. Stress can strengthen the connection between neurons in the brain. This helps improve memory and attention span to make you more productive overall.

What Makes Stress Bad?

When stress is continuous, it begins to change our brain and impact our overall health. Chronic stress activates the brain's fear center, meaning that the body is in a constant state of stress. When one part of the brain is constantly engaged, the other parts of the brain may not have enough energy to carry out their own functions properly. Chronic stress elevates cortisol levels, which can eventually cause problems with digestion, sleeping, and the immune system.

Your Brain Under Stress

Stress Changes the Brain's Structure:

Your brain is composed of gray and white matter. Gray matter is used for decision-making and problem-solving, while white matter connects brain regions and communicates information. During chronic stress, the myelin sheaths that make up white matter become overproduced, while the less gray matter is produced. When this happens, there can be an imbalance in gray and white matter permanently changes to the brain's structure.

Stress Impairs memory:

One effect of chronic stress that researchers have observed is memory impairment. Cortisol can cause your brain to shrink in size. Too much of it results in the loss of synaptic connections between neurons and the shrinking of your prefrontal cortex, the part of your brain that regulates behaviors like concentration, decision-making, judgment, and social interaction. It also leads to fewer new brain cells being made in the hippocampus. This means chronic stress might make it harder for you to learn and remember things.

Stress Makes Us More Susceptible to Mental Illness:

An imbalance between white and gray matter can also play a role in the development of mental illness. The theory is that having excess myelin in certain areas of the brain interferes with the timing and balance of communication. It was also noted that chronic stress can negatively alter hippocampal function. The hippocampus is involved in memory, specifically spatial memory, memory consolidation, and memory transfer.

Stress Shrinks the Brain:

While the overall volume of the brain tends to remain about the same, it has been found that chronic stress in otherwise healthy individuals can cause areas of the brain associated with emotions, metabolism, and memory to shrink. Chronic stress also made people more likely to experience brain shrinkage when exposed to intense stressors. This means that people under constant stress may find it harder to deal with future stress.



How Can We Decrease Our Stress?

Learning how to cope with stress can help minimize these effects. Try practicing relaxation techniques like meditation, yoga, or deep breathing. Do at least 30 minutes of moderately intense exercise, like brisk walking, on most days, which can calm your body and mind. Exercise and meditation decrease your stress and increase the size of the hippocampus, thereby improving your memory. It is also important to get at least seven hours of sleep. Seek support from friends and loved ones, and if necessary, talk to a mental health professional.

Visit www.braincentergb.org
for more information about stress and the brain.
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