

**Current Issue:**

October 15, 2001

NewsNews, events,
features**Science/Research**Latest scientific
findings**Profiles**The people behind
the university**Community**Harvard and neighbor
communities**Sports**Scores, highlights,
upcoming games**On Campus**Newsmakers, notes,
students, police log**Arts**Museums, concerts,
theater**Calendar**Two-week listing of
upcoming events**HARVARD GAZETTE ARCHIVES**

Dr. Harrison Pope of McLean Hospital used the Wechsler Adult Intelligence Scale Block Design Subtest, which he is holding, and other cognitive tests to do his study on heavy marijuana users. (Staff Photo by Rose Lincoln)

Study: Intelligence, cognition unaffected by heavy marijuana use

By William J. Cromie

Gazette Staff

The new study of cognitive changes caused by heavy marijuana use has found no lasting effects 28 days after quitting. Following a month of abstinence, men and women who smoked pot at least 5,000 times in their lives performed just as well on psychological tests as people who used pot sparingly or not at all, according to a report in the latest edition of the Archives of General Psychiatry.

That's the good news. The bad news, not included in the study, is that most heavy users admit that pot has had a negative effect on their physical and mental health as well their functioning on the job and socially.

"If there's one thing I've learned from studying marijuana for more than a decade, it's that proponents and opponents of the drug will put opposite spins on these findings," says Harrison Pope, a Harvard professor of psychiatry and leader of the research. "One day I'll get a letter that will say, 'we are shocked that you are so irresponsible as to publish a report that claims marijuana is almost harmless. That's a terrible disservice to our children.' The next day, I'll get a letter complaining that I'm 'irresponsible for implying there's something wrong with smoking marijuana. You have set back the legalization (of marijuana) movement by 20 years.'

"As a scientist, I'm struck by how passionately people hold opinions in both directions no matter what the evidence says. The other striking thing is how little we actually know about the effects of a drug that has been smoked for thousands of years and been studied for decades."

Withdrawal produces impairment

That shortage of knowledge motivated Pope and his colleagues at McLean Hospital, a Harvard-affiliated psychiatric facility in Belmont, to investigate the drug's long-term cognitive effects. They recruited 180 people, 63 of them heavy users who currently smoked pot daily, 45 former heavy users, and 72 who had used the drug no more than 50 times in their lives. Heavy use was defined as smoking pot at least 5,000 times. The subjects ranged in age from 30 to 55 years. Most of them were males because studies indicate that women are less likely to become heavy marijuana users.

All took batteries of intelligence, attention, learning and memory tests on days 0, 1, 7, and 28 after quitting the drug. (Daily urine samples confirmed whether or not they had stopped.) On days 0, 1 and 7, current heavy smokers scored significantly lower than the other groups on memory tests.

"By day 28, however, there were no significant differences among the groups on any of 10 different tests, and no significant association between cumulative lifetime marijuana use and test scores," Pope says. In other words, the researchers conclude that heavy marijuana use produces no irreversible mental deficits.

The investigators cannot say for sure why pot smokers remain impaired for days or weeks after giving up the drug. One possibility is that they retain substantial amounts of a compound known as THC, the active ingredient of marijuana, in their systems. THC dissolves in body fat, then slowly percolates into the blood and brain over days and weeks after a joint is smoked.

Another explanation blames a withdrawal effect, similar but not as pronounced as the agitation, irritability, sleeping problems and appetite loss suffered by users of heroin or alcohol. Such symptoms impair attention and memory.

"Some of the deficits we saw were as bad, or even worse on day seven as on day one," Pope notes. "This suggests that withdrawal, rather than a residue of drug in

the brain, accounts for the bulk of lingering impairments." A residue effect should decrease from day one to seven after quitting, but withdrawal problems would increase before they decrease.

Pot smokers who believe they are back to normal sometimes show detectable impairments on various tests. "That's a cause for concern," Pope points out. "You don't want to try landing a 747, driving a bus or train, or taking a calculus test a week after heavy marijuana use even if you feel normal."

Unsatisfied lives

Although researchers found no irreversible cognitive defects from a lifetime of marijuana consumption, pot users are not a happy lot. In a separate study, most heavy users admitted that the drug has a negative impact on all aspects of their lives from job performance and physical health to mental well being and satisfactory socializing.

Heavy smokers also have substantially smaller incomes and lower levels of education than nonusers or light users, despite the fact that the education and income levels of their families are the same. However, there's no way to determine if marijuana is the cause or if these people naturally have less ambition.

"It's a chicken and egg situation," Pope admits. "Probably the direction of causality goes both ways. In all likelihood, people who become frequent users are somewhat different at the outset; they may have lower cognitive abilities or less motivation. Once they start using the drug regularly, these differences become wider."

Asked if his conclusions would lead him to make any recommendations for or against legalizing marijuana, Pope answered "no, because so many other political and social factors are involved." He noted that alcohol, which is sold legally, causes cognitive deficits in long-term heavy users that do not disappear after 28 days and may be cumulative. However, he adds, "such toxicity is only one factor in the decision."

A number of investigations have linked marijuana to an increased risk of lung cancer. A recent Harvard study concluded that a middle-age person's chance of having a heart attack increases nearly five times during the first hour after smoking pot. That's especially meaningful for baby boomers who developed the habit in their teens and 20s and continue to use the drug in their 30s, 40s, and 50s. Other researchers have associated pot with impaired disease resistance and adverse effects on fetuses when mothers smoke the drug during pregnancy.

On the other hand, many claims exist that marijuana eases the nausea produced by cancer drugs and relieves the pain of diseases such as AIDS, severe arthritis, and glaucoma. Such claims led Canada recently to legalize its medical use.

Pope raises a caveat: "Is it better than other treatments for the same conditions? Given the association with lung cancer and other ills, does it provide more benefit than risk?"

Pro-pot people argue that, even if it's only equal in efficacy to prescription and over-the-counter drugs, it's much cheaper. "After all, it's only a weed," Pope points out.

All of these factors emphasize Pope's point that not much is really known about marijuana despite its long history of use and decades of study.



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