Study: Teens who drink alcohol impact their brain tissue

By Kathleen Miles, Huffington Post

A teen who consumes alcohol is likely to have reduced brain tissue health, but a teen who uses marijuana is not, according to a study.

Researchers scanned the brains of 92 adolescents, ages 16 to 20, before and after an 18-month period. During that year and a half, half of the teens – who already had extensive alcohol and marijuana-use histories – continued to use marijuana and alcohol in varying amounts. The other half abstained or kept consumption minimal, as they had throughout adolescence.

The before-and-after brain scans of the teens consuming typically five or more drinks at least twice a week showed reduced white matter brain tissue health, study co-author Susan Tapert, neuroscientist at UC San Diego, told HuffPost. This may mean declines in memory, attention, and decision-making into later adolescence and adulthood, she said.

However, the level of marijuana use – up to nine times a week during the 18 months – was not linked to a change in brain tissue health. The researchers did not test performance; they only looked at brain scans.

The study was conducted by researchers at UC San Diego and is scheduled to be published in the April issue of the journal Alcoholism: Clinical & Experimental Research.

The damage occurs because white matter brain tissue develops throughout adolescence and into a person's 20s, Joanna Jacobus, postdoctoral fellow at the UC San Diego, and co-

author of the study, told HuffPost.

Part of that still-developing brain tissue is where decision-making ability comes from, which can exacerbate substance use. “It becomes a cycle. If teens decrease their tissue health and cognitive ability to inhibit themselves, they might become more likely to engage in risky behavior like excessive substance use,” Jacobus said.

While studies showing the deleterious effect of alcohol on adolescents and adults have been more consistent, studies of the effect of marijuana have not, Tapert said. “One reason is that marijuana can really vary. Different strains contain different levels of THC and other marijuana components. For example, some studies have suggested one component, cannabidiol, may actually have neuroprotective effects,” she said.

The researchers are not sure why alcohol had an effect and marijuana did not. They said the study results cannot be considered definitive without more research. They also said they do not know if the reduced brain tissue health is permanent.

Still, Duncan Clark, a medical doctor who was not involved in the study and who studies teen substance abuse, said the study is valuable because similar research has only conducted a one-time test instead of tests before and after a period of substance use.

Clark, associate professor of psychiatry at the University of Pittsburgh Medical Center, said that because white matter brain tissue development may be the basis for greater self-control, researchers hope to be able to eventually use brain scans like those in this study to predict young individuals’ likelihood of substance abuse.

Because the researchers followed the subjects for 18 months, they were able to at least partially monitor preexisting

differences in the two groups. But Jacobus conceded that eliminating other factors – such as genetics, home environment, and even minimal use of other drugs – is very difficult.

Each teen in the study received brain imaging, a detailed substance-use assessment, and toxicology screening at the beginning of the study and at the end of the study – as well as substance-use interviews every six months.

Tapert led another study published in 2009 that looked at people ages 12 to 14 before and after they started to drink. Tapert's team found poorer performance on tests of thinking and memory in the teens who had begun to drink. The researchers reported that alcohol particularly compromised boys' attention span, and girls' comprehension and interpretation of visual information.

While this latest study examines marijuana's effect on physical brain tissue, a Duke University study earlier this year examined the drug's effect on intelligence and performance. That study found that teens who routinely smoke marijuana before turning 18 risk a long-term drop in their IQ.

Teen use of marijuana continues to be high, while teens' perception of the drug's harmfulness is down, according to a University of Michigan study published Wednesday. Nearly 23 percent of high school seniors polled in the study said they had smoked marijuana in the month prior.

"It is clear that more research is needed into the long-term effects of marijuana on the brain," Tapert said. "Especially because use is up."