



This family education sheet was created by Boston Children's Hospital's Adolescent Substance Use and Addiction Program (ASAP). The aim is to see how much you already know about cannabis and to give you some important information about what is true and not true about cannabis.

Question 1:

Can you become addicted to Cannabis?

- A. No
- B. Yes
- C. Probably

Answer: B) Yes. When you use cannabis, it stimulates the part of your brain called the "reward center". With stimulation over time, the cells in the reward center change, and when that happens, substance use becomes a reflex like eating, drinking, and breathing. We call that addiction.

People who become addicted to cannabis may use it without even thinking about it. When they don't have cannabis, they often find themselves thinking about it and planning how to get more. Over time, people with addiction may become less interested in other activities, like schoolwork or hobbies.

About 30% of people who use cannabis have some degree of loss of control over their cannabis use. Certain factors make addiction more likely: people who start using while they are still teens, people who use stronger cannabis products and people who have mental health problems like depression or anxiety are all more likely to develop cannabis addiction.

NIDA. 2021, April 13. Is marijuana addictive?. Retrieved from <https://nida.nih.gov/publications/research-reports/marijuana/marijuana-addictive> on 2022, October 25.

*Budney, A. J., Roffman, R., Stephens, R. S., & Walker, D. (2007). Marijuana dependence and its treatment. *Addiction science & clinical practice*, 4(1), 4–16. <https://doi.org/10.1151/ascp07414>.*

Question 2:

What parts of the brain are affected by cannabis?

- a) The cerebellum, which is important for movement and coordination.
- b) The hippocampus, which is important for memory and learning.
- c) The prefrontal cortex, which is important for decision making skills (sometimes called executive functions)
- d) All of the above.

Answer: D) All of the above. Several parts of the brain are rich in cannabinoid receptors where THC, the active ingredient in cannabis, can bind, and mimic natural chemicals made by the body. THC *artificially* stimulates these parts of the brain and can interfere with their normal functions. This means that cannabis use throws off coordination and interferes with learning and decision-making.

The cannabinoid system helps to guide the growth of neurons (brain cells) during adolescence. Cannabis can interfere with normal development. For example, people who use cannabis during their adolescence tend to have smaller hippocampi when their brains are full grown. People who use cannabis heavily during their teen years can also have drops in their IQ and are less likely to finish school compared to their relatives who don't use cannabis.

*Batalla, A., Bhattacharyya, S., Yücel, M., Fusar-Poli, P., Crippa, J. A., Nogué, S., Torrens, M., Pujol, J., Farré, M., & Martin-Santos, R. (2013). Structural and functional imaging studies in chronic cannabis users: a systematic review of adolescent and adult findings. *PLoS one*, 8(2), e55821. <https://doi.org/10.1371/journal.pone.0055821>.*



Cannabis Quiz

Question 3:

True or False - Cannabis use interferes with driving.

Answer: True. Cannabis can reduce coordination, slow reaction times, make it harder to judge distance and time, and impact decision making skills – all of which makes driving more dangerous. Drivers who are high are more likely to swerve lanes, have slower reaction times, and pay less attention to the road. All of these effects can happen without people “feeling high” and can last a long time after use.

Hartman, R. L., & Huestis, M. A. (2013). Cannabis effects on driving skills. *Clinical chemistry*, 59(3), 478–492.
<https://doi.org/10.1373/clinchem.2012.194381>

Lenné, M. G., Dietze, P. M., Triggs, T. J., Walmsley, S., Murphy, B., & Redman, J. R. (2010). The effects of cannabis and alcohol on simulated arterial driving: Influences of driving experience and task demand. *Accident; analysis and prevention*, 42(3), 859–866.

Question 4:

True or False: Cannabis relieves anxiety.

Answer: True (but read on). Many people feel much less anxious right after they use cannabis. Unfortunately, most people who use cannabis regularly find themselves struggling **more** with anxiety over time and they are more likely to develop anxiety disorders, much in the same way that people who use heroin and other opioids become much more sensitive to pain over time.

Hengartner, Michael P et al. "Cannabis use during adolescence and the occurrence of depression, suicidality and anxiety disorder across adulthood: Findings from a longitudinal cohort study over 30 years." *Journal of affective disorders* vol. 272 (2020): 98-103. doi:10.1016/j.jad.2020.03.126.

Stoner SA. *Effects of Marijuana on Mental Health: Anxiety Disorders*. Alcohol & Drug Abuse Institute, University of Washington, June 2017. URL: <http://adai.uw.edu/pubs/pdf/2017mjanxiety.pdf>.

Question 5:

True or False: Cannabis is okay to use because it's “natural.”

Answer: False. Not all natural plants are good for you – take tobacco, for example.

NIDA. (2017, December 1). *Marijuana Facts for Teens*. Retrieved from <https://archives.drugabuse.gov/publications/marijuana-facts-teens> on 22, October 25.

Natural Doesn't Necessarily Mean Safer, or Better | NCCIH (nih.gov)

Question 6:

Which psychotic symptoms can be caused by cannabis?

- a) anxiety
- b) paranoia
- c) hallucinations
- d) all of the above.

Answer: D) All of the above. In a study at Boston Children's Hospital, we surveyed teenagers when they came in for check-ups. Of the patients who told us that they had used cannabis in the past year, more than a quarter reported a hallucination while using and more than a third reported experiencing paranoia or severe anxiety with use. Taken together, more than 40% of past year users had experienced one of these symptoms of psychosis while using cannabis. (All of these patients only had symptoms while they were using cannabis, so they did not have psychotic disorders.)

Cannabis *causes* psychotic disorders in susceptible people and psychotic disorders are becoming more and more common as cannabis products become stronger and stronger. People who use cannabis during their adolescence are at the greatest risk of developing a psychotic disorder.

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Levy, S., & Weitzman, E. R. (2019). Acute Mental Health Symptoms in Adolescent Marijuana Users. *JAMA pediatrics*, 173(2), 185–186. <https://doi.org/10.1001/jamapediatrics.2018.3811>

Hall, W., & Degenhardt, L. (2008). Cannabis use and the risk of developing a psychotic disorder. *World psychiatry : official journal of the World Psychiatric Association (WPA)*, 7(2), 68–71. <https://doi.org/10.1002/j.2051-5545.2008.tb00158.x>

Answers were compiled/edited by the ASAP team at Boston Children’s Hospital. Please visit the ASAP website to learn more about our program: <https://www.childrenshospital.org/programs/adolescent-substance-use-and-addiction-program>

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