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Teen Brain: Behavior, Problem Solving, and Decision Making

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Many parents do not understand why their teenagers occasionally behave in an impulsive, irrational, or dangerous way. At times, it seems like they don't think things through or fully consider the consequences of their actions. Adolescents differ from adults in the way they behave, solve problems, and make decisions. There is a biological explanation for this difference. Studies have shown that brains continue to mature and develop throughout childhood and adolescence and well into early adulthood.

Scientists have identified a specific region of the brain called the **amygdala** which is responsible for instinctual reactions including fear and aggressive behavior. This region develops early. However, **the frontal cortex**, the area of the brain that controls reasoning and helps us think before we act, develops later. This part of the brain is still changing and maturing well into adulthood.

Other specific changes in the brain during adolescence include a rapid increase in the connections between the brain cells and pruning (refinement) of brain pathways. Nerve cells develop myelin, an insulating layer which helps cells communicate. All these changes are essential for the development of coordinated thought, action, and behavior.

Changing Brains Mean that Adolescents Act Differently From Adults

Pictures of the brain in action show that adolescents' brains function differently than adults when decision-making and problem solving. Their actions are guided more by the amygdala and less by the frontal cortex. Research has also demonstrated that exposure to drugs and alcohol before

birth, head trauma, or other types of brain injury can interfere with normal brain development during adolescence.

Based on the stage of their brain development, adolescents are more likely to:

- act on impulse
- misread or misinterpret social cues and emotions
- get into accidents of all kinds
- get involved in fights
- engage in dangerous or risky behavior

Adolescents are less likely to:

- think before they act
- pause to consider the potential consequences of their actions
- modify their dangerous or inappropriate behaviors

These brain differences don’t mean that young people can’t make good decisions or tell the difference between right and wrong. It also doesn’t mean that they shouldn’t be held responsible for their actions. But an awareness of these differences can help parents, teachers, advocates, and policy makers understand, anticipate, and manage the behavior of adolescents.