



Why? Their Brains Are Broken: Unlocking The Adolescent Brain

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Agenda For Session

*How do I
manage them
without
breaking my
brain?*

*Who is this
guy?*

*This is your
Brain on
Adolescence!*

*This Is
Your
Brain!*

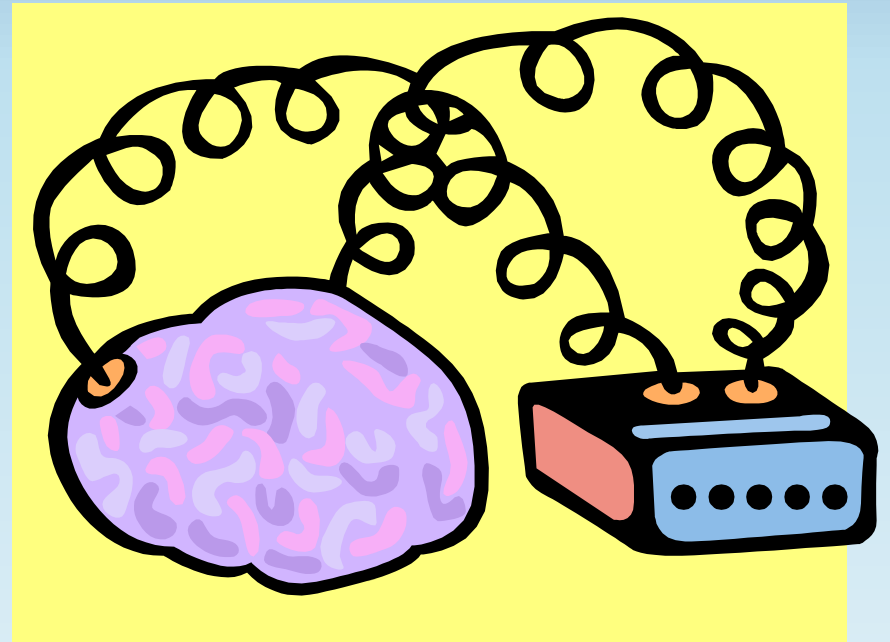
Who Is This Guy?

► ***Background:***

- **20 years in education field**
 - **12 years in public schools teaching Middle School and High School Physical Education, Science and Gifted Education.**
 - **8 years in higher education teaching PETE**
 - **Physical Education Pedagogy, Adapted Movement Science and Educational Technology.**

This Is Your Brain!

A Typical Day in Middle School Physical Education

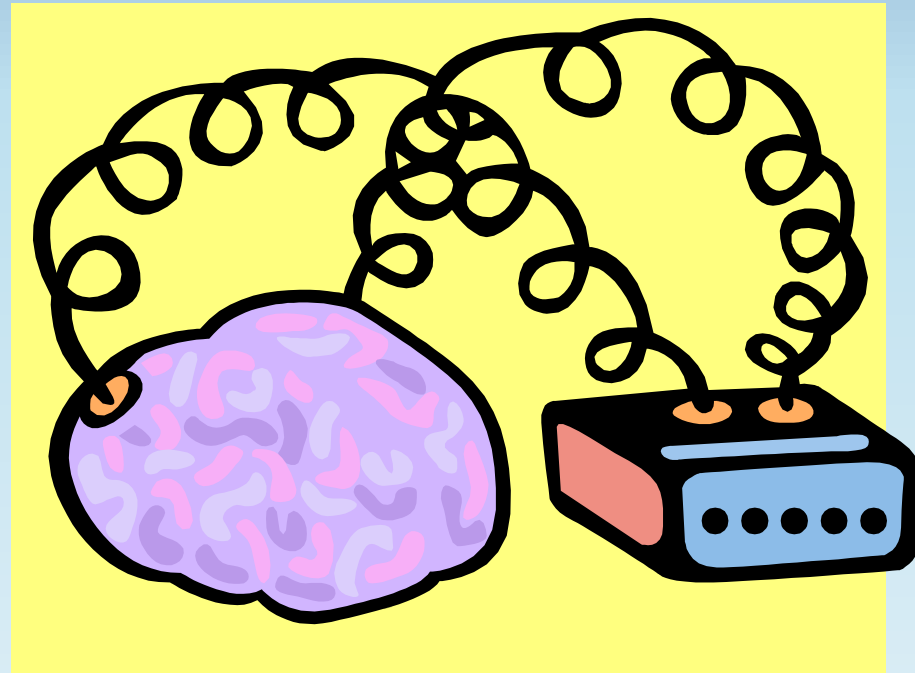


This Is Your Brain!

And The Saga Continues.....

