

WELCOME!

On your sticky note, write:

Your name

A one-word (or phrase) description of yourself at age 16

and an example of high-risk behavior, impulsive actions, or poor decision-making you've observed. Place that sticky note on the side wall closest to you. If your observation is similar to another you see, stick it to that note to form a chain.

If you have time, feel free to fill out the WOOP portion of your handout



THE DEVELOPING ADOLESCENT BRAIN – EDUCATION & SAFETY MANAGEMENT

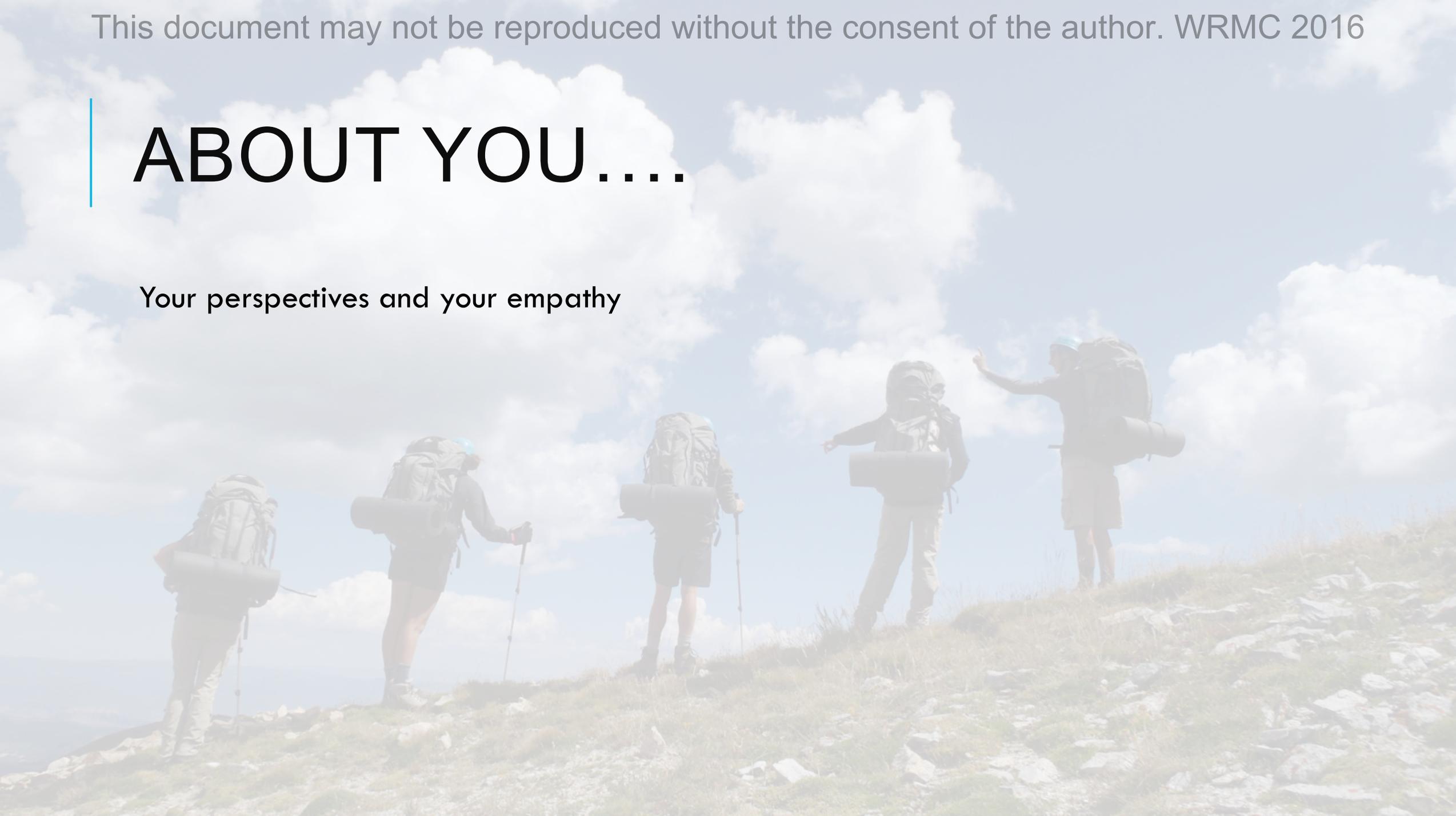
Steve Creech

ABOUT M



ABOUT YOU....

Your perspectives and your empathy



GOALS OF THIS PRESENTATION

Have a basic understanding of parts of the brain and their general functions

Understand that adolescent brains are wired to be more likely to engage in high-risk activities than adults or children

Explore ideas and walk away with actionable activities that can be delivered to staff to mitigate the hazard of adolescent temptations

Explore positive opportunities afforded by the structure of the adolescent brain

WOOP! (THERE IT IS!)

WISH: Understand the brain, how adolescent brains are wired, walk away with activities/tools to mitigate risk and leverage opportunities.

OUTCOME: Attendees will be inspired to take some or all activities and tools back to their programs and implement them

OBSTACLE: Time. In this room. (If) Slow transitions and getting behind.

PLAN: (Then) I'll start on time. Flicking the lights means we'll be starting back in 10 seconds, and I've set a timer for 55 minutes

WELCOME. AGAIN!

On your sticky note, write:

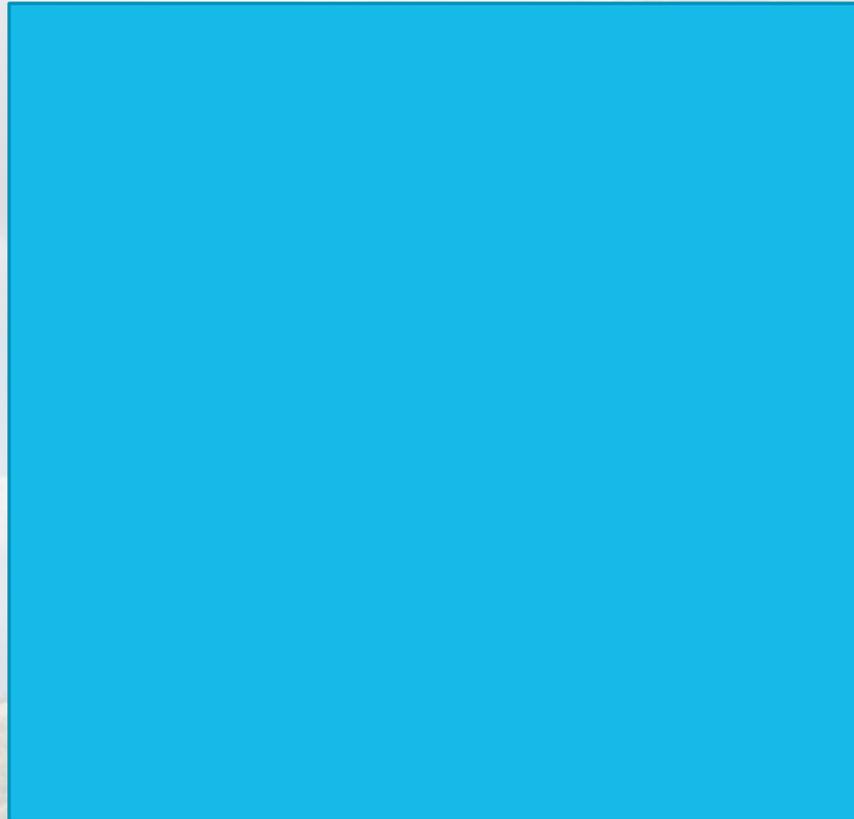
Your name

A one-word (or phrase) description of yourself at age 16

and an example of high-risk behavior or poor decision-making you've observed. Place that sticky note on the front wall. If it is similar to another you see, stick it to that note to form a chain.

If you have time, feel free to fill out the WOOP portion of your handout

SQUARE BREATHING



WHO IS NOT THE ADOLESCENT?



CHILDREN, TEENAGERS, ADOLESCENTS & ADULTS

Adolescence: Period between onset of puberty and adulthood, or establishing independence from caregiver.

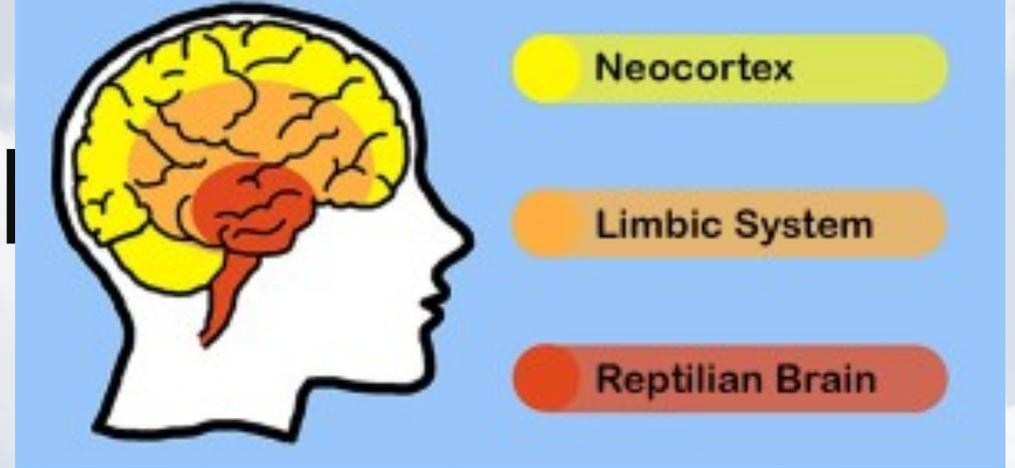
Roughly ages 10-25. And growing....

EDUCATIONAL OPPORTUNITIES: Build confidence in self-reliance through sustained skill scaffolding

Provide opportunities for novelty and supervised displays of competency leading to appropriate autonomy

RISK MANAGEMENT STRATEGY: College-aged students (and staff) (18-25) require more supervision than adults.

