AZUSA PACIFIC UNIVERSITY

SAMHSA
Substance Abuse and Mental Health Services Administration

PROJECT **YOUTH WELLNESS**

WEEK 2: UNDERSTANDING DEVELOPMENTAL RISKS: A NEUROSCEINCE FRAMEWORK

WEEK 2 CONTENTS

Youth Development Survey

Ages 12-24 make up the developmental period that is characterized by significant change and growth taking place biologically, cognitively, emotionally, and socially for young people. Read the following statements below and CIRCLE whether you think they are true or false.

Young people aged 12 to 24 have an increased preference for

- Rewarding and pleasurable activities — TRUE ◯ FALSE ◯
- Novelty and new experiences — TRUE ◯ FALSE ◯

Young people 12 to 24 are less likely to

- Engage in thoughtful decision-making process (reasoning pros and cons) — TRUE ◯ FALSE ◯
- Consider long-term consequences of actions — TRUE ◯ FALSE ◯
- Consider negative consequences — TRUE ◯ FALSE ◯

Young people 12 to 24 are more likely to

- Make decisions based on emotions (feelings) — TRUE ◯ FALSE ◯
- Be more impulsive (not practicing self-control) — TRUE ◯ FALSE ◯
- Engage in health-damaging (risky) behaviors — TRUE ◯ FALSE ◯

Reflect or share: why did you make those selections?

The Developing Brain Review

Did you guess that the brain is in development until the age of 25? Research shows that the youth years (between the ages of 12 to 24) are the most significant years for brain development especially since the developing brain has **plasticity**, which means it can change, adapt, and respond to its environment. The brain reaches full maturation at the age of 25. This means that, at your age, your brain has a long way to go in its phases of growing!

The brain is a mystery to a lot of people! *Did you know that your brain weighs 3 pounds?* This is amazing given that it is very complex. It is called the command center for your entire body, as it controls everything, from the things we see and feel to the actions we engage in. Take some time to study the image of some of the key areas of your brain below.

Place a STAR next to the ones you know about and add a QUESTION MARK next to the ones you have not learned about. Then, take some time to share what you know and learn from others.

