

Teen brain more prone to drug, alcohol damage

Teens may act invincible, but when it comes to drugs and alcohol, they're actually more vulnerable than adults to harmful effects on the brain, researchers said at Neuroscience 2010, the Society for Neuroscience conference in San Diego, California, on Monday.

"Brain development is actively transpiring even in the teen brain, and [if] you throw in a drug on top of that, you could change the trajectory of brain development." said Dr. Frances Jensen of Children's Hospital Boston.

The effects of getting high in the teen brain are longer-lasting than in the adults, she said. Even several days later, cannabis can stay in the teen's system, affecting the building blocks of learning and memory.

That's because there are likely more receptors for the drug to bind to in the teen brain than in the adult brain, she said.

There is also a potential long-lasting effect of chronic cannabis use among teens particularly, more so than in adults, she said. Research has shown that IQ can permanently decrease in teens who regularly use cannabis.

A study led by Staci Ann Gruber of Harvard Medical School found that people who began using marijuana before age 16 and who used it the most performed the worst on a test of cognitive flexibility. Cognitive flexibility means being able to change your response to something based on the context of the situation.

Functional magnetic resonance imaging (fMRI) of the brains of cannabis smokers shows that the frontal and prefrontal inhibitory areas are affected, Jensen said.

Research in addiction has increasingly focused on the idea that addiction is a form of learning. From that perspective, it makes sense that teens are also more susceptible to addiction, as new research in animals shows. A study presented by Michela Marinelli at Rosalind Franklin University of Medicine and Science found that rats in adolescence work harder for cocaine and consume more than adult rats.

"The teen brain learns so handily; unfortunately it can get addicted a lot faster, stronger and longer," Jensen said.

Alcohol may also harm the teenage brain more profoundly than in adults, Jensen said. As with drugs, there are likely more receptors in the brain for alcohol to bind to, creating more problems for the developing brain.

Researchers led by Toni Pak at Loyola University found that alcohol may disrupt connections in the brain that relate to stress hormone production, throwing off a person's ability to manage stress. And that may lead to anxiety and depression later in life. But take note: These findings were based on binge-drinking rats, so applicability to humans isn't completely certain.

"Parents need to stop saying, 'Oh, he'll be fine,' Jensen said. "It's important that this information gets to teenagers, that they be made aware of their vulnerable and impressionable brain state."

Post by: [Elizabeth Landau - CNN.com Health Writer/Producer](#)

