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# Parenting for Prevention

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Student Assistance Services Corp., 660 White Plains Road, Tarrytown, New York, 10591, April, 2017

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## Healthy Teen Brain Day

In 1971 a group of high school students in Marin County, California decided to designate April 20 as a day to promote the use of marijuana. They gathered at 4:20 to use marijuana and celebrate what they considered the benefits of using this drug. Since then, April 20 has remained a day for some people to promote the use of this drug.

The Westchester Coalition for Drug and Alcohol Free Youth has been successfully working for several years to reclaim the day as "Healthy Teen Brain Day." In the past there have been rallies at the Westchester County Center. This year, there will be an opportunity to tour and inflatable brain and attend a rally and news conference starting at 4:00 at the Maria Fareri Children's Hospital, 100 Woods Road in Valhalla.

We hope that adults and students from communities throughout Westchester will attend this important event to promote health living and change the perception about marijuana being a benign drug as the most recent research is showing a very different picture.

**Editor: Patricia M. Warble,  
CMSW, CPP**

## Impact of Marijuana on Academic Achievement

Amelia M. Arria, Ph.D., from the University of Maryland School of Public Health gave a compelling research-based presentation at the February, 2017 CADCA conference. Her talk was based on several recent research initiatives, including an April, 2016 review article published in *Biological Psychiatry* by Broyd et al. which considered the effect of young people using marijuana and their ability to be successful students.

This article in *Biological Psychiatry*, titled *Acute and Chronic Effects of Cannabinoids on Human Cognition-a Systematic Review* stressed the importance of realizing that the marijuana that is being used today is significantly more potent than the marijuana in the past. In 1995 the potency was 3.96% and today it is 11.84%. In addition, the use of "dabs," which are more concentrated doses of cannabis that are made by extracting THC and other cannabinoids using a solvent like butane or carbon dioxide, resulting in sticky oils also commonly referred to as wax, shatter, budder, and butane hash oil; edibles can have a higher concentration of THC. The 2016 *Biological Psychiatry* article concludes that this increase in potency poses a higher risk for negative consequences to adolescents who use marijuana.

Learning involves many cognitive skills that allows one to focus, memorize, interpret and analyze information and internalize the concepts. Dr. Arria's presentation summarized the impact of marijuana on following cognitive and other skills.

### Memory

According to the 2016 article in *Biological Psychiatry*, "Memory function has been the most consistently impaired cognitive domain affected by cannabis, and studies from the past 10 years continue to extend the evidence base. The most extensive evidence for impairment is within verbal learning and memory." (Broyd et al., 2016)

### Verbal Learning and Memory

The same article goes on to say, "Most often measured using word list learning tasks, with several immediate and delayed recall trials and a recognition trial, verbal learning and memory tasks have been identified as particularly sensitive to the acute and chronic effects of cannabis. Impaired verbal learning and memory continues to be consistently observed in chronic cannabis users, including adolescents and young

adults with some exceptions and even in only occasional users. Significant associations between poorer performance in regular users and frequency, quantity, duration, and age of onset of cannabis use have been reported. Consistent with previous findings, long-term users appear to be more affected than short-term users.” (Broyd, et al., 2016)

### Attention

“Impaired attention has been considered a hallmark of the intoxicating effects of cannabis” according to the article in *Biological Psychiatry*. They also point out that when there is a decrease in impairment, it might be explained by the development of tolerance among daily users. Several recent studies report impairment in an adolescent remained even when they had not used cannabis for 30 days. From that the researchers drew the conclusion that “cannabis-related attentional impairment may reflect residual effects that dissipate gradually as cannabinoids are cleared from the body.” (Broyd, et al., 2016)

### Inhibition

Inhibition refers to go/no go or stop-signal reaction time. The use of cannabis has consistently been reported to increase reaction time in both occasional and heavy cannabis users. (Broyd, et al, 2016)

### Psychomotor Function

In terms of psychomotor functioning, “finger tapping, critical tracking, choice reaction time tasks, and digit-symbol substitution tasks have been used to measure psychomotor function. In infrequent users, smoked or vaporized cannabis impaired critical track-

ing, affected reaction time and motor control in a dose-dependent manner, and disrupted motor function in a task with a motivational component. In heavy users, high-dose smoked cannabis resulted in more collisions in a virtual maze task but did not affect critical tracking. The weight of evidence suggests that psychomotor function is affected by acute intoxication and that this likely persists for some time after chronic cannabis exposure.” (Broyd, et al., 2016)

Dr. Arria and Robert Du Pont, MD discuss the relationship between academics and marijuana in a post for the Partnership for Drug-Free Kids entitled *Commentary: Recognizing the Contribution of Adolescent Substance Use to Poor School Performance*.

“Marijuana use negatively impacts academic outcomes by lowering the GPA and those students have higher rates of dropout than students who drink alcohol.” The authors speculate that this might be due to differences in the patterns of consumption between alcohol which is typically consumed on weekends and marijuana which is consumed throughout the week among adolescents. In addition, studies show that in recent years, as perceived risk of harm from marijuana has declined, marijuana use among youth has increased.

