

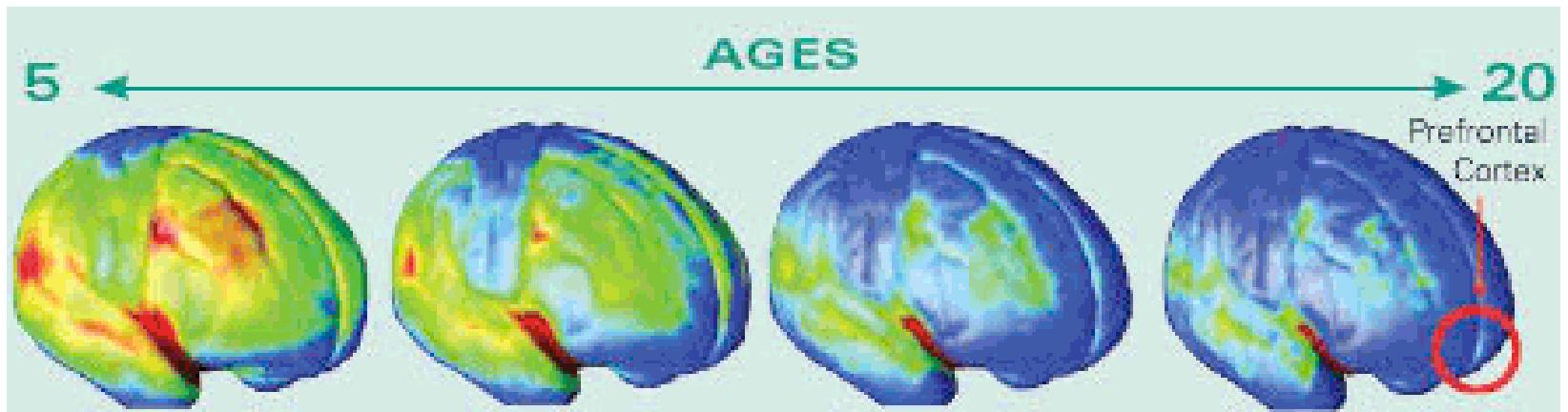
Science of High-Risk Behavior

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Director of the Behavioral Health Institute



United Way of Greater Houston

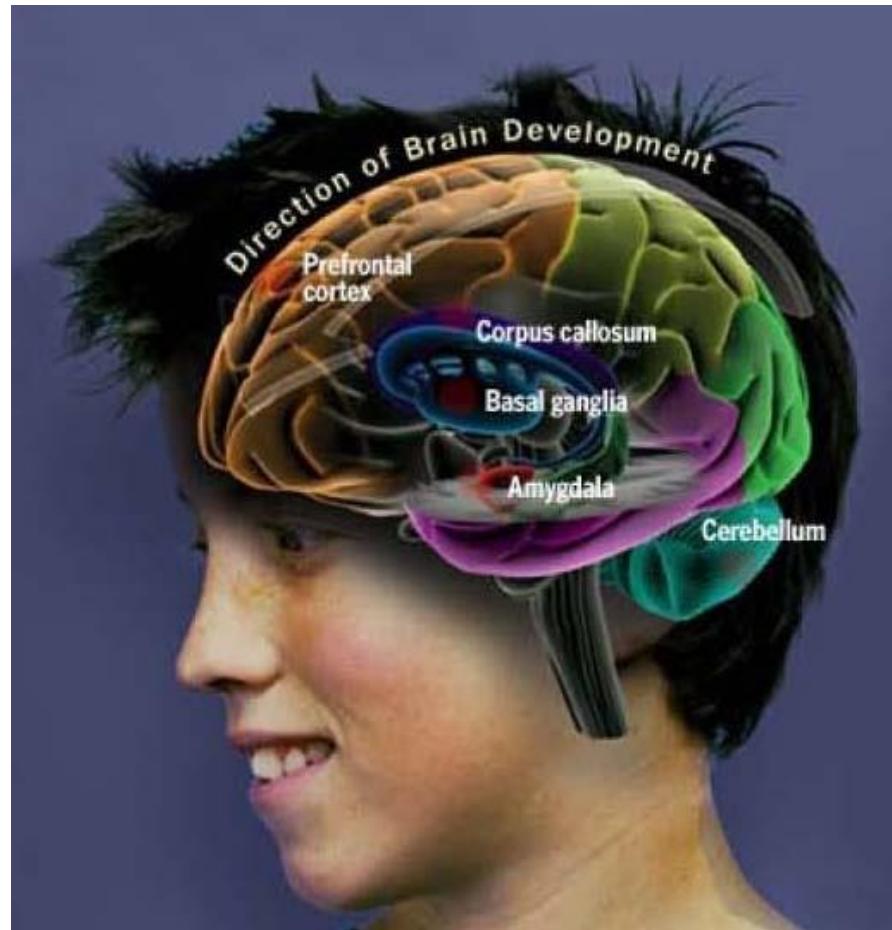


Blue represents maturing of brain areas.



*A teenager's brain
"has a well-
developed
accelerator but
only a partly
developed brake."*

