

Have you ever wondered what happens in the teenage brain? Read and find out.

Preparation

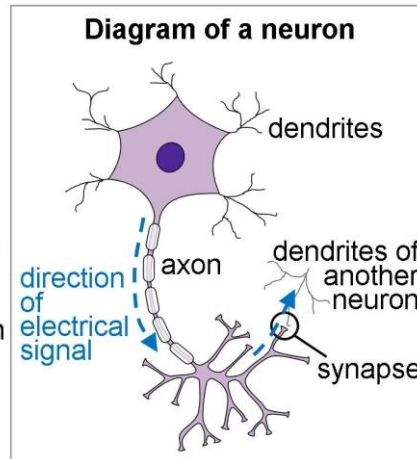
Match the vocabulary with the correct definition and write a–f next to the numbers 1–6.

- | | | | |
|--------|------------------------|----|--|
| 1..... | to stem from | a. | to weaken |
| 2..... | to master something | b. | to depend on |
| 3..... | to witness something | c. | to learn to do something well |
| 4..... | to wither | d. | to start or develop from |
| 5..... | to reinforce something | e. | to see something happen |
| 6..... | to rely on | f. | to give strength or support to something |

Me and my brain

We all know that significant changes occur in our bodies during adolescence, but have you ever stopped to wonder what's actually going on inside our brains during this time?

To paint a clearer picture, we should first familiarise ourselves with the different parts of the brain. Did you know, for instance, that our brains are made up of around 100 billion nerve cells called neurons? And stemming from these neurons are several branch-like structures for sending and receiving electrical signals? Every time we do or think anything, a signal is transmitted. The signal travels down a long structure called the axon and, at the end, it passes across tiny gaps called synapses to the dendrites of another neuron, which receive the signal. In this way, messages are sent across our neural network.



Our brain structure changes dramatically as we grow up. Newborn babies have almost all their neurons but few connections between them, which is why they can't do very much. After a few months however, the number of connections explodes, which in turn helps tiny tots master a whole range of new skills such as walking and talking. Despite earlier myths that most brain development is completed in the first few years, we now know that our brains continue to develop throughout our lives and perhaps the most dramatic time of change and development is during puberty.

During this period of reorganisation, the brain witnesses a sudden increase in neurons not dissimilar to a plant growing uncontrollably in spring. Just as we prune a plant to make it stronger and healthier, we prune our brains.



The connections that are used become stronger, whereas those which aren't used wither and die. So, the more frequently an action or thought is activated, the stronger the connections become between the neurons, which in turn strengthens the part of the brain being used. This explains why the more you do something, the better you become at it, reinforcing the old adage 'practice makes perfect'. In fact, it would seem that the teenage brain provides optimum conditions for perfecting skills such as playing a musical instrument, speaking another language or learning a complex computer game. It could therefore be argued that teenagers determine the development of their own grey matter through the activities and experiences they engage in.

It may also be unsurprising to many to learn that the last part of the adolescent brain to develop is the frontal cortex, responsible for self-control, problem solving and decision making. Consequently, long before teens become adept at rational, abstract thinking and logical decision making, they rely on the emotional centre of the brain to make choices and think. So perhaps unpredictable, volatile, risk-taking teenage behaviour, often put down to hormones, may actually have more to do with what's going on inside our brain.



1. Check your understanding: multiple choice

Circle the best answer to these questions.

1. What do we learn about the structure of the brain?
 - a. All neurons are activated when we think.
 - b. The structure of a brain cell is compared to a tree.
 - c. The structure of a brain cell changes when a message is sent.
 - d. Neurons come into contact with one another to allow a message to travel around the brain.

2. What does the second paragraph tell us?
 - a. Brain development is an ongoing process.
 - b. Babies are born with the capacity to do anything.
 - c. A reduction in connections between neurons helps babies learn how to speak.
 - d. It is no longer believed that most changes in the brain occur before adulthood.

3. What does the text tell us about brain reorganisation?
 - a. It normally occurs in the spring.
 - b. When we engage in an activity we strengthen connections in the brain.
 - c. As the number of neurons increases, the brain gets stronger.
 - d. People who play a musical instrument have stronger brain connections than those who play sport.

4. What does the writer imply in paragraph three?
 - a. All teens should play a musical instrument.
 - b. It is just as difficult to speak another language as it is to play computer games.
 - c. If we don't practise an activity in our teenage years, we won't be able to do it as an adult.
 - d. Teens can influence their own brain development.

5. During adolescence ...
 - a. all parts of the brain develop simultaneously.
 - b. we make emotional decisions because of our hormones.
 - c. we gradually improve our ability to think in abstract terms.
 - d. we are unable to carry out problem-solving tasks.

6. Overall, the writer thinks teenagers ...
 - a. are misunderstood.
 - b. want to learn more about the changes in their brains.
 - c. are more intelligent than they used to be.
 - d. can benefit from understanding the changes that happen in their brains.

2. Check your vocabulary: gap fill

Complete the sentences with a verb from the box.

master	reinforce	rely on
stem from	wither	witness

1. Sixty thousand fans were gathered in the Olympic Stadium to _____ that magic moment.
2. Words to express his feelings seemed to _____ and die inside him.
3. The science teacher used whole-class lessons to _____ what she hoped students had already discovered in their investigations.
4. There was no bus at night, so if we wanted to go out in the evening we had to _____ our parents for a lift back in the car.
5. He expected older children to _____ melody, harmony and the art of composing.
6. Part of the problem seemed to _____ the fact that the group didn't communicate with each other properly at the beginning of the project.

Discussion

Did you learn anything new from the text?

Do you know any interesting facts about the human brain?