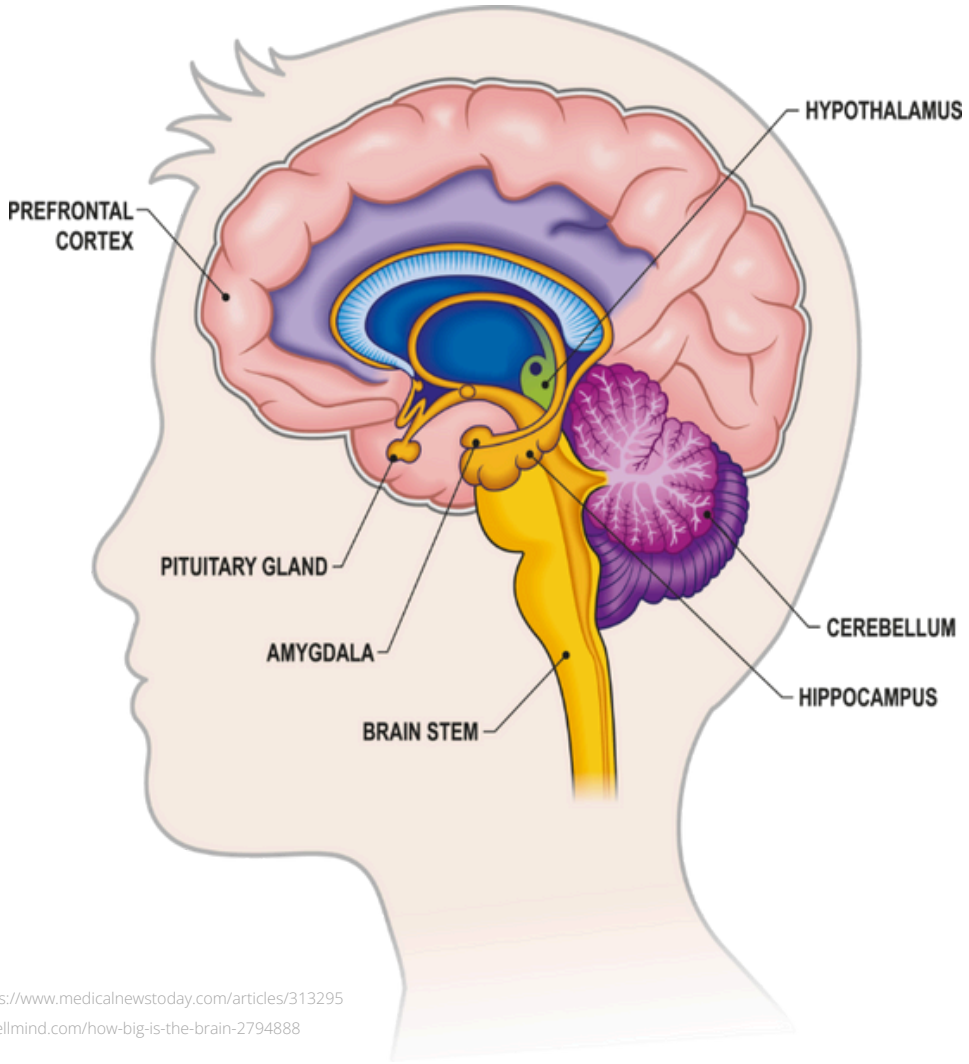


Image Source: https://www.medicalnewstoday.com/articles/313295
https://www.verywellmind.com/how-big-is-the-brain-2794888

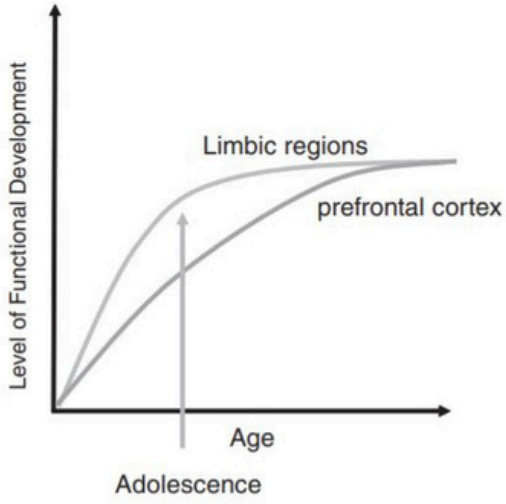
Brain Systems and Health Behaviors

Let's make some connections between brain development and health behaviors.

Review the parts of the brain that are not yet fully developed during the youth years (12 to 24). Which systems do you think have the greatest influence on your health behaviors? (HINT: refer to the brain systems on page 19).

Did you guess systems that control emotions and drive (amygdala, limbic system) and systems that control thinking and judgment (prefrontal cortex)? Research has identified that there is a **maturation gap** that exists during the developmental process. Specifically, there are critical imbalances in growth taking place between cognitive (thinking) and affective (emotional) regulation systems that contribute to risky decisions or being susceptible/vulnerable toward engaging in health-damaging behaviors.

