



ADOLESCENTS: WHAT ARE THEY THINKING?

Current Research on the Development of Teen Brains



Brain research has revealed new information about brain development in teenagers. Old thinking was that the structure of the brain was complete in adolescence, but new technology has made it possible to demonstrate that the teen brain is a work in progress, far from mature, until well into the 20's. Photo-imaging has made it possible to detect activity in a living brain and demonstrates within the function of the brain why teens often use poor judgement and make decisions that are not rational or well-considered.

In teens the emotional centers of the brain are very active. However, the prefrontal cortex, the part of the brain in charge of executive functions, like planning, organizing, setting priorities, making sound judgements, prioritizing, anticipating consequences, controlling impulses and calming unruly emotions, is the last part of the brain to mature. In teens, the prefrontal cortex is "asleep at the wheel". Adults often assume that teens, who look older and are sexually mature, have a better grasp of consequences than they do. Often adults interpret the lack of skill in these executive functions as poor choices or misbehavior, when, in fact, teens are exhibiting their immature brain structure and not-yet-developed thinking skills.

- *Be conscious of expectations of teens. The brains of teens are not as fully developed as the brains of adults. They cannot think like an adult.*
- *Expect teens to "think" with their emotions. In guiding and teaching teens, engage them at the emotional level.*
- *As the prefrontal cortex is beginning to "turn on", teens need the attention of adults who will walk along side them while they are learning to use this new equipment. Teens need adults who will help them learn to think a problem through, consider their options, and make a rational decision.*
- *Early adolescents, no matter how mature they may look, need supervision and the involvement of parents. Parents need new skills to work effectively with youth. Parents must shift their style from manager to consultant. The emerging abilities of teens must be honored, at the same time that on-going support is provided.*
- *Because of the developmental task of separation in the teen years, teens need the support of adults other than their parents. Teachers, coaches, youth leaders, parents of friends can all play a role in the teen's development.*
- *Adolescence is a stage in which a large investment of time and energy will pay off huge dividends in setting patterns for adult behavior. Even troubled teens, with adequate support, can learn restraint, good judgement, and empathy. For children who were deprived of what they needed in the first three years of life, this is the perfect time to intervene.*

Mirroring the dramatic process of brain development that occurs in infancy, the development of the teen brain involves a massive overproduction of connections between brain cells, sometimes doubling the gray matter in one year. Excess connections (synapses) mean that teens cannot keep track of multiple thoughts. By about age 18, as the connections which are "hardwired" by experience are kept and the rest are pruned away, pruning increases the power and efficiency of brain function. In a sense, teens are creating their own brains. Whatever teens choose to learn or experience will be hardwired and kept.

- *Teens should be encouraged to try many different activities to determine where their particular interests and talents lie.*
- *Give directions one at a time. Asking teens to remember a series of directions is an unrealistic expectation.*

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- *Early adolescence can be a chaotic time, with the activity inside the brain reflected in messy rooms, lockers, notebooks. Be patient and know that the best predictor of how tidy teens will be as adults is how tidy their parents are.*
- *Adolescence is a particularly vulnerable time for the brain because of all the dramatic changes and development. Talk to your teen about the devastating effects of drugs, alcohol and tobacco during this time. Give them the facts, and remember to engage their emotions.*

New experiences, novelty, with an element of thrill or danger, create a chemical process in the brain that is intensely pleasurable to teens, more so than to either adults or children.

- *Provide activities for teens with a perception of thrill or danger, but in a monitored, supervised setting. White water rafting, rock climbing, etc. fulfill a need for teens which is sometimes filled by shoplifting, illegal substances, or risky driving.*

In adolescence, biological clocks change, resetting natural sleep and wake cycles. Most teens are not chemically ready for sleep until 11 PM or later, and sleep-inducing chemicals are elevated into the school day. Teens require more sleep than adults, an average of 9 hours and 15 minutes. Most teens are sleep deprived. Sleep is food for the brain. Hormones critical to growth and sexual maturation are released during sleep. Deep REM sleep boosts memory and learning. Without enough sleep, teens are cranky and depressed; memory judgement, and reaction time are impaired.

- *Advocate for later start times in middle and high schools.*
- *Help your teen arrange for a school schedule with more demanding subjects later in the day.*
- *Understand that staying up late and wanting to sleep in the morning is biologically driven and is not misbehavior or a lack of cooperation.*

Adolescence is a miraculous time of change and growth. Emotions are at a height of activity, and the thinking brain is beginning to mature. Parents and other adults are crucial to this process and must invest in teens at a heightened level, keeping expectations realistic, and skillfully providing safety and support.

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You can also visit the following web sites:

www.duke.edu
www.brightbeginnings.k12.az.us
www.entech.net/brain_based_learning.html
www.focusas.com/Adolescence.htm

Recommended books and publications include:

Begley, Sharon, "Getting Inside a Teen Brain", NEWSWEEK, 2/28/2000.

Secrets of the Teenage Brain: Research-Based Strategies for Reaching and Teaching Today's Adolescents by Sheryl Feinstein EdD, The Brain Store, San Diego CA, 2004.

Riera, Michael, Uncommon Sense for Parents with Teenagers, Celestial Arts, Berkeley CA, 1995.

Strauch, Barbara, The Primal Teen: What the New Discoveries About the Teenage Brain Tell Us About Our Kids, Doubleday, NY, 2003.

Windell, James, 6 Steps to an Emotionally Intelligent Teenager: Teaching Social Skills to Your Teen, John Wiley & Sons Inc., New York, 1999.