BRAIN DEVELOPMENT



~Age 6: 95% of brain is in place, including prefrontal cortex (PFC)

~Age 10 Female; ~Age 12 Male: Onset of Puberty

- Increase in hormone production (testosterone/estrogen)
- Increase in social relationship consciousness
- Increase in emotional volatility & impulsivity

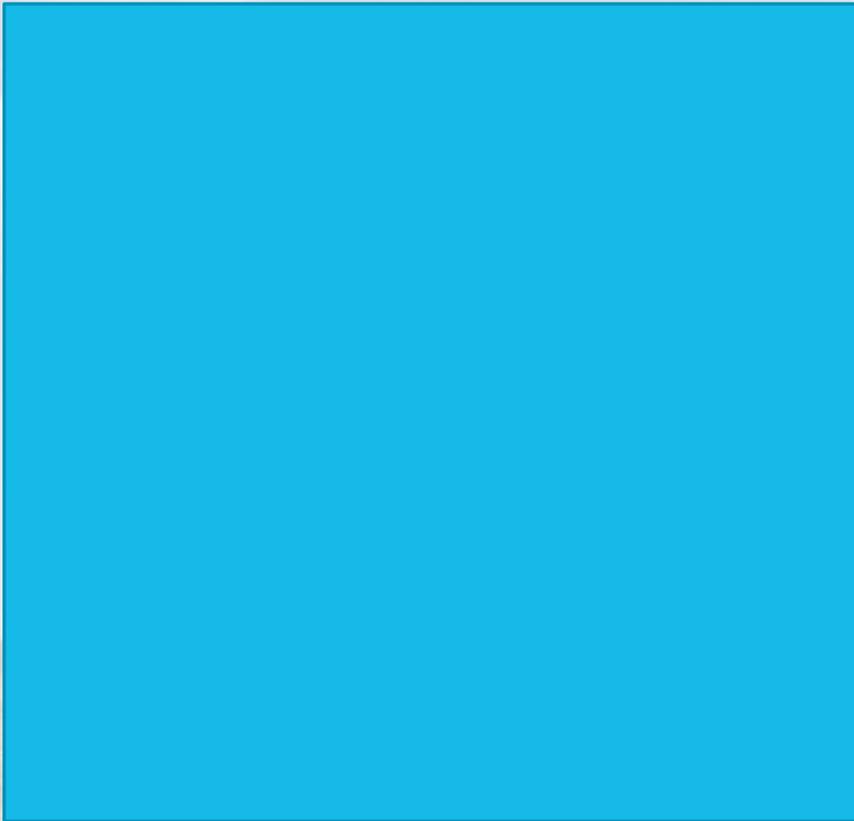
EMOTIONAL VOLATILITY & IMPULSIVITY

RISK MITIGATION STRATEGIES:

Ways to strengthen self-regulation:

Mindfulness

WOOP



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EMOTIONAL VOLATILITY IMPULSIVITY



RISK MITIGATION STRATEGY: When “hot”, give the adolescent time to “cool down” and let the PFC and rational thought catch up

Utilize activities that put adolescents into other people’s shoes and hear other’s perspectives

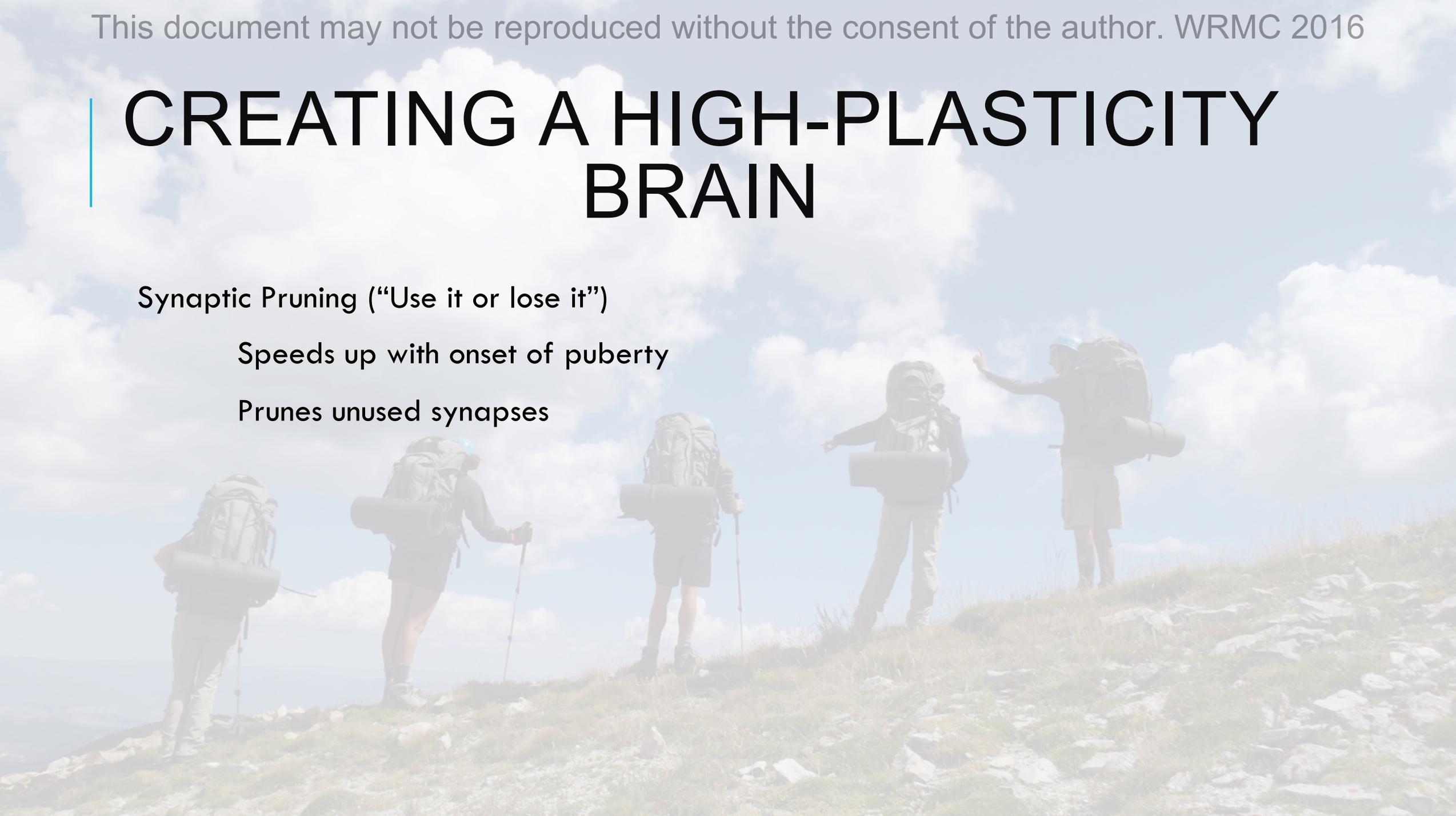
EDUCATIONAL OPPORTUNITY: Impulsive adolescents tend to choose short term rewards over long term. Chunk down large projects/expeditionary goals into small accomplishments.

CREATING A HIGH-PLASTICITY BRAIN

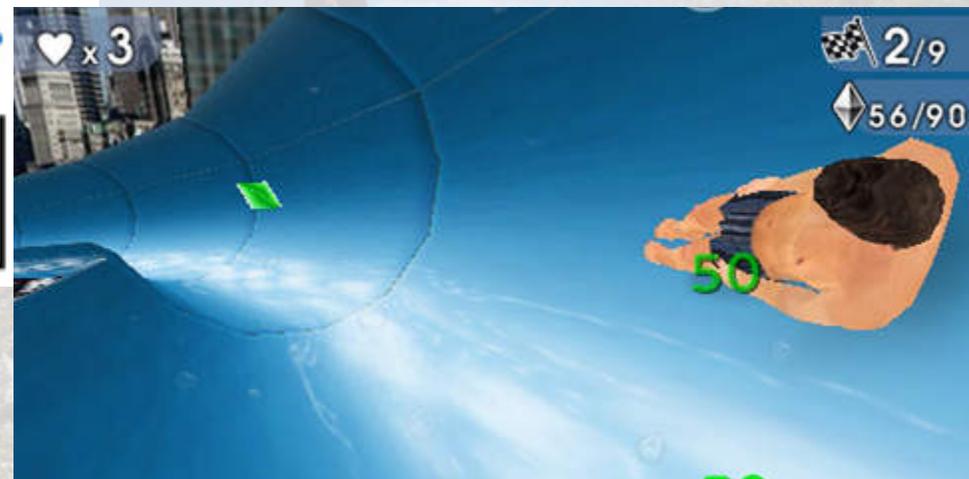
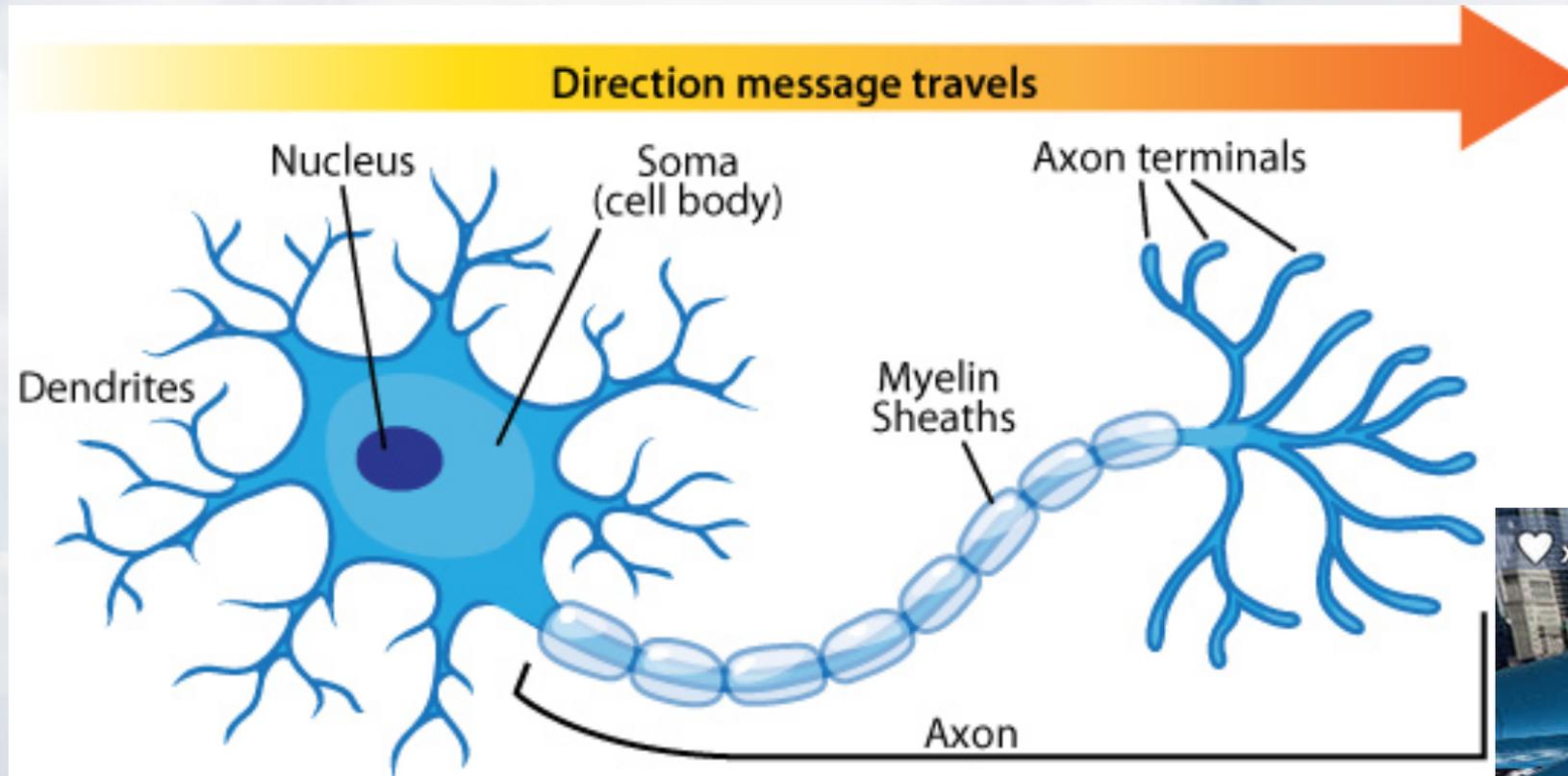
Synaptic Pruning (“Use it or lose it”)

