

Pot habit early in life may alter brain, study suggests

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(HealthDay)—Young teens who smoke pot may wind up with brains that

look strikingly different from those who start using marijuana later in their lives, a new study reports.

Early pot use may alter the physical development of a young teen's brain. It seems to obstruct the natural process by which the body eliminates unneeded neurons and synaptic connections, the researchers reported.

As a result, the brains of people who started smoking pot younger than age 16 tend to have fewer surface wrinkles and folds in the outer layer of the brain, also known as the cerebral cortex, said study lead author Francesca Filbey. She is chair of Behavioral and Brain Sciences at the University of Texas at Dallas' Center for BrainHealth.

The cortex also tended to be thicker in these early use teens, again suggesting that less development had occurred, the researchers said.

However, the study cannot definitively prove a cause-and-effect relationship. Filbey said the researchers couldn't rule out that the differences in brain development might drive early marijuana use, rather than vice versa.

"It could be that perhaps having these altered brain patterns is what led to the greater marijuana use," she said.

Still, the difference in brain development might be due to marijuana's influence on dopamine levels in the brain, which could influence how the cortex develops, Filbey added.

The research team analyzed MRI scans of 42 heavy marijuana users, including 20 considered "early onset" users because they started before age 16. All of the study volunteers began using marijuana during their teens, and continued throughout adulthood. They all reported using pot at least once a week, the researchers said.

The researchers explained that typical brain development for teens includes a process called "synaptic pruning." During this process, the brain sharpens itself by removing unneeded synapses and neurons. The process results in a thinner cortex that contains more wrinkles and folds on its surface, as well as greater contrast between the brain's gray and white matter.

In this study, the MRIs revealed that early onset users had thicker cortexes, fewer wrinkles and less gray and white matter contrast, compared to people who picked up their marijuana habit at 16 or older.

"The difference in association with marijuana use was striking between the two groups," Filbey said.

It also appeared that the more marijuana the person used, the more their [brain development](#) had been affected, the researchers said.

The study was published in the journal *Developmental Cognitive Neuroscience*.

Dr. Gayatri Devi, a neurologist with Lenox Hill Hospital in New York City, pointed out that "these children seem to have less sculpting of the brain."

Such alterations to normal brain structure could impact the teens' ability to think and reason in later life, said Devi, who was not involved with the study. For example, the frontal lobe of the cortex often deals with attention, judgment and other higher level brain function.

"If you don't have the normal sculpting that's seen during this age period, then one could speculate those are the areas that would be affected," Devi said.

But not everyone is convinced that early marijuana use is responsible for these changes.

Mitch Earleywine, a professor of psychology at the State University of New York at Albany, also sits on the advisory board of NORML, an advocacy group for marijuana legalization. He agreed with Filbey that it's not clear if early pot use caused these changes, or that people with these brain changes are more likely to start using pot earlier.

"None of these people were randomly assigned to use the plant, so we have no way of knowing if the effects actually preceded use or stemmed from it," said Earleywine. "I would add that these results don't hold a candle to the [brain](#) structure changes we see with binge drinking."

Dr. Andrew Adesman is chief of developmental and behavioral pediatrics at Cohen Children's Medical Center in New Hyde Park, N.Y. He said the study results are further warning for parents to keep their kids from experimenting with pot at a young age.

"With [marijuana](#) being legalized in more states, teens will likely perceive it as less risky," Adesman said. "They will also likely have greater access to pot in a multitude of forms, including appealing foods for consumption. Given these realities, we need to make sure that teens also get the message that using [pot](#) is not without consequences and it is still not recommended for use by teens."

More information: For more on marijuana, visit the [U.S. National Institute on Drug Abuse](#).

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