



DRUGS + YOUR BRAIN

A Threat to Mission Control

Meeet your brain. It's who you are. It's what allows you to think, breathe, move, speak, and feel. It's just three pounds of gray-and-white matter that rests in your skull, and it is your own personal "mission control." Your brain sends and receives chemical and electrical signals as part of a carefully calibrated communication system called the *central nervous system*, which controls your body's functions. Abusing drugs directly affects how your brain functions. This can lead to serious physical and emotional health problems.

▶ More Info:

For additional facts about drug effects on the brain and body, visit scholastic.com/headsup and teens.drugabuse.gov.

Not all drugs of abuse are the same, but they all affect the brain and can lead to serious consequences.

Memory Meltdown

Abuse of **marijuana** can make it hard to remember what you just said or did, and impossible to perform complicated tasks, since it affects the *prefrontal cortex* and the *hippocampus*—brain areas responsible for thinking and memory.



Out of Control

Marijuana and **alcohol** can affect a person's coordination and impair athletic and driving ability because of the effects on brain areas such as the *cerebellum*.



Fear and Rage

Abusing **cocaine**, **methamphetamine**, **steroids**, or **prescription stimulants** can cause anxiety and hostility by affecting many different parts of the brain, including the *amygdala*, which controls emotion and motivation.

Addiction

Abusing drugs can lead to addiction—an inability to stop using even when a person wants to and despite harmful consequences to his or her health and life (such as problems in school, at home, or at work). Drugs act on the *limbic system*, which includes the pleasure center of the brain. Drugs make people feel good, which is why some people keep taking them over and over again. But over time, drugs change the brain's wiring and function. The drugs become less pleasurable and other areas involved in judgment, decision making, learning, memory, and control over behavior are also affected. These brain changes are what turn a voluntary behavior (to try drugs) into the compulsive behavior (not being able to stop) that defines addiction.



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Mission Control

Key areas of the brain and what they control:

1. **CEREBRAL CORTEX** (including the **PREFRONTAL CORTEX**): information processing; thinking; speaking; problem solving; making decisions; sensing the environment
2. **CEREBELLUM**: motor control; coordination; balance; posture
3. **LIMBIC SYSTEM** (including the **VENTRAL STRIATUM, AMYGDALA, and HIPPOCAMPUS**): feeling pleasure; emotions; learning
4. **BRAIN STEM**: basic life functions, such as heart rate, breathing, and sleeping



Death

Abusing **prescription painkillers** like Vicodin® or OxyContin® or **prescription sedatives** like Xanax® or Valium® can slow breathing and heart rate by acting on the *brain stem*, which could lead to coma or death. Combining them with alcohol increases these risks.