



Grade 9 Sample Lesson Plan: Alcohol & The Brain - Decisions, Decisions, Decisions

SOLs

- Explain how alcohol and other drugs increase the risk of injury
- Analyze the deadly consequences of binge drinking
- Develop a set of personal standards to resist the use of alcohol, tobacco, and other harmful substances, and other harmful behaviors

Objectives/Goals

- The student will understand how teenage brain science and decision-making are related.
- The student will explain the impact of health risks and identify strategies to limit risk through decision-making scenarios.
- The student will generate alternatives to health-related issues or problems *such as binge drinking*.

Materials

- [Teens and Decision Making Article](#)
- [Teens and Decision Making Worksheet](#)

Procedure

- Hook - Have students make a prediction to the following question - *How many high school students do you think drink alcohol?* Answers will vary, often perceptions will be high. Here is data from the 2015 YRBS Survey from the CDC

The 2015 [Youth Risk Behavior Survey](#)⁷ found that among high school students, during the past 30 days

- 33% drank some amount of alcohol.
- 18% binge drank.
- 8% drove after drinking alcohol.

- 20% rode with a driver who had been drinking alcohol.

- Ask students - *Does any of this information surprise you?*
- Explain the objectives of the lesson (see above).
- Go over the functional knowledge you want students to know about binge drinking. You can decide based on the needs of your students, but here is somewhere to start (source: KidsHealth.org - <https://kidshealth.org/en/teens/binge-drink.html> . Refer to the web link for more information) This activity is intended to be a class discussion. If you'd prefer, you can also show this [Binge Drinking Video](https://www.youtube.com/watch?v=I9hdkDTaQWU) (4:22) from the CDC to help explain Binge Drinking (<https://www.youtube.com/watch?v=I9hdkDTaQWU>). It is important you get students to process and reflect on the video with some discussion questions (see below).
- Start by defining what binge drinking is. Ask students to define it in their own words, but make sure to include the following info - *Binge drinking used to mean drinking heavily over several days. Now, however, the term refers to the heavy consumption of alcohol over a short period of time. Today the generally accepted definition of binge drinking in the United States is the consumption of five or more drinks in a row by men — or four or more drinks in a row by women.*
- Analyzing Influences Activity - Next ask students to brainstorm ideas about *why people binge drink?* Have students create a table with two columns “Internal Influences” and “External Influences” Have them think of at least three Internal Influences and three External Influences on Teen Binge Drinking
- After students come up with their own ideas, have them share ideas and add to their list until everyone has at least 5-10 ideas for each column.
 - Answers will vary. Some ideas include:
 - Social connection
 - Peer Pressure
 - To get drunk
 - Curiosity
 - Perception it will make them feel good
 - A way to reduce stress (even though it can create more stress)
 - Feel older
- Next, ask students - *What are some of the risks of binge drinking?* Answers will vary. Some broad key ideas include:
 - Alcohol poisoning

- Impaired judgement
- Physical health consequences (brain & liver effects, overweight, high blood pressure)
- Mental health consequences (poor sleep, academic difficulties, personality and mood changes)
- Alcoholism (addiction)
- Other more specific ideas from the CDC include: *Consequences of Underage Drinking*
Youth who drink alcohol are more likely to experience
 - School problems, such as higher absence and poor or failing grades.
 - Social problems, such as fighting and lack of participation in youth activities.
 - Legal problems, such as arrest for driving or physically hurting someone while drunk.
 - Physical problems, such as hangovers or illnesses.
 - Unwanted, unplanned, and unprotected sexual activity.
 - Disruption of normal growth and sexual development.
 - Physical and sexual assault.
 - Higher risk for suicide and homicide.
 - Alcohol-related car crashes and other unintentional injuries, such as burns, falls, and drowning.
 - Memory problems.
 - Abuse of other drugs.
 - Changes in brain development that may have life-long effects.
 - Death from alcohol poisoning.
- Next, connect how binge drinking affects the teenage brain. (source: Teens.drugabuse.gov)

Short-Term Consequences of Intoxication (being “drunk”):

- An intoxicated person has a harder time making good decisions.
- A person is less aware that his/her behavior may be inappropriate or risky.
- A person may be more likely to engage in risky behavior, including drinking and driving, sexual activity (like unprotected sex) and aggressive or violent behavior.
- A person is less likely to recognize potential danger.

Long-Term Consequences as the Teen Brain Develops: Research shows that drinking during the teen years could interfere with normal brain development and change the brain in ways that:

- Have negative effects on information processing and learning.
- Increase the risk of developing an alcohol use disorder later in life.

- **Real World Connections** - Now that students have an understanding of how alcohol consumption affects the teenage brain, have them explore how the teenage brain functions and how decision-making works from a neuroscience standpoint. Have students read this [Teens and Decision Making Article](#) and complete this [Teens and Decision Making Worksheet](#) in small groups. After about 15 minutes, discuss and share some of the ideas from each group going over the three questions on the worksheet.
- **Knowledge Application: Decision-Making Practice** Students should have a better idea of how the teenage brain works and some of its structures/functions now. It is important to have students practice their decision making skills around alcohol related scenarios. When teaching decision making, there are some different acronyms to use. One suggest would be to use the DECIDE acronym below. It fits nicely with some of the main points in the last section of the article. As the article states in the last section...

