

Teacher Notes for Johnny's Ambassadors Youth Marijuana Prevention Magazine

Outline of Topics

Page:

1. Cover

2. Marijuana Facts

- Cannabis: In botany, the cannabis plant is defined as a “genus” with different species below it. The cannabis plant has hundreds of different chemicals called “cannabinoids.”
- **Teacher: The cannabinoids are naturally occurring compounds found in the Cannabis sativa plant.**
- THC: tetrahydrocannabinol (THC) is the most common cannabinoid in the cannabis plant. It is psychoactive, meaning it gives a “high” feeling.
- **Teacher: help the student understand what the word “high” means. When someone is “high” they may feel a sense of euphoria (a feeling of excitement), amused, laughing more frequently, and more sensitivity to light.**
- CBD: cannabidiol (CBD) is the second most common cannabinoid in the cannabis plant. It is not psychoactive on its own.
- **Teacher: the term psychoactive means something that affects the mind.**
- Hemp: a variety of cannabis that contains less than .3% THC and is used to make paint, rope, and paper. Delta-8-THC can be created chemically from CBD and is psychoactive.
- **Teacher: when something is created chemically that means that something is produced artificially by converting CBD or Delta-9 THC through a process known as isomerization.**
- Marijuana: a variety of cannabis that contains greater than .3 THC and is used to make drugs. Delta-9-THC comes from marijuana and is psychoactive.
- **Teacher: Check for understanding.**

Questions: why are the terms ‘cannabis’ and ‘marijuana’ not interchangeable?

- **Teacher: See <https://johnnysambassadors.org/marijuana-versus-cannabis/> for a good explanation on this.**

3. THC Potency. Many people think marijuana is safe, but there are real risks.

Old school marijuana (before you were born) contained between 2-5% THC. Today’s marijuana has been cultivated to be much stronger, between 15-30% and even more (it’s like smoking several old school joints one time).

Teacher: The term cultivated means to plant and grow the cannabis plant. Once the plant has matured, the plant will be cut down, where its buds will be processed and prepared for use.

“Old school” marijuana used to contain equal amounts of CBD, which was a protective factor. Today’s marijuana contains almost no CBD, just THC.

Teacher: A protective factor mitigates risk and promotes healthy development.

Then chemists invented new marijuana products that didn’t exist in the past. Raw THC is extracted marijuana using a machine (like the one on this page) and turned into concentrates. These products, such as wax, shatter, and crystal (“dabs”), can be 60-99% pure THC.

Extracted THC can be further distilled into oils, which are 80-99% pure. These oils can be vaped or put into edibles. Marijuana might start as a plant, but these products are created in a lab, and there's nothing natural about them!

Teacher: a note to remember, the higher the level of THC, the more risk for addiction or the need to have to have the substance, as well as an increased risk for psychosis or when someone loses touch with reality.

Marijuana is a very different drug than it used to be—it's like comparing apples and oranges. Many plants aren't safe and can hurt you, such as poison ivy, arsenic, hemlock, and marijuana, which is why we don't mess with them.

Fact: ALL marijuana products today, whether flower, dabs, vapes, or edibles are HIGH POTENCY (defined by the medical field as anything over 10%) and UNSAFE. There are NO studies that indicate today's high-potency marijuana products are healthy for youth.

Questions: All the research done on youth marijuana use has proven it's harmful, and no studies of today's high-potency marijuana have shown any benefit for youth. Does this worry you? Are you willing to roll the dice with your brain and your future?

4. **Adolescent Brain Development/Cognitive Effects** – “Adult use” marijuana is illegal for youth under 21, because your brain is still forming. The human brain continues to grow until age 25 for females and up to age 30 for males. Anything that interferes with brain programming can lead to cognitive, emotional, and mental health problems.

Teacher: Due to the brain's ongoing growth and development, there are known short-term affects including memory issues, inattentiveness, issues with learning, and decision making. Early marijuana use has also been known to impact school performance and increase the rate of school dropout. Long-term effects include memory issues, increased risk of depression and other mental health issues, addiction, relationship issues, legal issues, and financial issues.

Some teens believe regular cannabis use isn't harmful to their mental health or think, “It won't happen to me.” Nothing could be farther from the truth!

In one study, researchers did MRI scans on the brains of 799 youth at age 14 and 19. The more these teens used marijuana, the thinner their prefrontal cortex became. Without all your brain power available, your ability to make decisions when you get older will be impacted.

Teacher: It is important to understand your pre-frontal cortex- this is the hub an individual's executive functioning such as impulse control, judgment and empathy.