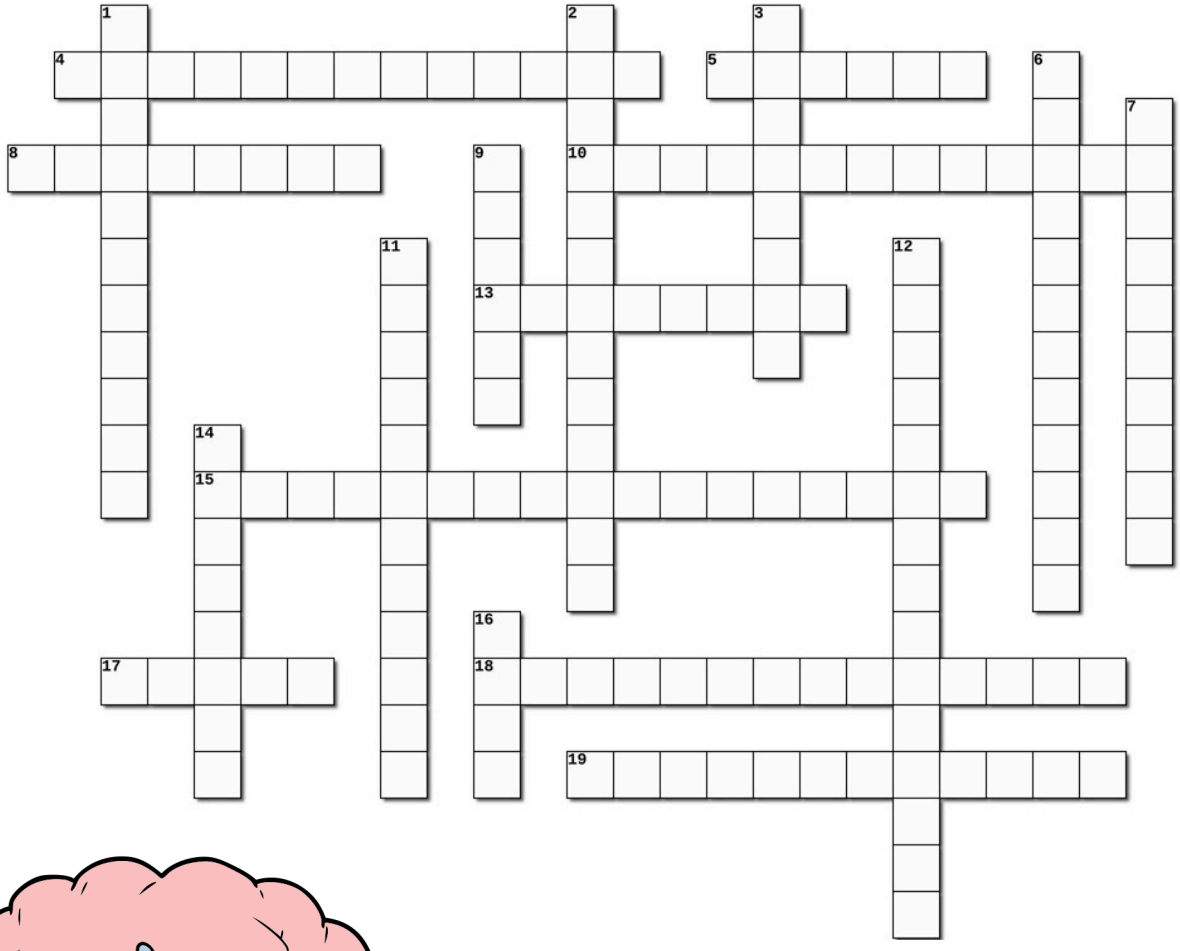
As shown in the figure below, since the prefrontal cortex is not yet fully developed during teen years, the brain relies on the limbic system to make decisions. This means that health behaviors at a young age are more motivated by emotions than by using critical thinking. An example of this is staying out late and drinking with friends to have fun instead of thinking about how it will affect your performance on an important test at school the next morning.

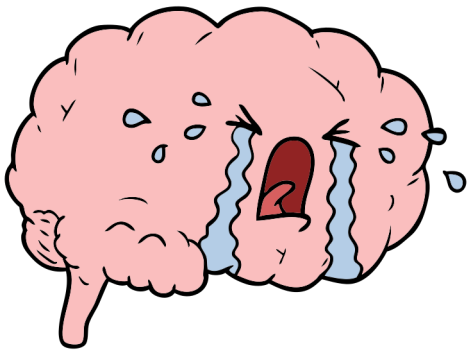


Source: https://www.ncbi.nlm.nih.gov/books/NBK545476/
Image Source: National Research Council. (2011). The science of adolescent risk-taking: Workshop report. National Academies Press.