"Learning how your brain works can help explain why sometimes you behave like you do. With this knowledge, you can be better equipped to make smart choices. One tip to follow is to take a moment before acting. When making a decision, something as simple as stopping to think can mean the difference between a positive and a negative outcome.

By waiting a minute before acting, you allow yourself to:

- consider consequences;
- weigh harmful outcomes (e.g., harm to yourself or others) against short-term benefits (e.g., fitting in or feeling high);
- determine whether peer pressure is making you do something you'd otherwise not do;
- get information or advice, if you need it."

References

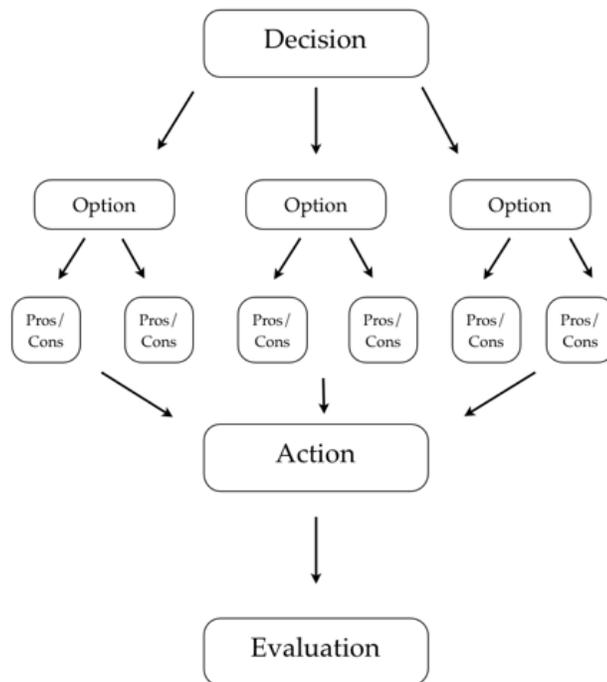
- [Teens and Decision Making Article](#)
- [Teens and Decision Making Worksheet](#)
- [Parent/Guardian Discussion - Connecting Health Class & Home: Binge Drinking](#)
- CDC - [Binge Drinking Video](#) (4:22)
- [KidsHealth.org - Binge Drinking](#)
- National Institute on Alcohol Abuse & Alcoholism - [Underage Drinking](#)
- CDC - [Underage Drinking Facts Sheet](#)
- [Teens.drugabuse.gov](#)
- Andy Horne, 2015 National Health Teacher of the Year

Handout

The next page includes a handout for the lesson. The handout is designed for print use only.

The following is a description of the **DECIDE** decision making process:

- Define the problem
- Explore the alternatives
- Consider the consequences
- Identify your values
- Decide and take action
- Evaluate the decision



- Working alone or in small groups, have students practice applying the DECIDE model to a realistic alcohol related scenario.
- Here are some possible scenarios:

Scenario #1 - Your parents are going away for the weekend and your best friend is pressuring you to throw a huge Saturday night party for all your friends. Your best friend has an older sibling who is over 21 years old and said he/she could pick up a keg for the party and some other "hard stuff." You have learned that your friend's older sibling has bought two kegs of beer, a case of Zima, a bottle of Vodka, and a few bottles of wine, which has been hidden in the basement. Your friend has spread the word around school that you are having a party and is encouraging everyone to show up. You now have over \$100 worth of alcohol, an empty house for the weekend, and fifteen friends expected to show. What should you do?

Scenario #2 - Position yourself in a situation where you are surrounded by 6 friends all older than yourself by a year or two. You all decide to hang out at your house because your parents are away for the night. You sneak into their alcohol stash and take unnoticeable amounts. Eventually you are all intoxicated, some more than others. Everyone is famished and decided to designate a driver to

drive to McDonalds. You feel as if you are the most capable, but run into the problem of whether or not to volunteer. Either you can risk getting caught and go get the food because you are the least intoxicated OR you can sit quiet and let your friend who is more intoxicated than you go and risk potentially getting caught or causing a wreck. What do you do?

Scenario #3 - You and Alex have gone to a football game at your school. For more than an hour you've noticed that Alex has been drinking vodka out of a flask. When you question Alex on it, they say "It's just to keep "warm". It's getting late now, and you would like to go home. Alex gave you a ride to the game, but now Alex's looking pretty drunk. When Alex asks if you are ready to leave, you ask "Are you sober enough to drive". "Yeah, sure," Alex says, laughing. "I've driven when I've been more drunk than this and nothing happened. Don't worry!" Formulate a decision on how you are getting home from the football game using the decision making process.

Scenario #4 - A close friend is driving you home from a holiday party. Your friend had three glasses of wine with dinner, over a period of several hours, but does not seem intoxicated. As you approach your destination, a police officer flags your car for a routine sobriety check. Your friend asks you to change places and pretend you were driving, since you had nothing to drink at the party. What do you do?

Scenario #5 - You are at a friend's house and the parents are not home. It is a pretty low-key get together with some friends you know well and you were planning on just hanging out. Later in the evening some more people show up who you don't know that well and they walk in with a case of beer and some vodka. All of a sudden the vibe has changed and they are pouring shots for everyone in the room. Shots of vodka are poured and handed to everyone including you. What do you do?