Researchers also found heavy marijuana use as an adolescent predicts an 8-point drop in IQ! So if you are an A student, that is a C. If you are a C student, that is an F.

When your brain doesn't form correctly, you won't have all the brain power you would have had to make good decisions as an adult, and your career opportunities could be limited.

Question: How comfortable are you knowing that using marijuana is literally causing damage to your brain (brain damage)?

Research links: <https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2781289> and <https://www.pnas.org/content/109/40/E2657>

5. **Marijuana Addiction and Dependence.** “I would never get addicted to marijuana.” Contrary to common belief, you CAN become addicted to marijuana, which medical professionals call “Cannabis Use Disorder (CUD).” **One out of six teens** who start using marijuana at a young age will become addicted to it, and **one in three teens who use marijuana daily** will become addicted. If you are using marijuana, how do you know if you are addicted? Ask yourself these questions. Do you:

- Use more marijuana or longer than you meant to?
- Try to cut back but can't?
- Spend a lot of time getting, using, and recovering from marijuana?
- Crave marijuana and want to use it all the time?
- Skip school or miss work because you're high?
- Keep using marijuana even when it causes you problems in life?
- Stop doing activities you used to enjoy?
- Use marijuana even when you feel sick?
- Keep using even when you have physical or mental problems from it?
- Have to use more marijuana to feel as high as you used to?
- Feel bad when you attempt to stop?

According to the American Psychiatric Association (APA), as listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), if you answered YES:

- To 2 or 3 of these questions, **you have a mild addiction.**
- To 4 or 5 questions, **you have a moderate addiction.**
- To 6 or more questions, **you have a severe addiction.**

The good news is it's never too late to get help! Talk with a parent, a counselor, a teacher, or a trusted adult, and tell them you are having problems with your marijuana use and wish to stop!

Questions: When you feel uncomfortable, what could you do to feel better instead of using a chemical? What do you usually do when you're happy? How can doing things that make you happy help you feel better when you're sad?

Teacher: Help the students better understand the difference between addiction, dependence, and misuse. Addiction refers to the harmful behavior associated with the use of substances. Dependence is associated with the tolerance and withdrawal (physical, mental, emotional sickness which occurs without the substance). Misuse refers to utilizing a substance in a way in which they are not intended to be used.

Research link: Hall, W.; and Degenhardt, L. Adverse health effects of non-medical cannabis use. *Lancet* 374:1383–1391, 2009.

6. **Short- and Long-Term Effects.** When you use marijuana, some things happen to you in the short term, and if you keep using it, more things can happen in the long term. Short-term effects of marijuana include:
- Lethargy
 - Impaired coordination and balance

- Slurred speech
- Increased heart rate
- Poor decision making
- Anxiety and panic attacks

Is it possible to overdose on marijuana? YES! It is possible to overdose with today's dangerously high THC products. Dr. Karen Randall, an Emergency Room physician in Pueblo, Colorado, says she sees teens in the ER with acute psychotic episodes, poisonings, and uncontrollable vomiting as a result of using too much THC.

Teacher: What is an overdose? An overdose occurs when you take more than the normal or recommended amount of a substance. An individual's body becomes so overwhelmed, it may shut down (the organs).

Can marijuana kill you? While overdosing on marijuana won't stop your breathing, it does kill people indirectly by:

- Increased car crashes from people driving high, which causes slowed reaction time
- House fires from people trying to make homemade marijuana concentrates
- Causing increased thoughts of suicide
- Cannabinoid Hyperemesis Syndrome, which is non-stop vomiting, which causes your organs to shut down from dehydration

Long-term effects on youth who use marijuana include:

- **Brain impacts.** Teens who use marijuana have impaired cognition and memory problems. They also have lower graduation rates and lowered IQ. Marijuana can cause permanent IQ loss of as much as 8 points when people start using it at a young age. These IQ points do not come back, even after quitting marijuana.
- **Poor life outcomes.** Using marijuana can affect performance and how well people do in life. Research shows that people who use marijuana are more likely to have relationship problems, worse educational outcomes, lower career achievement, and reduced life satisfaction.
- **Mental health issues.** Studies link marijuana use to depression and anxiety. Marijuana use can also cause delusional thinking and psychotic, which can lead to permanent schizophrenia, bipolar disorder, and other mental illnesses. Marijuana use is also correlated with an increase in suicidal thinking, suicide attempts, and suicide.