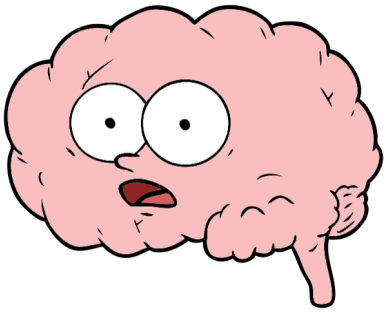
Structures and Functions of Your Amazing Brain

Put your brain knowledge to the test by completing this crossword puzzle below by using the clues on the next page. Stumped? Try it with a friend! How many did you get?





Structures and Functions of Your Amazing Brain



DOWN

1.It sends memories to certain parts of the brain for storage and retrieves them when you need them. 2.Helps process your hearing and other senses and also helps with language & reading. 3.The largest part of the brain; is divided into two sides, called hemispheres, just like the earth. 6.For personality and emotions, higher thinking skills, like problem-solving, and controlling movement. It continues to develop until your mid-20s. 7.It plays a key role in motor control, coordination, and spatial navigation, so we can find our way out of a maze, for example. 9.The outer layer of the brain. 11.Helps to control sleep and circadian rhythms. 12.Often called the “master gland,” which helps control growth, body temperature, pregnancy, and childbirth. 14.It processes emotions, like “fear.” 16.It helps control our breathing.

ACROSS

4.A region under the cortex, processes our emotions and drives.
5.They carry information from your senses to and from the brain and body.
8.It is known as a "happy hormone"— it makes us feel pleasure.
10.It is involved with your senses, attention, and language.
13.Located in the center of the brain, relays sensory & motor info to the cortex and helps with consciousness, sleep, and alertness.
15.It regulates our heart, and other body reflexes like vomiting, coughing, sneezing, and swallowing.
17.The command center for the entire body.
18.It helps your eyesight, including recognition of shapes and colors.
19.Wakes you up in the morning and gets the adrenaline flowing, like during a test or athletic event.

WORD BANK

BRAIN
CEREBRUM
CORTEX
DOPAMINE
FRONTAL LOBE
TEMPORAL LOBE
PARIETAL LOBE
OCCIPITAL LOBE
THALAMUS
CEREBELLUM
MEDULLA OBLONGATA
NERVES
LIMBIC SYSTEM
PONS
HYPOTHALAMUS
AMYGDALA
HIPPOCAMPUS
PITUITARY GLAND
PINEAL GLAND

National Institute on Drug Abuse. (2020, September 17). *The Human Brain: Major Structures and Functions*. NIDA. https://teens.drugabuse.gov/videos/human-brain-major-structures-and-functions-1

Structures and Functions of Your Amazing Brain

ANSWER KEY

DOWN

1. HIPPOCAMPUS
2. TEMPORAL LOBE
3. CEREBRUM
6. FRONTAL LOBE
7. CEREBELLUM
9. CORTEX
11. PINEAL GLAND
12. PITUITARY GLAND
14. AMYGDALA
16. PONS

ACROSS

4. LIMBIC SYSTEM
5. NERVES
8. DOPAMINE
10. PARIETAL LOBE
13. THALAMUS
15. MEDULLA OBLONGATA
17. BRAIN
18. OCCIPITAL LOBE
19. HYPOTHALAMUS

Review and Reflection

Let's Review

Key take-aways of what we learned so far:

- Young people's brains continue to develop until age 25.
- Young people's actions (including health behaviors) are more motivated by emotions rather than thinking due to the developmental growth maturation gap of your brain.
- Young people your age need to protect the developing brain.

Reflect on things that stood out to you from this section, things you never knew about, and things you will be sharing with others. Also, include any other reflections or questions you have about the information that was covered.