**The Adolescent Brain**

Presented at CHC by the Upside Down Organization

Frank J. Kros 2012

Seven Essential Strategies:

1. Teach teens about their unique brains…how it works, strengths, vulnerabilities.
2. It’s not personal, it’s just adolescence…they overcomplicate problems.
3. Sense and meaning…learning that makes sense and has meaning for them.
4. Adapt the language of the brain…what we say and how we say it.
5. Teach empathy and build strong communication skills…empathy is a learned skill.
6. Make it real: the survival game…teens need preparation and practice in making good decisions.
7. Don’t forget the fundamentals…exercise, nutrition, sleep and coping skills.

Kids are not as happy as they appear on Facebook. There is such a thing as Facebook Depression. They believe that everyone else out there is having a great time and they can’t live up to that.

Why Do They Act That Way David Walsh

* An adolescent’s brain is not a child’s brain, it is not a young adult’s either.
* Adolescence begins at age 10 – 13 years and ends at age 25 years. It is longer than it used to be because kids begin much earlier.
* Adolescents are dealing with sexual maturity, parents changing sleep cycles and planning for the future. Their stress is 10X greater than an adult in the same situation.
* They are very sensitive to dopamine. It is addictive because it feels good. That is why they engage in behaviors that may not show good judgment.
* Studies have shown that at age 14 years a boy on reads facial expressions 14% of the time, spontaneous problem solving is very poor and he does not even think about the future.
* The brain’s highest functioning is from age 35 to 65 years.
* We basically lend our frontal lobes to our adolescents by helping them to think and plan ahead. As parents and teachers we make the mistakes of thinking they will think like we do.

Learning: is making a memory and requires neurogenesis (growing new neurons). There is a neuro circuit that is necessary for long term memory. Teens have MANY of these circuits firing at once, adults have much fewer. There is a nucleus with axons for electricity and dendrites which are receptors. They are fed by neurotransmitters. One of these is cortisol which is for stress. The neurotransmitters “read the recipe” and excite all the others.

Inside the Brain

1. Blossoming: starts at puberty and goes on for 5 years. The brain overproduces dendrites. The only other time this happens is at age 2 when there is another brain growth burst.
2. Pruning: use it or lose it. Dendrites get pruned. Brain is neutral…will produce WHATEVER you put into it. That is why you can still play an instrument later in life after not having played in a long time. Oddly, pot use strengthens dendrites.
3. Myelination: it is physical reinforcement and insulates the dendrites making them perform faster (for good or bad behavior). 80% of this is achieved in adolescence.
4. Hormones: adolescents have a lot but testosterone is 1000% stronger in adolescence. It overstimulates the amygdala which makes the teen become even more impulsive.

-Because of all the overstimulation, the teen’s thinking is slower and fuzzy with rumination. Adults think clearer without all of the extra stimulation.

Amygdala is at its height at 16 years. It is the only organ that is full size at birth. It is Latin for almond (its shape and size). ALL information goes to the amygdala first. It is our gut feeling…it is our survival organ. If there is a threat, we act without thinking. It watches over everything like a palace guard. It sees where our attention needs to go. However, it is subjective so that is why teens get so stressed and over react. *This is why there is such emotional drama in adolescence!!*

-This is the perfect storm:

*Adult Expectation*>>>>>>>>>>>>>>>>>>>*Time Pressure*  = *Lie.*

(Conflicts with teen’s Pressure on the

event, desire, fear.) “Blossoming” process.

-Some are moral based lies that have been given a lot of thought, but most fly out due to the brain feeling the pressure and impulsivity.

STOP, CHILL and CHOOSE!!!!!!

-Know that teens are prone to the amygdala lie.

1. Stay cool.

2. Stop the world. (Discuss it until it is resolved.)

3. Calm the teen down. (Sit and breathe.)

4. Choose a different response. Teach them how to *think, to choose.* If you get the teen too upset they will be farther away from *thinking* and it will not be a teachable moment.

-Addictions formed in adolescence are hard to break during pruning due to the reinforced dendrites during these years.

-The brain has certain periods that myelination is best for certain tasks. That is why it is hard to learn a new language in high school…it is best to learn at ages 3 to 8 years.

-What they do in high school is so important!!! (Those reinforced dendrites that make pruning difficult.)

Boys

-Teenage boys need sports due to increased aggression.

1. Boys will really start to talk back.

2. There is not enough serotonin so there is a high incidence of depression.

3. During teenage years, serotonin DECREASES.

4. In boys it is moderate, in girls it is severe.

5. Dopamine makes us feels good. After initial puberty, this also decreases and makes their risk taking behavior increase (the thrill). They need more and more stimulation to get the same high.

6.They have poor impulse control, increased sex drive and become territorial.

Girls

1. Their progesterone and their estrogen de-stabilize. The amygdala equals unpredictable emotional responses.

2. There is a HUGE drop in the girls’ serotonin levels, but not such a big drop in the dopamine.

3. Their impulse control (frontal lobe) develops faster than the boys’.

4. Cortisol levels also rise so stress reactions increase. Towards the end the hormones are more balanced, but there is more amplification of emotion and drama.

-In 2009 there were more female teens employed than male teens.

-Boys and girls increase their appetite, but society tells the girls to eat less.

-Girls also have an increased sex drive.

-Start teaching this in 8th grade.

-We read facial expressions with the amygdala and even grown men still have trouble doing this.

-What do we remember?

1. Amygdala stuff

2. Things that make sense to us. (Based on prior knowledge.)

3. Things that have meaning to us. (Hypothalamus matures at age 9 to 10 years.)

-When students have not mastered tasks we should:

1. Ask them how what they learn in high school is relative to what they knew before.

2. Ask them how they could use this information.

3. NOT tell them they are smart; it will make them think it is easy and innate. By the power of association, kids think that if they have to work hard they are dumb.

-What we SHOULD be teaching is the strategy of *acquisition* of material. Let them know it is NORMAL to struggle. Let them know we struggle too!

-When teaching empathy, recognize that empathy is a *learned* skill.

-Prepare kids with SURVIVIAL GAMES:

1. Ask about high risk events with names and places. Collect what they wrote down on index cards.

2. Read aloud.

3. Ask how you could avoid the situation while still saving face.

4. Role play if they are up to it.

Sleep

-Teens need 9 ½ hours of sleep. High school teens get VERY little sleep. Naps and sleeping late is how they catch up.

-Circadian cycles change in puberty. High school teens stay up so much later. Melatonin is a sleep hormone and some people use it as a supplement.

The thalamus is what integrates all sensory input. It then encodes it to make long term memory. 80%!!! of this happens only when we are asleep.

-Shy of sleep = obesity and emotional volatility.

Teens are fighting what feels like invisible tigers and we need to help them.