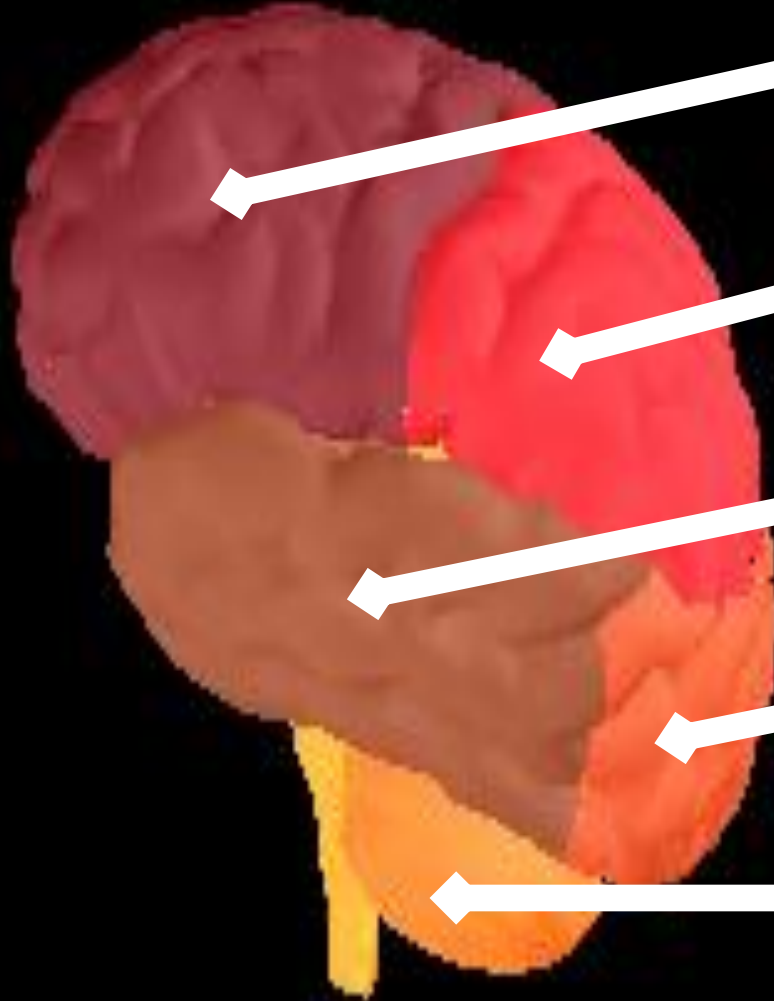
Why?

- ▶ ***First look at the anatomy of the brain***



This Is Your Brain!

Lobes of the Brain



Frontal Lobe

Parietal Lobe

Temporal Lobe

Occipital Lobe

Cerebellum

This Is Your Brain!

Frontal Lobe Functions



Frontal Lobe:

- Creativity***
- Judgment***
- Planning***
- Problem Solving***

This Is Your Brain!

Parietal Lobe Functions

Parietal Lobe:

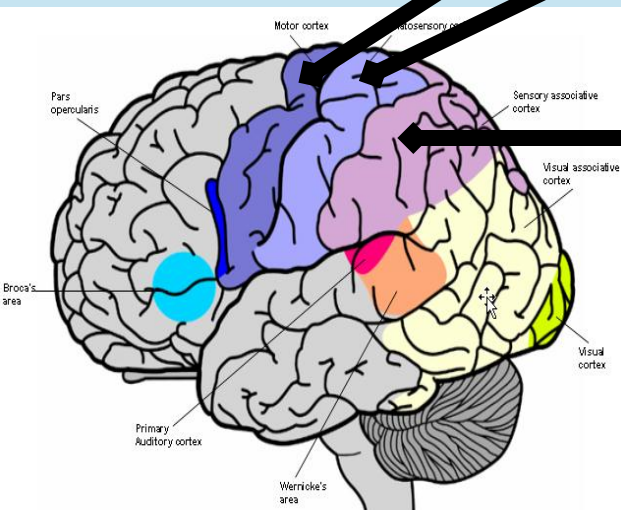
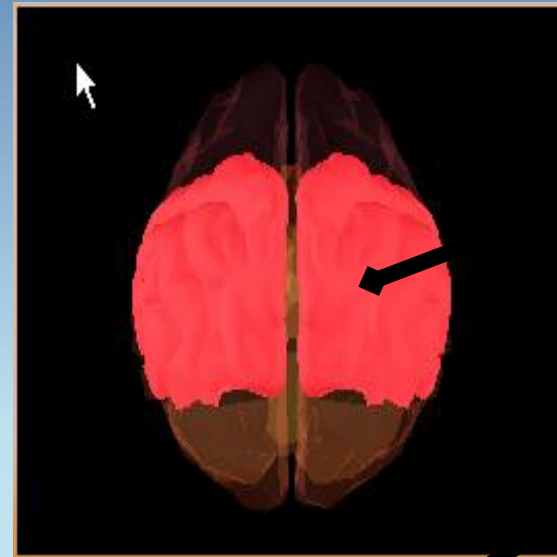
—Pre-motor area

—Primary Motor Control Area

- Movement***

—Primary Sensory Area

- Skin receptors***



This Is Your Brain!

