

ALL OF US, AT SOME MOMENT, HAVE HAD A VISION OF OUR EXISTENCE AS SOMETHING UNIQUE, UNTRANSFERABLE AND VERY PRECIOUS. THIS REVELATION ALMOST ALWAYS TAKES PLACE DURING ADOLESCENCE.

SELF-DISCOVERY IS ABOVE ALL THE REALIZATION THAT WE ARE ALONE: IT IS THE OPENING OF AN IMPALPABLE, TRANSPARENT WALL -- THAT OF OUR CONSCIOUSNESS -- BETWEEN THE WORLD AND OURSELVES. IT IS TRUE THAT WE SENSE OUR ALONENESS ALMOST AS SOON AS WE ARE BORN, BUT CHILDREN AND ADULTS CAN TRANSCEND THEIR SOLITUDE AND FORGET THEMSELVES IN GAMES AND WORK.

THE ADOLESCENT, HOWEVER VACILLATES BETWEEN INFANCY AND YOUTH, HALTING FOR A MOMENT BEFORE THE INFINITE RICHNESS OF THE WORLD. SHE IS ASTONISHED AT THE FACT OF HER BEING, AND THIS ASTONISHMENT LEADS TO REFLECTION: AS SHE LEANS OVER THE RIVER OF HER CONSCIOUSNESS, SHE ASKS HERSELF IF THE FACE THAT APPEARS THERE, DISFIGURED BY THE WATER, IS HER OWN. THE SINGULARITY OF HER BEING, WHICH IS PURE SENSATION IN CHILDREN, BECOMES A PROBLEM AND A QUESTION."