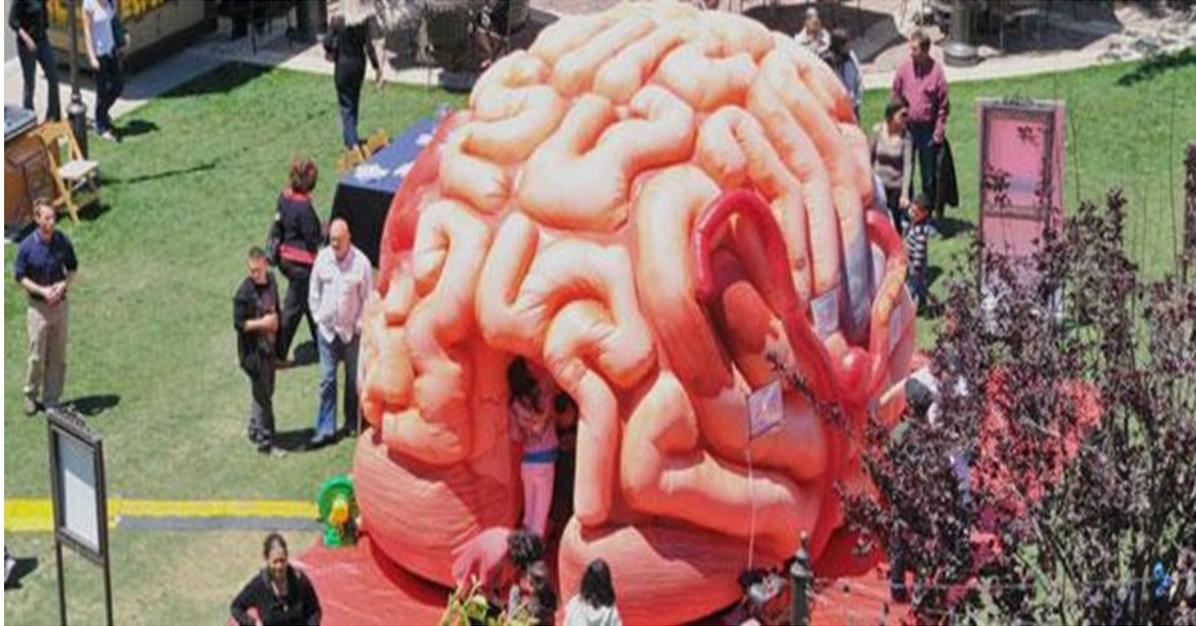
Several studies note that sometimes the use of marijuana precedes academic failure and other times early academic failure leads to use. There are many pathways that lead to negative outcomes from substance use during adolescence.

Students that show early signs of academic difficulties should be specifically screened for drug and alcohol use. Steps should be taken to ensure that at-risk students become and stay drug-and alcohol-free. Proper management must be comprehensive and may include assessments and interventions for behavioral problems and mental health disorders.

Cessation of substance use following treatment is associated with improvement in academic performance. This evidence shows that doing something about substance use is an important way to promote and improve academic success. 2016, *Biological Psychiatry*.

New neurobiological research tells us that there are short and longer-term effects of drug use on students’ ability to learn. Certainly, learning is compromised if students come to class under the influence. Motivation to study and achieve declines as the use becomes more regular. Too often, students with alcohol or drug problems aren’t even making it to the classroom.”

Dr Arria stressed in her presentation the concept of the brain being “hijacked” by the use of substances including marijuana. Academic potential is much more than a GPA. It’s the ability to maintain interest and curiosity and continue to be motivated to succeed despite disappointment or failure. It is the ability to be able to communicate the need for help from school personnel or other resources.



# **Celebrate Healthy Teen Brain Day With a Walk through a Giant Brain**

**Thursday, April 20 from 10 a.m. – 6 p.m.  
RALLY AND NEWS CONFERENCE STARTING AT 4:00  
p.m.**

**Maria Fareri Children's Hospital,  
100 Woods Road, Valhalla**

**Join with coalitions and student leaders throughout  
Westchester to celebrate the majority of young people  
who are making the brain-healthy choice to  
remain marijuana free**

**For more information call 332-1300**

## Alcohol and Athletes

Dr Arria also included some information in her CADCA presentation about the impact of alcohol on athletic performance. She cited research done by the National Institute of Health about this topic.

Dr Arrai reports that athletes with high-risk drinking patterns were more likely to get injured. In addition, if an athlete drinks after competitive activity, the alcohol interferes with replenishing the storage of glycogen.

Think of glycogen as the “wick” in a candle and our fat stores as the “wax”. If we have no glycogen, we cannot sustain a flame and therefore cannot burn energy even with lots of stored fat available. An individual cannot burn fat without the presence of at least small amounts of glycogen. Therefore, glycogen has to be present for aerobic exercise to continue.

In addition, drinking alcohol interferes with the replenishing of the electrolytes that are lost by sweating.

Dr. Gary Wadler, a New York University School of Medicine professor states “alcohol’s effects depend on a number of factors, including how much and how fast one drinks, the individual's size and how much food is in the stomach.” The effects of alcohol are directly related to the concentration (percentage) of alcohol in the blood; however, the effects vary among individuals and even in the same individual at different times. Additionally, an acute tolerance may develop whereby increasing amounts are necessary to produce the same effect.”

Dr. Wadler says that detrimental effects of alcohol on performance are extremely well documented and include impairment of the following:

Balance and steadiness

Reaction time

Fine and complex motor skills

Information processing

Temperature regulation

Dr Arria also points out that al-

cohol upsets the balance of the normal and “necessary” inflammatory process that is needed for repair and healing.

## Upcoming Events

**May 5 9:15am to 3:30pm**  
**Mid-Hudson Substance Abuse Prevention Conference**

**Poughkeepsie Grand Hotel**

**Keynote: *In Defense of the Teen Brain***

Bertha Madras, Ph.D

Workshops to follow keynote

*Hidden Mischief*

*Logged in And Tuned Out—Gaming, Gambling and Tech Addictions*

*Overview of the HIDTA program*

**May 10 11:00pm to 12:30**  
**Student Assistance Services**

**660 White Plains Road**

***Protecting Teens and Keeping Them Safe***

Robert DuPont, MD

Dr DuPont is a compelling, practical, motivating and insightful speaker about issues related to teen substance abuse.

Contact 332-1300 for more information about both events.