Temporal and Occipital Lobe Functions



Temporal/Parietal Lobes:

- Processing, higher sensory and language functions, hearing, memory and language.***



Occipital Lobes:

- Vision and visual processing areas.***

This Is Your Brain!

Cerebellum Functions



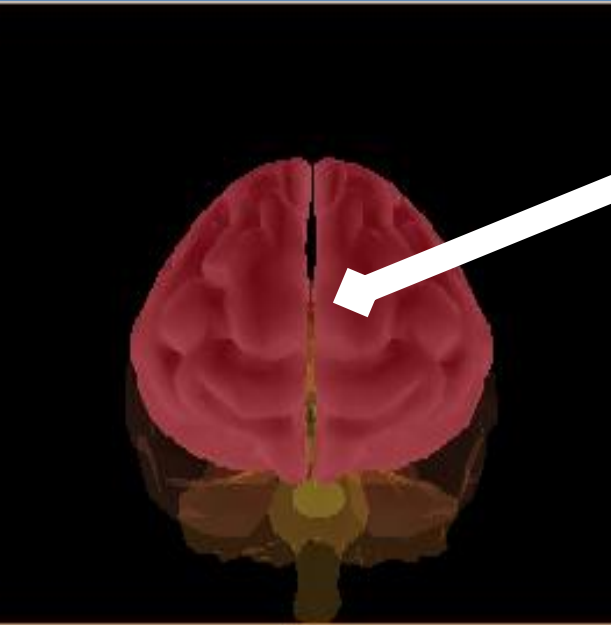
Cerebellum:

– Coordinates key skills for movement:

- ***Balance.***
- ***Posture.***
- ***Keeping the Body in an Upright Position.***
- ***Speed, Direction, Force.***
- ***Steadiness of Voluntary Motion.***
- ***Memories of motor skills.***

This Is Your Brain!

Areas of Memory



Frontal Lobes:

- Long Term Memory***
 - Concentrated in the thalamus and hypothalamus and the frontal lobes.***



Parietal, Upper Temporal and Occipital Lobes:

- Short Term memory of what we hear and see.***

The Brain Dance

- *Frontal Lobe–Frontal Lobe–Its time to be creative!*
 - *Hands on your head and freestyle!*
- *Parietal Lobe–Parietal Lobe–I can feel I can move!*
 - *Hands side of your head, wipe arms, side to side*
- *Temporal Lobe–Temporal Lobe–I can hear and remember!*
 - *Hands on your ears, cue tip throw is away*
- *Occipital Lobe–Occipital Lobe–I can see, I can see!*
 - *Hands back of head, look right, look left*
- *Cerebellum–Cerebellum–I can balance, I can stand.*
 - *Hands on base of skull, two hops right, two hops left*



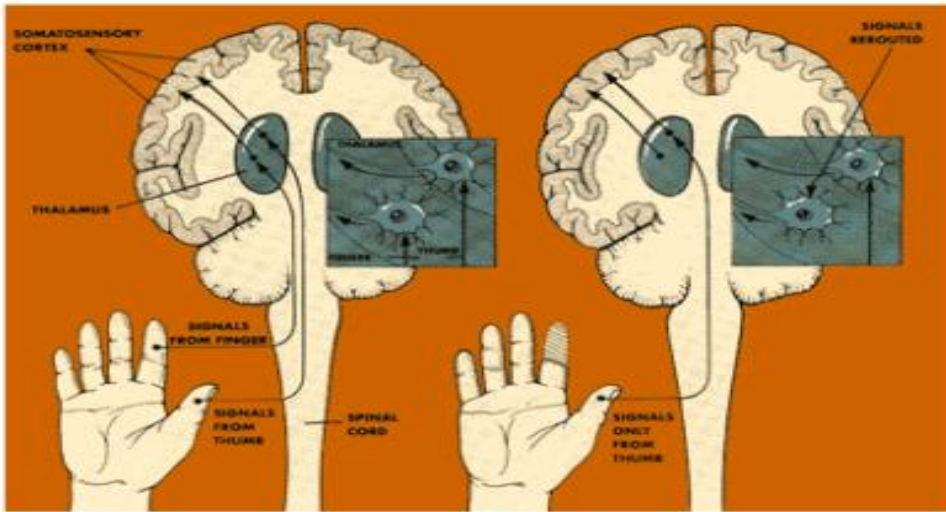
Why Did We Do That???