Possible Extensions to the Activity

- You could have students turn in a worksheet or reflection to the following scenarios above.
- Discussion or journal prompt to one of the following prompts/question(s)
 - Develop a set of personal standards to resist the use of alcohol. What are your views on underage drinking? If you are put in a "difficult" scenario with your peers in regards to underage drinking, how will you respond? What can you do now to ensure you stick to a healthy and safe choice?
 - Have students read the following article: [*With Drinking, Parent Rules Do Affect Teens' Choices*](#) A prompting question could be...*Do you agree with the experts that kids will listen when parents talk about the dangers of drinking? Explain your answer.*

- [Parent/Guardian Discussion - Connecting Health Class & Home: Binge Drinking](#) - Have students connect Health Class with their Home by providing the opportunity to have important conversations with a parent/guardian. Use this activity for ideas

Assessments, References, & Sources

- [Teens and Decision Making Article](#)
- [Teens and Decision Making Worksheet](#)
- [Parent/Guardian Discussion - Connecting Health Class & Home: Binge Drinking](#)
- CDC - [Binge Drinking Video](#) (4:22)
- [KidsHealth.org - Binge Drinking](#)
- National Institute on Alcohol Abuse & Alcoholism - [Underage Drinking](#)
- CDC - [Underage Drinking Facts Sheet](#)
- [Teens.drugabuse.gov](#)
- Andy Horne, 2015 National Health Teacher of the Year

Parent/Guardian Discussion - “Connecting Health Class & Home - Binge Drinking”

Dear Parents/Guardians,

This unit in Health class, we are discussing the consequences of underage drinking. It is extremely important that students not only engage in discussions about this topic at school, but that an ongoing dialogue is also occurring at home. Research shows that among adolescents who abstain from alcohol, parental disapproval of underage drinking is the key reason they have chosen not to drink. (Please see this article [With Drinking, Parent Rules Do Affect Teens’ Choices](https://www.npr.org/2015/07/27/427011100/with-drinking-parent-rules-do-affect-teens-choices) from NPR.org using the following link for more information: <https://goo.gl/LUeJwv>)

Today, students will be bringing home an assignment called “Connecting Health Class & Home - Binge Drinking,” that will be due on _____. The assignment requires students and parents to discuss the following questions below. Please share your thoughts and reactions. I have included a few questions below to get you started:

- ~ What are some ways that drinking as a teen can affect your future?
- ~ What are some ways that parents can help their teen deal with the pressure to drink or use harmful substances?
- ~ What are some ways that a teen can let their parent know they are dealing with the pressure to drink of use harmful substances?
- ~ What are some appropriate and fun ways for teens to socialize?

Feel free to expand your discussion to include other topics not included on this worksheet. This assignment will be graded on completion.

Sincerely,

Name _____ **Date** _____ **Pd** _____

I have discussed the questions above and my signature acknowledges we have completed it.

Student Signature

Parent/Guardian Signature

Teens and Decision Making

What Brain Science Reveals

Instructions: Begin reading the article on the teenage brain either individually or with your group. When you arrive at a number, complete the following tasks on this sheet:

Supplies: An activity sheet for each group member
1 package of markers for the whole group to share

1

When you arrive at checkpoint #1, briefly describe a time that you rushed through a decision and write a short explanation. When you have completed your short explanation, add an illustration to your example (a nice color picture).

Illustration

2

When you arrive at checkpoint #2, use the markers and draw a brain. List the name and function of the two regions of the brain that the article describes.

