

Teens and Decision Making

Dear Teacher:

As a teacher of teens, you're aware that your students are going through important developmental stages as they mature into accomplished, independent adults. During this time, it is critical for them to understand the concept that *different areas of the brain mature at different rates*, a fact that has profound functional and behavioral implications.

This latest installment of *Heads Up* reports on important research, which shows that the teen brain is "under construction"—and how this fact impacts decision making. Students will gain insight into how rushed decisions—acting quickly before thinking something through—result from the influence of feelings and emotions (rooted in the more mature limbic system of teens) over *logic* (rooted in the yet-to-mature prefrontal cortex).

The information within this issue can help teens see the value of taking a moment to think before they act as a means to making smarter and more rational decisions. These steps can help protect them against making "bad" decisions, such as using drugs, alcohol, and tobacco, all of which carry serious risks of health and other consequences.

I urge you to share this important article with your students, and hope you will use the thought-provoking activities below to help your students apply what they've learned in their daily lives.

Sincerely,



Nora D. Volkow, M.D.
Director of NIDA



In This Installment

The latest science on:

- How decisions happen differently in the teen brain versus the adult brain
- Why emotions have an edge over logic in teen decision making
- How teens can "shape" their brains by choices and actions

More Information

- For facts about drugs and the body, visit www.scholastic.com/headsup and www.teens.drugabuse.gov
- For help with a drug problem, go to www.findtreatment.samhsa.gov, or call 1-800-662-HELP

Lesson Plan & Activities

NATIONAL STANDARDS

Science (NSES, NRC): Life Science: Regulation and Behavior; Science in Personal and Social Perspectives: Risks and Benefits

Language Arts (IRA/NCTE): Evaluation Strategies; Evaluating Data

KEY CONCEPTS

Recent scientific discoveries show that while one's brain reaches maximum size somewhere between ages 12 and 14, development continues all the way through one's early twenties. A key area of development is the **prefrontal cortex**, the brain region responsible for planning and sizing up risks and rewards. This area is not fully matured in adolescents—as a result, the faster-maturing **limbic system**, the emotional control center, gains an edge during decision making.

BEFORE READING

- Have students brainstorm examples of decisions that a person might make. Ask them to identify **emotional** versus **logical** aspects of each decision.

COMPREHENSION EXERCISE

- Use the reproducible on the back of this page to reinforce key information presented in the article.

CRITICAL THINKING

- How might the science of adolescent brain development explain the fact that teens can be more influenced by the immediate emotional rewards of a choice, and less concerned with consequences—even though they may logically recognize these consequences?
- How is synaptic pruning affected by choices and actions?

DISCUSSION QUESTION

- When faced with a spur-of-the-moment decision, why can pausing for a moment make a difference?

WRITING PROMPT

- Have students list choices and behaviors they find challenging and rewarding, and identify the desired short- and long-term benefits of each.

ANSWERS TO REPRODUCIBLE: 1. teens; 2. brain; 3. neurons, neurotransmitters; 4. prefrontal cortex; 5. axons, dendrites; 6. synapse; 7. b; 8. a; 9. a; 10. b; 11. a. 12. a; 13. c. ANSWERS TO STUDENT MAGAZINE: 1. d; 2. b; 3. a; 4. c; 5. e.

For printable past and current articles in the **HEADS UP** series, as well as activities and teaching support, go to www.drugabuse.gov/parent-teacher.html or www.scholastic.com/HEADSUP.

Name _____

Date _____

Teens and Decision Making: A Quiz

Use what you've learned from reading the article to answer the questions below.

Fill in the Blank

1. Acting before thinking something through happens more often in _____ than in adults.
2. Decisions stem from a series of events in the _____, which happen almost instantaneously.
3. Specialized cells called _____ talk with each other by way of electrochemical impulses and chemical messengers called _____.
4. Since the limbic system matures earlier than the _____, it is more likely to gain an upper hand in decision making. This imbalance helps to explain a teen's inclination to rush decisions.
5. Inside the brain, information travels through a network of neurons, which have thread-like fibers called _____ and branch-like structures called _____.
6. A _____ is the small space between an axon and a dendrite where information is exchanged.

True or False

7. The brain reaches its maximum size between ages 5 and 7.
(A) True (B) False
8. Brain development continues through a person's early twenties.
(A) True (B) False
9. Myelination boosts the brain's efficiency because it increases the speed of a signal traveling down an axon by up to 100 times.
(A) True (B) False
10. Synaptic pruning increases the number of synapses.
(A) True (B) False
11. Teens have the potential, through their choices and the behaviors they engage in, to shape their own brain development.
(A) True (B) False

Multiple Choice

12. The prefrontal cortex, a key brain region located directly behind your forehead, is an important control center for:
(A) thinking ahead and sizing up risks and rewards.
(B) coordinating motor responses and keeping your balance.
(C) mounting an emotional response to stimuli.
(D) responding to loud noises.
13. The limbic system, a part of the brain that matures earlier than the prefrontal cortex, plays a central role in:
(A) sports.
(B) speaking foreign languages.
(C) emotional responses.
(D) thinking ahead.