Research: <https://www.samhsa.gov/marijuana>

7. Top Ten Marijuana Myths

1. You can't get addicted to marijuana. 17% of adolescents who use marijuana become addicted, and 50% of daily users become addicted.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4827335/pdf/nihms762992.pdf>
2. Marijuana can't lower your intelligence. Heavy marijuana exposure starting in adolescence predicts an 8-point drop in IQ. <https://sci-hub.tw/https://doi.org/10.1073/pnas.1206820109>
3. Marijuana won't increase the odds you'll use other drugs. Adolescent marijuana users are 2.5 times more likely to abuse prescription opioids.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3552239/pdf/nihms388189.pdf>

4. Marijuana makes you a better driver. Marijuana decreases your reaction time, motor coordination, and driving skills.
<https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812440-marijuana-impaired-driving-report-to-congress.pdf>
5. Students who use marijuana are less likely to drop out of school. Young people who use cannabis are at increased risk of poor academic performance and dropping out of school.
<https://sci-hub.tw/https://pubmed.ncbi.nlm.nih.gov/11219366/>
6. Marijuana can't cause mental illness. Marijuana use can increase your risk of psychosis and schizophrenia 2- to 4-fold. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4988731/>
7. Your fertility rates can't drop if you use marijuana. Marijuana can reduce fertility due to decreased sperm counts and delayed ovulation. <https://pubmed.ncbi.nlm.nih.gov/26283092/>
8. You'll feel more motivated to do things if you use marijuana. Long-term marijuana users have lower levels of dopamine and are less ambitious and motivated.
<https://www.sciencedaily.com/releases/2016/09/160901211303.htm>
9. Smoking marijuana is not harmful for your health. Marijuana smoke can cause symptoms of chronic bronchitis, a heavy cough, and lung irritation.
<https://www.drugabuse.gov/publications/research-reports/marijuana/what-are-marijuanas-effects-lung-health>
10. Marijuana can't kill you. People have died from Cannabinoid Hyperemesis Syndrome (CHS), characterized by uncontrollable vomiting. <https://pubmed.ncbi.nlm.nih.gov/29768651/>

Question: Which one of your beliefs about marijuana was “shattered” by this information?

8. Is Marijuana Medicine? Will it help my problems?

You may have heard that marijuana can help get over negative things happening in your life. But it's important to understand the difference between short-term symptom relief and long-term problems from using marijuana. The fact is, the U.S. Food and Drug Administration (or FDA) has only approved medical marijuana use for two rare seizure disorders, nausea associated with chemotherapy, and the treatment of anorexia wasting syndrome. So, unlike popular belief, it's rare to receive a prescription for marijuana as medicine.

Getting a “Medical Marijuana Card” means you are using drugs outside of approved, safe uses. There are NO studies showing any benefit of today's high-potency marijuana for teens. So, what problems are teens trying to treat using unapproved marijuana products?

Teacher: Revisit the difference between “medical” and “recreational” marijuana.

PROBLEM CATEGORY 1: MENTAL HEALTH

- a) Feelings of sadness can increase when you use marijuana. Marijuana increases your risk of developing depression and suicidal behavior later in life.
<https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2723657>
- b) Using marijuana does not help with depression. Marijuana use has been shown to double the risk for depression. <https://pubmed.ncbi.nlm.nih.gov/28750823/>
- c) Marijuana does not help with ADHD. Adolescents with ADHD exhibit more severe symptoms with marijuana use. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3390681>

PROBLEM CATEGORY 2: FEAR AND ANXIETY

- a) Marijuana will not help you reduce anxiety. While “chilling out” can be a short-term effect, the long-term impact can be quite the opposite and make anxiety worse.
<https://pubmed.ncbi.nlm.nih.gov/12943018/>
- b) Using marijuana before a party will not help you calm your nerves. Self-medicating with THC increases your risk for social phobia in anxious people.
<https://www.sciencedaily.com/releases/2011/08/110801172550.htm>
- c) Pot use prevents you from learning to tolerate stress. Those who start using marijuana frequently at a young age are more likely to have anxiety disorder in early adulthood.
<https://pubmed.ncbi.nlm.nih.gov/17314727>

PROBLEM CATEGORY 3: LIFE STRESSORS

- a) Using marijuana to escape from painful problems won’t help. Self-medicating can have serious long-term consequences for mental illness and cause extreme paranoia.
<https://academic.oup.com/schizophreniabulletin/article/41/2/391/2526091>
- b) Marijuana is not better than cigarettes. In the U.S., dependence on marijuana has increased more than dependence on any other drug:
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2797098/pdf/ascp-04-1-4.pdf>
- c) You will not sleep better if you use marijuana. Weed only makes insomnia and sleep problems worse. <https://www.sciencedaily.com/releases/2016/10/161017155004.htm>

Question: Which category do most of your challenges tend to fall under (Mental Health, Fear and Anxiety, Life Stressors)? What is a good activity you can do instead when feeling this way?

