



NATIONAL SAFETY COUNCIL

Position/Policy Statement

Zero Tolerance Recreational Cannabis Use under Age 21

NSC Policy Position:

The National Safety Council (NSC) supports a zero tolerance recreational cannabis use by individuals under the age of 21. Due to the rapid legalization of cannabis across the U.S. and changes in attitudes to marijuana use, providing factual, scientific data on the impacts of use of cannabis at younger ages is required. It is important that teenagers and young adults fully understand the risks associated with early cannabis use on a developing brain.

All jurisdictions that have decriminalized cannabis for recreational use require a consumer to be at least 21 years old. Initial data show that despite this restriction, recreational use among those under 21 years of age increases too.¹ NSC supports studying the effects of recent laws legalizing the use of marijuana to better understand the impact and define and support best policies to reduce adolescent marijuana use.

Facts

Cannabis is the most widely consumed illicit substance worldwide.² In 2015, more than 11 million individuals ages 18 to 25 used cannabis.³ In addition to its popularity with young adults, cannabis ranked as the most commonly used drug among 8th and 12th graders in the U.S.⁴ According to the University of Michigan “Monitoring the Future Study” conducted in 2014, of U.S. 8th graders who used illicit or pharmaceutical drugs, 11.7% of them used cannabis, which was the highest percentage among listed drugs.⁵ For 12th graders, cannabis held an even greater level of popularity at 35.1%.⁶ (Alcohol was not considered in this study, although it is the most widely used drug among these two age groups.⁷) The study also discovered that cannabis

¹ <https://jamanetwork.com/journals/jamapediatrics/fullarticle/2593707>

² Substance Abuse and Mental Health Services Administration. (2010). Results from the 2009 National Survey on Drug Use and Health: Volume I. Summary of National Findings (Office of Applied Studies, NSDUH Series H-38A, HHS Publication No. SMA 10-4586 Findings). Rockville, MD.

³ <https://www.drugabuse.gov/publications/drugfacts/cannabis>

⁴ <https://www.drugabuse.gov/publications/research-reports/marijuana/what-scope-marijuana-use-in-united-states>

⁵ https://deepblue.lib.umich.edu/bitstream/handle/2027.42/137939/vol2_2007.pdf?sequence=1&isAllowed=y

⁶ Ibid.

⁷ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3664402/>

use (daily, past-month, and lifetime) has decreased among 8th graders compared to five years ago.⁸

Cannabis Laws

Currently (2019), 33 states, D.C., and three U.S. territories (Guam, Puerto Rico, U.S. Virgin Islands) have passed medical cannabis laws, and 11 states, D.C., and 2 U.S. territories allow for individuals age 21 and older to possess cannabis for recreational use.⁹ The number of states with comprehensible cannabis laws (medically or recreationally) are expected to increase in the coming year. In all states in which cannabis is legal for recreational use, the law requires consumers to be 21 years of age or older to legally purchase products. Consumers under the age of 21, must have a medicinal marijuana card, which can only be obtained through a doctor.¹⁰ Despite this restriction, states in which marijuana is legal for recreational use may experience a higher use rate among adolescents.

Drug Addiction and THC Concentrations

Cannabis is addictive. According to a 2014 study in the New England Journal of Medicine on the adverse health effects of cannabis use, 25-50% of those who are daily users of cannabis will become addicted.¹¹ An individual does not need to smoke daily to become vulnerable to addiction, with 9% of those who simply experiment with cannabis becoming addicted.¹² Additionally, 17% of those who start using as teenagers will become addicted.¹³ The younger a person starts to use any mood or mind altering substances, the greater the possibility of developing an addiction.

Like other addictive drugs, cannabis works in the reward pathway of the brain. It releases dopamine in this pathway, signaling to the brain that this is a good behavior to repeat. A 1997 study found that cannabis with a THC concentration of 5% had a 1.5 fold dopamine increase.¹⁴ Today, THC content is higher. Over the last 20 years (1995-2015), THC content has increased 212%.¹⁵ With a higher potency drug, there may be a greater potential for addiction.

Cannabis & Young Users

The human brain continues to develop through the early and mid-twenties, and during this time of development, the brain is sensitive to damage from drug exposure.¹⁶ During adolescent brain development, dopamine and glutamate are prevalent in the brain, both of which are stimulatory neurotransmitters.¹⁷ Early exposure to cannabis during adolescence disrupts glutamate, which plays an important role in synaptic pruning.¹⁸ The interference of synaptic pruning by cannabis

⁸ <https://www.drugabuse.gov/publications/drugfacts/monitoring-future-survey-high-school-youth-trends>

⁹ <http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx>

¹⁰ <https://www.civilized.life/articles/how-old-do-you-have-to-be-to-smoke-weed-legally/>

¹¹ <https://northstarbehavioral.com/wp-content/uploads/2015/06/Adverse-Health-FX-Cannabis-Volkow-NEJM-2014.pdf>

¹² <https://www.drugabuse.gov/publications/research-reports/marijuana/marijuana-addictive>

¹³ Ibid.

¹⁴ <http://perspectivesinmedicine.cshlp.org/content/2/8/a012229.full>

¹⁵ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4987131/>

¹⁶ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3621648/>

¹⁷ Ibid.

