Alcohol / Drugs and the Adolescent Brain

Manhasset Community CASA Coalition Against Substance Abuse

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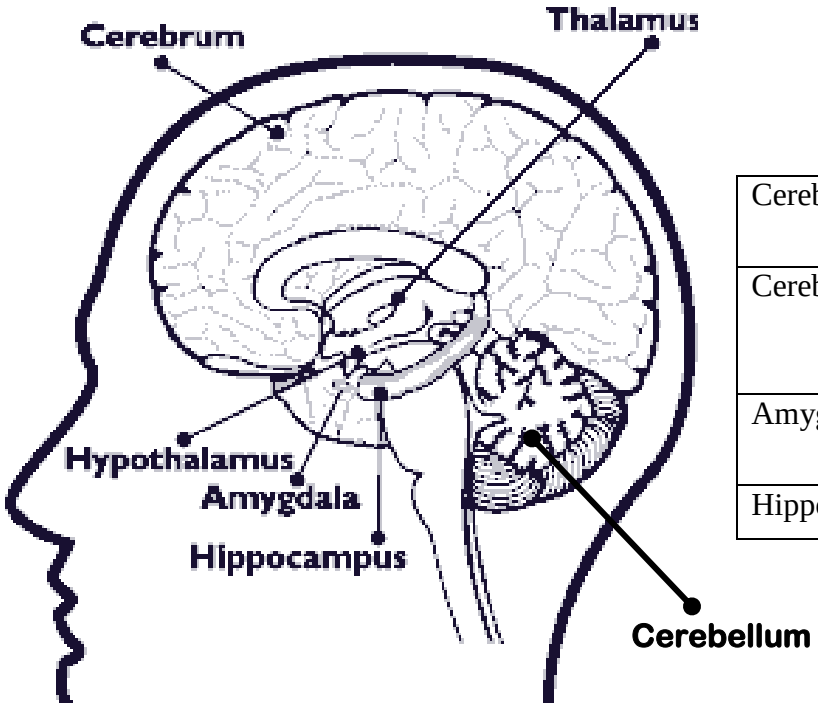


Cerebrum	thinking, planning, judgment, decisions
Cerebellum	balance, coordination, and movement, such as standing still, walking,
Amygdala	strong emotions, such as fear, "gut" reactions
Hippocampus	memory, mood

BRAIN DEVELOPMENT

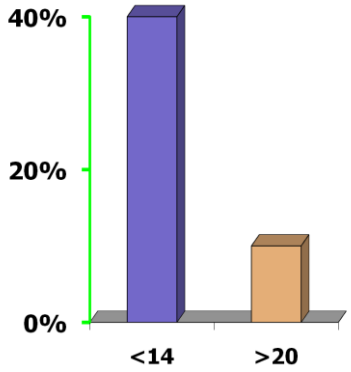
Birth to Age 10
Basic mechanisms such as touch, speech, vision, hearing, memory, emotions, attention, gross/fine motor skills

Pre-Teen to Mid-Teens
Puberty management, developing abstract thought, developing sophistication in relationships

Late Teens to Early 20's
Self awareness, manage complex interpersonal relationships, complex abstract thought, judgment/decision-making, long-term planning abilities

Early Drinking – Later Dependence

Grant & Dawson, NIAAA, 2007



How does early initiation of drinking/drugs impact brain development?

- Alcohol/drugs interferes with & slows brain connections
- Alcohol/drugs affects memory
- Alcohol/drugs can slow growth & maturation of brain regions

"The human brain is on a schedule, making connections, wiring the brain. Alcohol and other drugs change the brain's chemistry, changing the development. Exposure to substances that inhibit cell growth has a devastating impact on the developing brain."

---Kuhn, Swartzwelder, Wilkie, *Duke University*

Risk Taking / Impulsivity / Decision-Making

Pre-teens and younger teens process emotions rather crudely, activating the amygdala, the brain center that mediates fear and "gut" reactions.

As teens grow older, their brain processing of emotions shifts to the frontal lobe, leading to clearer perceptions, improved understanding, logic, access to experiences, and more appropriate reactions.

"Adolescents vary in capacity to override impulses in emotionally charged situations that require decisions in the heat of the moment, but accurate and efficient in making non-emotional decisions in the present.

On other words, when a poor decision is made in the heat of the moment, the adolescent may know better, but the emotional context biases their behavior in opposite direction of the optimal action."

BJ Casey, Ph.D., *Sackler Institute for Developmental Psychobiology, Weill Cornell Medical College*

ALCOHOLand DRUGS impair the frontal lobes, resulting in

- Less neural activity
- Decrease in reasoning
- Decrease in self-control (more impulsive)

Weitlauf, Woodward, Alcoholism: Clinical and Experimental Research 2008

Drinkers face victimization

- Take more risks
- Impaired thinking
- May not recognize danger
- May not be able to help self

American Journal on Addictions, 2001

ALCOHOL-RELATED ISSUES

1. Emotional
2. Relationships with family, friends, peers, public
3. Legal
4. Financial
5. Education / Employment

Criminals convicted of violent crimes reported being under the influence of alcohol in

42% of murders 41% of assaults 39% of sexual assaults

December, 2006, Society for Prevention Research

Underage Drinkers Abuse Alcohol to Relieve Stress

People who start drinking at a young age tend to become problem drinkers when they get older. They are more likely to use alcohol to relieve stress. A survey of 27,000 people (average age: 43) by the National Institute on Alcohol Abuse and Alcoholism found that those who reported the greatest number of stressful incidents in their lives drank the most.

Those who began drinking at age 14 or younger and reported six or more "stressors" in their lives drank an average of 6 drinks per day, 5 times more than those who began to drink alcohol at age 18 or older.

Among those who began drinking at age 14 or younger, alcohol consumption rose 19% for each stressful event reported. Drinking among people who began at age 18 or older rose only 3% for each stressor. This study was published in January 2007.

Dawson, D.A., Grant, B.F., Li, T. (2007) Impact of age at first drink on stress-reactive drinking. *Alcoholism: Clinical and Experimental Research*, 31(1): 69–77; doi: 10.1111/j.1530-0277.2006.00265.