

Name: _____ Class: _____

The Distracted Teenage Brain

Scientists discover that teens are easily distracted by behaviors that were once — but are no longer — rewarding

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What happens when you challenge a group of teenagers and adults to a simple computer game testing their ability to stay focused on goals, with the distraction of a potential reward? That's what psychologist Zachary Roper and his team wanted to find out. As you read the article, look for information that helps explain young adult behavior. How can science help explain teenage identity?

- [1] Teens have a reputation for making some not-so-smart decisions. Researchers have blamed those poor decisions on the immaturity of a teen's prefrontal cortex. That is the part of the brain involved in making plans and decisions. But scientists now find the answer may be simpler: the allure¹ of rewards. Rewards, even small ones, entice teens more than they do adults.

And, perhaps surprisingly, teens tend to continue doing things they once found rewarding, even after the actual payoff is long gone. Both findings come from a new study by researchers at the University of Iowa in Iowa City.



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Psychologist² Zachary Roper and his team worked with two groups of volunteers: 13- to 16-year olds and 20- to 35-year-old adults. Each volunteer had to play a game of sorts. During a training phase, a computer displayed six circles, each a different color. The players had to find the red or green circle. These targets had either a horizontal³ or vertical⁴ line inside. The remaining circles had lines at other angles. When the participant found the correct target, they had to press one of two keys on a keyboard. One key would report they had found the vertical line. The other reported finding a horizontal line.

When a volunteer hit the right key, the screen flashed the amount of the reward they had earned. For some volunteers, green circles provided a large (10-cent) reward and red circles provided a small (2-cent) reward. For other volunteers, the amounts were reversed, with red circles worth more. All other colors had no reward.

1. **Allure (noun):** attraction, appeal
2. **Psychologist (noun):** Someone who studies the human mind, especially in relation to actions and behavior.
3. **Horizontal (adjective):** A line or plane that runs left to right.
4. **Vertical (adjective):** A term for the direction of a line or plane that runs up and down.

- [5] By the end of this training, volunteers had learned the value of each color. But they weren't aware that they had, notes Iowa's Jatin Vaidya. When the scientists asked the players about the value of red versus green circles, both teens and adults had no awareness that a circle's color had any effect on how much they had earned during any given trial.

After this training ended, it was time to begin testing in earnest⁵. The scientists informed the volunteers they had a new target. Each had to report the orientation⁶ of the line inside a blue diamond. Again, groups of six symbols appeared on a computer screen. Only one was a diamond. The other five were still circles. In some trials, one of those circles was red or green. In other trials, there were no red or green circles.

The recruits were told to answer as quickly as possible. And for this phase of the experiment, no additional money would be earned.

The researchers now measured how long it took people to find the diamond and record their answers.

When no red or green circles were among the onscreen options, both adults and teens responded quickly. But when a red or green circle showed up, both groups initially took a bit longer. Adults, though, quickly stopped paying attention to the colored circles. Their response times sped up.

- [10] Teens reacted differently. They took longer to respond whenever a red or green circle showed up. Their response times never sped up. Their attention still was drawn to the previously valued circles — even though the shapes no longer brought any reward. Clearly, the red and green circles were distracting teens from their objective.

Roper's team reported the findings September 10 in *Psychological Science*.

"The study demonstrates that the attention of adolescents⁷ is especially drawn to rewarding information," says Brian Anderson. A psychologist at Johns Hopkins University in Baltimore, Md., he was not involved with the study. These data may help explain why teens engage in risky behavior, he says.

Some behaviors, such as texting or using social media, trigger the brain's reward system. Once the teenage brain has linked a behavior to that reward, it continues to seek the reward again and again. That's why teens are likely to opt for the reward of social media when they should be studying. Or why they respond to texts while driving.

How can someone overcome their brain's attempts to distract? Vaidya suggests physically removing distractions whenever possible. Shut down the phone when driving or disconnect from Wi-Fi while doing homework. When distractions are not readily available, it will be easier to focus attention on the things that matter most. Like arriving home safely.

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5. **In earnest (phrase):** with seriousness or intensity

6. **Orientation (noun):** direction, as in vertical or horizontal

7. **Adolescent (noun):** Someone who is in a transitional stage of physical and psychological development that begins at the onset of puberty, typically between the ages of 11 and 13, and ends with adulthood.

Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. In your own words, summarize the central ideas of this article. [RI.2]

2. PART A: As it is used in paragraph 1, the word “entice” most closely means: [RI.4]
 - A. Discourage
 - B. Persuade
 - C. Enjoy
 - D. Minimize
3. PART B: Which detail from the paragraph provides the best clue to the meaning of the word “entice”? [RI.1]
 - A. “not-so-smart decisions”
 - B. “allure of rewards”
 - C. “even small ones”
 - D. “more than they do adults”
4. What is the author’s purpose for including the information about teen reputations at the beginning of paragraph 1? [RI.5]
 - A. To argue that rewarding students for bad behavior will only make the problem worse.
 - B. To explain the neurological reason behind teens’ poor decisions.
 - C. To list the reasons why teens have a reputation for making poor choices.
 - D. To introduce the idea that teens’ poor choices may driven by simple rewards.

5. What does paragraph 5 reveal about the volunteers in the study? [RI.3]
- A. They were more successful at pressing correct keys for colors that were worth more, without even realizing it.
 - B. They eventually realized which color was worth more and could therefore focus more on getting those keys right.
 - C. They denied knowing which color was worth more so that they would not be accused of cheating.
 - D. They could not recognize which color was worth more so the results were entirely random.

6. The title of this article is "The Distracted Teenage Brain." Which paragraph from the article best explains why the author chose this title, and why? [RI.6]

7. According to psychologists like Brian Anderson, how does this study relate to teenage behavior? What does the computer game they participated in have to do with teens' everyday lives? [RI.8]

Discussion Questions

Directions: Brainstorm your answers to the following questions in the space provided. Be prepared to share your original ideas in a class discussion.

1. Are you surprised by the findings of this study? Why or why not?
2. In paragraph 11, one scientist makes the claim that the results of the study, which suggest that teens are more easily distracted by potential rewards, help prove why teens are more likely to engage in irresponsible behavior. In your opinion, is this a strong argument? What might be some other reasons teenagers make poor choices?
3. In the context of this article, how can science define the identity of a teenager? Where does it fall short?