▶ *The Brain Needs Oxygen to function:*

- *Adding movement breaks to instruction increases blood flow to the brain thus increasing oxygen content to the Brain.*
- *Thus having a positive impact on learning and retention*

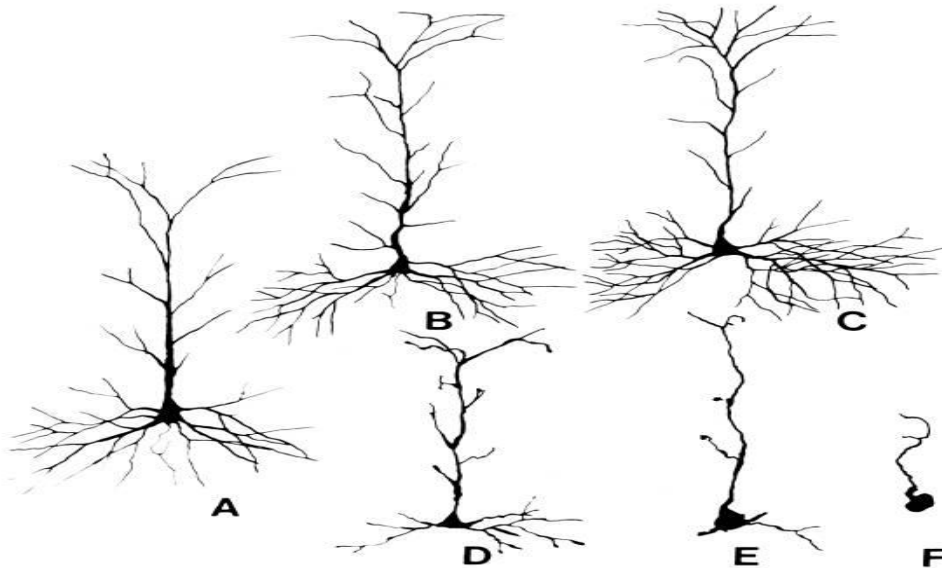
This Is Your Brain on Adolescence!