Speeds up with onset of puberty

Prunes unused synapses



CREATING A HIGH PLASTICITY BRAIN MYELINATION! “USE IT AND IMPROVE IT”



EDUCATIONAL OPPORTUNITIES OF A HIGH-PLASTICITY BRAIN

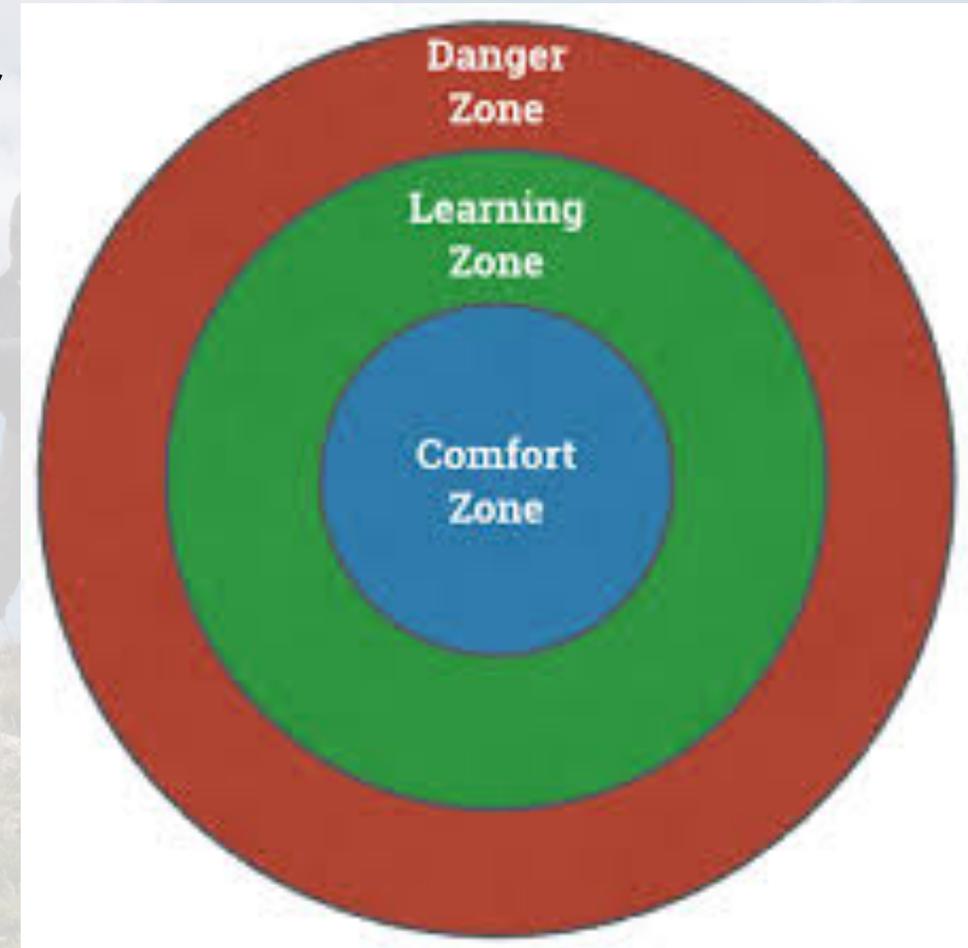
Scaffolding – Capacity to learn and adapt is increased, so keep them in their “learning zone” by progressively challenging them.

This maximizes their plasticity

Novelty – Keeps synapses from being pruned and develops myelination.

RISK MITIGATION STRATEGY

Build safe and successful habits



THE REPTILIAN BRAIN

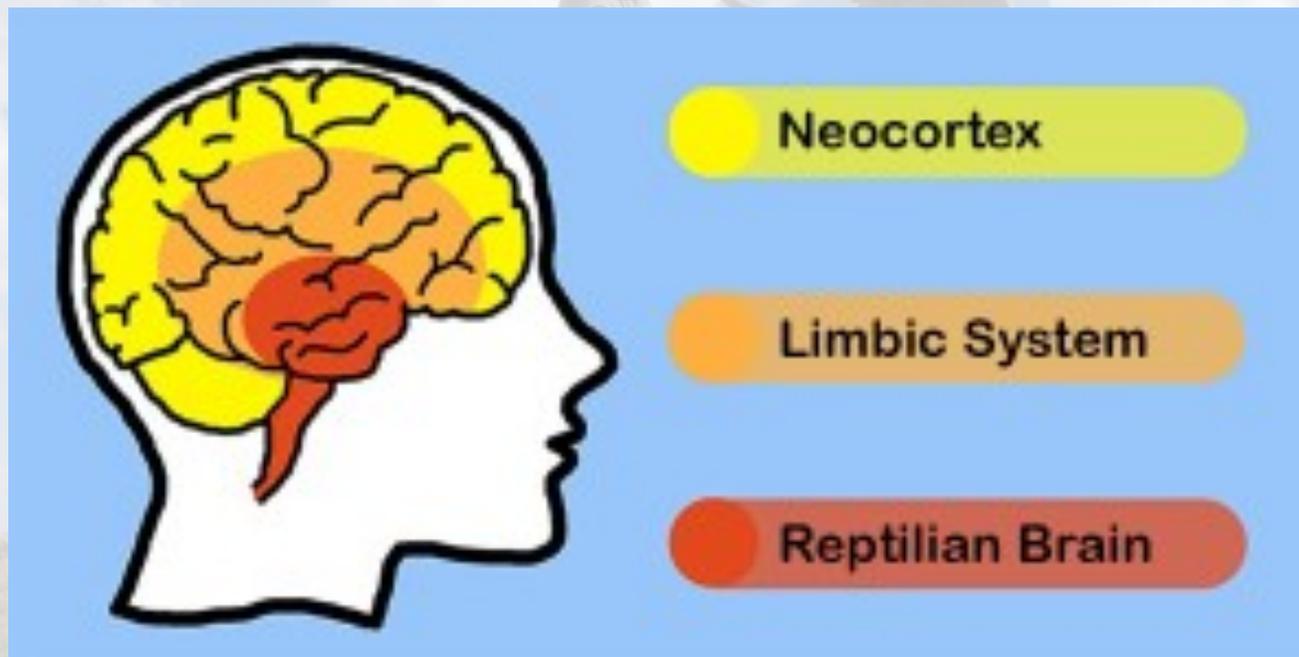
Responsible for BASIC autonomic life functions

Breathing

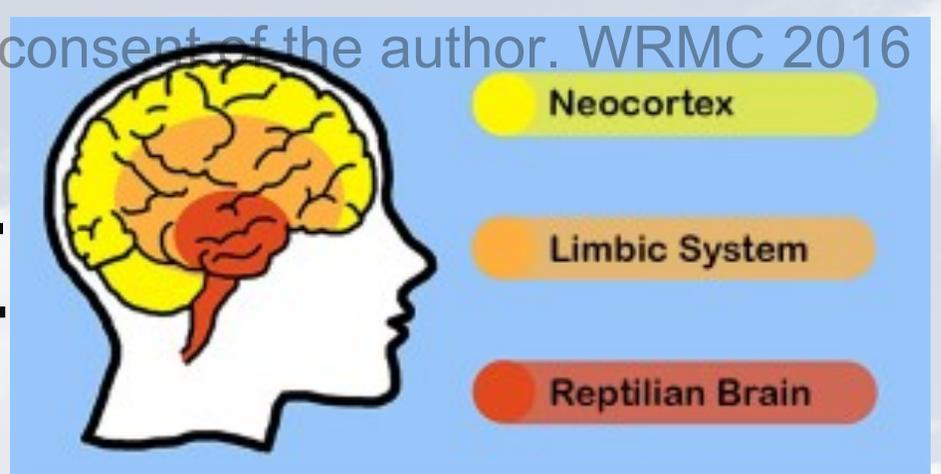
Heart Rate

Body Temperature

Balance



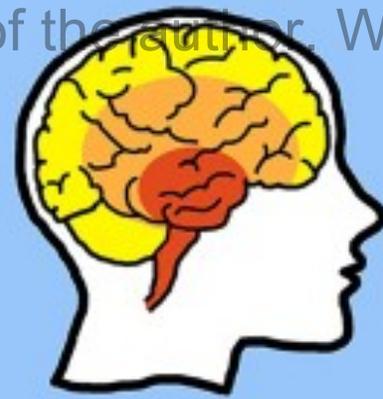
THE LIMBIC SYSTEM



The Emotional (Sub-Conscious) Headquarters of the Brain

DEVELOPS SURVIVAL DATABASE OF PATTERN RECOGNITION

- Amygdala – Violence/Aggression, Fear/Anxiety
- Hypothalamus – Fight or Flight, Freeze or Faint, etc. Triggers adrenaline release



BRAIN DEVELOPMENT

~Age 6: 95% of brain is in place, including PFC

~Age 10 Female; ~Age 12 Male: Onset of Puberty

- Increase in Hormone Production – Social Relationship Consciousness rises

~Age 15-16: Limbic System reaches maturity

- Dopamine production Peaks, Serotonin (calming, satiation feeling chemical neurotransmitter) decreases. Synaptic pruning creates ever more efficient neural transmission. Great Plasticity.