Region of the brain: _____

Function: _____

Region of the brain: _____

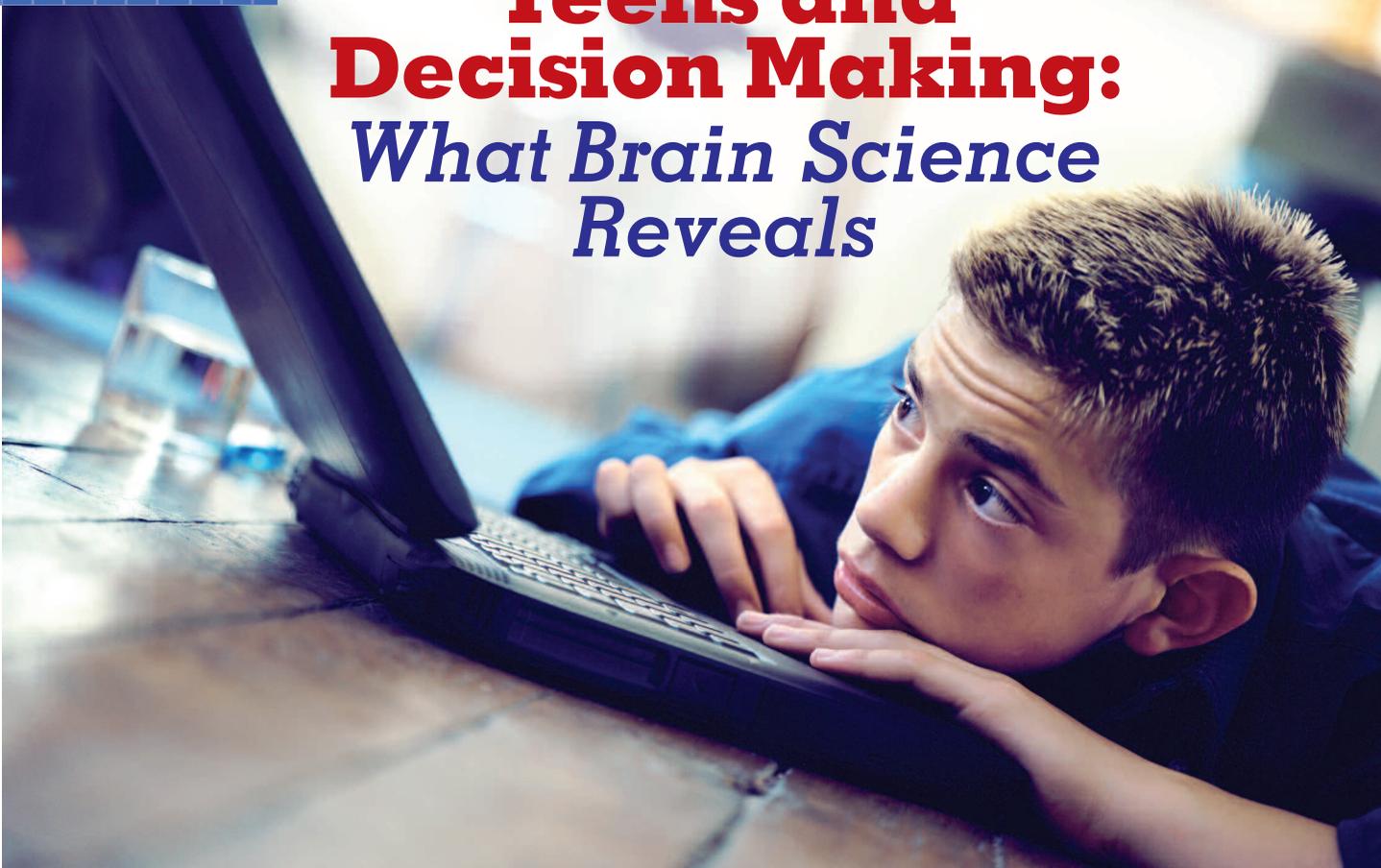
Function: _____

Illustration

3

When you arrive at checkpoint #3, write your response to the following statement: "Most kids don't really plan to use drugs". Do you agree with this statement? Why or why not?

Teens and Decision Making: What Brain Science Reveals



Do you ever act before thinking? Have you ever wondered why? Do you worry this might create problems? If you answered “yes” to any of these questions, read on.

Picture this: Your finger is poised on the *send* button, your eyes scanning an angry e-mail you’ve dashed off to a friend who has upset you. Some things you’ve written are a little harsh. In your brain a little red light goes off, but, what the heck, you’re steamed and your friend deserves it. You push the button.

Whether you’re aware or not, rushed decisions like this—acting before *thinking it through*—happen more often in teens than in adults. Recent discoveries in brain science may help explain why this is so.

First, a bit on how a brain makes decisions. Decisions don’t “just happen” automatically in your conscious mind. They stem from a series of events in the brain, which happen almost instantaneously. This involves a relay system in which different structures—made up of specialized cells called neurons—talk with each other by way of electrochemical impulses and chemical messengers, called neurotransmitters. Information flowing through this decision-making circuit is analyzed in the different structures. Then the network, as a whole,

puts out a response. This output provides the basis for our behaviors and actions.

While this process is basically the same for teens and adults, the devil is in the details. Since the brain is not fully developed until the early 20s, the way in which a teen's decision-making circuit integrates information may put him or her at a higher risk of making decisions the teen could later regret.

THE TEEN BRAIN: Under Construction

Not long ago, scientists thought the human brain was fully mature long before the teen years. While research shows that one's brain reaches its maximum size between ages 12 and 14 (depending on whether you are a girl or a boy), it also shows that brain development is far from complete. Regions of the brain continue to mature all the way through a person's early 20s.

A key brain region that matures late is the **prefrontal cortex**, located directly behind your forehead. The prefrontal cortex is very important as a control center for thinking ahead and sizing up risks and rewards. (This area is, in fact, the little red light that was trying to warn you about sending that e-mail.) Meanwhile, another part of the brain that matures earlier is the **limbic system**, which plays a central role in emotional responses.

Since the limbic system matures earlier, it is more likely to gain an upper hand in decision making. This relationship between the emotional center (limbic system) and control center (prefrontal cortex) helps to explain a teen's inclination to rush decisions. In other words, when teens make choices in emotionally charged situations, those choices are often more weighted in *feelings* (the mature limbic system) over *logic* (the not-yet-mature prefrontal cortex).

This is also why teens are more likely to make "bad" choices, such as using drugs, alcohol, and tobacco—all of which pose a risk of serious

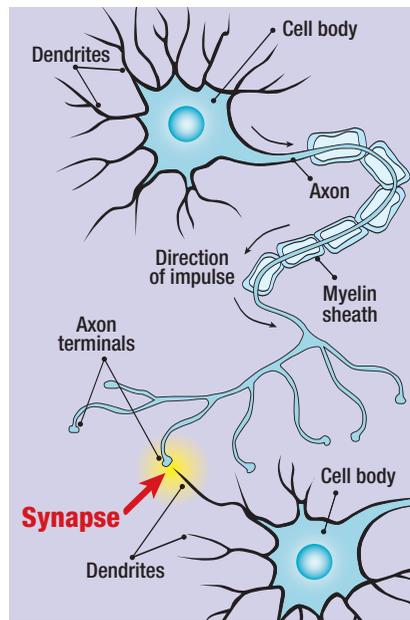
health consequences. "Most kids don't really 'plan' to use drugs," says Professor Laurence Steinberg of Temple University, "at least not the first time. They are more likely to experiment *on the spur of the moment*, particularly when influenced by others [peer pressure]."