Laurence
Steinberg



AGE

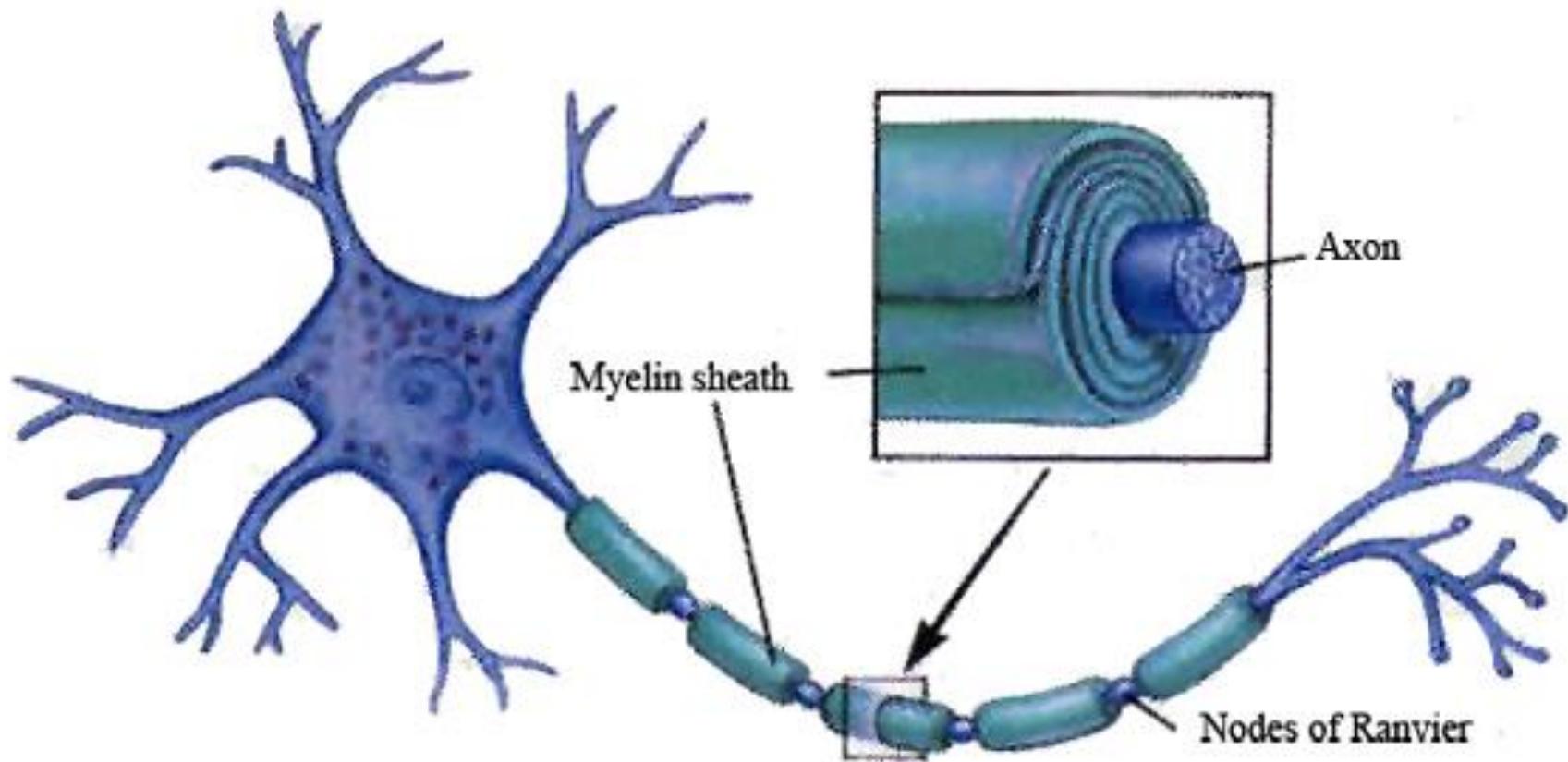
11-12 ← → 24-25

200

100



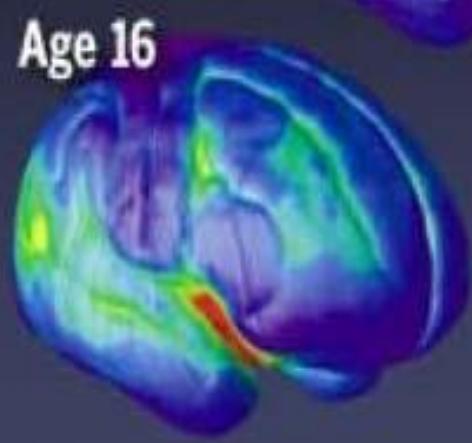
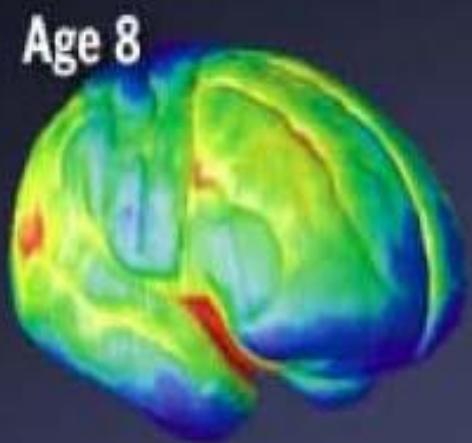
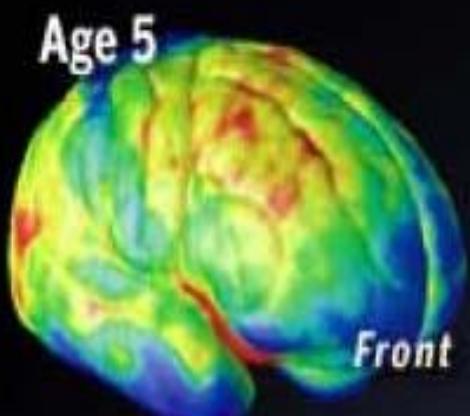
Myelin = Processing Speed