~Age 16: “Cold” cognitive functioning and assessment is equivalent or better to adults (IQ, memory,

~Age 25: Prefrontal Cortex and myelination reaches maturity



WHY
DOES
IT
MATUR
E SO
QUICK
LY?

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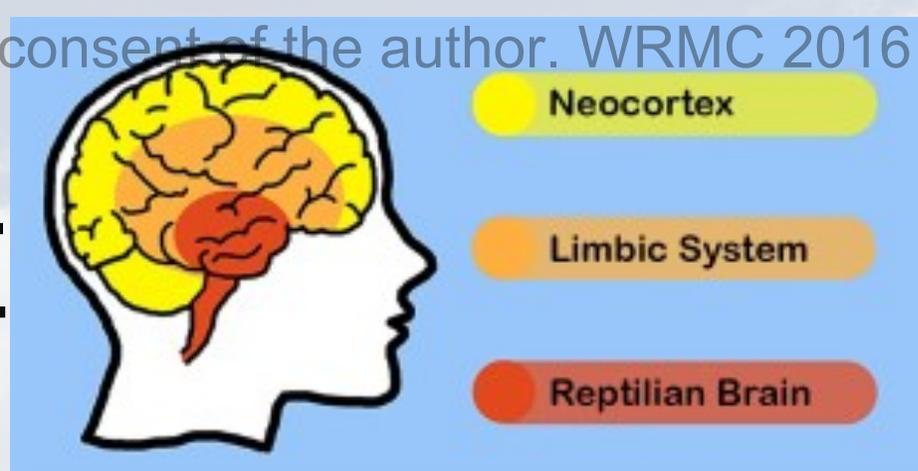
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THE LIMBIC SYSTEM

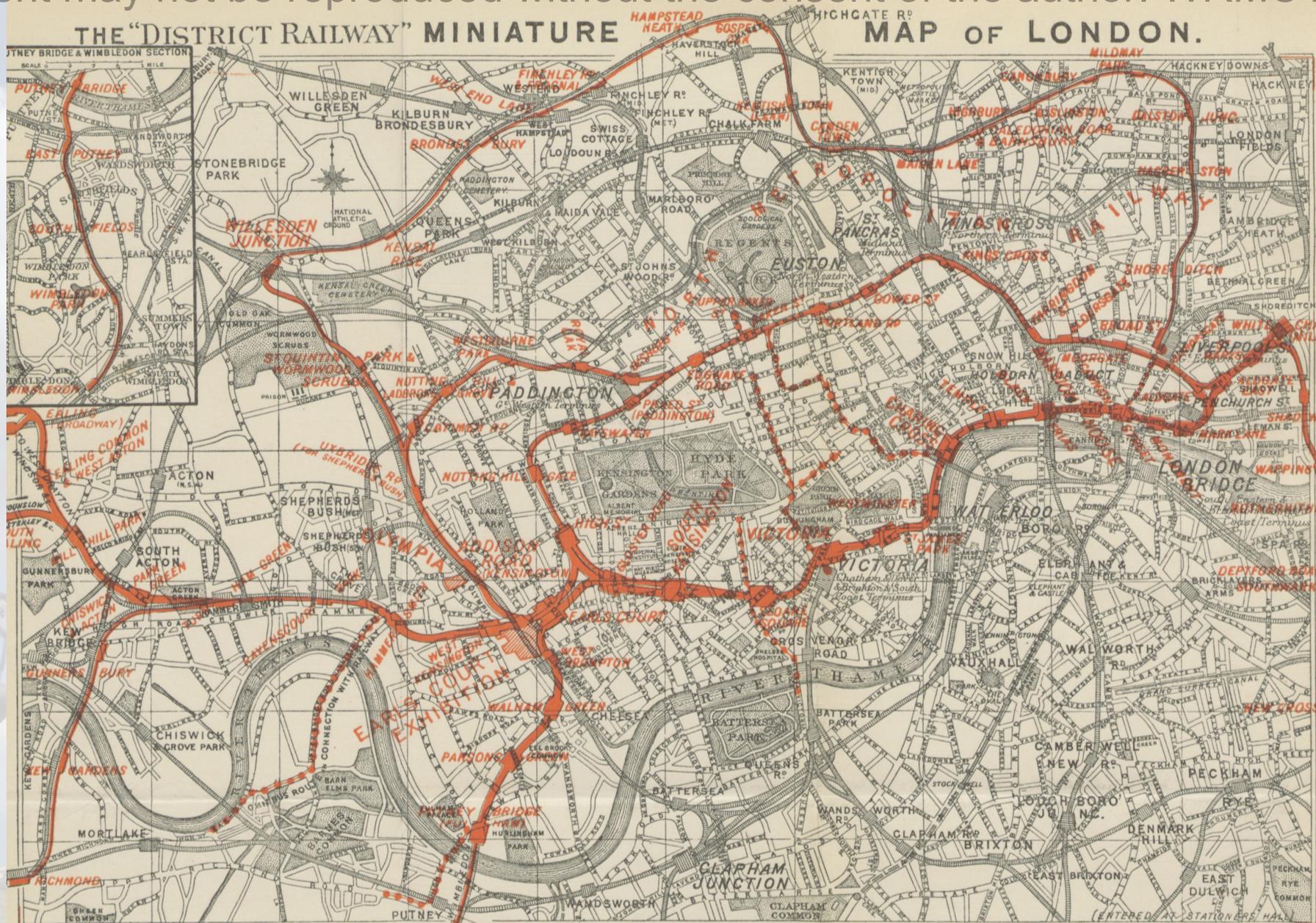


The EMOTIONAL (Sub-Conscious) Headquarters of the Brain

DEVELOPS SURVIVAL DATABASE OF PATTERN RECOGNITION

- Hippocampus – Conversion of Short Term to Long Term Memory



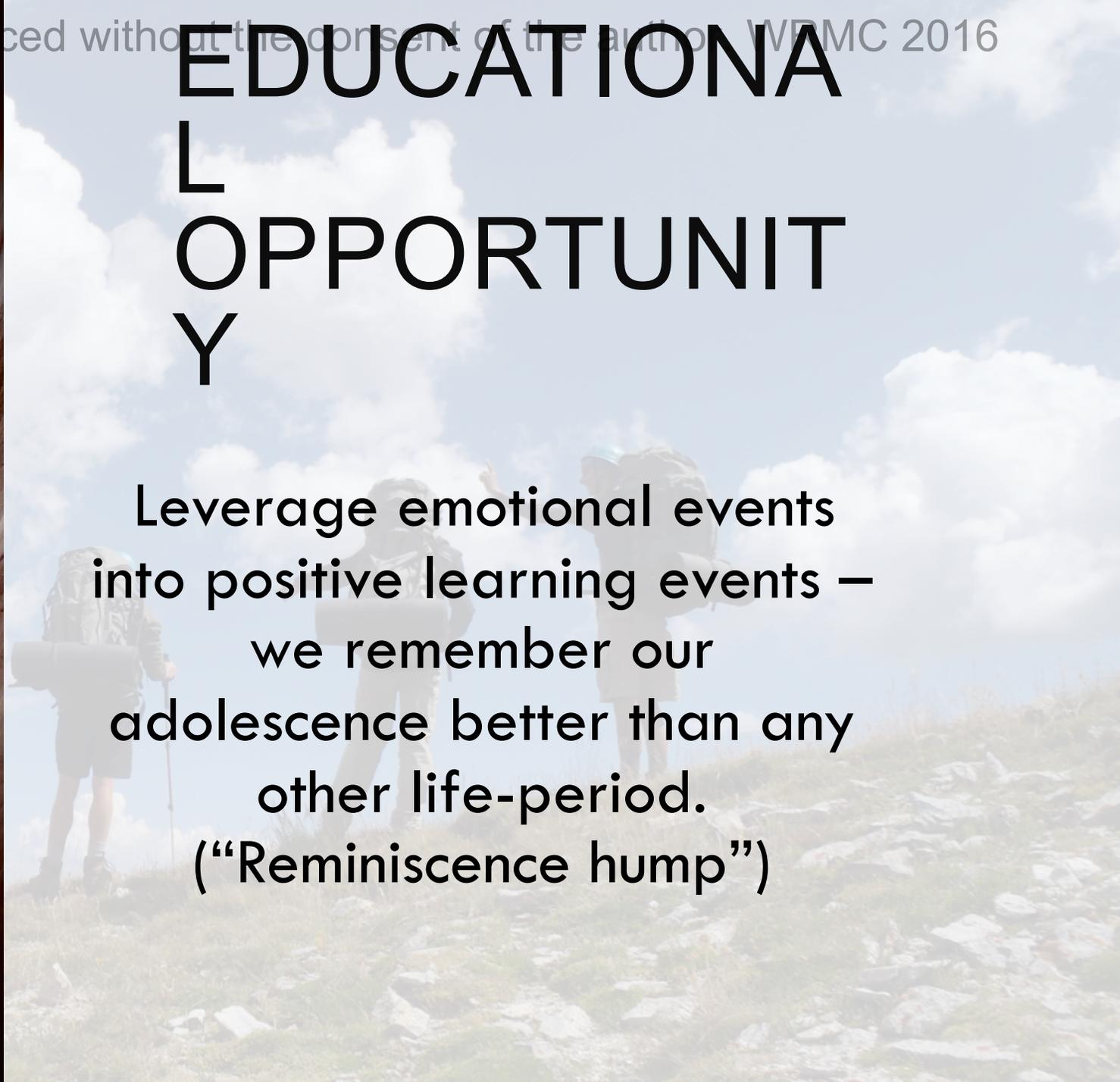


“A London street map is a mess: a preposterously complex tangle of veins and capillaries, the cardiovascular system of a monster.”
- Jody Rosen

