

## ***What's going in the teen brain?***

It is well known how dangerous substance abuse is for everyone's brain. Drinking alcohol or taking other kinds of drugs can cause serious damage to brain structures and their functioning, and this is particularly dangerous in the adolescent brain. This article is a great tool for adults who train youth leaders to increase their understanding of the development of the teen brain and its interactions with drugs.

Recent scientific discoveries have put a much different perspective on our understanding of brain development. We know now that the human brain is creating new connections throughout a person's lifespan, but the adolescent period is the most important time of growing and maturation.

The teen **brain is continually sculpting itself** by the process of neuromaturation, creating areas with different associated functions; creating new thoughts and new behaviors. Furthermore, this maturation follows a non-uniformed pattern (some areas grow faster than others) which is key in developing areas of the brain responsible for **decision-making, problem solving** and **self-regulation**. In general, adolescence is a period marked for experimentation, which hopefully is positive, healthy experimentation, but, as adults we know that many teens experiment and abuse alcohol and drugs for the first time...from a neurobiological point of view the combination of that teen's developing biology with drug/alcohol abuse could be brutal.

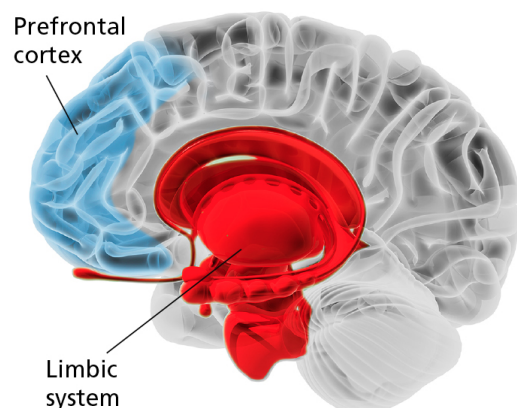
In order to understand why drug abuse with teens will have bigger negative effects on development we have to differentiate and understand two parts major parts of the brain \*<sup>1</sup>:

### **Prefrontal cortex:** *Thinking*

Planning, problem solving, decision-making, integration of moral and ethical standards

### **Limbic system:** *Emotions*

Motivations, feeling and emotional expression and emotional memories



The brain develops the Limbic region faster than the Prefrontal cortex region. We can simply translate that as: *emotions are maturing faster than reasoning*. While the limbic system

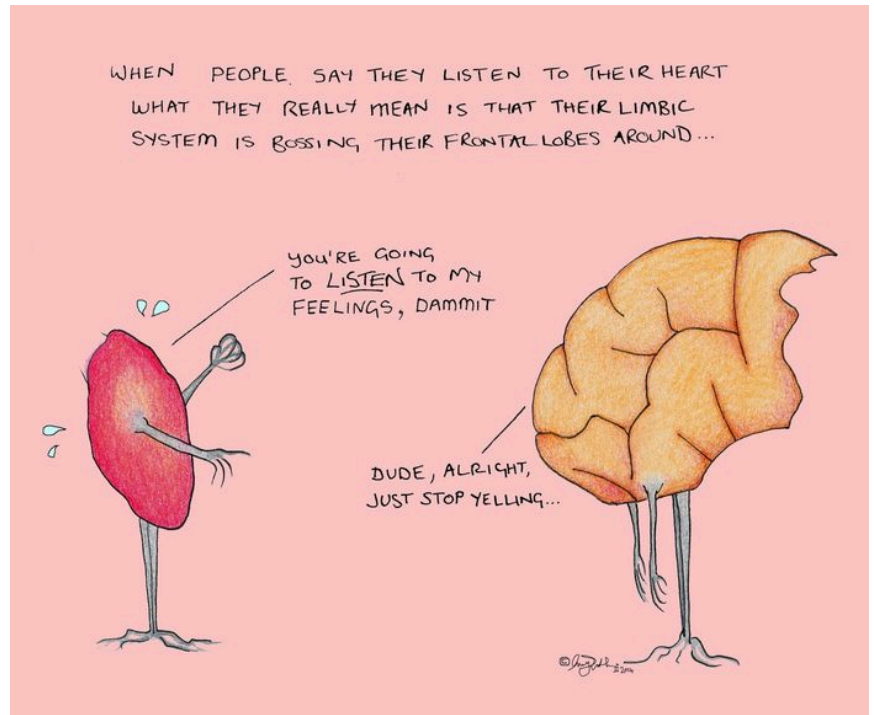
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<sup>1</sup> \* Link to better understanding emotional brain:

<https://www.youtube.com/watch?v=xNY0AAUth3g>

is completely developed at the end of childhood, the prefrontal cortex and its interconnections will continue developing until the age of 25.

Of course teens can express and show sound judgment, but it is also true that during highly emotional tense situations (like peer pressure) teens may be particularly prone to taking risks due to their inability to control impulses compared to a mature adult brain. It explains why teens are more likely to make risky decisions and show impulsivity.



Please note, this is an over simplified explanation to a very complicated neurobiological process: the key elements are that numerous studies support adolescent brain development as characterized by a tension between **(1) early emerging of limbic system structures** (again, the “primitive” area, promoting impulsive reactions and associated with sensation-seeking and risk-taking), expressing an exaggerated reactivity to the motivational stimuli in teens involving brain reward when taking alcohol/drugs, and **(2) later maturing prefrontal regions** (controlling behavior). Thus, the imbalance between both systems raises vulnerability to risk-taking behaviors and an increased susceptibility to use/abuse and ultimately, addiction.

The process and outcomes of risk-taking are actually an evolutionary adaptive issue, being necessary in order to discover and learn from experiences, thus developing the brain in a proper way. Teens need to understand alcohol/drugs are negative, unhealthy risks. It is important to encourage them to reach their potential to take positive risks that promote a physical healthy brain and body. In addition, a teen should be attentive to emotional health as well. Learning to control, regulate and manage emotions can be developed by *Mindful activities* <sup>\*2</sup>, which decreases the risk factors to negative risks taking behaviors including illicit drug use. Adolescence is a time of major cognitive advances and gains in physical strength, emotional maturity and vitality, be aware, be healthy, **stay away from drugs!**

• Isabel Rodríguez •

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<sup>2</sup> \* Link to Mindfulness activities and tips for running them with youth!

<https://positivepsychologyprogram.com/mindfulness-for-children-kids-activities/>