FINE-TUNING THE BRAIN

Like the rest of the body, the brain needs to mature in order to reach peak performance. This process involves slow changes—strongly influenced by brain activity—that have evolved to fine tune (or optimize) how neural impulses flow throughout the brain, allowing it to process information faster and more reliably.

Inside the brain, information travels through a network of neurons, which have thread-like fibers called *axons* and branch-like structures called *dendrites*. Dendrites bring information into the neurons, while axons take it away and pass it along to the next neuron. Thus, neurons are assembled into circuits where the far end of an axon (its terminal) is positioned close to a dendrite. The small space between the two is called a **synapse**—where information is exchanged.

Throughout childhood and adolescence, the brain is busy fine-tuning itself through two key processes: myelination and synaptic pruning.



A **synapse** is the small space where an axon and dendrite exchange information.

In **myelination**, axons wrap themselves in a fatty substance (myelin sheath), which works like the insulating plastic that surrounds electrical wires. This boosts the brain's efficiency by increasing the speed with which a signal travels down the axon by up to 100 times. In **synaptic pruning**, synapses not used very often are removed, allowing the brain to redirect precious resources toward more active synapses. This strategic loss of weak synapses shapes the brain and makes it more efficient. This important pruning process molds the brain in response to a person's experiences and activities.

This means that teens have the potential, through their choices and the behaviors they engage in, to shape their own brain development—



strengthening some circuits and getting rid of others. This makes the type of activities teens are involved in especially important. Skill-building activities, such as many physical, learning, and creative endeavors, not only provide stimulating challenges, but can simultaneously build strong brain pathways. When teens learn and repeat

appropriate behaviors, they are helping to shape their brains—and their futures.

WAIT A MINUTE!

Learning how your brain works can help explain why sometimes you behave like you do. With this knowledge, you can be better equipped to make smart choices.

One tip to follow is to *take a moment* before acting. When making a decision, something as simple as stopping to think can mean the difference between a positive and a negative outcome. By waiting a minute before acting, you allow yourself to:

- consider consequences;
- weigh harmful outcomes (e.g., harm to yourself or others) against short-term benefits (e.g., fitting in or feeling high);
- determine whether peer pressure is making you do something you'd otherwise not do;
- get information or advice, if you need it.

For more information about drugs and your body, visit <http://teens.drugabuse.gov> and www.scholastic.com/headsup.

To learn more about “pausing” to allow yourself to make smart choices, check out www.myspace.com/pause.

Vocabulary

Match each word in Column A to its meaning in Column B.

Column A

1. synapse
2. myelination
3. prefrontal cortex
4. limbic system
5. synaptic pruning

Column B

- A. brain area important for thinking ahead and sizing up risk and reward
- B. process in which axons become wrapped up in fatty myelin sheath
- C. brain system that plays a central role in emotional responses
- D. the small space between axons and dendrites where neurons exchange information
- E. cutting back the number of synapses

Alcohol and Your Body

• What to Know •

When a person drinks alcohol, it is absorbed into the bloodstream within minutes and affects nearly every organ system in the body. How alcohol affects people depends on a number of factors, such as:

- The same amount of alcohol more strongly affects a person who weighs less than a heavier person
- Because their bodies are still developing, young people are more at risk for some types of alcohol damage
- The same amount of alcohol typically affects women more than it does men.

On the right, read through facts about the effects of alcohol on the body. Then test what you know by choosing the correct answers below.

1. Which organ breaks down alcohol?

- a. Liver c. Heart
b. Kidneys d. Lungs

2. Over time, alcohol can make it difficult for the body to soak up bone-building ____.

- a. calcium c. oxygen
b. enamel d. carbon

3. Alcohol causes your ____.

- a. liver to produce more urine.
b. heart to produce more blood.
c. stomach to produce more acid.
d. stomach to produce more urine.

4. Which of the following statements is FALSE?

- a. Long-term alcohol abuse may lead to cancer.
b. Drinking alcohol over a long period of time decreases blood pressure.
c. Alcohol affects nearly every organ system in the body.
d. Abusing alcohol over a long period of time can make acne worse.

Heart



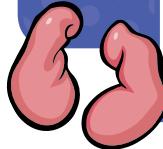
Alcohol causes the heart rate to slow. Heavy drinking over a long period of time can also increase the risk of heart disease, stroke, and high blood pressure.¹

Stomach



Alcohol can give you an upset stomach because it makes you produce more stomach acid. Drinking a lot of alcohol over a long period of time can damage the lining of the stomach—causing ulcers or stomach cancer.

Kidneys



Drinking alcohol causes your body to produce more urine, making your kidneys work overtime. Heavy drinking over a long period of time may lead to kidney failure.

Skin



Drinking alcohol can give your skin a red appearance similar to blushing because it allows more blood to flow near the skin surface. Drinking a lot of alcohol over a long period of time can cause acne to become worse and make your skin look puffy.