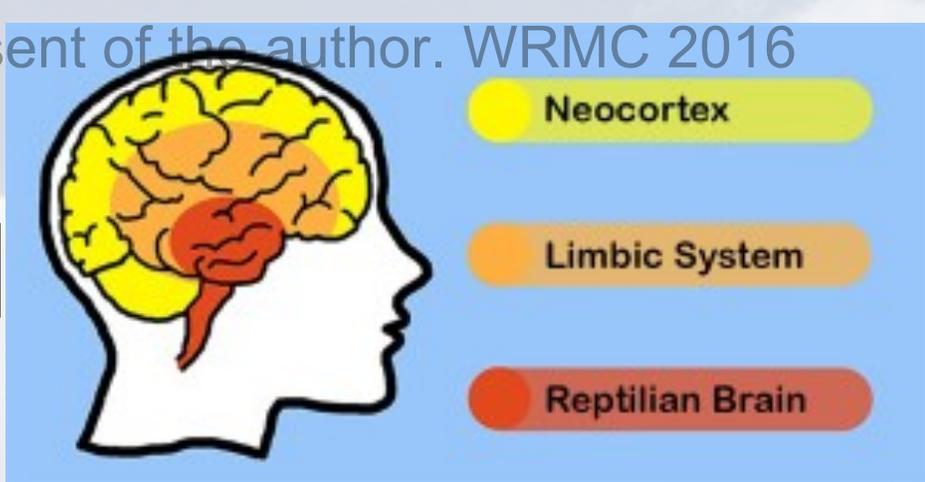


EDUCATIONAL LEARNING OPPORTUNITY

Leverage emotional events
into positive learning events –
we remember our
adolescence better than any
other life-period.
 (“Reminiscence hump”)



THE LIMBIC SYSTEM

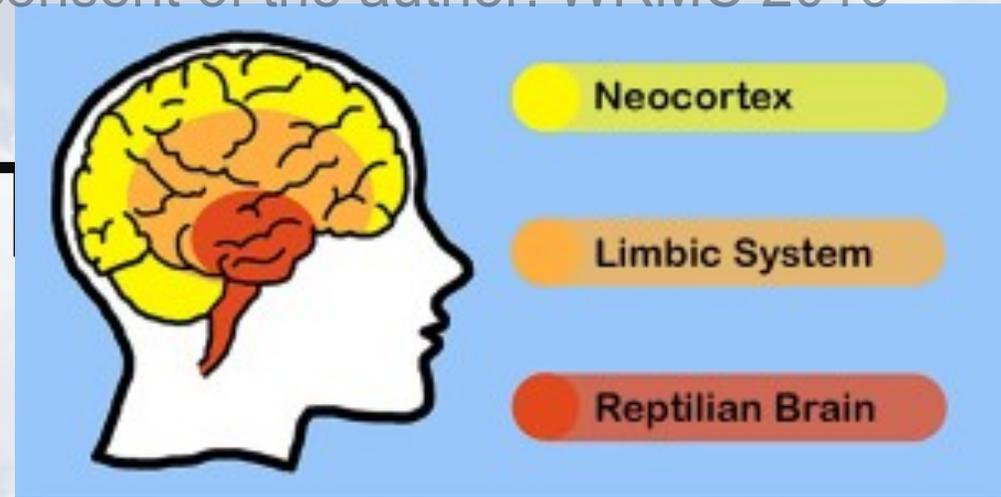


“The Pleasure Zone”

- Ventral Tegmental Area (VTA) – Production of Dopamine (Chemical Neurotransmitter of Pleasure Messages)
- Nucleus Accumbens – “The Pleasure Center” links pleasurable motor functions with dopamine
- Fully mature around age 15



PREFRONTAL CORT



“Rational Headquarters of the Brain” - EXECUTIVE FUNCTIONS

- Planning Complex Behavior
- Decision Making
- Moderating Social Behavior - Inhibition
- Future Consequences
- Problem Solving
- Short Term Rewards vs Long Term Goals

Fully mature around age 25



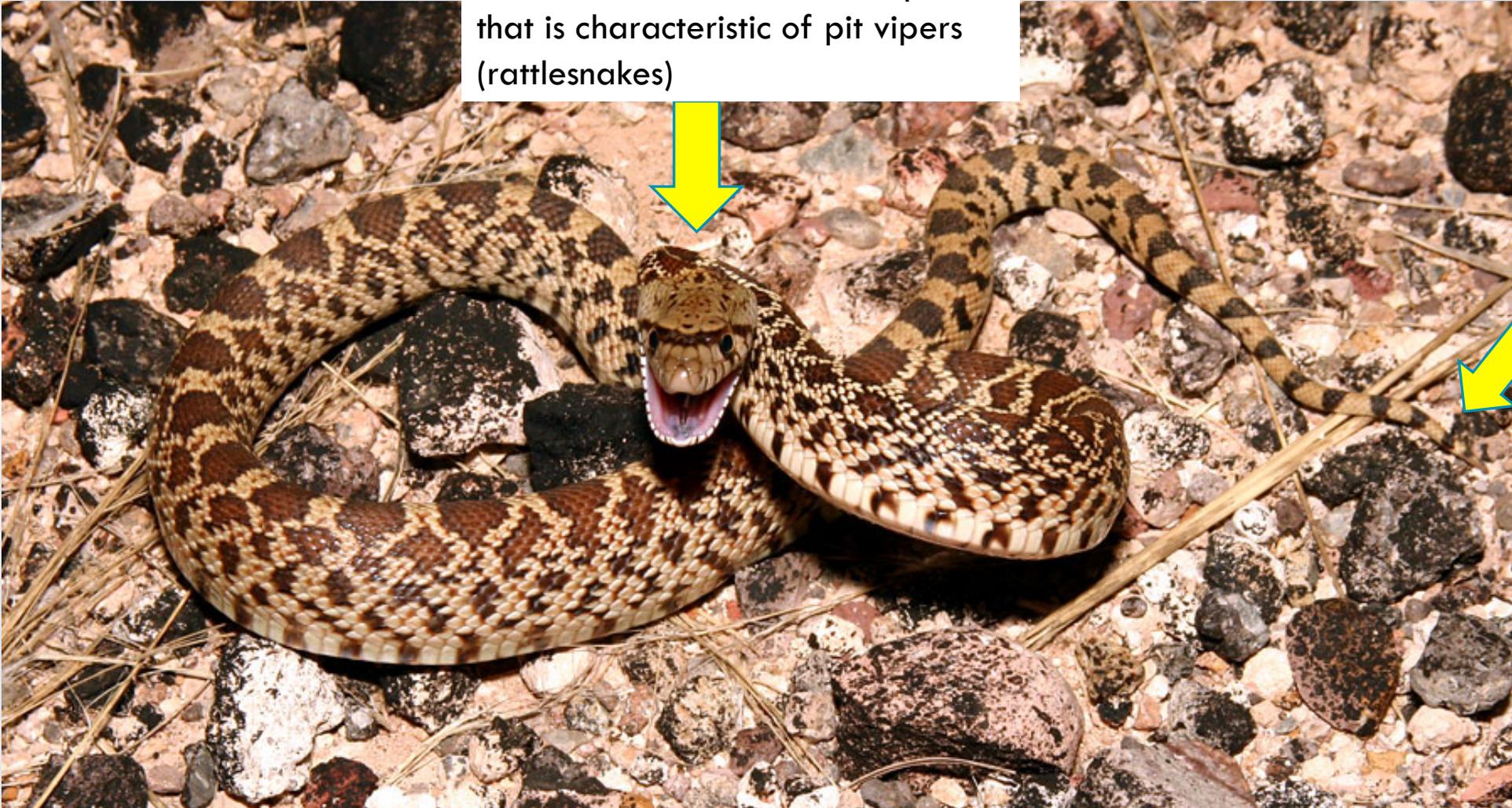
Head is not the diamond shape that is characteristic of pit vipers (rattlesnakes)



No rattle....



WHY
RATION
AL
THOUG
HT
?



