

Marijuana can affect memory when adolescents are learning

'Gateway drug' or not, experts say, it's not a benign path for teens

By Rita Rubin
USA TODAY

Tyreol Gardner first smoked marijuana when he was 13.

"The main reason I tried it was curiosity," Gardner recalls. "I wanted to see what it felt like."

He liked what it felt like, and by age 15, he was smoking pot every week. He supported his habit with the money his parents gave him for getting straight A's on his report card. They didn't have a clue.

"By 16, when I got my license, it turned into a fairly everyday thing," says Gardner, now 24. "I believe it is very addictive, especially for people with addictive personalities."

Millions of baby boomers might disagree. After all, they smoked marijuana — the country's most popular illicit drug — in their youth and quit with little effort.

But studies have shown that when regular pot smokers quit, they do experience withdrawal symptoms, a characteristic used to predict addictiveness. Most users of more addictive drugs, such as cocaine or heroin, started with marijuana, scientists say, and the earlier they started, the greater their risk of becoming addicted.

Many studies have documented a link between smoking marijuana



By Rebecca DiAngelo for USA TODAY

Starting over: Rachel Kinsey, 24, of Richmond, Va., began drinking alcohol at 14 and smoking marijuana at 15. She has been sober for two years.

Pot smoking in high school

Marijuana is the most-used illicit drug among high school seniors in 2006. Percentage of U.S. 12th graders reporting past-year use of drugs (other than alcohol and tobacco):

Marijuana	31.5%
Other narcotics (such as Vicodin, OxyContin)	7.9%
Amphetamines	8.1%
Cocaine	5.7%
Hallucinogens	4.9%
Heroin	0.8%

Source: Center for Substance Abuse Research, University of Maryland

By Karl Gelles, USA TODAY

and the later use of "harder" drugs such as heroin and cocaine, but that doesn't necessarily mean marijuana causes addiction to harder drugs.

"Is marijuana a gateway drug? That question has been debated since the time I was in college in the 1960s and is still being debated today," says Harvard University

psychiatrist Harrison Pope, director of the Biological Psychiatry Laboratory at Boston's McLean Hospital. "There's just no way scientifically to end that argument one way or the other."

That's because it's impossible to separate marijuana from the environment in which it is smoked, short of randomly assigning people to either smoke pot or abstain — an experiment that would be grossly unethical.

"I would bet you that people who start smoking marijuana earlier are more likely to get into using other drugs," Pope says. Perhaps people who are predisposed to using a variety of drugs start smoking marijuana earlier than other people do, he says.

Besides alcohol, which is often the first substance that adolescents abuse, marijuana may simply be the most accessible and least scary choice for a novice who is susceptible to drug addiction, says Virginia

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Tech psychologist Bob Stephens.

No matter which side you take in the debate over whether marijuana is a "gateway" to other illicit drugs, you can't argue with "indisputable data" showing that smoking pot affects neuropsychological functioning, such as hand-eye coordination, reaction time and memory, says Wesley Clarke, director of the federal Substance Abuse and Mental Health Services Administration.

Adolescents have the greatest rates of marijuana use, and they also have the greatest amount to lose by using marijuana, scientists say.

"Adolescence is about risk-taking, experimentation," says Yasmin Hurd, professor of psychiatry, pharmacology and biological chemistry at the Mount Sinai School of Medicine in New York who published a rat study last summer that found early exposure to THC, the psychoactive ingredient in marijuana, led to a greater sensitivity to heroin in adulthood.

"All of the studies clearly show the earlier someone starts taking marijuana, the greater their vulnerability to addiction disorders and psychiatric disorders. I'm so shocked still that so many parents are not considering enough the dangers of early drug use."

Use is more common

Marijuana use by adolescents in the USA declined slightly from 2005 to 2006, but it's still more common than it was 15 years ago, according to "Monitoring the Future," an ongoing study by the University of Michigan that tracks people from the eighth grade through young adulthood. It's paid for by the National Institute on Drug Abuse, or NIDA, part of the National Institutes of Health.

In 2006, 11.7% of eighth-graders said they had used marijuana during the past year, compared with 6.2% of eighth-graders in 1991. Among 12th-graders, 31.5% said they had used marijuana in the previous year; in 1991, 23.9% said they had.

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Yasmin Hurd, Mount Sinai School of Medicine

"You are at school, and your main job as an adolescent is to learn and memorize," NIDA director Nora Volkow says. But if you keep becoming intoxicated by smoking marijuana, she says, you'll fall further and further behind in your studies. "How are you going to catch up?"

In a study comparing heavy marijuana users with people who had had minimal exposure to the drug, Pope found that the former had lower verbal IQ scores than the latter. In a 2003 paper, he and his co-authors postulated three potential reasons: innate differences between the groups in cognitive ability that predated first marijuana use, an actual toxic effect of marijuana on the developing brain, or poorer learning of conventional cognitive skills by young marijuana users who skipped school.