Eyes



Alcohol can blur your eyesight. Your pupils (the black center of the eye) may get small, making it difficult for your eyes to adjust to light.

Bones



Drinking a lot of alcohol over a long period of time makes it more difficult for the body to soak up bone-building calcium. Eventually, that makes the bones thinner and easier to break.

Liver



Your liver is a critical organ; it helps filter poisons out of the blood and makes body-building proteins. Your liver breaks down alcohol so that your body can get rid of it. Heavy drinking over a long period of time can permanently damage your liver, causing a disease called cirrhosis.

¹ NIAAA, www.niaaa.nih.gov/FAQs/General-English.

Fast Fact

The word “intoxicated” refers to the fact that alcohol is toxic, or hazardous, to the body.



Some of the slang names for alcohol are booze, sauce, brewskis, hooch, hard stuff, and juice. Don't worry about trying to fit in or be cool when it comes to drinking alcohol. Most teens aren't drinking alcohol. Drinking is not as common or as "cool" as some people would like you to believe it is.



Alcohol is in drinks like beer, wine, liquor, wine coolers, whiskey, liqueurs, and even some coffee drinks. If you are not sure whether the drink you are going to have has alcohol in it, check the label. If there is alcohol in the drink, it has to say so on the label—it's the law. If you are still not sure or can't tell from the label, ask a trusted



Alcohol is really unhealthy for our bodies. It is considered a central nervous system (CNS) depressant. The main job of the CNS is to send signals throughout the body. For example, the CNS tells you when to raise your hand in class or how to jump over a hurdle. Our brains think of the actions it wants our bodies to do and sends messages to that part of the body. When this system is slowed down by alcohol, the body can't react as quickly to the messages the brain is sending. That is why it is important for people not to drive after they drink alcohol.



Besides harming the central nervous system, alcohol can weaken our immune system and make us more likely to get sick or develop

Here are the parts of your body that could be damaged by alcohol if you chose to drink —yuck!

The Heart



Drinking alcohol could cause your blood pressure to rise, increase your heart rate, cause your heart to beat abnormally, and it could increase the size of your heart. All of these things are bad for you. If you have an irregular heartbeat, you won't be able to play sports or exercise as well as you normally could.

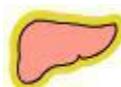
Drinking alcohol over a long period of time could cause stomach ulcers or stomach cancer.

The Stomach



Drinking alcohol could cause diseases such as cirrhosis (pronounced "sir-o-sis"), inflamed liver (hepatitis), or even cancer of the liver. Its job is to keep poisons like germs and bacteria out of our blood. The liver also makes the protein that causes our blood to clot, and clotting is what causes scabs to form and makes us stop bleeding when we get a cut. We need our liver so we can stay healthy and so our bodies stay clean. Cirrhosis is a disease that damages the liver. It weakens the liver's ability to clot and keep our blood free from poisons and bacteria. People can get cirrhosis in different ways, but drinking too much alcohol is the most common way.