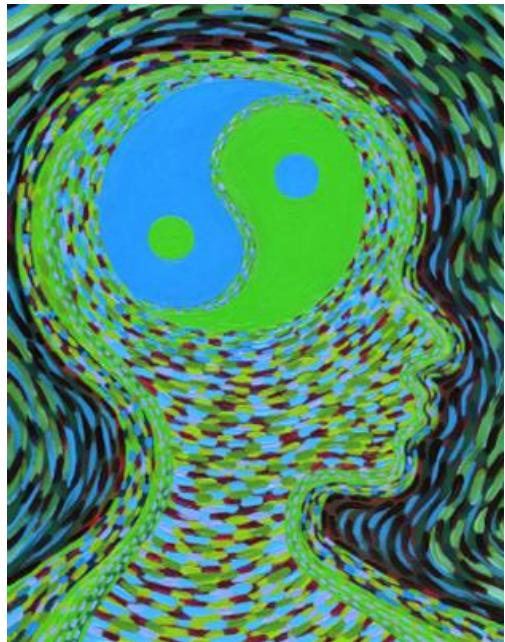
Dendrites = More connections







USE IT OR LOSE IT PRINCIPLE



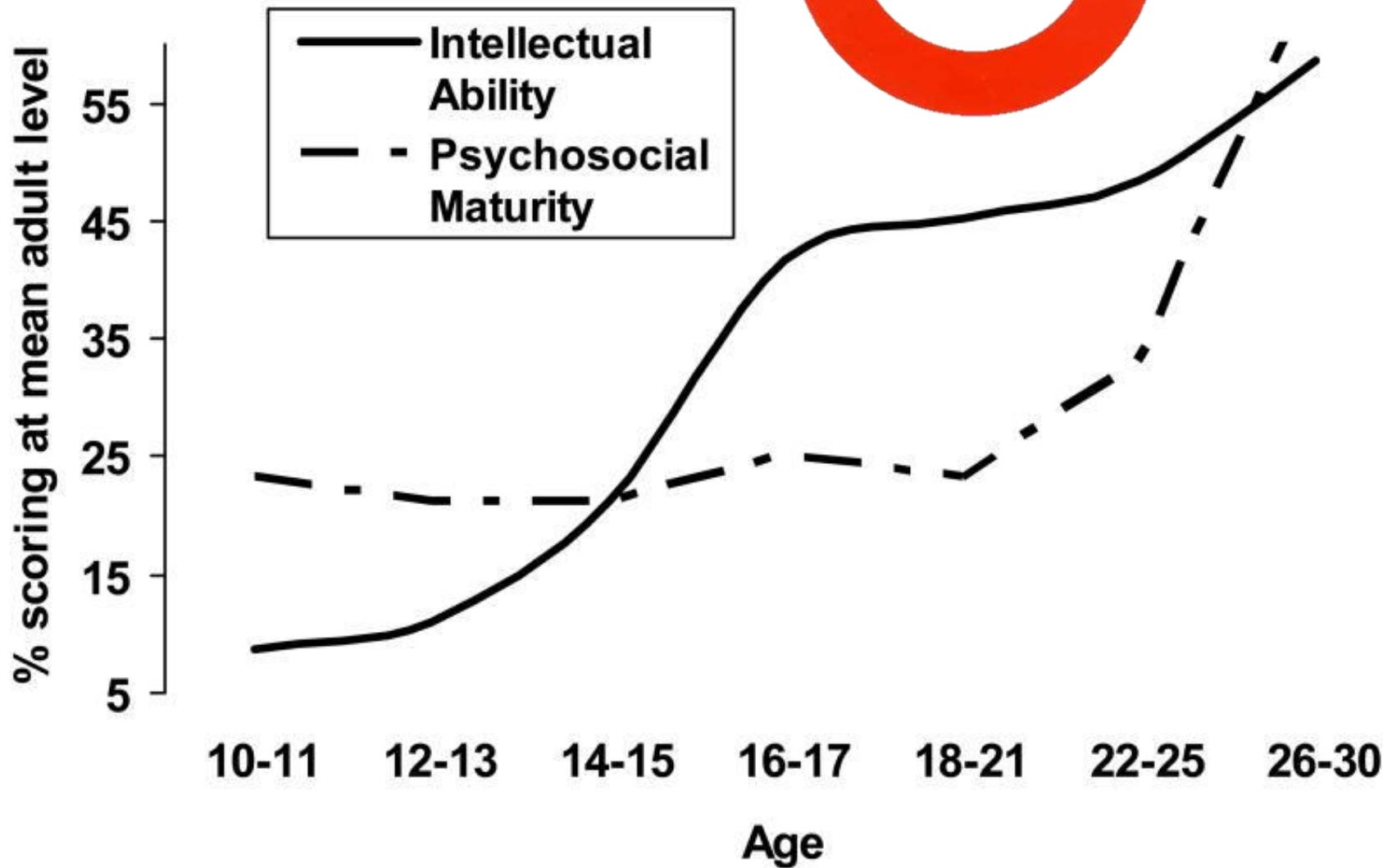
Pruning (Apoptosis) clears out unneeded wiring to make way for more efficient and faster information-processing (thicker myelin)

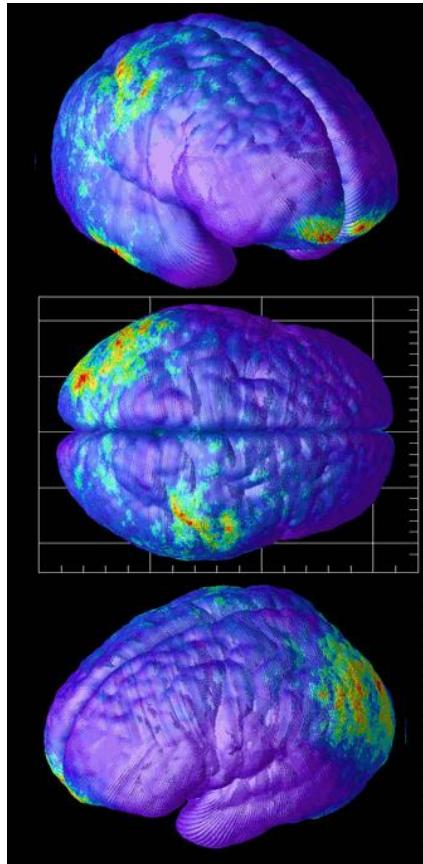
From Immature, Child Responding to Mature, Adult Thinking: The Road to Executive Function

- Abstract; conceptual understanding
 - Impulse Control
 - Problem-Solving
 - Decision-Making
 - Judgment
 - Emotion Regulation
 - Frustration Tolerance
 - Ability to Feel Empathy



MIND THE GAP

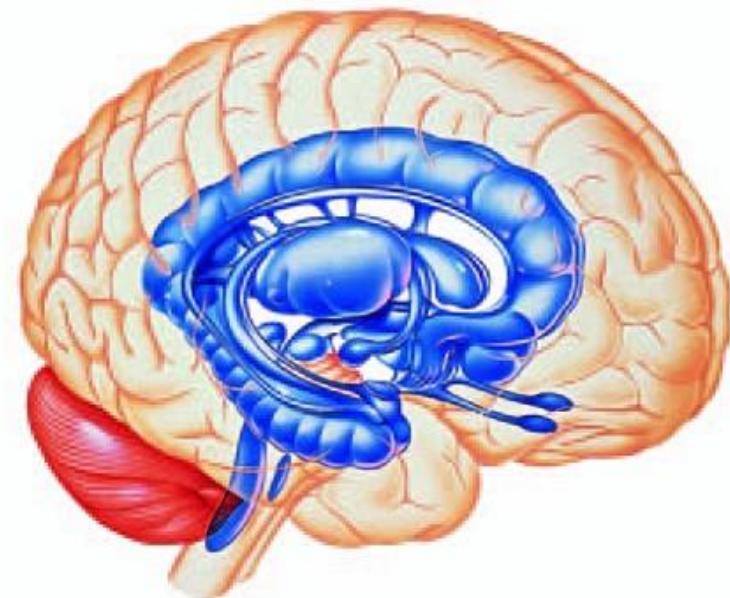
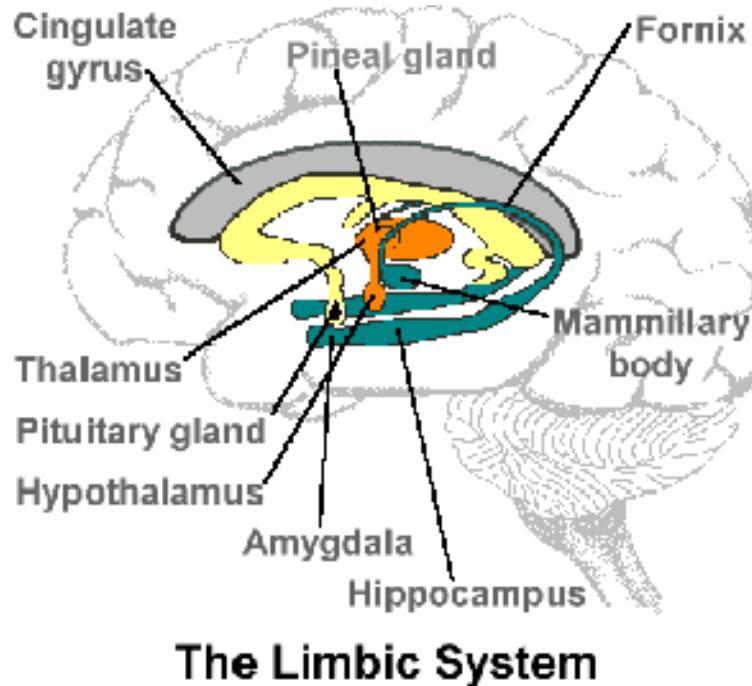