Growth and Reorganization



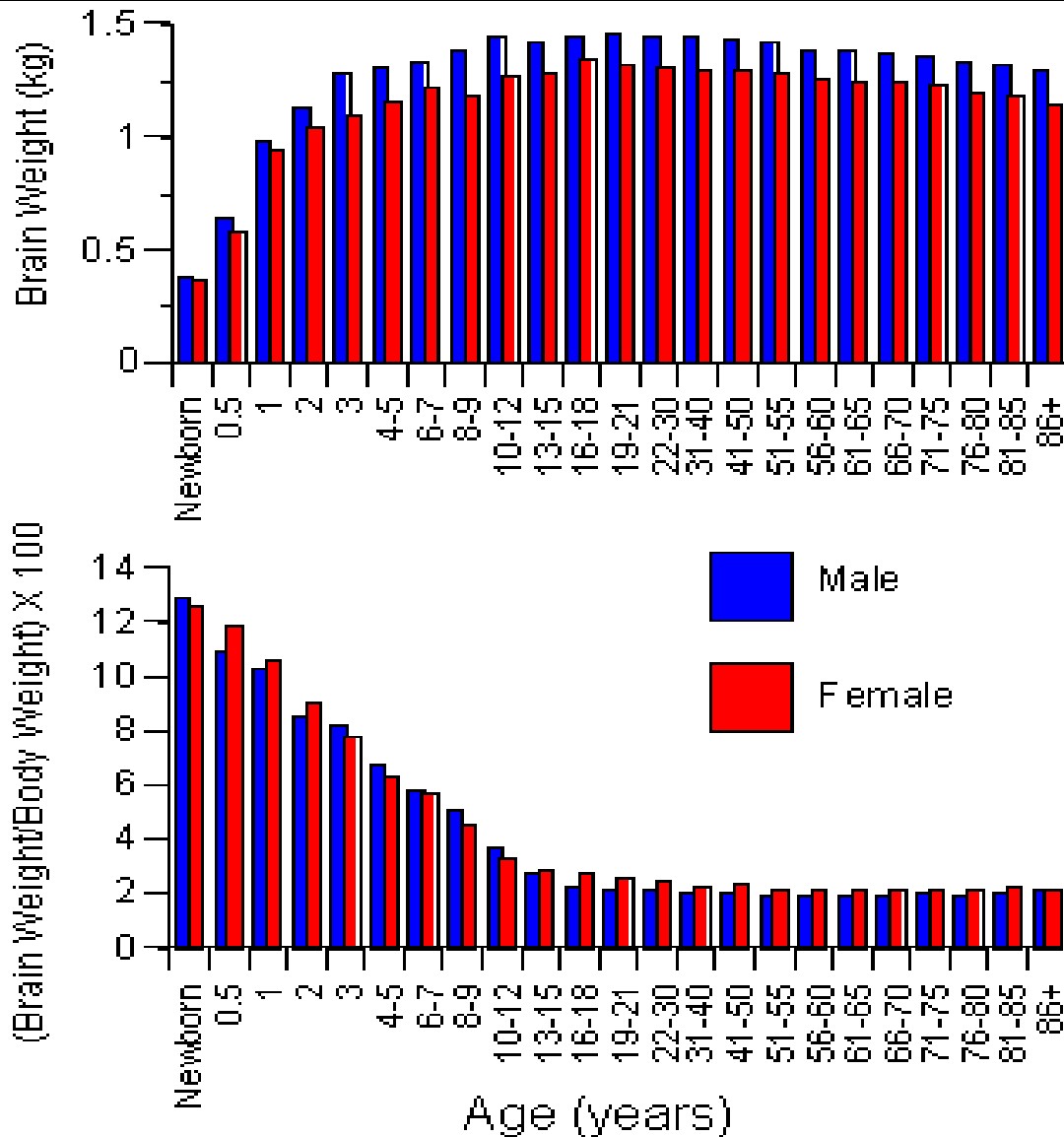
Reorganization

- **Connections form in the brain between brain cells for specific sensory and motor patterns.**
- **The connections that are reinforced are retained, while the ones that are not are pruned away.**



This Is Your Brain on Adolescence!

Growth and Reorganization

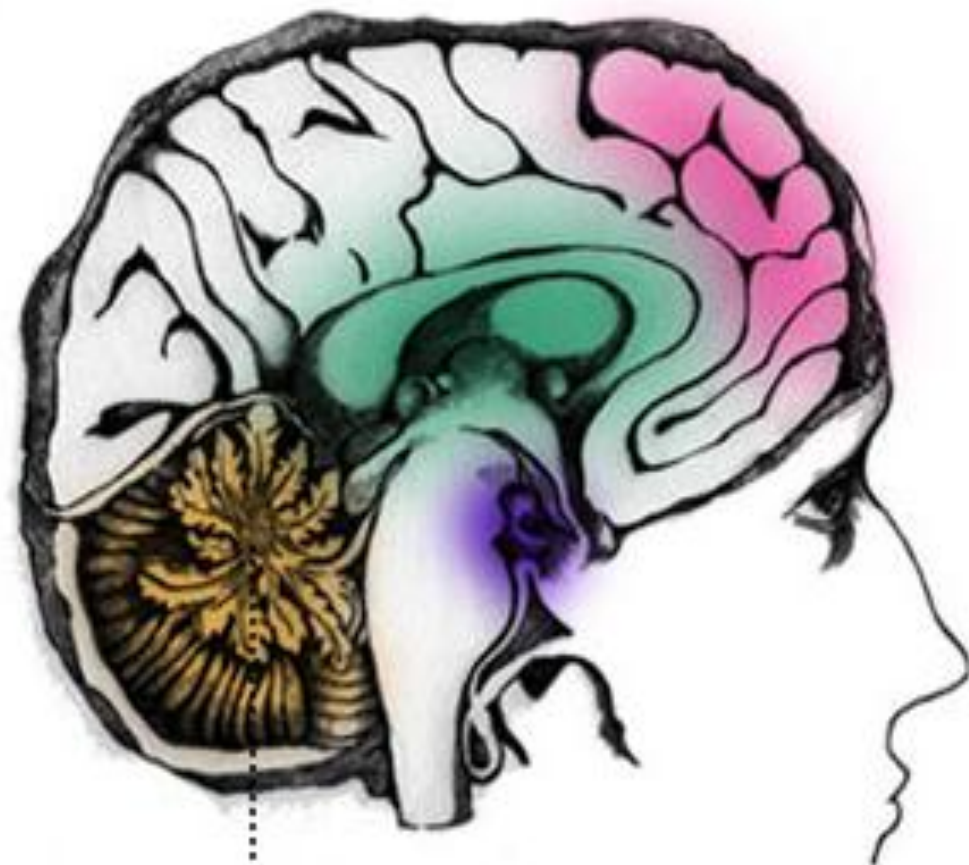


The most active periods of brain growth and reorganization take place in the first two years of life.

- ***The brain grows by expanding connections between brain cells (neurons).***
- ***The terrible 2's can be explained by this process.***

Anatomy of a Teen Brain

Roll over a part of the brain for more information.