- OCTAVIO PAZ

Cognitive / Neural Transitions in Adolescence



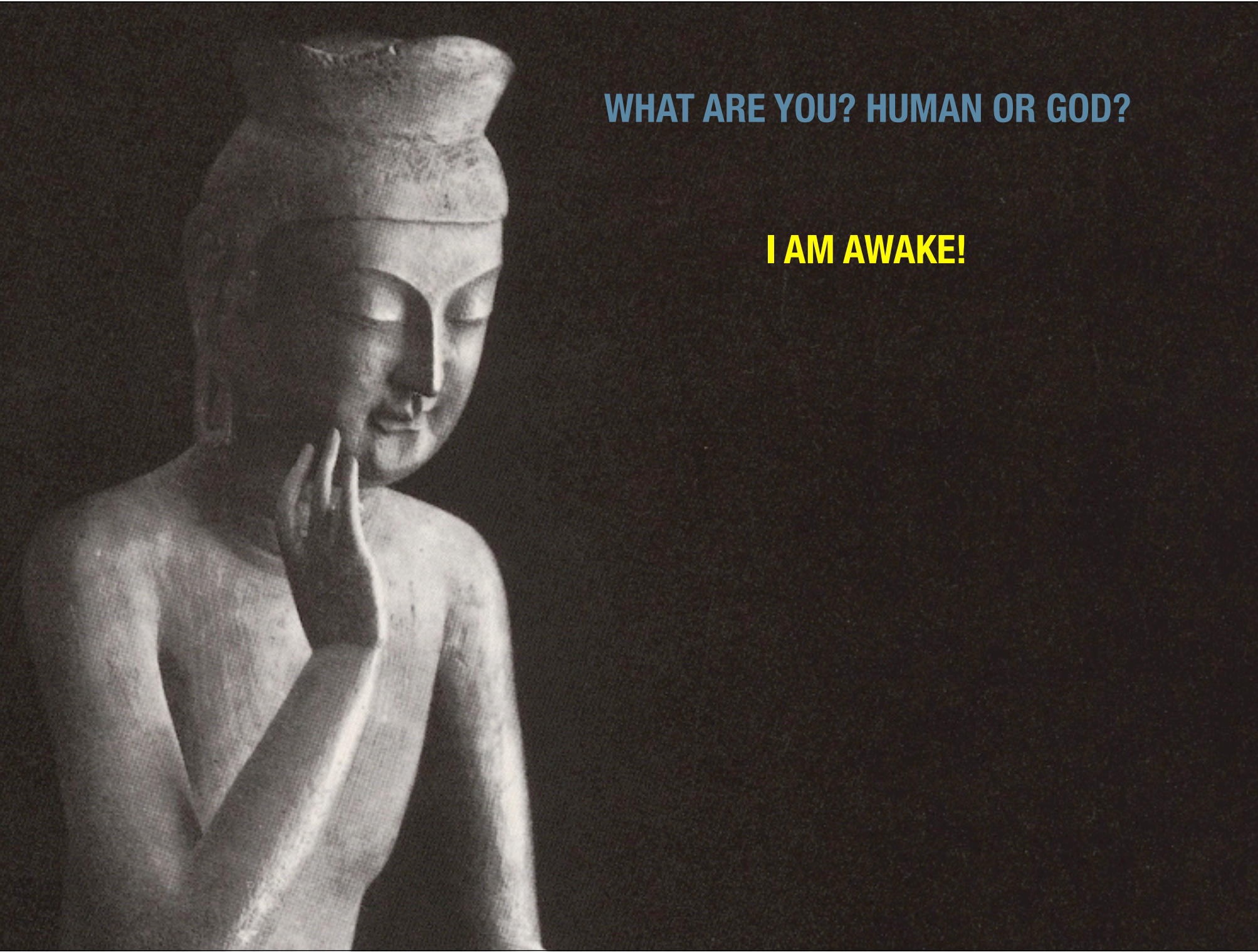
RAINER MARIA RILKE

*since feeling is first
who pays attention
to the syntax of things
will never wholly kiss you.*

*I feel closer to what
language doesn't reach.*



e e cummings

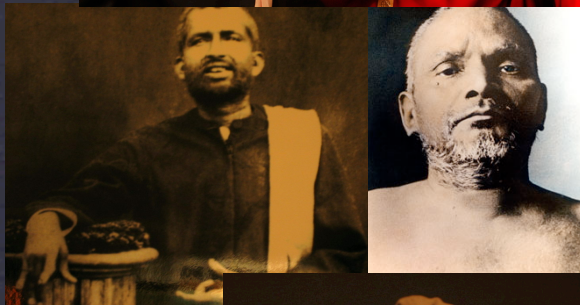


WHAT ARE YOU? HUMAN OR GOD?

I AM AWAKE!