¹⁸ Synaptic Pruning is a natural process thought to be the brain's way of removing connections in the brain that are no longer needed.

disrupts an adolescent's brain development because it limits the brain's ability to "maintain more efficient brain function" through eliminating extra synapses.¹⁹

One of the last areas to fully develop in the brain and most impacted by early age cannabis use is known as the frontal cortex, which is critical to planning, judgement, decision-making, and personality traits.²⁰ Yet, a study found only 26.7% of 12th graders believe "regular cannabis use offers great risk of harm."²¹

In addition to adversely impacting brain development, "using cannabis at a young age (15-18 years old) increases the risk of developing a psychotic disorder.²² This risk triples when an individual smokes a THC potency above 15%.²³ Adolescent emergency and urgent care visits drastically increased in Colorado as well from 2005 – 2015, increasing from 161 in 2005, to 777 in 2015. Behavioral health evaluations accounted for 67% of these visits in 2015.²⁴ One study reported a 10-year increase in adolescent cannabis associated emergency/urgent care visits.²⁵ These visits increased from 1.8 per 1,000 visits in 2009 to 4.9 per 1,000 in 2015.²⁶ Colorado legalized recreational use of cannabis for adults 21 years of age and older in January 2014.

Acute and Long Term Effects of Cannabis Use

Cannabis can affect the body in a number of ways. Negative health effects on lung function associated with smoking marijuana have been documented, and studies linking marijuana use with higher rates of psychosis in patients with a predisposition to schizophrenia have recently been published, raising concerns about longer-term psychiatric effects.²⁷ Psychological effects include relaxation, sedation, disorientation, impaired judgment, and lack of concentration.²⁸ The physiological effects include slowed fine motor skills, reddening of eyes, increased appetite, dry mouth, and increased heart rate. These effects contribute to weaving, impaired learning, short-term memory and attention deficits, and delayed decision-making.²⁹

Acute effects of cannabis use have shown to impair attention, memory, and learning and decision making.³⁰ While these effects can last for days, chronic cannabis use in early adulthood has also been associated with poor school performance, higher dropout rates, increased welfare dependence, and greater unemployment.³¹ A Duke University study found that chronic cannabis use was linked to a decline in an average of six IQ points.³² A study comparing cannabis use before and after age 16 found that people who use it before the age of 16 made twice as many mistakes on tests of executive function, including planning, flexibility, abstract thinking, and inhibition of inappropriate responses.³³

¹⁹ <https://www.healthline.com/health/synaptic-pruning>

²⁰ <https://www.apa.org/monitor/2015/11/marijuana-brain>

²¹ <https://www.drugabuse.gov/publications/drugfacts/monitoring-future-survey-high-school-youth-trends>

²² <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4033190/>

²³ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4911936/>

²⁴ GS Wang et al. Journal of Adolescent Health 2018; 63:239-241

²⁵ [https://www.jahonline.org/article/S1054-139X\(18\)30238-6/fulltext](https://www.jahonline.org/article/S1054-139X(18)30238-6/fulltext)

²⁶ <https://www.sciencedirect.com/science/article/abs/pii/S1054139X18300041>

²⁷ <https://www.ncbi.nlm.nih.gov/pubmed/17662880>

²⁸ <https://www.ncbi.nlm.nih.gov/books/NBK538131/>

²⁹ <https://www.drugabuse.gov/publications/drugfacts/cannabis>

³⁰ <https://www.apa.org/monitor/2015/11/cannabis-brain>

³¹ Ibid.

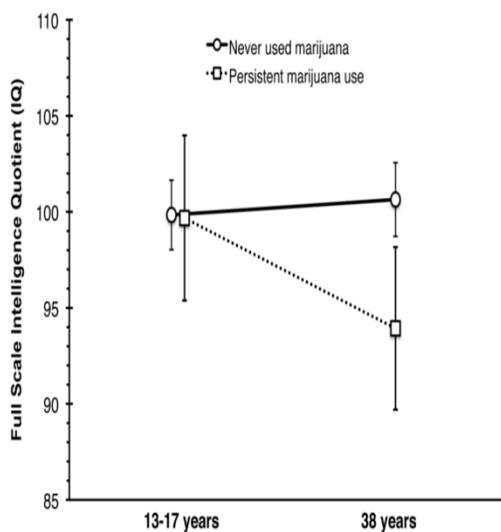
³² <https://www.pnas.org/content/109/40/E2657.full>

³³ <https://www.apa.org/monitor/2015/11/marijuana-brain>

The chart below displays how certain executive cognitive functions are affected after cannabis use at certain times after use. Acute effects denote 0-6 hours after use, residual effects denotes 7 hours to 20 days after use, and long term effects denote 3 weeks or longer after cannabis use. If an executive function is impaired, the chart will list “impaired.” If an executive function was still operating at its normal level, the chart will state “normal” or “largely normal.” If there were mixed results for an executive function, it will say “mixed findings.”

Executive Function Measured	Acute Effects	Residual Effects	Long-Term Effects
Attention/Concentration	Impaired (light users) Normal (heavy users)	Mixed findings	Largely normal
Decision Making & Risk Taking	Mixed findings	Impaired	Impaired
Inhibition/Impulsivity	Impaired	Mixed findings	Mixed findings
Working Memory	Impaired	Normal	Normal
Verbal Fluency	Normal	Mixed findings	Mixed findings

Source: R D Crean, N A Crane, BJ Mason *J Addict Med.* 2011 Mar 1; 5(1): 1–8.



In New Zealand, a study was conducted with 1, 037 individuals with initial testing conducted at age 13 before cannabis use and again at age 38. The intelligence quotient (IQ) decreased by 8 points with early and persistent teen use of cannabis.³⁴ (Chart at left.)

As cannabis becomes legal or decriminalized in more U.S. states, the availability to children and teenagers is likely to increase. Research suggests that adolescent use increases the risk of drug misuse in adulthood and that the developing brain is disproportionately impacted by youth cannabis use. While laws surrounding cannabis vary by state, NSC supports imposing strict laws prohibiting the use by those under 21 years of age

This position statement reflects the opinions of the National Safety Council but not necessarily those of each member organization.

Adopted by the National Safety Council, 2019

³⁴ Meier et al. *Proc National Academy of Sci*, 2012