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Dear Reader,

If you work with or parent teenagers this probably isn't a news flash: Teenage Brains are Different from Adult Brains. We see that difference in the impulses that drive them, the risks they take, and the choices they make. We scratch our heads when a teen acts mature and focused one moment, then scattered and self-destructive the next. Just when a goal is in reach, he may skip school, flunk a class, or get into a fight. Why, we wonder, is it so hard for teens to just listen and stay out of trouble?

In this 'Ohana Connections Corner and the next I will be writing about the teenage brain. In this installment I'll be sharing information about the development of the teenage brain under optimal circumstances – when a child has a secure home life, stimulating environment, and is free from excessive stress. In the second installment I will talk about the impact that trauma has on teenage brain development. Coupled with their ordinary developmental tasks, a history of trauma can result in the brain developing in ways that are protective, but which may not contribute to a happy, healthy life.

I hope you find these articles informative and helpful. Understanding your teen's brain development isn't meant to excuse his or her behavior. Instead, understanding the growth and development of this vital organ may unravel that timeless mystery of why teens act the way they do. Having that bigger picture may help keep things in perspective, especially on those days when trying behaviors cloud our memory of why we love teens so much and believe so strongly in their future.

*Aloha,
Wilma*

The Teenage Brain
by
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Adolescence is the wind up before the big pitch, developmentally speaking. Mentally, emotionally, and physiologically it's preparation for the launch into adulthood and independence. Hormones are raging. Questions of: *Who am I? Who will I become? How do I fit in?* are preoccupying. On top of that, the brain itself is undergoing an important, though often challenging, growth spurt.

What is going on inside the brain during this phase? With the help of magnetic resonance imaging, or MRI machines, answers to that question are beginning to emerge. Scientists are finding that between the ages of 12 and 25 there's a *lot* going on, and what they're finding can help explain how teens and young adults think.

When we launch something – say a baseball -- energy is propelled forward. In the teenager, scientists have discovered a brain in the process of being hardwired in a forward direction. At the beginning of puberty, adolescents make decisions relying primarily on their brain's limbic system which is the emotional center located toward the mid to back part of the brain. Teens are more likely to make impulsive, reactive decisions rather than thought out ones. As they grow older the wiring between the brain's limbic system and the prefrontal cortex -- the region in the front of the brain capable of reason, judgment, impulse control, and understanding others – grows stronger and more efficient. It isn't until the youth is in his or her mid to late 20's that the hardwiring is complete and the prefrontal cortex is the area where most decisions will be made. It's not that teens don't ever make sound, thought out decisions; accessing that part of their brain is just slower and takes effort. A parallel would be the experience of trying to change a habit. If you're accustomed to desserts, when you diet it takes thought and

determination to not eat sweets. Dieting is not your automatic fallback position, just as making reasoned choices isn't the automatic response of teens.

So how do the limbic system and prefrontal cortex get hardwired together? Throughout life, the prefrontal cortex communicates with the rest of the brain through synapses. In adolescence, there's a huge growth in synapses, which is why teens are so capable of learning and absorbing new information. Introduce a new video game or technological device to a teen and you'll see that process in action.

At the same time too many synapses can cause circuitry overload so the brain also actively prunes synapses that aren't being used. The synapses that remain become stronger and more efficient with use, and are coated with a protective substance called myelin. What this means in everyday terms is this: the skills and habits we develop in adolescence help to form the capacities we carry on into adulthood. Basically, within the teen brain, we lose what we don't use which is why encouraging teen creativity and decision making is so important.

One part of the limbic system that is well developed in teens is the area which registers pleasure and reward. During adolescence the levels of dopamine (the chemical that affects concentration, memory, problem solving and connects action with pleasure) are shifting so teens need to be more stimulated to feel pleasure. This is why they take more risks, use drugs, gravitate towards intense video games and movies, and may be bored with activities they used to like. The new and jolting are what's exciting, the old and familiar might be tolerated but aren't as compelling. While this risk taking may give adults gray hairs, some of it is actually important to the launching process. Without a desire to take risks and try new things, leaving home and going out into the world would be much more frightening and difficult. Youth learn what they're capable of when they take chances, and healthy risk taking helps them develop confidence.

During this same time, teen brains are highly attuned to social relationships which activate a hormone that also feeds their pleasure center. Teens love to be with other teens because that hormone, plus the dopamine, gets stimulated simultaneously. They're being social, plus their friends are more cutting-edge and willing to take risks than adults.

Developmentally, "hanging out with friends" is important because it is one way teens invest in their future. Teens enter a world made by adults, but they will live and grow in a world that is made and remade by their generation. Knowing how to build relationships and navigate peer interactions and pressure is crucial for later success. While family members and caregivers may feel discounted because teens want to spend more time with friends than with family, it is part of the separation and launching process. Time with friends needs to be monitored, but supported too.

In teens we have a brain that's flexible and growing, needs extra stimulation to feel its pleasure center, turns to its peers for its social contact, and isn't fully connected to its rational, sensitive-to-others, mature judgment side. Sound like a set up for a disaster? Catastrophes can and do happen, of course, but more often than not, the teen years are a time of positive development and creativity. For the youth, in each risk is an opportunity to learn strengths and weaknesses, to develop resiliency and mastery. It's a time when mistakes are made, but lessons are learned. For teens it's the beginning of truly coming into their own.

As adults our role is to act as a bridge to the world of adulthood. Like a coach providing guidance, we can give directions, require compliance and discipline, but we must also allow for independence. Working with teens, engaging their hopes and dreams, encouraging them to come up with strategies to solve their own problems are all ways we can help their brains grow healthy and strong. A coach can't throw the ball for the pitcher, just as we can't control every aspect of our teens' experience. Young adults must become active decision makers in their own lives. With engaged and supportive adults, however, teens are more likely to launch into adulthood with confidence and clarity, and to hit their developmental mark.

If you'd like to read more about the teenage brain here are two articles I'd recommend:

“Teenage Brains” by David Dobbs: <http://ngm.nationalgeographic.com/2011/10/teenage-brains/dobbs-text>

“The Adolescent Brain,” Jim Casey Foundation, Youth Opportunities Initiative:
http://www.jimcaseyyouth.org/sites/default/files/The%20Adolescent%20Brain_prepress_proof%5B1%5D.pdf