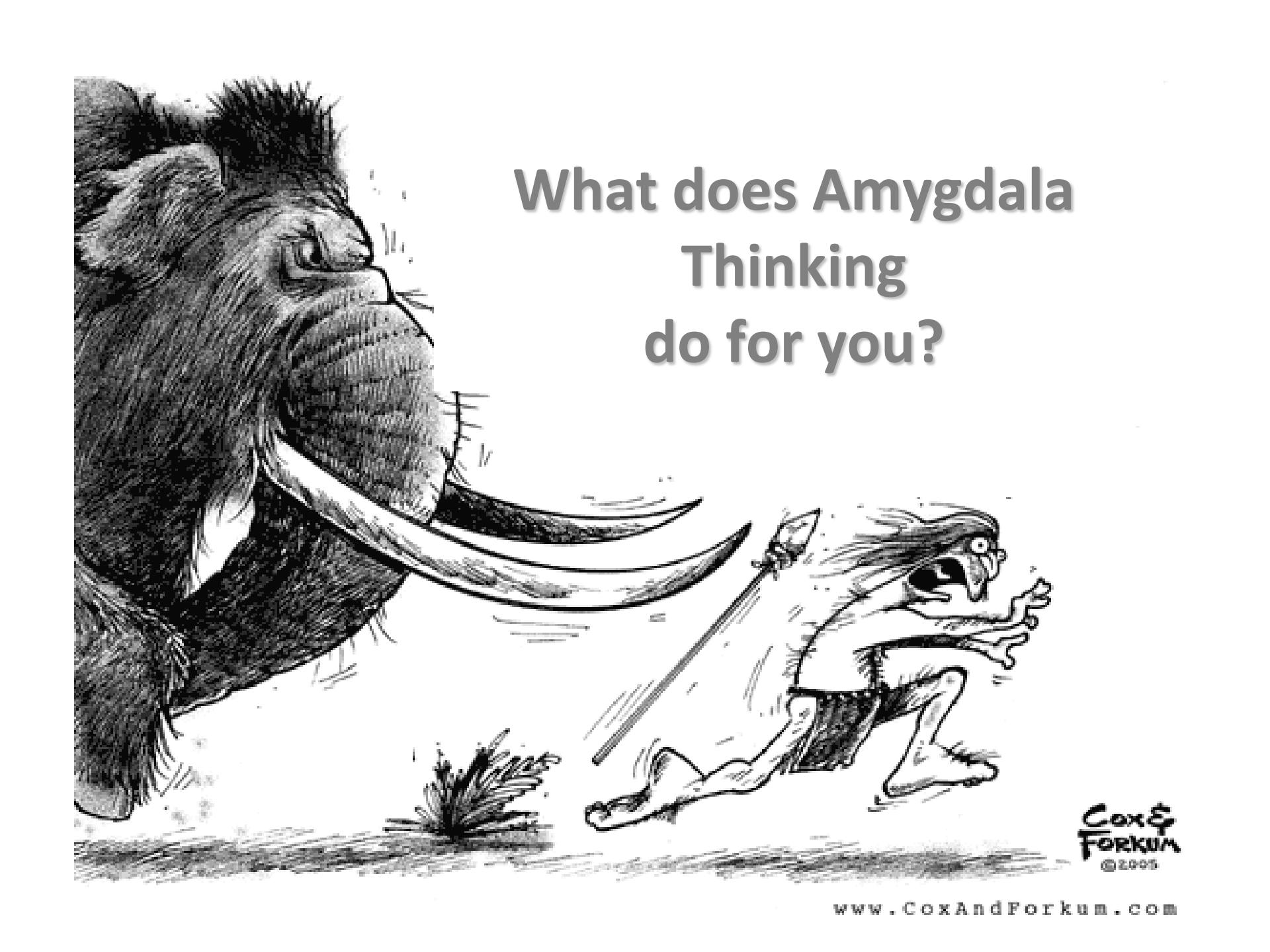


**How do
high-risk behaviors
such as
alcohol/drugs effect
the brain during the
pruning process?**

Limbic System

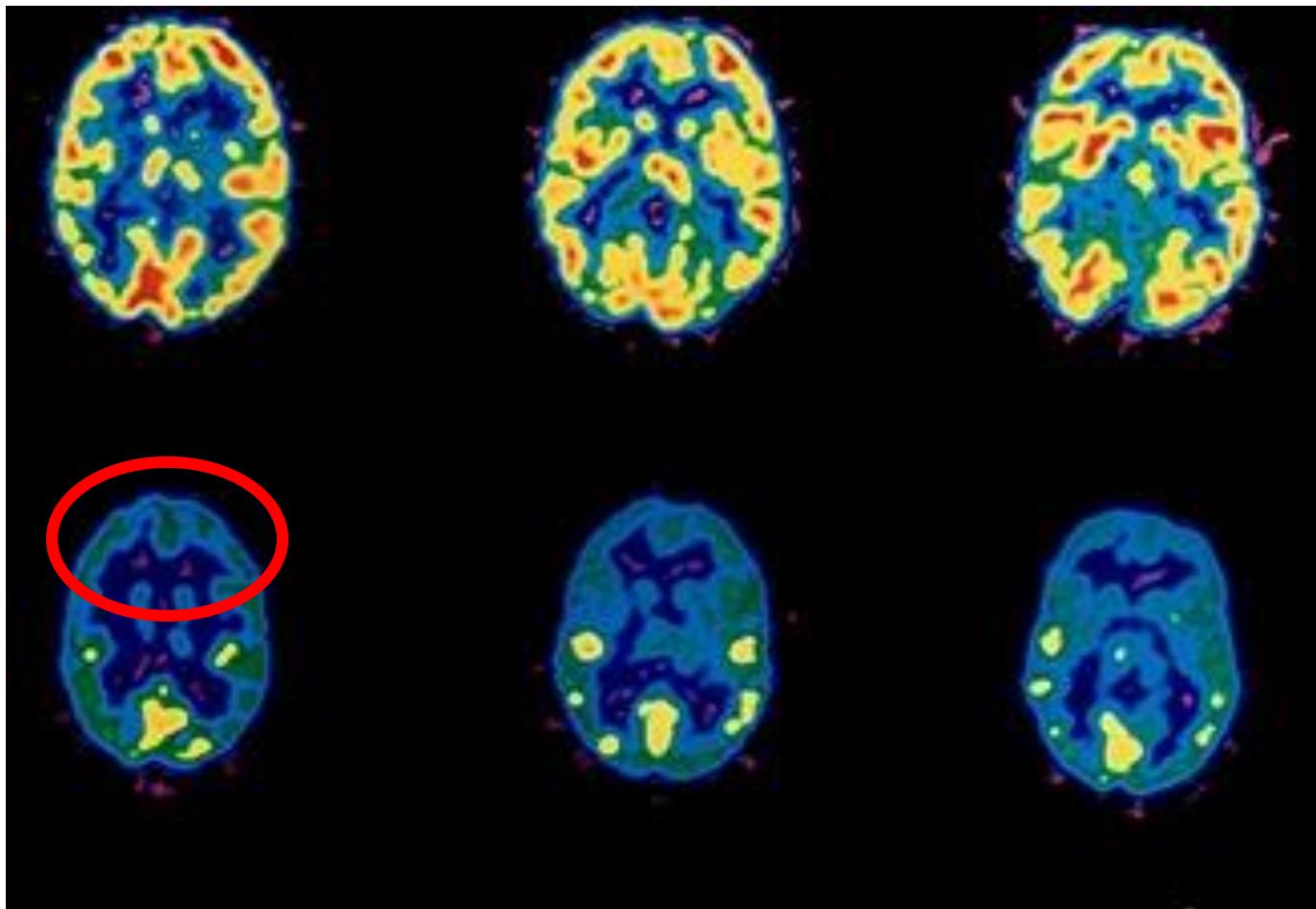
- 1) Survival: Fight or Flight
- 2) Pleasurable Experiences