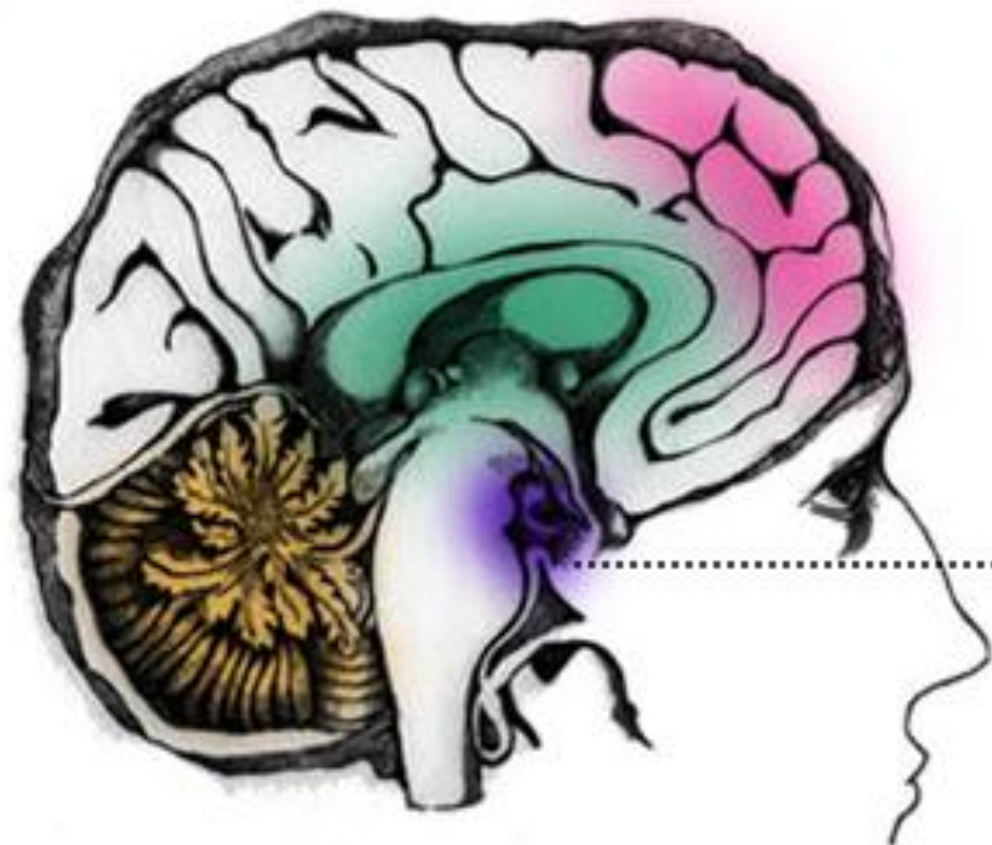


Cerebellum

This part of the brain has long been thought to be involved with the coordination of muscles and physical movement. Recently, scientists have come to believe that it is involved in the coordination of thinking processes, as well. New research has shown that it is an area that undergoes dynamic growth and change during the teenage years.

Anatomy of a Teen Brain

Roll over a part of the brain for more information.



Amygdala

This area of the brain is associated with emotional and gut responses. New imaging studies suggest that teenagers, when asked to interpret emotional information, use this reactive part of the brain rather than the more "thinking" region, the frontal cortex, while adults rely more heavily on the frontal cortex. Scientists speculate that this may be why teens have trouble modulating their emotional responses.

Anatomy of a Teen Brain

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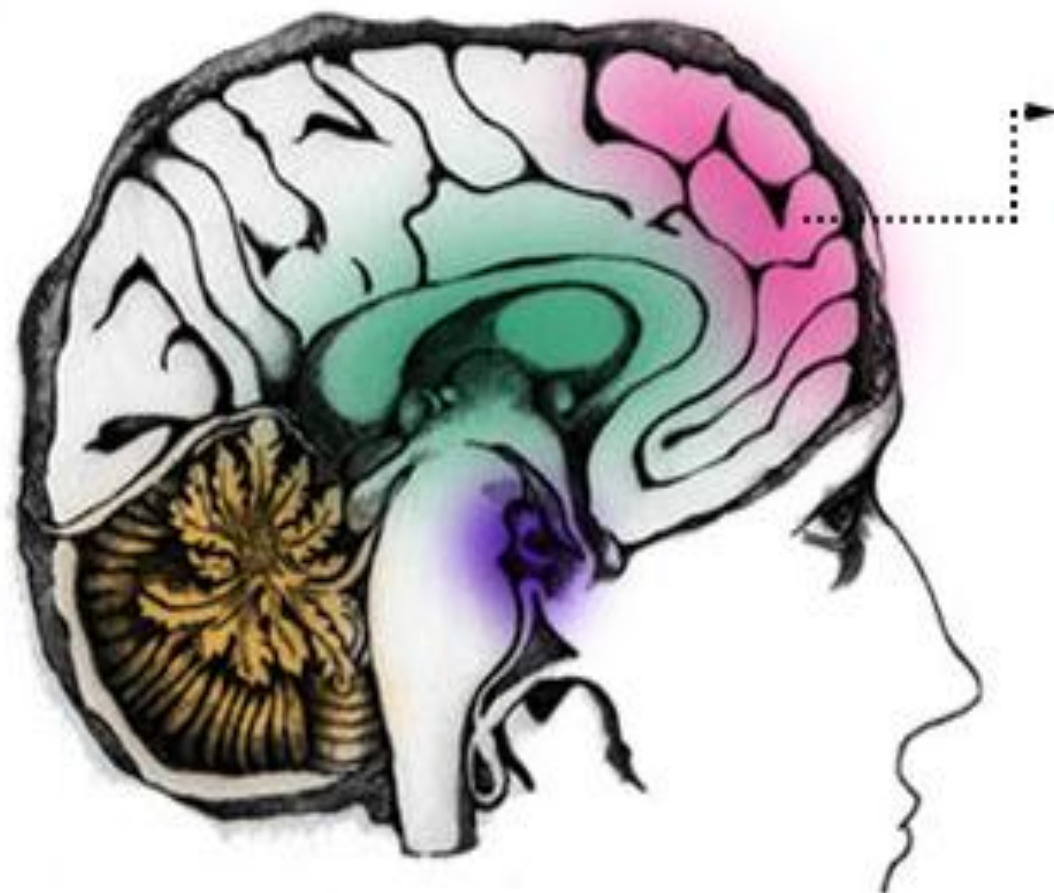


