

# Let's Be Clear Georgia

## A Collaborative to Prevent Marijuana Abuse

Let's Be Clear Georgia is a partnership of private and public agencies, employers, and individuals engaging in best practices and policies to prevent marijuana abuse in our state.

### MARIJUANA AND MOTIVATION



#### DOES MARIJUANA AFFECT MOTIVATION?

Youth: Young people who smoke marijuana may be at risk of “major” changes to the area of the brain that regulates motivation, a new 2014 study by Harvard University and Northwestern Medicine claims. In the study, brains of 40 young adults were scanned (half were non-users and half reported smoking for 1-6 years and showed no signs of dependence). All smokers showed abnormalities in the shape, density and volume of the nucleus accumbens, which “is at the core of motivation, the core of pleasure and pain,

and every decision that you make,” explained Dr. Hans Breiter, a co-author of the study and professor at Northwestern’s medical school.<sup>1</sup>

Heavy users: Scientific findings are adding to the growing literature showing that heavy marijuana use may also harm the brain. New NIDA-funded research shows that heavy marijuana use (at least four times per week over the past six months) is linked to adverse changes in the function and structure of brain areas associated with reward, decision making, and motivation.<sup>2</sup>

#### HOW DOES MARIJUANA AFFECT MOTIVATION?

“Today we know that cannabis contains more than 530 chemicals, including 109 cannabinoids,” explained Dr. Marilyn Huestis, chief of the chemistry and drug metabolism section at the National Institute on Drug Abuse. “THC binds to cannabinoid receptors throughout the brain and affects all aspects of brain function, including paying attention, memory and learning, decision-making, emotion, coordination and motor control, appetite and pain sensation,” she said.<sup>3</sup>

#### DOES SMOKING OR EATING MARIJUANA CHANGE THE IMPACT?

Smoking or inhaling marijuana sends a concentrated dose into the lungs and quickly releases THC into the brain, causing a rapid onset of effects.<sup>3</sup> The impact is almost immediate and can last from 1 to 3 hours. Decision making, concentration, and memory can suffer for days after use, especially in regular users. If marijuana is consumed in foods or beverages, the effects of THC appear later — usually in 30 minutes to 1 hour — but can last over 4 hours.<sup>4</sup>

## **CAN MARIJUANA HAVE A PERMANENT IMPACT?**

In 2012, one of the most well designed studies on marijuana and intelligence found that marijuana use reduces IQ by as much as eight points by age 38 among people who started using marijuana regularly before age 18.<sup>5</sup>

"Quitting or reducing cannabis use did not appear to fully restore intellectual functioning," said Dr. Madeline Meier, of Duke University in North Carolina.<sup>6</sup>

## **WHAT GEORGIANS SHOULD KNOW:**

- 1) Studies show heavy marijuana use can have adverse changes in the function and structure of brain - and impact motivation.
- 2) Studies show marijuana can affect the normal development of the teen brain - and impact motivation.
- 3) Studies show IQ can be reduced by as much as eight points by age 38 among people who started using marijuana regularly before age 18.

## **TO LEARN MORE VISIT:**

<http://clearga.org/marijuana-and-motivation>

## **SOURCES**

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1 The Journal of Neuroscience, Cannabis Use is Quantatively Associated with Nucleus Accumbens and Amygdala Abnormalities in Young Adult Recreational Users April 16, 2014 • 34(16):5529 –5538 • 5529, <http://jn.sfn.org/press/April-16-2014-Issue/zns01614005529.pdf>.

2. National Institute on Drug Abuse, "Evidence Grows That Heavy Marijuana Use May Harm The Brain", Science Spotlight, November 19, 2014 <http://www.drugabuse.gov/news-events/news-releases/2014/11/evidence-grows-heavy-marijuana-use-may-harm-brain>

3 National Institutes of Health, "Marijuana: From the Street to the Clinic July 22 2014." NIDA's Dr. Huestis Warns of Adverse Cognitive Effects of Marijuana, [Http://nihrecord.nih.gov/newsletters/2014/08\\_15\\_2014/story1.htm](http://nihrecord.nih.gov/newsletters/2014/08_15_2014/story1.htm)

4 Crean RD, Crane NA, Mason BJ. An evidence based review of acute and long-term effects of cannabis use on executive cognitive functions. Journal of Addiction Medicine 2011;5:1-8. National Institute on Drug Abuse, <http://teens.drugabuse.gov/drug-facts/marijuana>

5 Meier MH, et al. (2012) Persistent cannabis users show neuropsychological decline from childhood to midlife. Proc Natl Acad Sci USA 109(40):E2657–E2664.

6 Teen Cannabis may damage brain for life, warns major study, August 28 2012, <http://www.independent.co.uk/news/science/teen-cannabis-use-may-damage-brain-for-life-warns-major-study-8082533.html>

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