

Marijuana May Not Be Harmful to Adults... But What About Youth?

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The liberalization of laws governing access to marijuana has launched the most significant social experiment in the regulation of a recreational intoxicant since the 18th Amendment enacted Prohibition in 1920. This effort, however, is perhaps the antithesis of Prohibition, with the decriminalization of a long-banned substance. Cannabis is now legal for medical use in 23 states, while four states, along with the District of Columbia and Guam, sanction recreational use of cannabis by adults.

Colorado, one of the first states to embark upon this “Anti-Prohibition” experiment in full force, has since approved more than 2,500 marijuana business licenses. Neighborhoods now boast more marijuana dispensaries than Starbucks, McDonald’s, and 7-Elevens combined. One of the main reasons for this wave of decriminalization is cumulative scientific evidence and public opinion supporting the belief that marijuana is less harmful than tobacco or alcohol.

But there is one enormous and unnoticed caveat to the commonly held view of the relative safety of cannabis. It only applies to adults. Our knowledge of the risks of cannabis for youth is far less certain, and suggests great cause for concern.

As every neuroscientist knows, there is a world of difference between a mature adult brain and the developing brain of a child or adolescent. In the same way that an office building is not fully functional until all the bricks are laid, and pipes, wiring and air ducts installed and operational, the human brain is not fully formed until all of its neurons and support elements are formed, in their correct position and properly connected into neural circuits, a maturational process that isn’t complete until the middle of the third decade of life. It’s important to understand that the young brain is not a miniature version of an adult brain, but is a qualitatively different organ that is highly vulnerable to anything that interferes with its developmental processes.

This concern is not unique to marijuana. Many substances that do not cause trouble for adults, can be problematic for youth. For example, aspirin is safe and effective in adults, but, if given to children, can be toxic to the brain and liver, causing a condition called Reye’s Syndrome. Similarly, marijuana may pose far greater risks to youth than adults.

The largest study of the relationship between marijuana and the adolescent brain found that by the time teenage cannabis users reached their thirties, their IQ had dropped by 6 points. Another study found that the prefrontal cortex of adolescent cannabis users required more activation during attention tasks, suggesting that adolescent users must exert greater cognitive effort than non-users to solve the same mental task. A related study found an increase in impulsivity in adolescent cannabis users associated with a decrease in the amount of white matter in their brains. But perhaps the most alarming findings come from a plethora of studies in animals that consistently reveal that rodents, who are repeatedly exposed to cannabis during

adolescence, exhibit impairments in their cognition and alterations in brain structure during adulthood.

Taken together, these findings demonstrate why a history of early cannabis use should serve as a red flag to clinicians for the potential development of impulse control, memory problems and even mental disorders. But, to be clear, while available evidence generally suggests sound reason to believe there is a strong link between the consumption of cannabis products by youth and various emotional and cognitive consequences as adults, we cannot yet conclude whether heavy teenage pot use causes mental impairments or illness, or whether people who are genetically predisposed to being psychotic, depressed, anxious, or suicidal are simply more likely to seek out weed to help them cope with their emotional issues. All of these potential risks to brain development and mental functions posed by cannabis, increase the earlier and more frequently that a young person consumes the drug. So even if we accept the evidence suggesting that adult cannabis use is not harmful, we should not be so sanguine about teen use.

Given what's at stake – the mental health of our country's youth – we must engage in this grand Anti-Prohibition social experiment with our eyes wide open. With Colorado as the leading edge of this social experiment, it behooves the state government to ensure that mechanisms are in place to monitor and limit the potential adverse impact of cannabis. These include warnings of the possible adverse effects, FDA oversight, and epidemiologic tracking by the CDC and state Department of Health. The state should also support continued research on the effects of cannabis use, particularly among youth. Finally, if we take the science seriously—the same kind of science that is driving the decriminalization marijuana use—then we should support policies which inflict penalties on selling or sharing cannabis with anyone under 21.

Prohibition was repealed in 1933. We don't yet know the future of cannabis legalization, but until we have a better understanding of the risks of unfettered use in the population, particularly among youth, we have a moral obligation to send the message that even though marijuana consumption in Colorado is legal and acceptable for adults, it's safety for youth is unknown.

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