Corpus Callosum

This is a cable of nerves that connects the two hemispheres of the brain, and is believed to be involved in creativity and problem solving. It appears to change and grow significantly through adolescence.

Anatomy of a Teen Brain

Roll over a part of the brain for more information.



Frontal Cortex

The frontal cortex is often referred to as the "CEO" of the brain, because it is the part responsible for planning, strategizing, and judgment. Recent research has shown that this area undergoes a growth spurt at around the ages of 11-12, followed by a period of pruning and organizing of the new neural connections during the teen years.

This Is Your Brain on Adolescence!

Brain Development Summary

- ▶ ***The largest re-organization of the brain takes place at approximately two time frames:***
 - ***In the early years from 0-4 years.***
 - ***In the adolescent years from 9-12.***
- ▶ ***The brain is not fully “installed” until age twenty and is developing during the teen years.***
 - ***Ages 9-10 the frontal lobes undergo a second wave or re-organization forming millions of new synapses that process information.***
 - ***Ages 11-12 a massive pruning gets rid of unused pathways allowing the brain to function more efficiently.***
 - ***This process continues into the late teens.***

This Is Your Brain on Adolescence!

Intellectual and Physical Development

► Intellectual:

- ***Moving to abstract thought.***
- ***Are intensely curious.***
- ***Prefer active learning experiences.***
- ***Favor interaction with peers during learning activities.***
- ***Enjoy using skills to solve real life problems.***
- ***Are egocentric, argue to convince others, exhibit independent, critical thought.***
- ***Consider academic goals as a secondary level of priority, personal-social concerns dominate thoughts and activities.***

► Physical Development:

- ***Accelerated physical development:***
- ***Mature at varying rates of speed:***
- ***Experience bone growth faster than muscle development:***
- ***Wide range of individual differences appear in pre-pubertal and pubertal stages of development. Age 13***
- ***Experience biological development five years sooner than adolescents in the last century.***
- ***Disturbed by body changes.***
- ***Metabolism causes restless, listlessness and effects eating habits.***

This Is Your Brain on Adolescence!

Intellectual and Physical Summary

► Intellectual/Physical:

- ***Are intellectually at risk, face decisions that have the potential to affect major academic values with lifelong consequences.***
- ***Face responsibility for sexual behavior before full emotional and social maturity has occurred.***
- ***Overtax digestive systems with large quantities of improper foods.***
- ***Poor levels of endurance, strength and flexibility.***
- ***Fatter, unhealthier and more physically at risk.***
- ***Leading causes of death: Homicide, suicide, accidents.***

This Is Your Brain on Adolescence!

Psychological and Social Development

► Psychological:

- ***Erratic and inconsistent in behavior.***
- ***Anxiety and fear are contrasted with bravado. Superiority to inferiority.***
- ***Chemical and hormonal imbalances trigger emotions that can cause regression to childish behavior patterns.***
- ***Easily offended and sensitive to criticism of personal shortcomings.***
- ***Exaggerate simple occurrences and believe personal problems, experiences and feelings are unique to themselves.***
- ***Moody, restless, self-conscious and alienated, lack self-esteem and introspective.***

► Social:

- ***Conflicts with loyalties to peer groups and family.***
- ***Peers are source for standards and models of behavior as well as heroes.***
- ***Rebellious toward parents but still dependent on parental values.***
- ***Want to make their own choices but authority of family is critical factor in decisions.***
- ***Act out unusual or drastic behavior at times, aggressive, daring boisterous and argumentative.***
- ***Fiercely loyal to peer group values and are sometimes cruel or insensitive to those outside their peer groups.***
- ***Challenge authority figures, test limits of acceptable behavior.***

This Is Your Brain on Adolescence

Psychological and Social Summary

► *Psychological/Social:*

- *Searching for answer to “Who Am I?”*
- *Psychologically at risk, at no other point in human development is an individual likely to encounter so much diversity in relation to oneself and others.*
- *Socially at risk, adult values are largely shaped conceptually during adolescence, negative interactions with peers, parents and teachers may compromise ideals and commitments.*

Managing Them Without Breaking Your Brain!