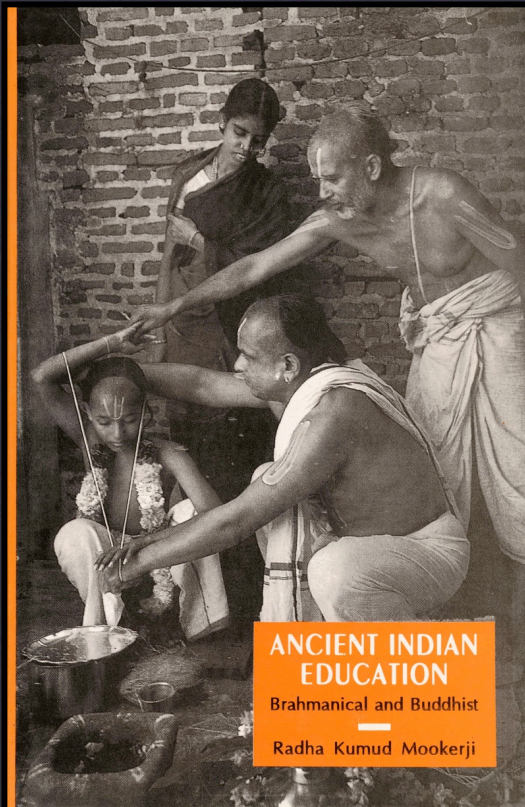
ANCIENT INDIAN WISDOM + MODERN SCIENCE

= "CONTEMPLATIVE SCIENCE"



FOR LIBERATION
AND THE GOOD OF THE WORLD

India's Rite of Passage Ceremony for Youth



Upanayanam or the "Sacred Thread Ceremony" is a Hindu rite-of-passage ritual marking the point at which young people began their formal education and the long transition to adulthood.