Hmmmmmm.... It sure does look like a snake. And its pattern is similar to a rattlesnake. But...it doesn't have a rattle and its head is not the shape of pit vipers (ie. Venomous snakes in the US). This doesn't actually pose a threat to my life....No need for impulsive, high-risk action

INCREASED SENSITIVITY TO REWARDS

EDUCATIONAL OPPORTUNITIES: Positive Reinforcement, especially of value traits

DeVoTed praise: **D**escribe, **V**alue, **T**ransference

Appreciations & Service to others:

“Empirically...doing a kindness to others produces the single most reliable momentary increase in well-being of any exercise tested” – Martin Seligman



BRAIN MATURITY IMBALANCE

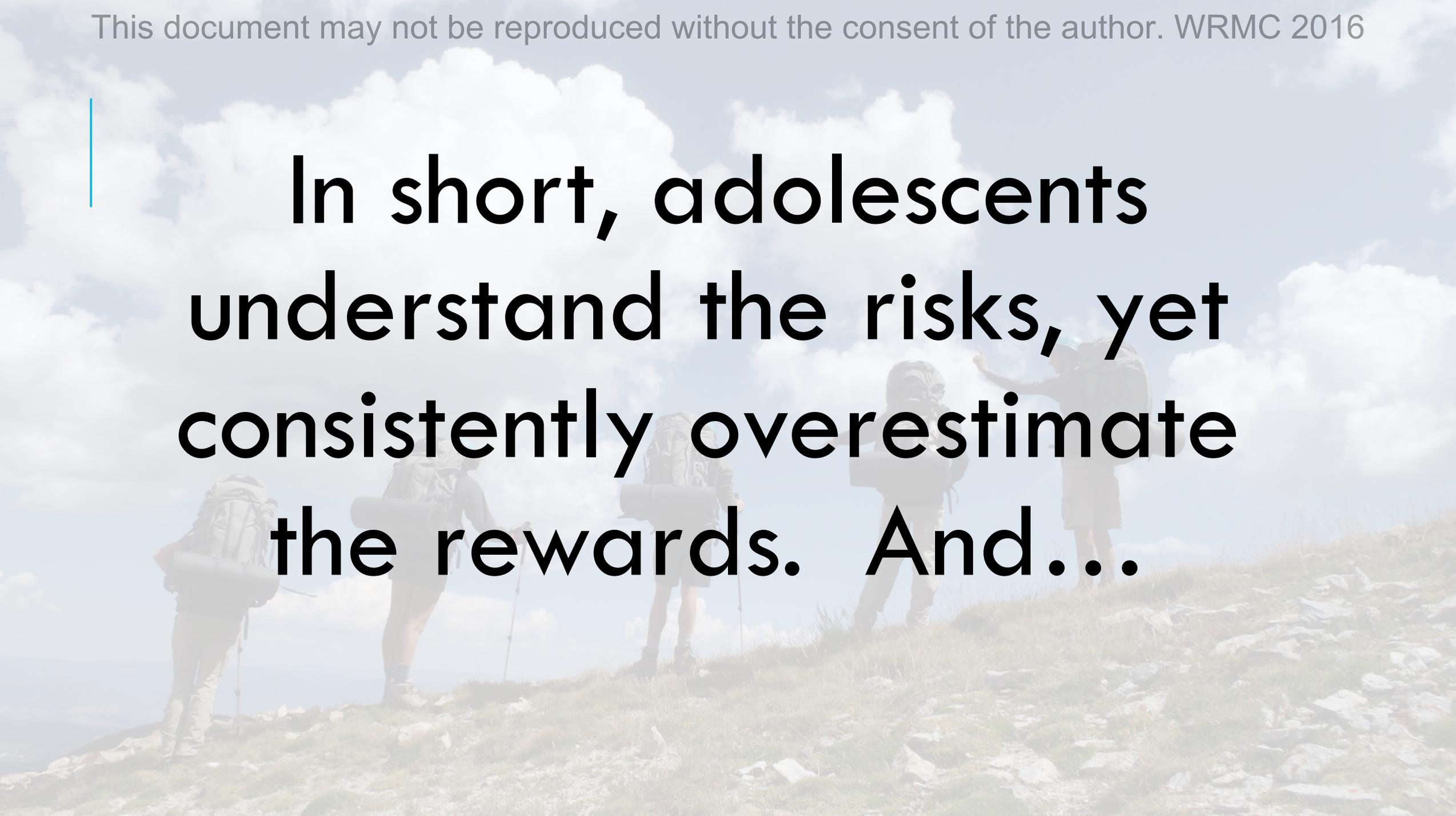
During adolescence, the emotional reward center of the brain with dopamine levels at their peak, is fully matured and faster reacting than the rational center. This drives pleasure seeking action, while the part of the brain that thinks things through, plans, strategizes, and inhibits inappropriate social behavior is immature. It's an unfair fight.

LIMBIC



PREFRONTAL
CORTEX



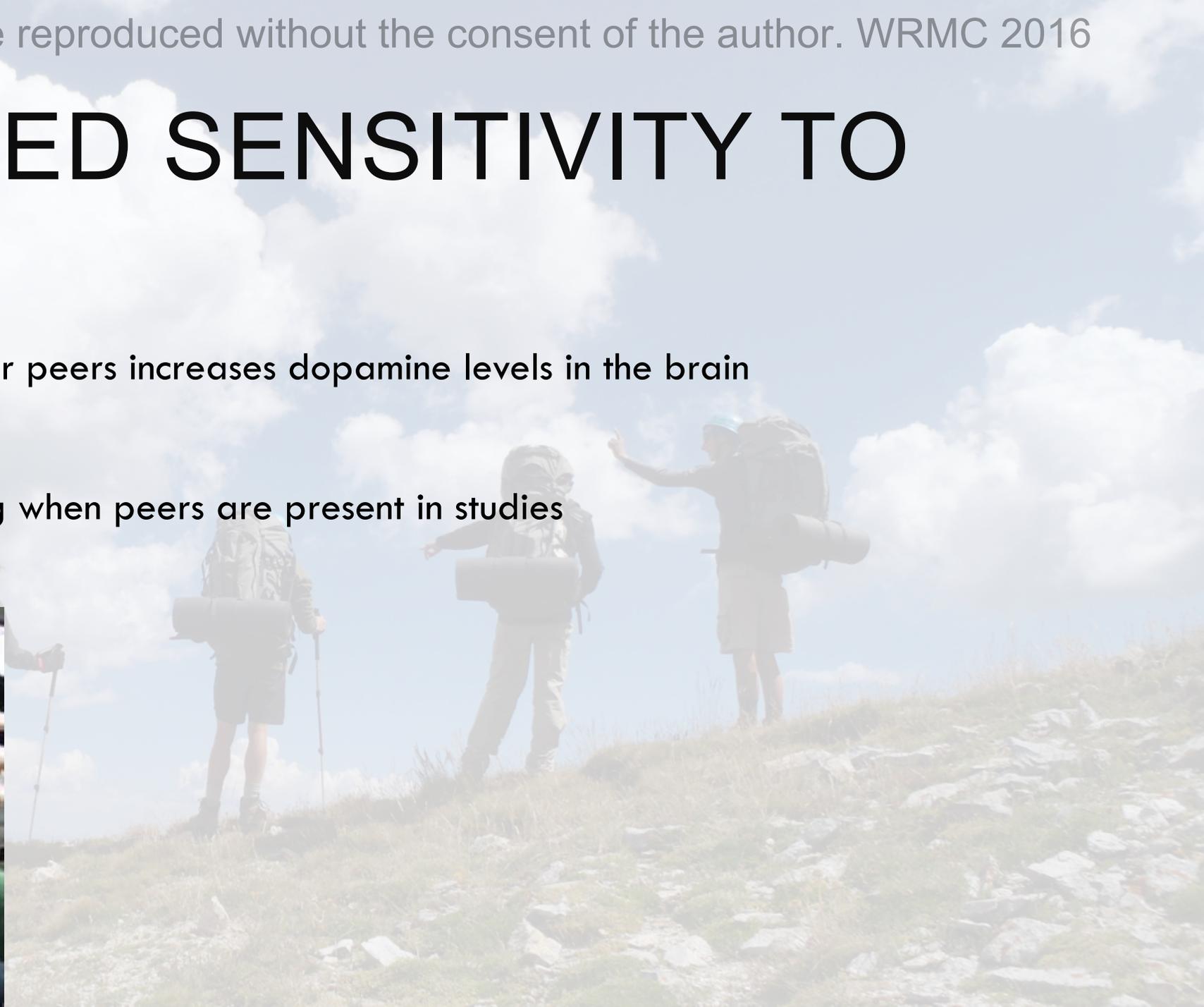
A group of hikers is silhouetted against a bright, cloudy sky as they stand on a rocky mountain peak. The hikers are wearing backpacks and using trekking poles. The foreground shows the rugged terrain of the mountain, with rocks and sparse vegetation. The overall scene conveys a sense of adventure and exploration.

In short, adolescents understand the risks, yet consistently overestimate the rewards. And...

INCREASED SENSITIVITY TO PEERS

Simply being around other peers increases dopamine levels in the brain

Higher rates of risk taking when peers are present in studies



Teen Drivers Risk Death with Young Passengers

A 16- or 17-year-old driver's **RISK OF BEING KILLED IN A CRASH** increases when there are young passengers in the vehicle.

Compared to driving without any passengers, **THE RISK:**



QUADRUPLES when carrying 3 or more passengers younger than 21



DOUBLES when carrying 2 passengers younger than 21

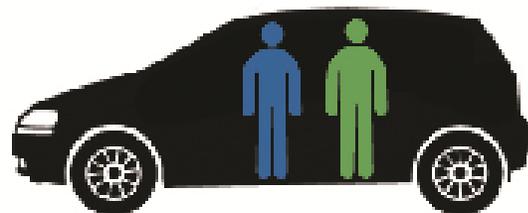


INCREASES by 44 % when carrying 1 passenger younger than 21

Adults 35+ 

Passengers under 21 

Teen Drivers (ages 16 or 17) 



DECREASES by 62 % when an adult age 35+ is in the vehicle



*Teen Driver Risk in Relation to Age and Number of Passengers" AAA Foundation for Traffic Safety, MAY 2012



Pas un vrai slam, mais ça reste bluffant.

