

# Regular marijuana use bad for teens' brains

## Psychology and public health experts weigh in on potential effects of legalization on youth

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WASHINGTON — Frequent marijuana use can have a significant negative effect on the brains of teenagers and young adults, including cognitive decline, poor attention and memory, and decreased IQ, according to psychologists discussing public health implications of marijuana legalization at the American Psychological Association's 122nd Annual Convention.

"It needs to be emphasized that regular cannabis use, which we consider once a week, is not safe and may result in addiction and neurocognitive damage, especially in youth," said Krista Lisdahl, PhD, director of the brain imaging and neuropsychology lab at University of Wisconsin-Milwaukee.

Marijuana use is increasing, according to Lisdahl, who pointed to a 2012 study showing that 6.5 percent of high school seniors reported smoking marijuana daily, up from 2.4 percent in 1993. Additionally, 31 percent of young adults (ages 18 to 25) reported using marijuana in the last month. People who have become addicted to marijuana can lose an average of six IQ points by adulthood, according to Lisdahl, referring to a 2012 longitudinal study of 1,037 participants who were followed from birth to age 38.

Brain imaging studies of regular marijuana users have shown significant changes in their brain structure, particularly among adolescents, Lisdahl said. Abnormalities in the brain's gray matter, which is associated with intelligence, have been found in 16- to 19-year-olds who increased their marijuana use in the past year, she said. These findings remained even after researchers controlled for major medical conditions, prenatal drug exposure, developmental delays and learning disabilities, she added.

"When considering legalization, policymakers need to address ways to prevent easy access to marijuana and provide additional treatment funding for adolescent and young adult users," she said. She also recommended that legislators consider regulating levels of tetrahydrocannabinol, or THC, the major psychoactive chemical in marijuana, in order to reduce potential neurocognitive effects.

Some legalized forms of marijuana have higher levels of THC than other strains, said Alan Budney, PhD, of Dartmouth College. THC is responsible for most of marijuana's psychological effects. Some research has shown that frequent use of high potency THC can increase risk of acute and future problems with depression, anxiety and psychosis. "Recent studies suggest that this relationship between marijuana and mental illness may be moderated by how often

marijuana is used and potency of the substance," Budney said. "Unfortunately, much of what we know from earlier research is based on smoking marijuana with much lower doses of THC than are commonly used today." Current treatments for marijuana addiction among adolescents, such as brief school interventions and outpatient counseling, can be helpful but more research is needed to develop more effective strategies and interventions, he added.

Additionally, people's acceptance of legalized medical marijuana use appears to have an effect on adolescents' perception of the drug's risks, according to Bettina Friese, PhD, of the Pacific Institute for Research and Evaluation in California. She presented results from a 2013 study of 17,482 teenagers in Montana, which found marijuana use among teenagers was higher in counties where larger numbers of people voted to legalize medical marijuana in 2004. In addition, teens in counties with more votes for the legalization of medical marijuana perceived marijuana use to be less risky. The research findings suggest that a more accepting attitude toward medical marijuana may have a greater effect on marijuana use among teens than the actual number of medical marijuana licenses available, Friese said.