

Press Release

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SAFE Glen Cove Coalition: Study Explores Effects of Recent and Lifetime Cannabis Use on Brain Function

The study, published in JAMA Network Open, is the largest of its kind ever to be completed that examined the effects of cannabis use on over 1,000 young adults aged 22 to 36 using brain imaging technology. The researchers found that 63% of heavy lifetime cannabis users exhibited reduced brain activity during a working memory task (cognitive functioning) , while 68% of recent users also demonstrated a similar impact.

This decline in brain activity was associated with worse performance on working memory, the ability to retain and use information to perform tasks. For example, working memory allows a person to follow instructions they've just been given or to mentally visualize and manipulate information, like solving a math problem.

"As cannabis use continues to grow globally, studying its effects on human health has become increasingly important. By doing so, we can provide a well-rounded understanding of both the benefits and risks of cannabis use, empowering people to make informed decisions and fully comprehend the potential consequences," said the study's first author Joshua Gowin, Ph.D., assistant professor of radiology at the University of Colorado School of Medicine on the University of Colorado Anschutz Medical Campus.

In the study, heavy users are considered young adults who've used cannabis more than 1,000 times over their lifetime. Whereas, using 10 to 999 times was considered a moderate user and less than 10 times was considered a nonuser.

The researchers studied the neural response of participants during a magnetic resonance imaging (MRI) session and gave them seven cognitive tasks to complete. The tasks tested working memory, reward, emotion, language, motor skills—such as tapping a finger to map brain control, relational assessment and theory of mind.

The researchers found that cannabis had a statistically significant effect on brain function during working memory tasks, meaning the observed impact is very unlikely to be due to random chance. This effect was seen in both recent and lifetime cannabis users. The impact was less significant for the other tasks.

During working memory tasks, the researchers found heavy cannabis use appeared to reduce brain activity in certain areas of the brain (prefrontal cortex and anterior insula). These regions of the brain are involved in important cognitive functions such as decision-making, memory, attention and emotional processing.

Researchers also suggests that abstaining from using cannabis before doing a cognitive task could help to improve performance. "People need to be aware of their relationship with cannabis since abstaining cold turkey could disrupt their cognition as well. For example, heavy users may need to be more cautious," Gowin says.

He adds, "There are a lot of questions we still need answers to regarding how cannabis impacts the brain. Large, long-term studies are needed next to understand whether cannabis use directly changes brain function, how long these effects last and the impact on different age groups."

JAMA Network Open is a monthly open access medical journal published by the American Medical Association covering all aspects of the biomedical sciences. For more information, please visit www.jamanetwork.com. For more information about the study please visit JAMA Network Open (2025). DOI: 10.1001/jamanetworkopen.2024.57069.

SAFE is the only alcohol and substance use prevention agency in Glen Cove whose mission is to eliminate alcohol and substance use in Glen Cove. Its Coalition is concerned about cannabis use- especially in youth as their brains are developing. The Coalition is conducting a prevention awareness campaign entitled "Keeping Glen Cove SAFE; Underage Cannabis Use," to educate and update the community regarding cannabis use and its negative consequences. To learn more about the SAFE Glen Cove Coalition please follow us on www.facebook.com/safeglencovecoalition or visit SAFE's website to learn more about Cannabis/Marijuana use at www.safeglencove.org.