The Liver

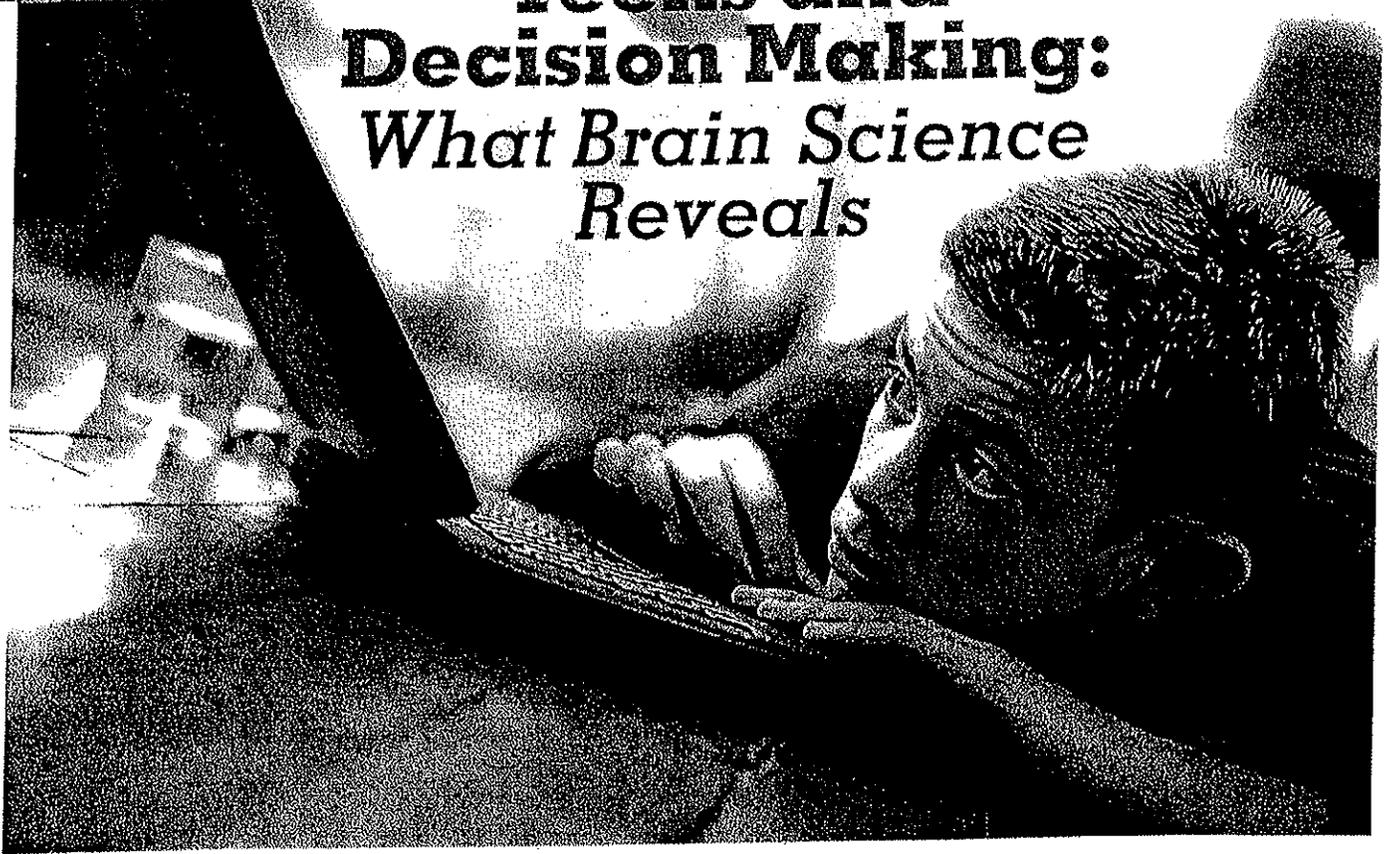


The Brain



Drinking alcohol leads to a loss of coordination, poor judgment, slowed reflexes, distorted vision, memory lapses, and even blackouts. This means alcohol won't let you do the things you normally do that require coordination and skill. You can't ride a bike, inline skate, play sports, or even walk in a straight line.

Teens and Decision Making: What Brain Science Reveals



Do you ever act before thinking? Have you ever wondered why? Do you worry this might create problems? If you answered "yes" to any of these questions, read on.

Picture this: Your finger is poised on the *send* button, your eyes scanning an angry e-mail you've dashed off to a friend who has upset you. Some things you've written are a little harsh. In your brain a little red light goes off, but, what the heck, you're steamed and your friend deserves it. You push the button.

Whether you're aware or not, rushed decisions like this—acting before *thinking it through*—happen more often in teens than in adults. Recent discoveries in brain science may help explain why this is so.

1

First, a bit on how a brain makes decisions. Decisions don't "just happen" automatically in your conscious mind. They stem from a series of events in the brain, which happen almost instantaneously. This involves a relay system in which different structures—made up of specialized cells called neurons—talk with each other by way of electrochemical impulses and chemical messengers, called neurotransmitters. Information flowing through this decision-making circuit is analyzed in the different structures. Then the network, as a whole,

Photo: © Denis Feix/Getty Images.

puts out a response. This output provides the basis for our behaviors and actions.

While this process is basically the same for teens and adults, the devil is in the details. Since the brain is not fully developed until the early 20s, the way in which a teen's decision-making circuit integrates information may put him or her at a higher risk of making decisions the teen could later regret.

THE TEEN BRAIN: Under Construction

Not long ago, scientists thought the human brain was fully mature long before the teen years. While research shows that one's brain reaches its maximum size between ages 12 and 14 (depending on whether you are a girl or a boy), it also shows that brain development is far from complete. Regions of the brain continue to mature all the way through a person's early 20s.

A key brain region that matures late is the **prefrontal cortex**, located directly behind your forehead. The prefrontal cortex is very important as a control center for thinking ahead and sizing up risks and rewards. (This area is, in fact, the little red light that was trying to warn you about sending that e-mail.) Meanwhile, another part of the brain that matures earlier is the **limbic system**, which plays a central role in emotional responses.

Since the limbic system matures earlier, it is more likely to gain an upper hand in decision making. This relationship between the emotional center (limbic system) and control center (prefrontal cortex) helps to explain a teen's inclination to rush decisions. In other words, when teens make choices in emotionally charged situations, those choices are often more weighted in *feelings* (the mature limbic system) over *logic* (the not-yet-mature prefrontal cortex).

This is also why teens are more likely to make "bad" choices, such as using drugs, alcohol, and tobacco—all of which pose a risk of serious

health consequences. "Most kids don't really 'plan' to use drugs," says Professor Laurence Steinberg of Temple University, "at least not the first time. They are more likely to experiment *on the spur of the moment*, particularly when influenced by others [peer pressure]." 3

WAIT A MINUTE!

Learning how your brain works can help explain why sometimes you behave like you do. With this knowledge, you can be better equipped to make smart choices.

One tip to follow is to *take a moment* before acting. When making a decision, something as simple as stopping to think can mean the difference between a positive and a negative outcome. By waiting a minute before acting, you allow yourself to:

- consider consequences;
- weigh harmful outcomes (e.g., harm to yourself or others) against short-term benefits (e.g., fitting in or feeling high);
- determine whether peer pressure is making you do something you'd otherwise not do;
- get information or advice, if you need it.

For more information about drugs and your body, visit <http://teens.drugabuse.gov> and www.scholastic.com/headsup.