Traditionally, the ceremony was performed with young Brahmin, Kshatriya, or Vaishya males (and in some sects, girls as well) at 9, 11, or 13 years of age .

During a multi-day ritual, the young person undergoes a series of ritual purifications and ceremonies by which he or she becomes qualified for life as a student (Brahmacharya), as prescribed in the Manusmriti (text). After this ritual, the young person acquires the right to study the Vedas, the sacred scriptures of Ancient India.

In a sense, this ceremony and its nearness to puberty marks the beginning of both "wisdom training," as well as practical forms of education related to making a living, in the Ancient Hindu educational tradition.

SHAMBHALA SUN

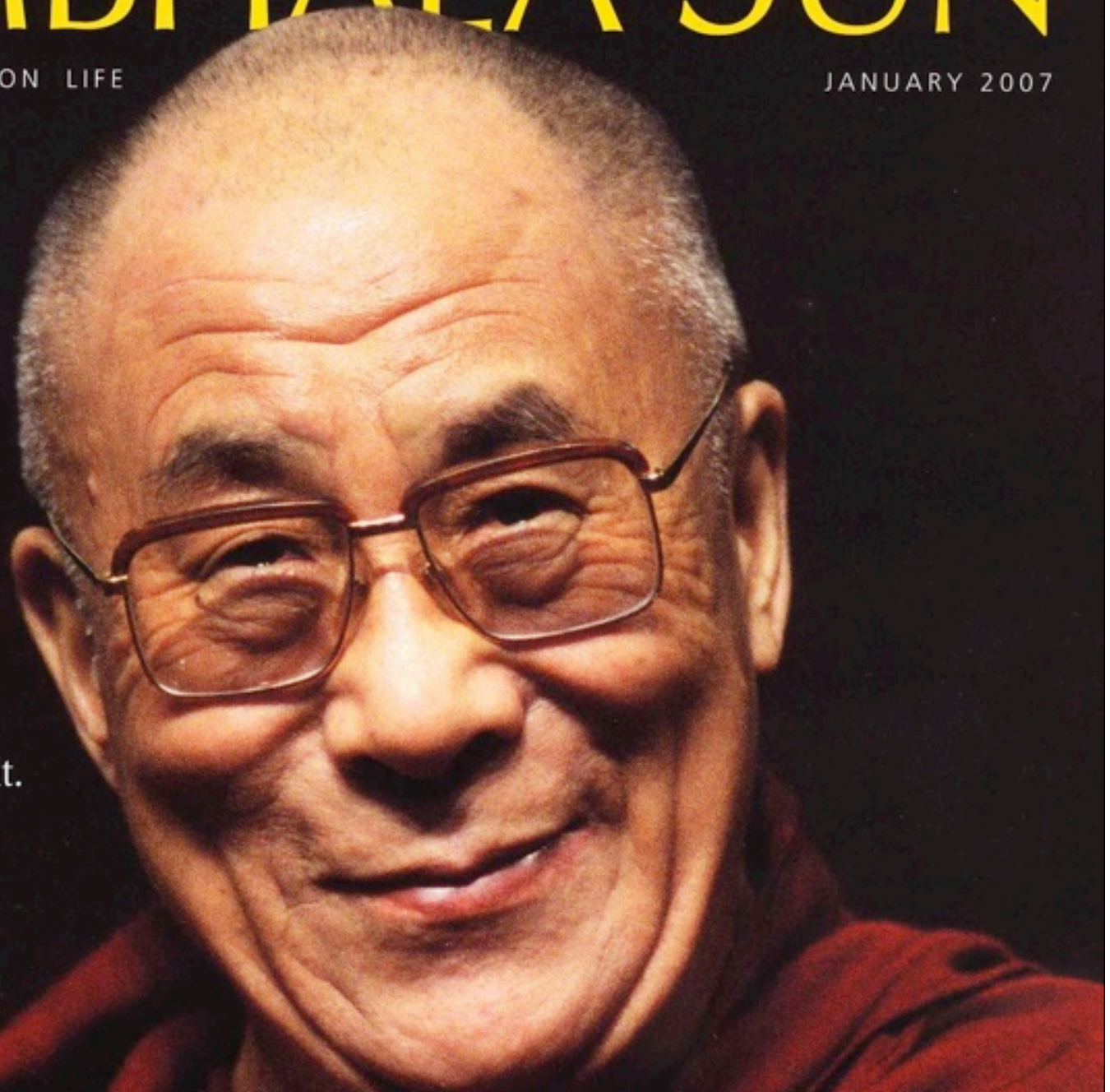
BUDDHISM CULTURE MEDITATION LIFE

JANUARY 2007

Educating the Heart

The **DALAI LAMA** leads a movement to teach children about compassion & empathy. He says our future depends on it.

The Zen of
Joan Didion



[HTTP://WWW.MINDANDLIFE.ORG](http://www.MINDANDLIFE.ORG)



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Mind and Life XVIII

Attention, Memory and the Mind

A Synergy of Psychological, Neuroscientific
and Contemplative Perspectives



April 6–10, 2009 • Dharamsala, India



Mind and Life XIX

Educating World Citizens for the 21st Century

Educators, Scientists and Contemplatives
Dialogue on Cultivating a Healthy Mind, Brain and Heart



October 8–9, 2009 • DAR Constitution Hall • Washington, D.C.

The Mind & Life Institute is an independent, not-for-profit organization devoted to establishing a mutually respectful working collaboration and research partnerships between modern science and Buddhism – two of the world's most fruitful traditions for understanding the nature of reality and promoting human well-being.

**Training our minds and
hearts so that we may
attain happiness and love
and serve others selflessly**

Mental control

Emotional passion

Breath Exercise

(1 min)

Sound Exercise

(3 chimes)

Stroop Task

(1 person)

STROOP TASK



**INHIBITION OF DOMINANT (I.E., AUTOMATIC)
MENTAL (INTELLECTUAL AND EMOTIONAL)
AND BEHAVIORAL RESPONSE TENDENCIES
(I.E., HABITS)**

