

# Long-term marijuana use tied to worse verbal memory in middle age

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(Reuters Health) - As marijuana becomes more accessible to young and old alike in the U.S., researchers warn that long-term use of the drug may cause lasting harm to at least one type of brain function.

A new study based on following thousands of young adults into middle age finds that long-term marijuana use is linked to poorer performance on verbal memory tests, but other areas of brain function do not appear to be affected.

“We did not expect to find such a consistent association with verbal memory for chronic exposure to marijuana,” especially since the link held even when other factors like cigarette smoking, alcohol use and other behavioral factors associated with marijuana use were accounted for, said lead author Dr. Reto Auer of the University of Lausanne, Switzerland.

Auer and colleagues analyzed data from a 25-year U.S. study of young adults, which included repeated measures of marijuana exposure over time and a standardized test of verbal memory, processing speed and executive function in year 25. Almost 3,500 participants completed the standardized tests.

At the beginning of the study period in the 1980s, participants were 18 to 30 years old and more than 80 percent reported past marijuana use. Just 12 percent continued to use marijuana into middle age, according to the results in *JAMA Internal Medicine*.

Researchers found that as past years of marijuana use increased, verbal memory scores decreased. In practical terms, the results meant that for every additional five years of exposure, 50 percent of marijuana users would remember one less word from a list of 15 tested words.

“Recreational marijuana users use it to get high, to benefit from the transient change it produces,” Auer told Reuters Health by email. “But this transient effect might have long term consequences on the way the brain processes information and could also have direct toxic effects on neurons.”

But, he said, it is unclear from this observational study if lower verbal memory is a cause or a consequence of marijuana use.

The study only included self-reported marijuana use and did not employ brain imaging to measure structural changes, the authors note.

“Unfortunately, as with all recreational drug exposures, it would not be feasible to perform a long term randomized controlled trial to verify causation,” Auer said. “We are left with trying to do the best we can in epidemiological studies and adjust for potential confounders to estimate the potential causal effect of marijuana on health outcomes.”

Several studies have found that cannabis users who have used daily over years, and especially those who have used daily for decades, perform worse on various cognitive tasks than their peers who have either not used cannabis or have used it less frequently, for shorter periods, then stopped, said Wayne Hall, of the University of Queensland, Australia, who coauthored a related commentary.

“People who used occasionally in their 20s and discontinue as most cannabis users do, are at low risk of developing any cognitive impairment,” Hall told Reuters Health by email.

“But cannabis is a drug, and like all drugs, it can harm users when used in particular ways,” Hall said. “This message needs to be communicated to all cannabis users and especially those in U.S. states where medical or recreational cannabis use by adults is now legal.”

The new results did not include information on how the marijuana was consumed, only on the number of days of exposure in the month before each exam, Auer said.

All marijuana users and the overall population interested in knowing the health consequences of marijuana should have access to balanced, high quality information from independent researchers, but no study has repeatedly measured brain structure and marijuana use over time, Auer said.

“There is a severe lack of well performed studies on the topic, especially considering the proportion of the population who have been exposed, or are exposed to marijuana,” he said.