▶ *Characteristics of Effective Management:*

- *High level of student involvement with the work.*
- *Clear student expectations.*
- *Relatively little, wasted time, confusion or disruption.*
- *Work-oriented but relaxed and pleasant atmosphere.*

Managing Them Without Breaking Your Brain!

▶ *High level of student involvement with the work:*

- *Effective:* *Students are working.*
- *Ineffective:* *Teacher is working.*

▶ *Clear Student Expectations:*

- *Effective:* *Students know that assignments are based on learning expectations and tests are based on learning expectations.*
- *Ineffective:* *Get a piece of the equipment and play the game.*

Managing Them Without Breaking Your Brain!

► *Relatively little wasted time, confusion or disruption:*

- **Effective:** Discipline plan, Start class immediately, Assignments/Agenda posted.
- **Ineffective:** Makes rules and punishments according to mood, takes roll and dallies, students ask “what am I supposed to do? Repeatedly!

Managing Them Without Breaking Your Brain!

▶ *Work-oriented but relaxed climate:*

- *Effective:* Time in practicing procedures until they become routines, has signal to bring the class to attention, knows how to praise and encourage the student.
- *Ineffective:* Tells but does not rehearse procedures, yells and flicks the light switch or counts, generalized praise or none at all.

Managing Them Without Breaking Your Brain!

▶ *Step # 1: Proximity Control:*

- *Position yourself near the off task student in the context of teaching.*

▶ *Step # 2: Non-Verbal Prompt:*

- *Provide a non-verbal reminder to the off-task student in the context of teaching.*

▶ *Step # 3: Verbal Prompt:*

- *Can you do this or do I need to arrange you an alternative, I'll be able to tell.*

Managing Them Without Breaking Your Brain!

▶ **Step # 4: Removal to Safe-Seat:**

- **Student completes think sheet and follows safe-seat guidelines.**
- **May return to activity when completed.**
- **Followed by a phone call home.**

▶ **Step # 5: Removal to Safe Seat:**

- **Student completes think sheet and follows safe-seat guidelines. May not return to the class for the remainder of the day.**
- **Phone call home.**

Managing Them Without Breaking Your Brain!

▶ **Step # 6: Removal to Buddy Room:**

- **Student is removed to an alternative classroom or gymnasium and completes think sheet. May not return to class.**
- **Phone call home.**

▶ **Step # 7: Referral to the Office:**

- **Referral includes think sheets from previous consequences and log of phone conversation with parents.**

▶ **Step # 8: Student begins in Safe-Seat:**

- **Completes think sheet of expected behavior before they are allowed to return to class participation.**

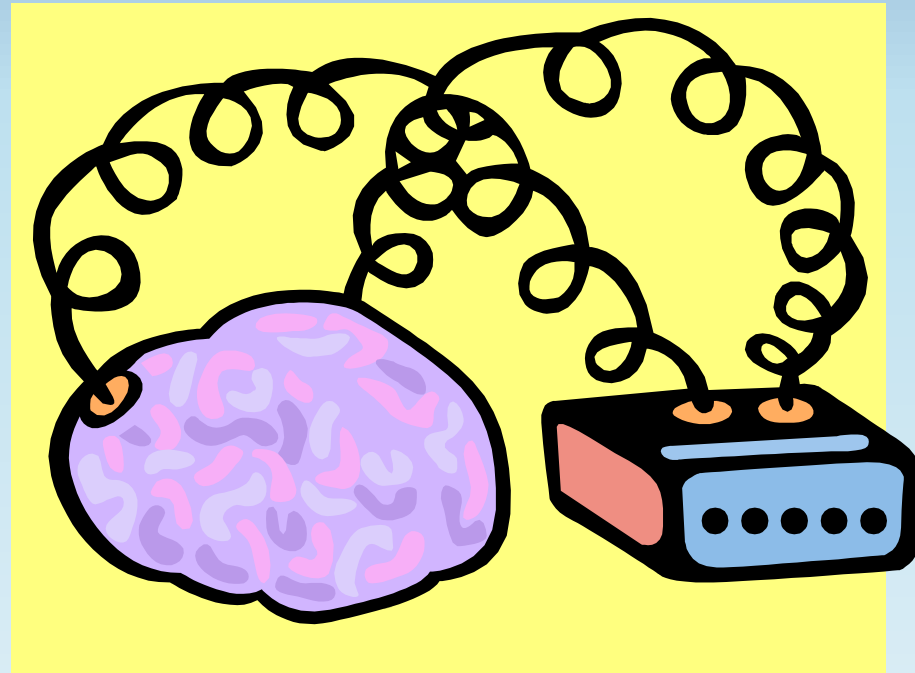
*Managing Them Without
Breaking Your Brain!*

***Behavioral Management
Plan Samples***

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And The Saga Continues.....

► *Rewind and
Replay*





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