



Cannabis And The Adolescent Brain

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“Top 5 Take-Aways”

1. During the past 3 decades, the potency of marijuana (that is, its concentration of cannabinoids, and THC in particular) has approximately tripled—greatly increasing the health risks associated with using marijuana, as well as the potential of becoming addicted.
2. Marijuana has many effects on the brain. It has been shown to impair attention, concentration, memory, and problem-solving skills—all of which are necessary for learning. From the standpoint of safety (including automotive safety), marijuana also interferes with judgment, coordination, and reaction time. Finally, its use is associated with higher rates of several psychiatric disorders—including anxiety, depression, and psychosis.
3. Teens are especially vulnerable to the long-term neuropsychiatric effects of marijuana because much of the brain—including those brain systems with which cannabinoids directly interact—undergoes active development during adolescence. There is evidence that chronic marijuana use in adolescence results in intellectual deficits in adulthood.
4. With respect to the respiratory system, marijuana smoke is toxic and contains many of the harmful chemicals found in cigarette smoke. The use of vaporizers or similar devices does not remove these risks.
5. Marijuana is an addictive substance—and has twice the addictive potential when used initially during adolescence. There is, moreover, evidence that marijuana use in adolescence may increase the likelihood of other addictions during adulthood.

Frequently Asked Questions

- What are the physical effects of marijuana on the body; for instance, what physical signs should parents be looking out for? How long is it in their system, etc.?
 - Signs of MJ use include: red eyes (or use of eye drops), dry mouth, irritability, decreased motivation or interest in usual activities, difficulty remembering, dizziness, unexplained laughter or giddiness, and being more hungry than usual.
 - Although the noticeable psychological effects of MJ have their onset within a few minutes when smoked (within 1-2 hours when ingested as an edible), and tend to wear off within 1-3 hours (longer for edibles), evidence of MJ is detectable in drug tests for 3-10 days due to its lipophilic properties (and long-term users may show positive tests for as much as 2-3 months).
- When people talk about frequency of use, what is a lot (daily, weekly, monthly, etc.)?
 - Someone who uses MJ 2-3 times per week might be considered a “regular” user—and more than that, would get into the category of “heavy” use.
- What are the long term effects of marijuana usage on the teenage brain and how does it affect brain development?
 - We really know so little about the developing brain—so I believe that it’s best to limit the extent to which we introduce psychoactive substances into the adolescent brain. It’s worth noting that the adolescent brain—particularly the areas that control judgment and decision-making—are developing until the early- to mid-20s. (One major study demonstrated that chronic MJ use initiated in adolescence resulted in intellectual deficits that did not recover in adulthood, even when MJ use was discontinued.)
- How is marijuana different than cigarette smoking? What are different effects of edibles vs. smoking marijuana?
 - MJ smoke is toxic and contains many of the harmful chemicals found in cigarette smoke. Use of vaporizers or similar devices does not remove these risks.
 - Although use of edibles would remove the pulmonary risks associated with smoking MJ, other adverse effects—those on the brain in particular—would remain. The essential difference for

edible MJ, in comparison to smoked MJ, is a slower onset and a longer duration of action (due to differences in absorption rates).

- Is marijuana addictive? Is it a myth that it is a gateway drug?
 - Yes, MJ is addictive. Nearly 10% of those who experiment with MJ become addicted—a proportion that doubles in those who begin using during adolescence.
 - It is not a myth that MJ use often precedes the use of other drugs. There is laboratory evidence from animal studies and epidemiologic evidence in humans that marijuana use during adolescence can influence addictive behaviors later in life.
- What is the root cause of marijuana use in teens (anxiety, stress, peer pressure)? Are there any benefits to teens using it?
 - The causes of MJ use in teens are likely similar to the causes of all psychoactive substance use (such as nicotine, alcohol, or prescription pain pills); these would include: anxiety, depression, and a desire to fit in with their peers.
 - There are no apparent benefits to teens of using MJ. And, with respect to the question of “medical MJ,” only man-made forms of THC are approved by the FDA (for a very small number of medical uses)—and there are no FDA-approved medical reasons for teens to use THC or MJ in any form.
- What are effective strategies for convincing adolescents of the damaging effects of marijuana? What is the best “message” and who are the most effective “messengers”?
 - Talking to kids about MJ use is much like talking to them about any other risk-laden behavior that may be relatively common in the teen population: inquire about what they already know or have heard about it; offer facts about the risks or consequences of engaging in the behavior; and, of course, avoid getting angry or making negative comments. As with anything else, good communication is key—and, for those of you who have younger kids, this conversation is perhaps best begun during the elementary or middle school years.
 - As to the best message: I think of MJ in a similar vein to how I think about nicotine or alcohol. It’s a risky behavior—but kids are exposed to it, and many will try it at some point. Over time, one hopes that they will exercise good judgment about the risk-benefit equation as it relates to their own values and their own lives. And the best messengers are all of us: parents, of course; kids, in relation to their peers; and those of us (adults) in the helping professions—teachers, physicians, police officers—who have the opportunity, from time to time, to influence the youth in our community.