INCREASED SENSITIVITY TO PEERS

RISK MITIGATION STRATEGIES:

- Frontload firm behavioral expectations
- Create emotional safety through positive & inclusive group culture
- “Guide’s Meetings”
- Supervise these age groups, esp. 17 & younger

EDUCATIONAL OPPORTUNITIES:

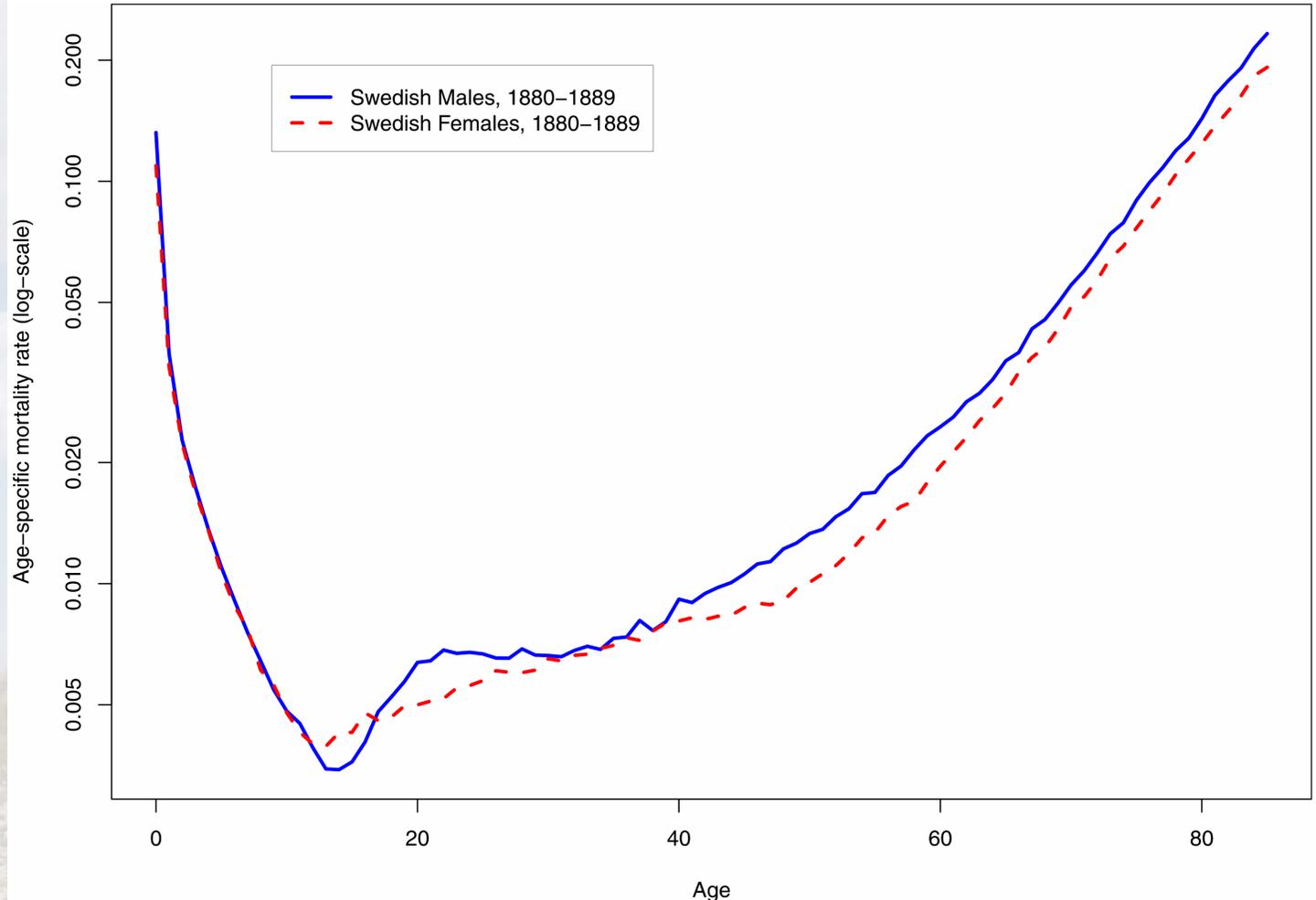
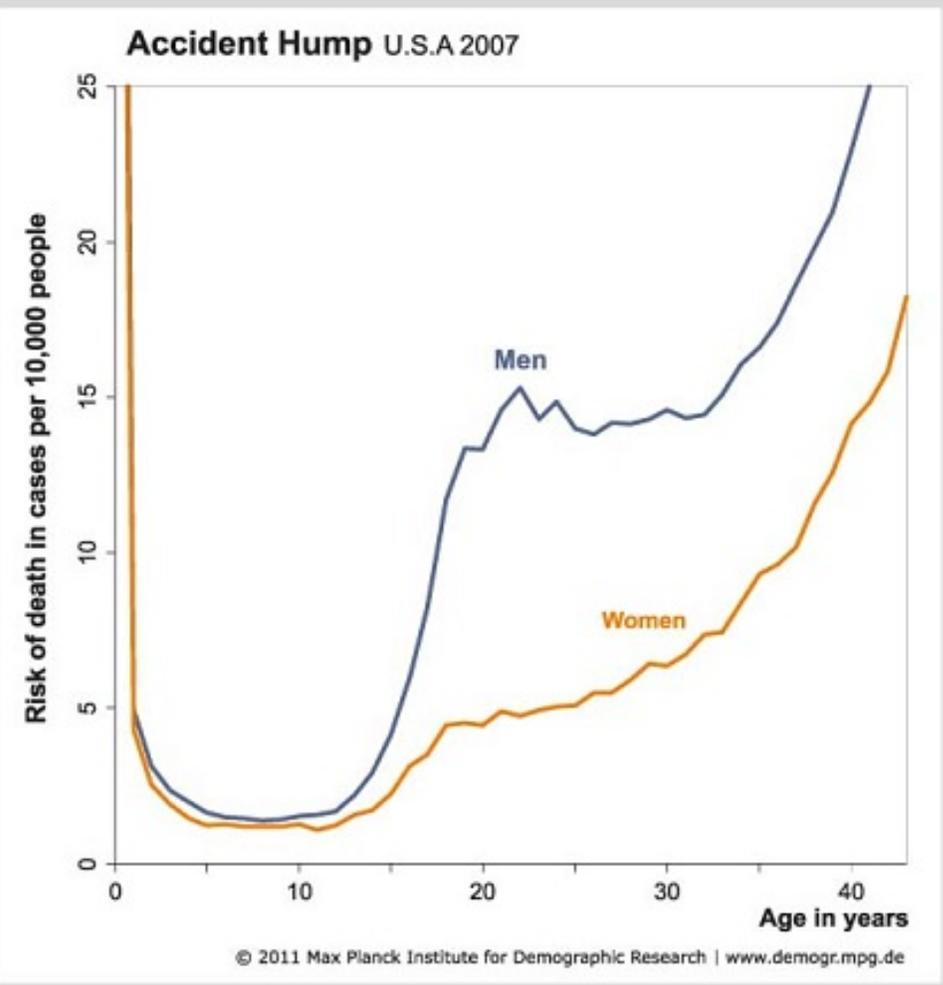
Develop projects, goals, and expeditions that challenge students and invite teamwork. The research backs it up that adolescent learning is enhanced in groups.

Developing positive group culture habits

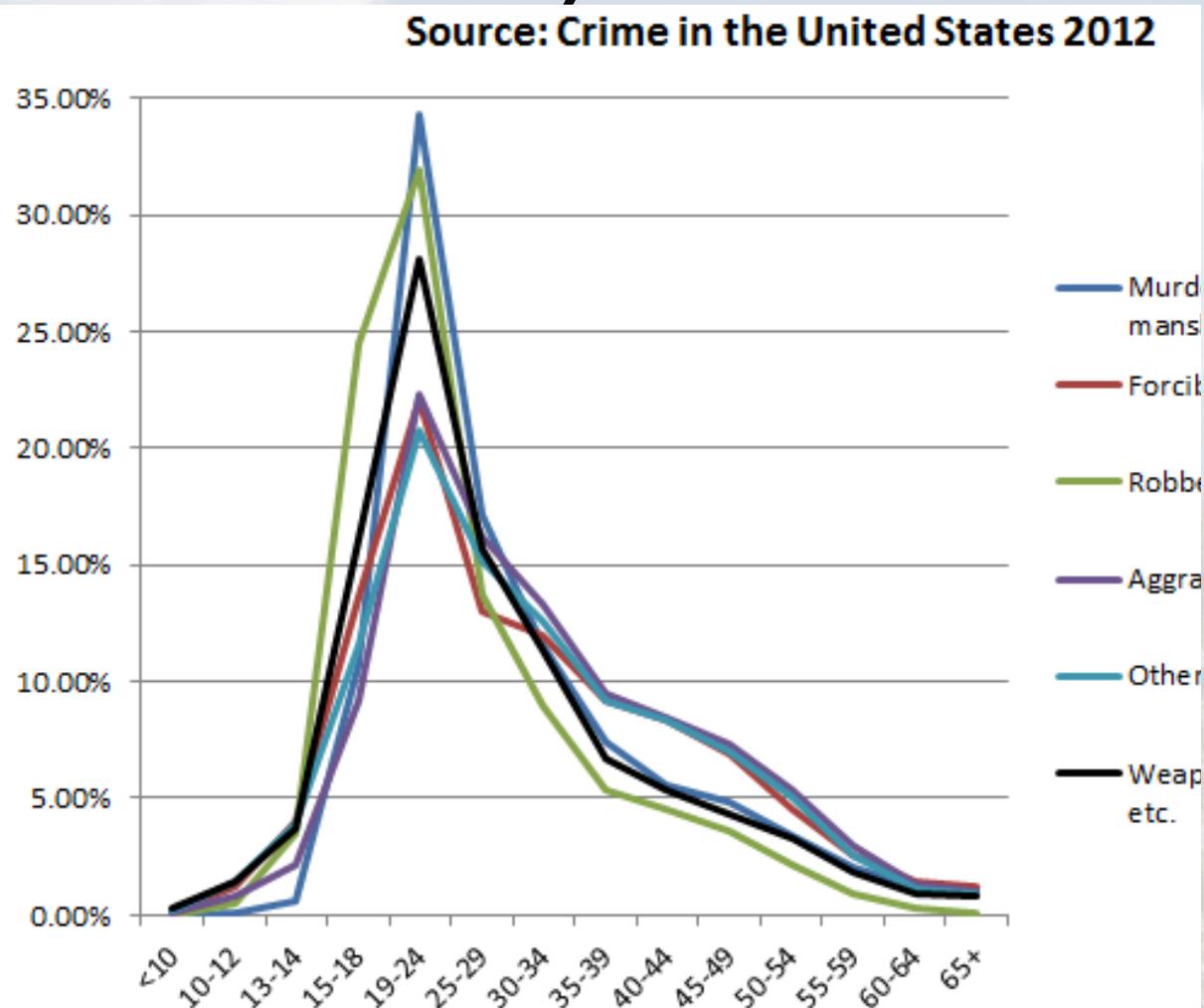
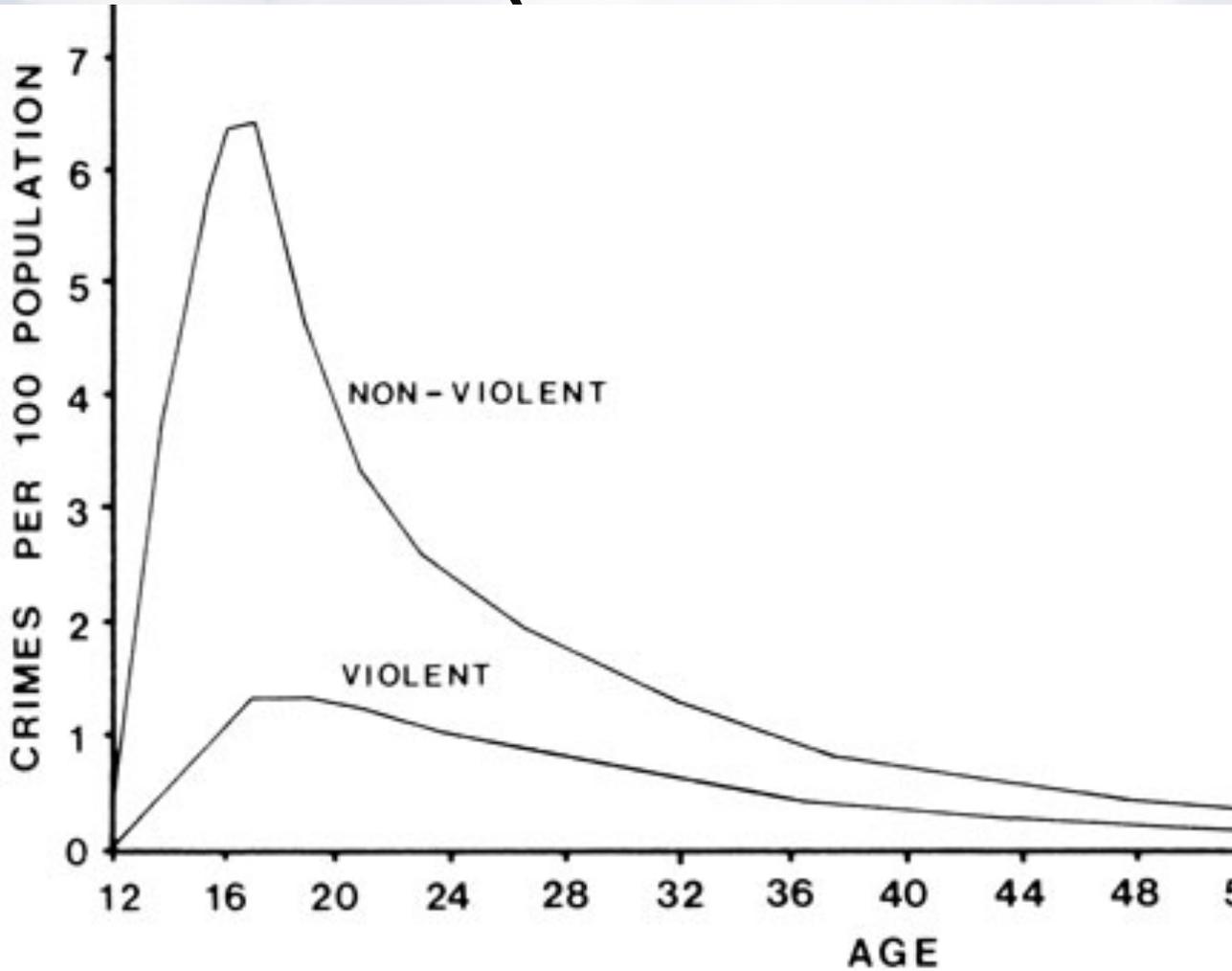
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HEIGHTENED RISK TAKING (ACCIDENT HUMP)