9. Your Brain is Your BFF

There is one part of your brain that is extremely active in your teen years called the Amygdala. To instantly see it works, think of something that scares you. For example, maybe you’re afraid of spiders because you were bitten by a black widow when you were 5 years old. How do you feel when you see a spider today? You probably feel your heart race a little just from thinking about it. Your negative emotional response was stored in the Amygdala, and that memory reminds you to avoid spiders. This is a protective feature because it increases your motivation to AVOID harmful things.

It's the same way with marijuana. There can be some negative consequences of using marijuana that can change your life forever. Your brain is the only one you get, and marijuana can damage it. Your brain is your BFF, and you don’t want to hurt it. Trust each other and take care of each other. Your brain is trying to be your BFF by helping you stay safe. Sometimes, healthy fear is a healthy motivator to avoid danger.

Your Amygdala is giving you a healthy fear of:

- Triggering schizophrenia or paranoid delusions
- Damaging your memory so you can’t succeed in school
- Losing your friends
- Not reaching your future goals

Instead, treat your brain like your BFF in return:

- Avoid ALL THC products and substances.
- Choose friends that support your motivations.

- Take care of your brain with healthy food.
- Focus on the goals you want to achieve.

Question: What can YOU do to better treat your brain like your BFF?

Teacher:

- What is mental health? Includes our emotional, psychological, and social well-being. Mental health affects how we think, feel, and act. And determines how we handle stress, relate to others, and make healthy choices.
- What is anxiety? The feeling of nervousness, excessive fear and/or worry, increased heart rate, rapid breathing. Have you ever experienced a situation where you were anxious?
- What is paranoia? Thinking or feeling as though your safety is in jeopardy. Or feelings of being threatened, without any merit.
- What are delusions? A constant belief that something is untrue.
- What is schizophrenia? Occurs when someone loses touch with reality due to an interruption in the brain's processing.

10. Dirty Dozen Negative Impacts of Teen Marijuana Use

1. Creates marijuana dependence: www.ncbi.nlm.nih.gov/pmc/articles/PMC4827335/pdf/nihms762992.pdf
2. Decreases your IQ: <https://sci-hub.se/10.1073/pnas.1206820109>
3. Causes anxiety and depression: www.ncbi.nlm.nih.gov/pmc/articles/PMC6991277
4. Increased the odds you'll use other drugs: www.ncbi.nlm.nih.gov/pmc/articles/PMC3552239/pdf/nihms388189.pdf
5. Causes uncontrollable vomiting: <https://pubmed.ncbi.nlm.nih.gov/29768651/>
6. Makes you more likely to drop out of school: <https://sci-hub.se/10.1046/j.1360-0443.2000.951116213.x>
7. Results in psychosis and schizophrenia: www.ncbi.nlm.nih.gov/pmc/articles/PMC4988731
8. Decreases fertility rates: <https://www.sciencedaily.com/releases/2016/09/160901211303.htm>
9. Lowers your motivation to do things: www.sciencedaily.com/releases/2016/09/160901211303.htm
10. Increases suicidal thought and behavior: www.nih.gov/news-events/news-releases/cannabis-use-may-be-associated-suicidality-young-adults
11. Damages your health: www.drugabuse.gov/publications/research-reports/marijuana/what-are-marijuanas-effects-lung-health
12. Makes your driving worse: www.nhtsa.gov/sites/nhtsa.gov/files/documents/812440-marijuana-impaired-driving-report-to-congress.pdf

11. The Link Between Marijuana and Schizophrenia

There are many different forms of mental illness, but two severe types can be brought on or made worse by using THC:

1. Psychosis: symptoms of delusional thinking, paranoia, and/or hallucinations
2. Schizophrenia: psychosis that becomes permanent

Using marijuana daily with a THC content over 10% increases the **risk of a psychotic disorder** by 5-fold.

If marijuana use were a *cause* of schizophrenia, you would see more cases of schizophrenia in a population as marijuana use and potency increase over time. That's what happened in Denmark.

Denmark has a national healthcare registry of 7 million, which enables researchers to study the entire population. In this case, they looked at diagnoses of schizophrenia and cannabis use disorder. They concluded due to the increases in the use and potency of cannabis, their population went from 2% to 8% incidence of schizophrenia between 1995 and 2010.