What does Amygdala Thinking do for you?

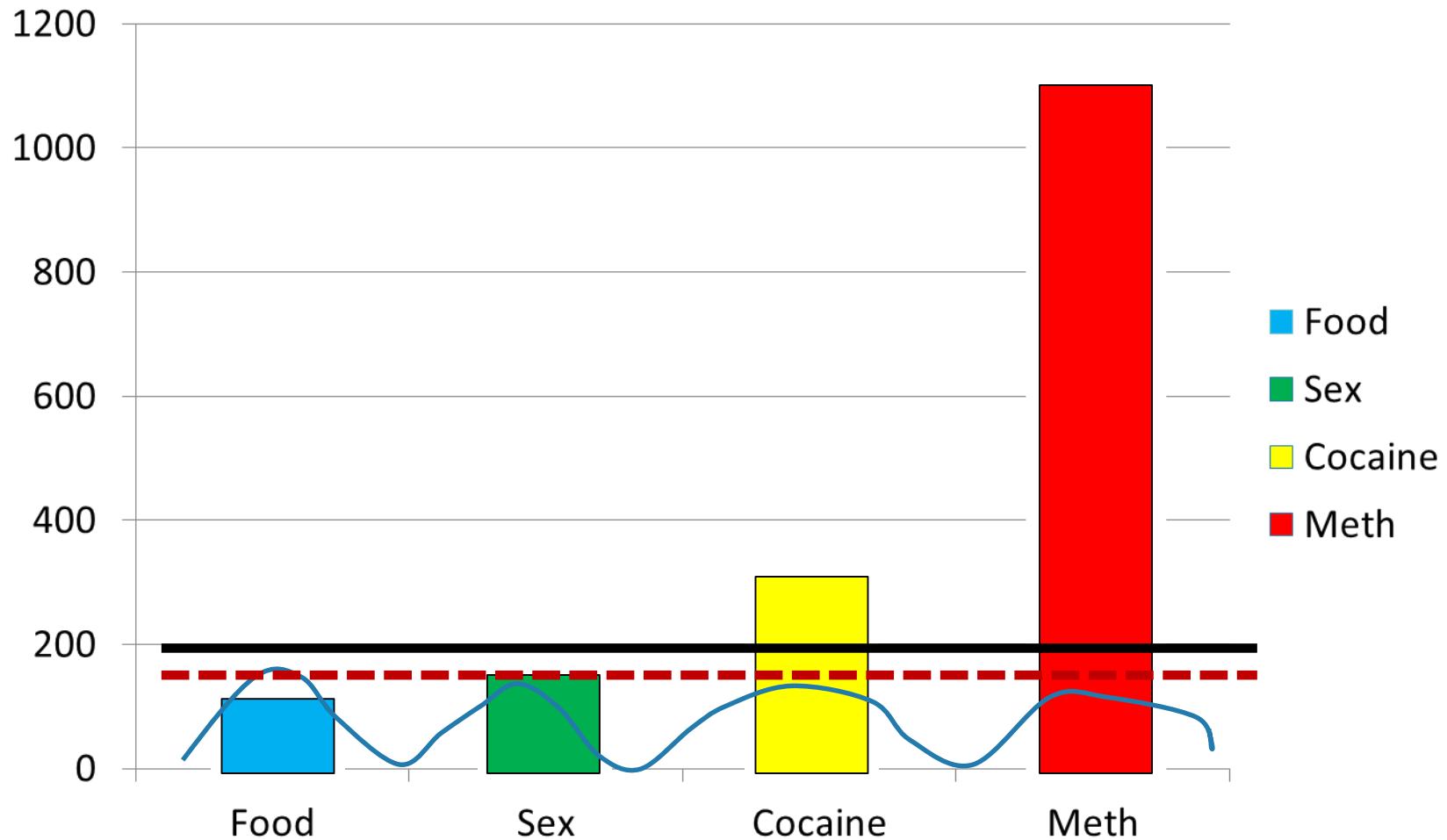
HYPOFRONTALITY: *FEAR*



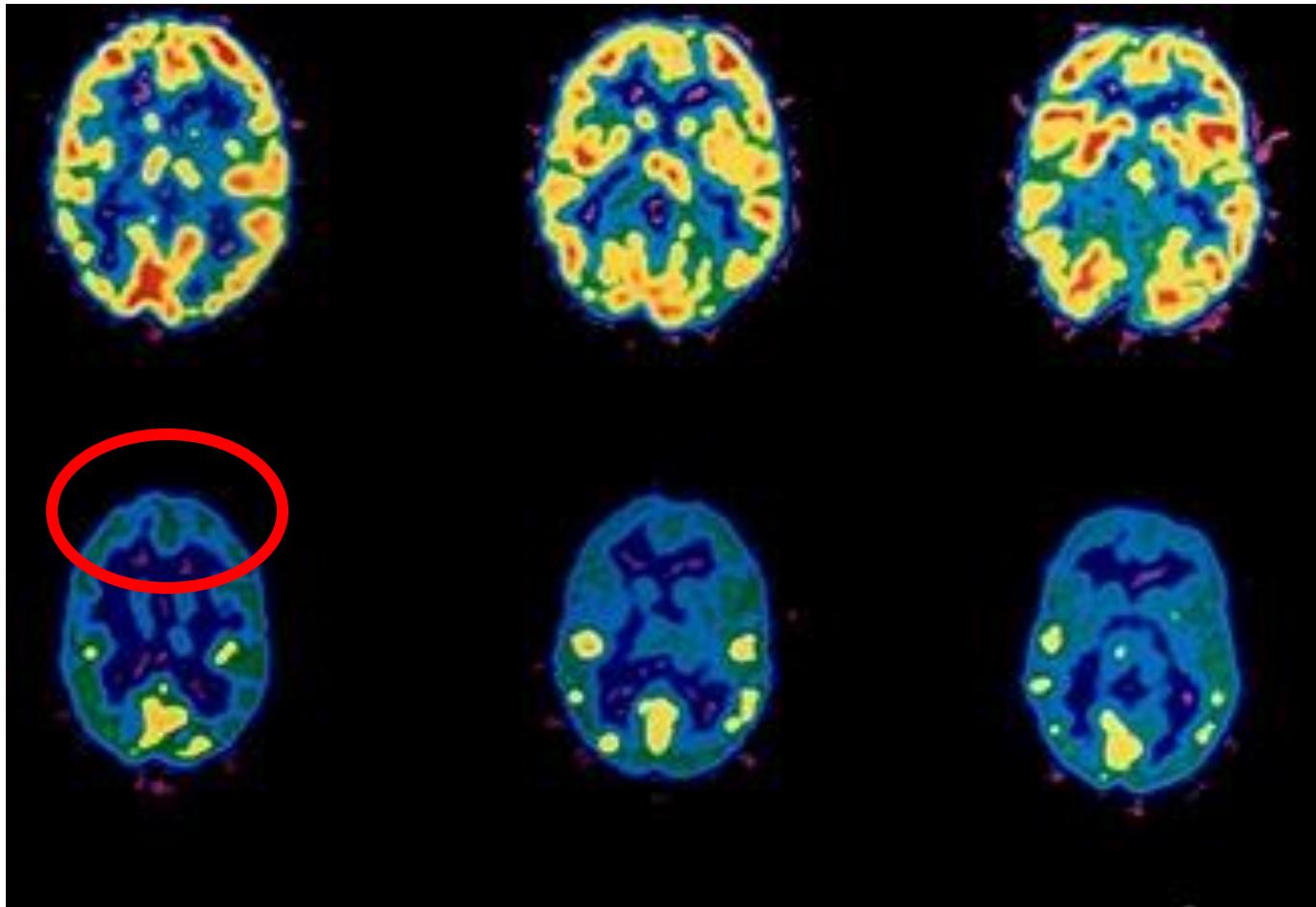


Dopamine:
Calm, Happy,
Signals Salience

Dopamine Release and the Hedonic (pleasure) Threshold

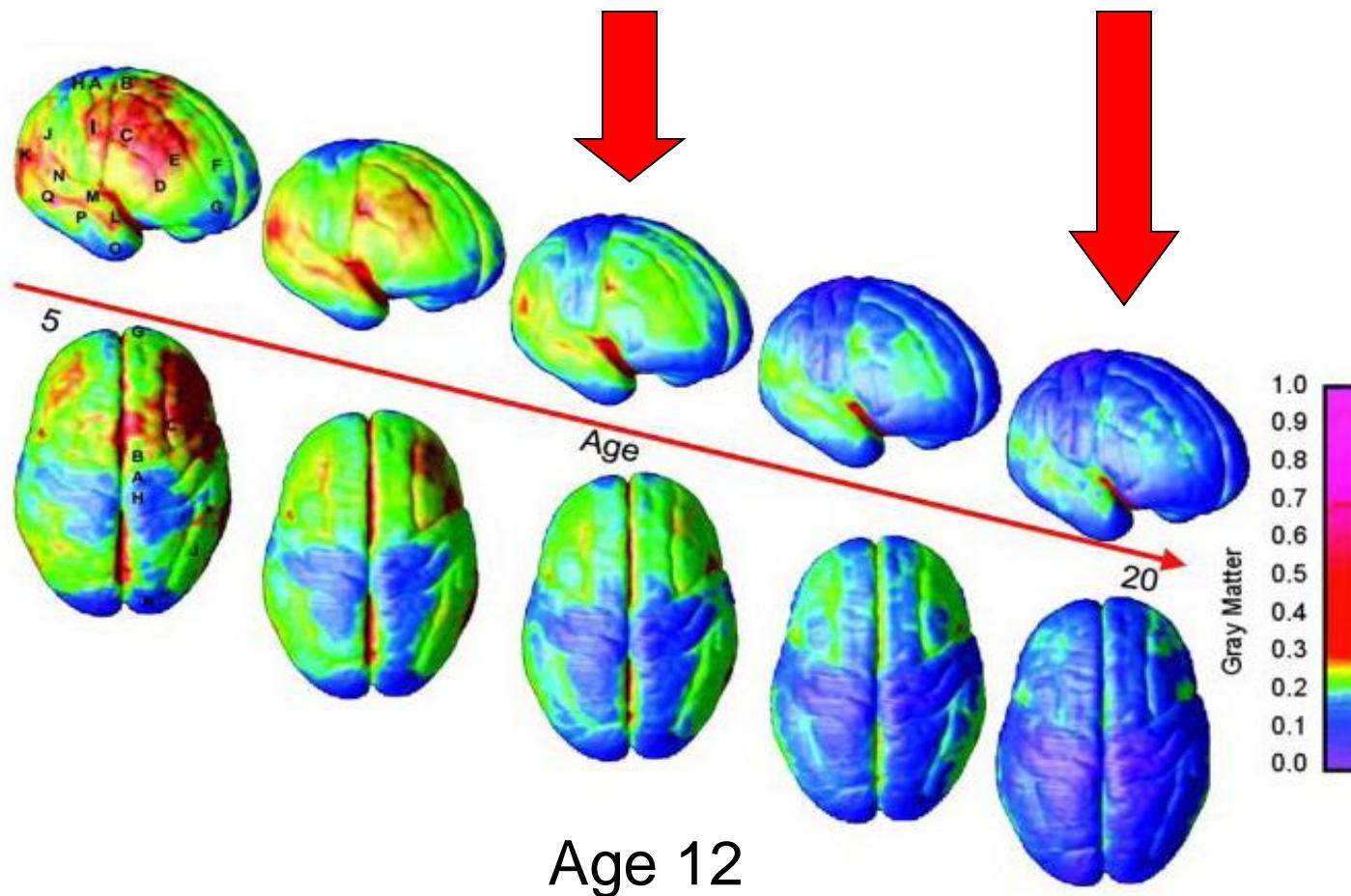


HYPOFRONTALITY = PLEASURE



IN BETWEEN Age 11-25 = ARREST

If you arrest here but stop using here



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Gogtay, N., Giedd, J.N., et al. (2004)

Dynamic mapping of human cortical development during childhood through early adulthood
Proceedings of the National Academy of Sciences, 101 (21), 8174 – 8179

Acquired Narcissism



- Poor attunement
- Inadequate self-appraisal
- Little capacity for reflection
- Projections dominate
- Poor impulse control
- Focus on self to compensate
- Emotional extremes
- Denial

