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The Effects of Stress on the Brain



Can you recall feeling restless? Had trouble sleeping? Felt irritated and moody? There was probably something exciting (good or bad) going on in your life. Good or bad, it was probably something that you were stressed about. **Stress** is a reaction of your body to a challenge. It can be any challenge or demand at all. People use the word stress to describe a feeling of not being in control.

Evolutionarily speaking, experiencing stress in the short-term was used to keep us alive. It causes a quick start of the **'fight-or-flight'** response. This is very helpful in dangerous situations. It is also helpful when you need to accomplish



Stress is a feeling of not being in control.

something challenging. Good examples of this are when you need to lift a car off your child or when you need to fight a bear. In both cases, many people experience what they feel to be superhuman strength. In reality, they are using stress through the fight-or-flight reaction. Stress for too long, however, causes many negative effects for your brain and body



Stress is a helpful emotion when you need to accomplish something, such as fight a bear.

The journey of the stress hormones

Ecobottle Sample

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Stress - Stress is a reaction of your body to a challenge.

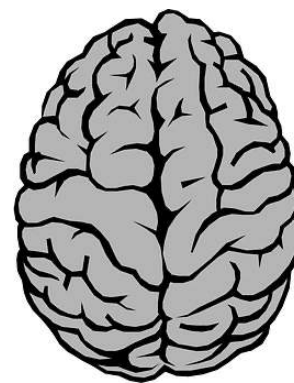
Fight-or-flight response - Response to a harmful event, attack, or threat to survival.

Hormones - Chemicals that signal your body to do something.

And the journey continues inside your brain...

Did you know that having long term stress also has an effect on the size, structure, and working of your brain (Lupien et al. 2009)? Too much production of stress hormones has three important results (Chetty et al. 2014; Davidson & McEwen 2012).

1. It increases the activity in the **amygdala** - the fear center of your brain. This creates a brain that is in a constant state of 'run away-or-fight'. The amygdala increases in size in cases of long-term stress.
2. It lowers the activity in the **hippocampus** - the center for learning, memorizing, handling emotions, and stress control. Stress lowers the growth of new brain cells. Also, some areas actually shrink.
3. It decreases the activity in the **prefrontal cortex** - the center of decision-making and concentration. Some areas also shrink a little under high levels of stress.



Long-term stress can affect your brain.

Grey and white are all that matter

Within the brain, it is all about activity. When people talk about the brain, they often talk about the '**grey matter**'. This grey matter consists of tightly packed nerve **cell bodies** (neurons). They do the thinking and decision-making. Some of the existing ones die. Fewer new ones are also made. This will result in problems with learning, memorizing, stress control, and decision-making, amongst other things.

How about the reverse button?

Ecobottle Sample

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Getting your brain back on track

Your brain develops during your lifetime. Therefore, changes can be reversed, although it gets more difficult as you grow older. Stress starts with the individual's view of feeling out of control. This is the key to reversing its effects. A lot of research has been done. It has shown that meditation is a great way to reduce the production of stress hormones. Mindfulness, training, and physical exercise are proven to be the best ways to get back in control of your life.



Meditation can help reduce stress.

Grey matter – Nerves in the brain responsible for thinking and decision-making

Anxiety - A feeling of worry, nervousness, or unease.

Reading Comprehension Questions

1. Describe how your body can benefit from stress.
2. What is,
3. What is the function of the hippocampus?
4. What
5. What can you do to reverse the negative effects of chronic stress on your brain?

Extension Question

6. Describe
7. Describe how the different parts of your brain can shrink or grow.
8. Describes

TWE READING SAMPLE

Ecobottle Sample



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TWF READING SKILLS

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