12. The Endocannabinoid System

In the 1990s, researchers were studying how the cannabinoid Delta-9-tetrahydrocannabinol (THC) in marijuana products makes people high. They found the receptor it binds to and named it the Cannabinoid-1 (CB1) receptor in the nervous system and the Cannabinoid-2 (CB2) receptor in the immune system. So, they named this internal system the Endocannabinoid System (ECS).

As you can see in the diagram, the brain is rich in CB1 receptors. The CB1 control brain and central nervous system functions, like pain, sleep, metabolism, movement, and heart rate, by influencing how neurotransmitters are released.

We have a natural endocannabinoid in our bodies called Anandamide, which is the brain's natural "feel good" chemical. This is released after running, for example, which is often called the "runner's high." Anandamide has also been isolated in chocolate. THC and Anandamide molecules aren't exactly the same, but THC is close enough it tricks the brain into letting it bind to the CB1 receptors. When THC is introduced into the body, it interferes with our normal functions. Marijuana is the *only* drug that can bind to these receptors.

In chronic consumers of marijuana, the loss of CB1 receptors in the brain's arteries reduces the flow of blood, and hence of glucose and oxygen, to the brain, causing attention deficits, memory loss, and impaired learning ability. In youth, marijuana use can change the structural development of the brain, specifically causing thinning in the prefrontal cortex.

Research: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4789136/>

Question: Why are attention, memory, and learning important to your future career goals?

13. Can Marijuana Increase Your Risk for Suicide?

Is My Friend Feeling Suicidal? Why should you even ask this question? Everyone is okay, right? *Wrong.* Current suicide figures show that teen suicide rates have increased. Why?

Research shows a **dangerous trend**. According to the Colorado Violent Death Reporting System, teen suicides have significantly increased since marijuana was legalized "medically." In Colorado in 2004, 15.2% of teen suicides ages 15-18 years had **marijuana as the primary drug found**. In 2018, that figure was **38.5% of suicides**.

The increase in suicides correlates with:

- Broader use of THC by teens
- Increased potency of THC

- More easily accessible THC concentrates

Research: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4219077>

Question: Why do you think using marijuana can make teens feel more suicidal?

Teacher: Offer the students resources and remind them of their trusted adults within the building. Point out teachers, counselors, and administrators. Remind the students of the limits of confidentiality and the importance of getting help for a student because we care about their safety and well-being.

14. Signs of Suicide

You have a friend who's been using marijuana and seems to be struggling. How would you know if he or she is suicidal? Remember the acronym C-A-R-E and watch for these FOUR SIGNS OF SUICIDE:

1. Circumstances (life situations)

- Divorce of parents
- Relationship breakup
- Bullying

2. Actions (behaviors)

- Giving treasured items away
- Reaching out to loved ones to say goodbye
- Suddenly wanting to be closer to God

3. Remarks (words)

- "People would be better off without me."
- "I'm not going to be around to see it."
- "I'm done."

4. Emotions (feelings)

- Extreme sadness or crying
- Depressed state or hopelessness
- Suddenly happy after period of sadness

<https://www.nimh.nih.gov/health/publications/warning-signs-of-suicide>

If these warning signs apply to you or someone you know, get help as soon as possible, particularly if the behavior is new or has increased recently.

Question: If you have ever considered suicide or know someone who has, where could you go to get help?

15. Marijuana is the #1 Gateway Drug

According to the Centers for Disease Control, in their 2019 Youth Risk Behavioral Survey, whether a teen has **ever used marijuana in his or her lifetime is the #1 predictor** they have abused opioids in the past

30 days, even over previous 30-day alcohol use. In other words, *using marijuana leads to opioid abuse in teens more than any other drug.*

Now, being a gateway drug doesn't mean if you use marijuana, you'll for sure use harder drugs. But people who are using harder drugs most likely started with marijuana—that's what a gateway means. If you went to a party and had never used any substances before, and a friend suggested you shoot up with heroin, would you? Of course not! But if you had been using marijuana, and your tolerance has built up so much you can't get the same high as before, you are more likely to move on to a harder substance.

<https://www.cdc.gov/healthyyouth/data/yrbs/index.htm>

In 2010, there were about **20,000** opioid-involved overdose deaths annually. In 2021, there were over **80,000** overdose deaths involving opioids.

<https://nida.nih.gov/drug-topics/trends-statistics/overdose-death-rates>

Question: Looking at these two studies, how do you think the legalization of marijuana has contributed to the opioid epidemic?

16. **Back Cover**