Your Brain After Drugs

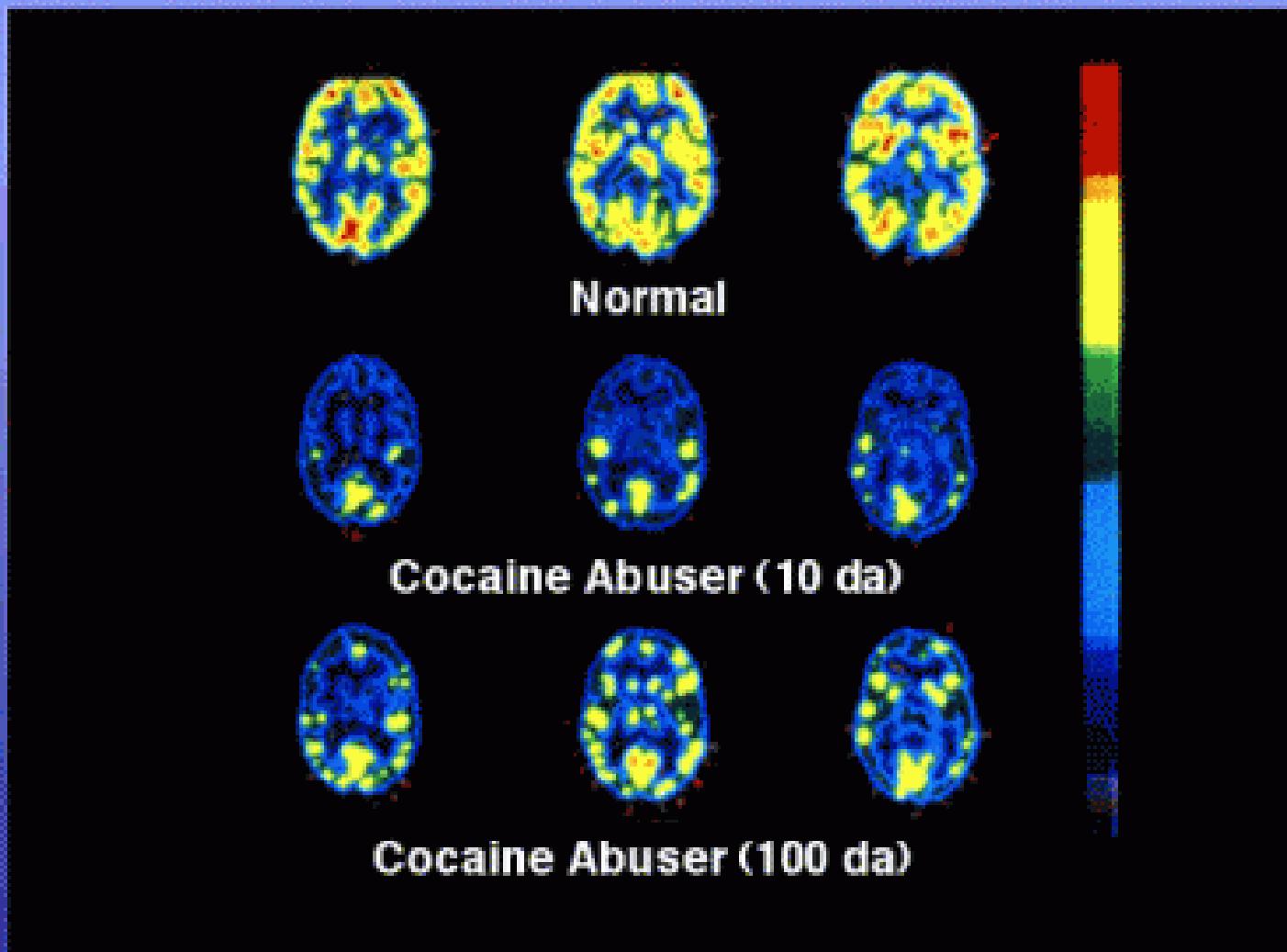


Photo courtesy of Anna Rose Childress, Ph.D., NIDA website, 2007

Dopamine-Releasing Chemicals

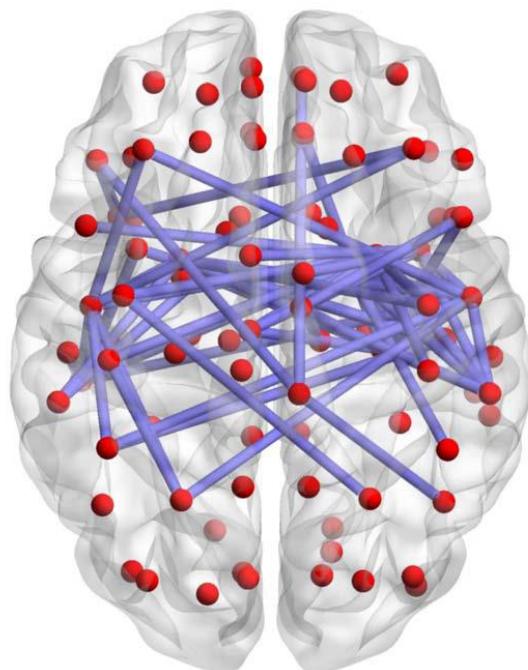
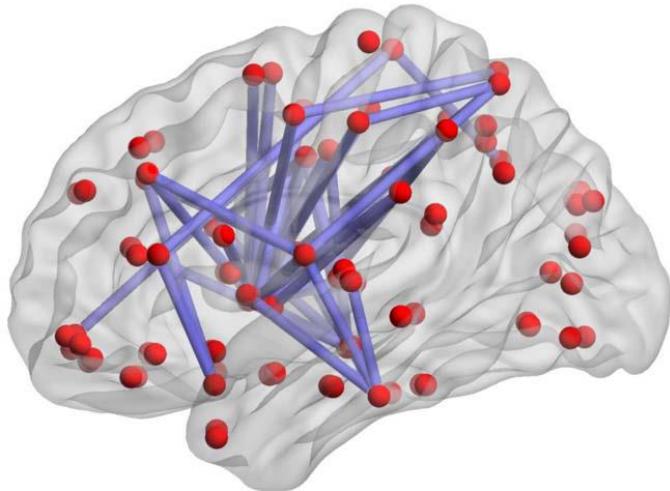
- Alcohol & Sedative/Hypnotics
- Opiates/Opioids
- Cocaine
- Amphetamines
- Entactogens (MDMA)
- Entheogens/Hallucinogens
- Dissociants (PCP, Ketamine)
- Cannabinoids
- Inhalants
- Nicotine
- Caffeine
- Anabolic-Androgenic Steroids