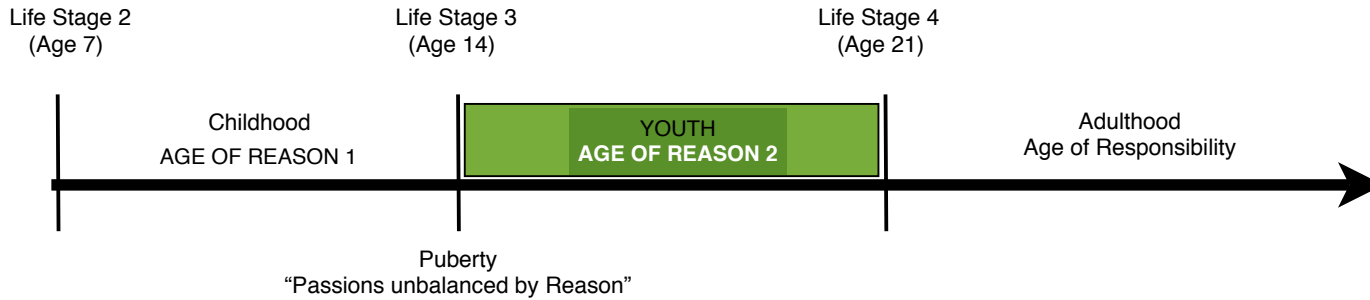
Your experience

**Mental control is hard,
it takes effort**

PASSIONS / ANIMAL LIKE

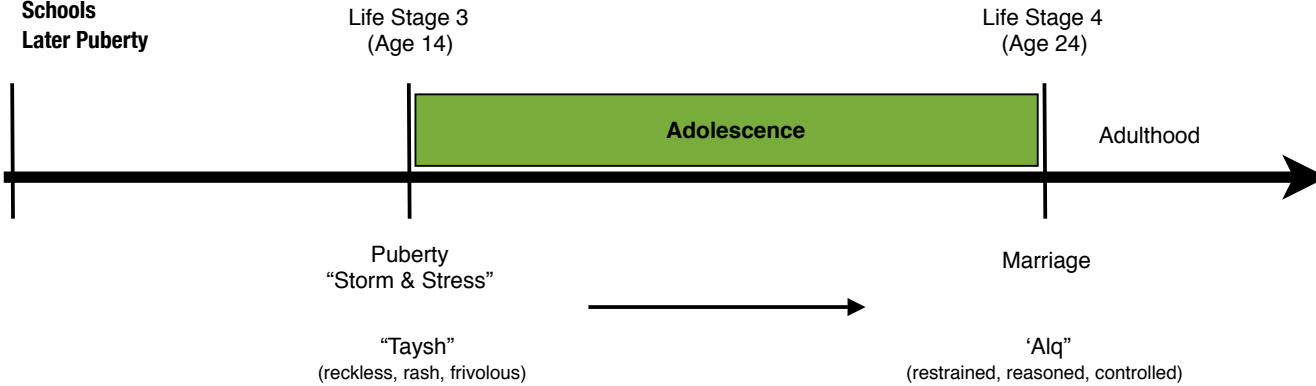
REASON / HUMAN LIKE

PLATO and ARISTOTLE on "YOUTH" - circa 2500 BCE



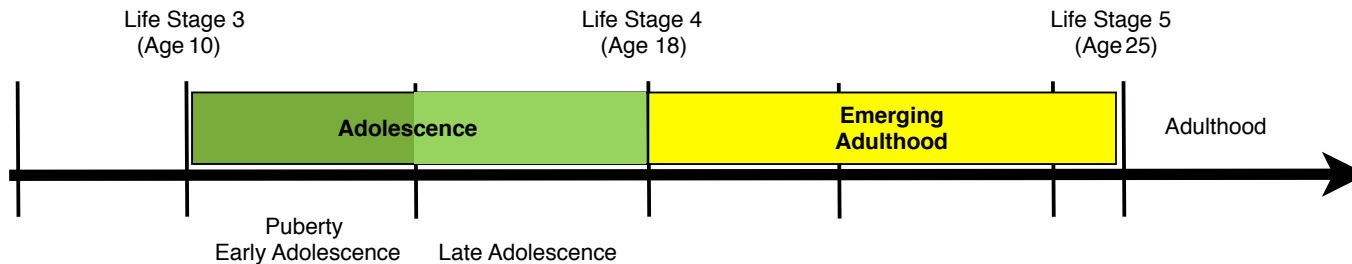
G.S. HALL and the "AGE OF ADOLESCENCE" - circa 1890-1920 CE

Labor Laws
Schools
Later Puberty



J.J. ARNETT and "EMERGING ADULTHOOD" - circa 1995 CE

Earlier Puberty / Secondary School / Delayed Roles



ADOLESCENCE IS TERM THAT IS ONLY ABOUT 100 YEARS OLD

“COOL, SLOWER & DELIBERATE SELF-REGULATION”