HEIGHTENED RISK TAKING (AGE-CRIME CURVE)



HEIGHTENED RISK TAKING: HOW DO WE MITIGATE?

Risk Factor: Increased sensitivity to rewards leads to heightened risk taking

RISK MITIGATION STRATEGY:
Eliminate all risk?

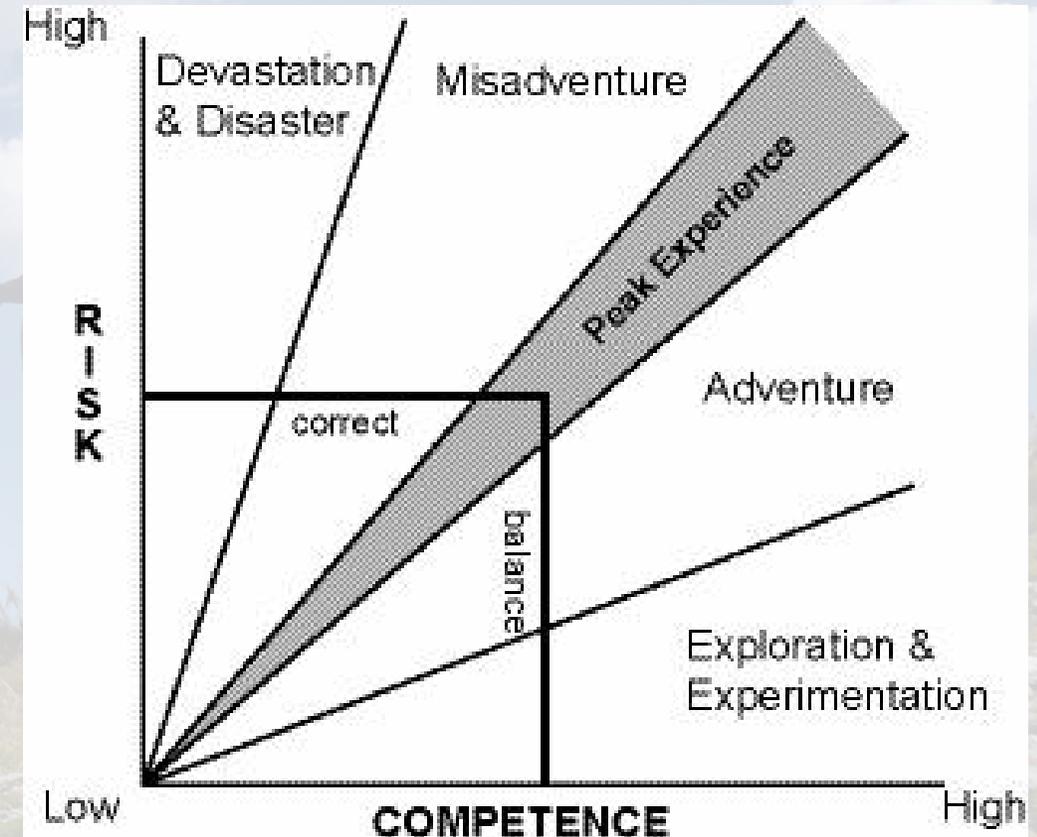


C'MON, SERIOUSLY. HOW DO WE MITIGATE? HEIGHTENED RISK TAKING

RISK MITIGATION STRATEGY: Satisfy desire for higher risk taking by providing safety measures to eliminate actual risk while leaving high perceived risk. (Or allow for social integration/interaction in emotionally safe environments.)

“It is the goal of instructors to prevent and effectively manage accidents, not about avoiding activities that involve danger.”

Build safe successful habits with scaffolding skill levels



HEIGHTENED RISK TAKING

RISK MITIGATION STRATEGIES:

Supervision. They are significantly less likely to act recklessly with an adult present.

Create opportunities among staff to proactively predict temptations that students may feel on course. (Also, create opportunities to among organizational leadership to proactively predict temptations that adolescent staff may feel throughout employment, housing, etc.)

Practice scaffolded self-regulation techniques daily.
focused and explicit.

Make them



HEIGHTENED RISK TAKING

RISK MITIGATION STRATEGIES:

Provide opportunities for novelty and displays of competency: appropriate autonomy

Create opportunities among staff to proactively predict temptations that students may feel on course. (Also, create opportunities among organizational leadership to proactively predict temptations that adolescent *staff* may feel throughout employment, housing, etc.)

IT'S A WONDERFUL TIME!

Creativity is less inhibited (in emotionally safe situations) by the PFC.
Harness it!

“Good judgment comes from experience, and experience the result
of bad judgment” Mark Twain

More neurons as well as synaptic pruning allows for higher
adaptability and growth in new situations and “firsts” outside of
comfort zones and in the “learning zone.” Plasticity is a time of great
growth potential.



BACK TO THE STICKY NOTES

Using the example chains, form groups of 3 or 4 and brainstorm mitigation strategies & educational opportunities that you could use in that situation in the future.



REVIEW

Why aren't they using their brains? They are. They are just using brains that are wired different from ours.

The maturity imbalance leads to understanding the risks, yet consistently overestimates the rewards.

There are ways to empathize, mitigate these risks, and positively leverage opportunities within the unfair limbic/PFC fight.

The truth is they are extraordinarily competent even if they don't ordinarily express that competence.

WOOP! (THERE IT IS!)

WISH: Understand the brain, how adolescent brains are wired, walk away with activities/tools to mitigate risk and leverage opportunities.

OUTCOME: Attendees will be inspired to take some or all activities and tools back to their programs and implement them

OBSTACLE: Time. In this room. (If) Slow transitions and getting behind.

PLAN: (Then) I'll start on time. Flicking the lights means we'll be starting back in 10 seconds, and I've set a timer for 55 minutes

RESOURCES

Blakemore, Sarah Jayne. "The mysterious workings of the adolescent brain."

Giedd, Jay N. "Risky Teen Behavior Is Driven by an Imbalance in Brain Development." *Scientific American*. June 2015: 33-37. Print.

Kolbert, Elizabeth. "The Terrible Teens." *The New Yorker*. 31 August 2015. 83-86. Print.

Steinberg, Laurence. *Age of Opportunity: Lessons from the New Science of Adolescence*. First Mariner Books. Boston, MA. 2014.

STEVE CREECH

For a complete list of resources, digital copies of *many* articles, any questions, or if you feel like hiring me (curriculum development, adventure photography, trainings, etc.), please feel free to email me at stevejcreech@yahoo.com

Thanks!