Dopamine-Releasing Behaviors



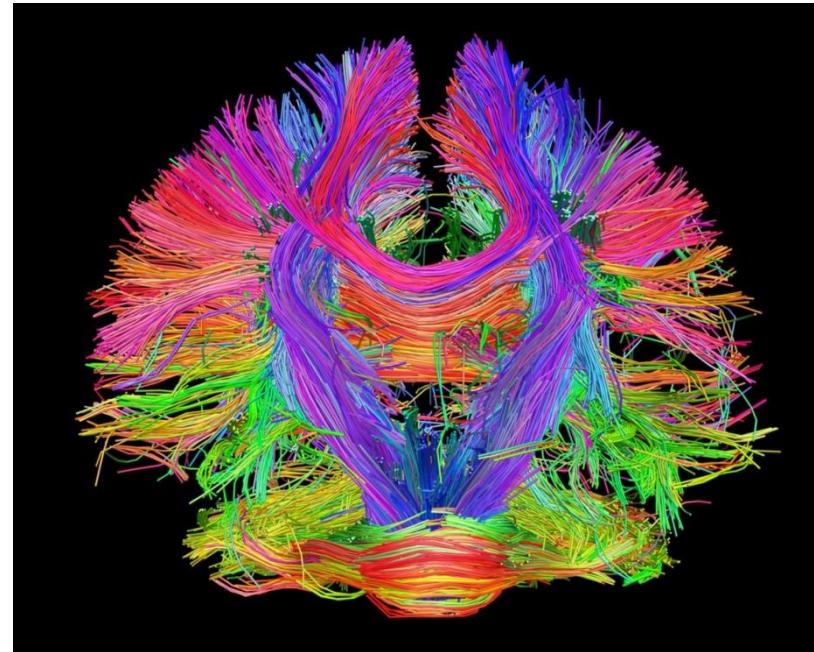
- Food (Bulimia & Binge Eating)
- Sex
- Relationships
- Other People (“Codependency,” Control)
- Gambling
- Cults
- Performance (“Work-aholism”)
- Collection/Accumulation (“Shop-aholism”)
- Rage/Violence
- **Technology/Video Games**

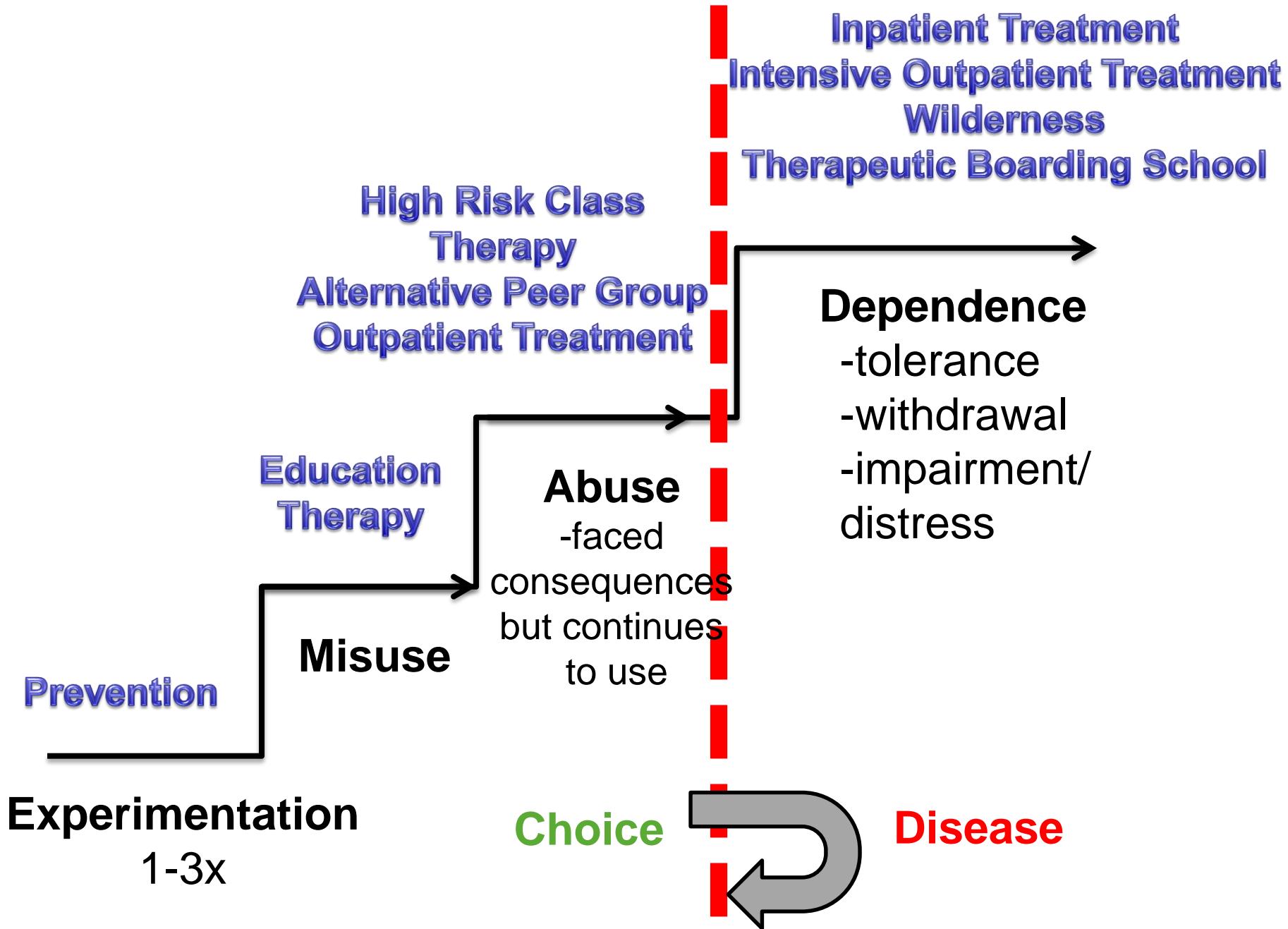


Adolescents with internet addiction display altered brain functional connectivity and decreased connections within all three major cerebral lobes involved.

Personality Traits associated with and predictive of alcohol and drug use....

1. **Impulsivity:** most consistent and strongest predictor
2. **Sensation seeking:** low tolerance for boredom, strong need for stimulation, risk-taking
3. **Hopelessness:** linked to depression coping and numbing of feelings
4. **Anxiety sensitivity:** fear of anxiety-related physical sensations and unrealistic belief of loss of control
(predictive of no use in early adolescence)





Amygdala Thinking vs. Prefrontal Cortex

- ◆ All or Nothing:
Concrete
- ◆ Based on fear or anger
reactions
- ◆ Ignited by real or
perceived threats
- ◆ Begins adrenaline cycle
- ◆ Fight or Flight Survival
Mode
- Abstract; conceptual
understanding
- Impulse Control
- Problem-Solving
- Decision-Making
- Judgment
- Emotion Regulation
- Frustration Tolerance
- Ability to Feel
Empathy

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