Wasted years

By the time Gardner was a junior, he started skipping high school regularly to smoke pot. "I would always find somebody who wasn't at school that day and get high with them," he says. Gardner says he missed 50 days in the first semester of his senior year. His parents discovered his stash of marijuana and sent him to a psychiatrist. His grades plummeted; his college plans evaporated.

When he was 16 or 17, Gardner says, he was charged at least twice with possession of marijuana and underage possession of alcohol. The court sent him to a three-month outpatient treatment program. He attended weekly sessions and underwent urine checks.

But it didn't stick. He celebrated the end of the program by getting high on pot and alcohol. By 18, "I was pretty heavy into cocaine," Gardner says. Crystal meth and intravenous heroin followed.

"I was always looking for the ultimate high. It was like a constant search, and I never found it. . . . By the end, it was a living hell for me."

Finally, Gardner says, his parents persuaded him to enter an inpatient treatment program in Winchester, Va. They spoke from experience. When he was 8, Gardner says, his father stopped using drugs while in prison for possession. "My mom got clean while he was in prison."

Gardner says he has been off drugs and alcohol for 14 months. He works in a Winchester factory that makes patio decking. He graduated from high school because a teacher took pity on him and let him try to make up the work he had missed. More than six years after graduating, Gardner hopes to go to college to study psychology.

Research shows that marijuana users are significantly less satisfied with the quality of their lives than non-users, a revelation "as telling as any very fancy story of molecules," Volkow says.

Yet, she says, "I think there is a general sense that marijuana is a relatively benign drug and does not produce addiction," although over the past decade, "research clearly has provided unequivocal evidence that . . . some people can become addicted to marijuana."

Stephens has conducted seven large treatment studies of marijuana dependence, or addiction. "There's never any shortage of people who meet this definition," says Stephens, who edited the 2006 book *Cannabis Dependence*.

Pot as predecessor

Pope has studied heavy marijuana users, whom he defines as having smoked pot at least 5,000 times, or once a day for nearly 14 years. On average, his subjects, ages 30 to 55, reported having smoked marijuana 20,000 times.

Pope required the volunteers to abstain from smoking pot for 28 days and used urine samples for confirmation.

"We had them rate various symptoms on a day-by-day basis," he says. "We were able to show there is a clear withdrawal syndrome."

His research found that the most common symptom of marijuana withdrawal was irritability, followed by trouble sleeping and loss of appetite. Symptoms began to subside after a week and disappeared by the end of two weeks.

"We've had some people in our study who reported quite a lot of craving. They were quite miserable not being allowed to smoke marijuana," Pope says, although "certainly, one does not see craving even remotely to the degree you would . . . with heroin or alcohol or cocaine."

Marijuana today is more potent and therefore more toxic than marijuana grown in the 1970s, Volkow says. Back then, she says, plants typically contained only 2% THC. Today, she says, marijuana plants typically contain 15% THC.

Even if today's marijuana is more potent, Stephens says, he's not convinced that makes a difference.

"The evidence of its increased potency is overrated," he says. Samples of marijuana grown in the 1970s might have appeared to be less potent than they actually were because they weren't fresh when tested. And, Stephens speculates, marijuana users might just smoke more of less-potent pot, and vice versa.

A family problem

Rachel Kinsey says drug addiction runs in her mother's family, although not in her immediate family. Kinsey, 24, started drinking alcohol at 14 and smoking marijuana at 15 — "definitely a predecessor for everything else I used." She began using Ecstasy and cocaine at 17, then heroin at 18.

"I did graduate high school, and I went off to college, but I withdrew after a month," says Kinsey, of Richmond, Va. She used the diagnosis of mononucleosis she had received the week before college as an excuse. "I don't think I was ready for the responsibility, and I wanted to continue to use while I was in college. I was at the point where I just didn't care about college. I was already using heroin."

She moved in with her boyfriend and his father, both of whom used heroin. At 19, she became pregnant. She moved back in with her mother, substituted methadone for heroin and gave the baby up for adoption. Practically as soon as she delivered, she was back on heroin.

About five months after her son was born in May 2003, Kinsey entered inpatient addiction treatment. During the 30-day program, she became involved with a man who went back to using cocaine after ending treatment. Kinsey says she didn't want to go back to using cocaine or heroin, "but for some reason I thought it was OK to drink and go back to smoking weed."

When she turned 21 in fall 2003, "it was off to the races. For some reason, I felt (turning 21) gave me the right to drink if I wanted to."

From January to August 2004, Kinsey says, she was charged three times with driving under the influence of alcohol and marijuana.

'Not worth the risk'

With the help of another stay at a treatment center, Kinsey hasn't used drugs or alcohol since Aug. 25, 2004, the day after her last DUI arrest. She's halfway toward graduating from nursing school and works as a nurse tech in a hospital. For the first time, she has signed a lease on an apartment and pays rent.

She can't drive until September 2008 and then only to work, to school and to 12-step meetings.

If she had to do it all over again, she says, she never would have started smoking marijuana.

"You never know where it's going to lead you," she says. "You don't know that you're not going to become an addict, so it's not worth the risk."