To learn more about "pausing" to allow yourself to make smart choices, check out www.myspace.com/pause.



Pick Your NPR Station

There is at least one station nearby

CHILDREN'S HEALTH
NEWSCAST

LIVE RADIO

SHOWS

With Drinking, Parent Rules Do Affect Teens' Choices

LISTEN

QUEUE

Download

Transcript

May 31, 2010 · 12:00 AM ET

Heard on Morning Edition

MICHELLE TRUDEAU



New research finds that socializing kids to drink at the family table -- often referred to as the "European drinking model" -- doesn't necessarily translate to more responsible drinking patterns.

As teenagers mature into their senior year of high school, many parents begin to feel more comfortable about letting them drink alcohol. But new research from brain scientists and parenting experts suggests loosening the reins on drinking may not be a good idea in the long run. And, researchers say, parents' approach to addressing teen drinking does influence a teen's behavior.

Brain researchers are finding that alcohol has a particularly toxic effect on the brain cells of adolescents. That's because their brain cells are still growing, says Susan Tapert, a professor of psychiatry at the University of California, San Diego.

The regions of the brain important for judgment, critical thinking and memory do not fully mature until a person is in his or her mid-20s. Tapert found that alcohol can damage the normal growth and development of a teenager's brain cells in these regions.

"Adolescents who engage in binge drinking (that is, having five or more drinks on occasion for boys, or four or more drinks on occasion for females) tend to show some brain abnormalities in their brain's white matter. That's the fibers that connect different parts of our brains," she wrote in a recent study.

And if binge drinking continues, within two to three years, Tapert says, it can result in subtle declines in a teen's thinking and memory. She reports declines in attention and memory among the teens who had engaged in binge drinking.

"Teenagers who initiate heavy drinking actually go downhill relative to kids who do not initiate heavy drinking during adolescence on several measures of cognitive function," she says

There is a lot of variability among individuals, but Tapert concludes that for some teens there may be no safe level of alcohol use. She saw negative effects in thinking and memory in teens after just 12 drinks in a month, or two or three binge drinking

episodes a month.

The Role Of Parents

So if parents want to give a "no alcohol" message to their teens, what can they do?

Alcohol researcher Caitlin Abar from Pennsylvania State University found that parents' efforts do play a role in shaping their teens' behavior. She studied how parents deal with their high school teenagers regarding alcohol use while still at home, and she then checked after the teens' first semester of college. Her study of 300 teenagers and their parents was published recently in the journal *Addictive Behaviors*.

"Parents who disapproved completely of underage alcohol use tended to have students who engaged in less drinking, less binge drinking, once in college," Abar says.

And conversely, a parent's permissiveness about teenage drinking is a significant risk factor for later binge drinking.

"The parents who are more accepting of teen drinking in high school were more likely to have children who engaged in risky drinking behaviors in college, compared to those children who had parents that were less accepting," Abar says. The researchers also asked the teens about their parents' drinking patterns and found that parents' own drinking behavior influenced a teen's later alcohol use.

Rules Matter

But, it was parents' rules that had the strongest effect, says Abar. Complete disapproval of teen drinking by parents was the most protective, even more than when parents allowed a limited amount of alcohol consumption.

Other studies support Abar's findings. Psychology professor Mark Wood from the University of Rhode Island says that parental monitoring -- knowing where your teenagers are, who they're with, what they're doing -- also pays off in terms of less drinking when they go off to college.

"The protective effects that parents exert in high school continue to be influential into college," Wood says. "Even after a time when the kids have left the home. So it's the internalization of those values, attitudes and expectations that seem to continue to exert an effect."

Research studies by Wood, Abar and others challenge the common parenting practice in much of Europe where kids are socialized to drink at the family table, with the expectation that they'll learn to drink responsibly. Dutch researcher Haske van der Vorst has studied this "European drinking model."

"A lot of parents have the idea," says van der Vorst, "that if I let my child drink at home with friends, then at least I can control it somehow. I can buy the alcohol myself. Then I am in control."

Unfortunately, she says, based on her research, the European drinking model isn't working. "Not at all actually," she says. "The more teenagers drink at home, the more they will drink at other places, and the higher the risk for problematic alcohol use three years later."

To underscore these findings, a recent survey of 15- and 16-year-olds throughout Europe finds that the majority of European countries have a higher rate of teen drunkenness than in this country.

This does not surprise researcher Abar.

"It really calls into question the strategy that parents are adopting of the European drinking model," she says. "The most protective strategy for parents is to make it really clear to their teens that they completely disapprove of underage alcohol use."

Abar says that families that institute a zero tolerance policy will not prevent college students and other teens from drinking. But, she says, teenagers from those households do tend to drink less.

Related NPR Stories

Study: A Cigarette A Month Can Get A Kid Hooked May 31, 2010

Q&A: Teaching Kids To Take Healthy Risks May 10, 2010

The Teen Brain: It's Just Not Grown Up Yet March 1, 2010

Teen Drinking May Cause Irreversible Brain Damage Jan. 25, 2010

ERs Report Rise In Binge Drinking By Teens March 22, 2009

Stay On Top Of The News

Keep up to date on the day's top headlines from NPR, delivered to your inbox once daily.

SUBSCRIBE

By subscribing, you agree to NPR's terms of use and privacy policy.

More Stories From NPR