CORTEX

EXECUTIVE CONTROL

LANGUAGE / THOUGHT

**PRE-FRONTAL
CORTEX**

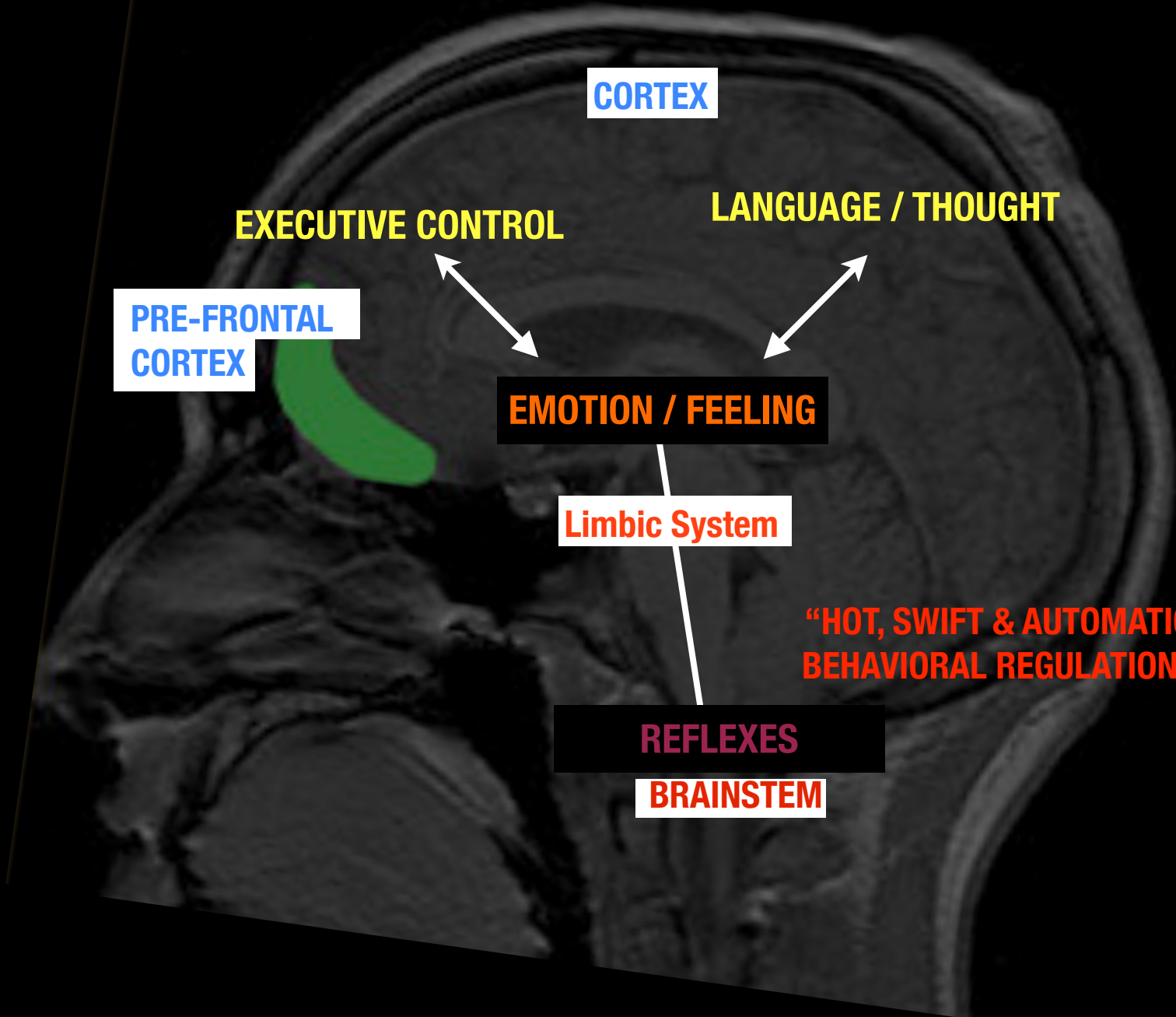
EMOTION / FEELING

Limbic System

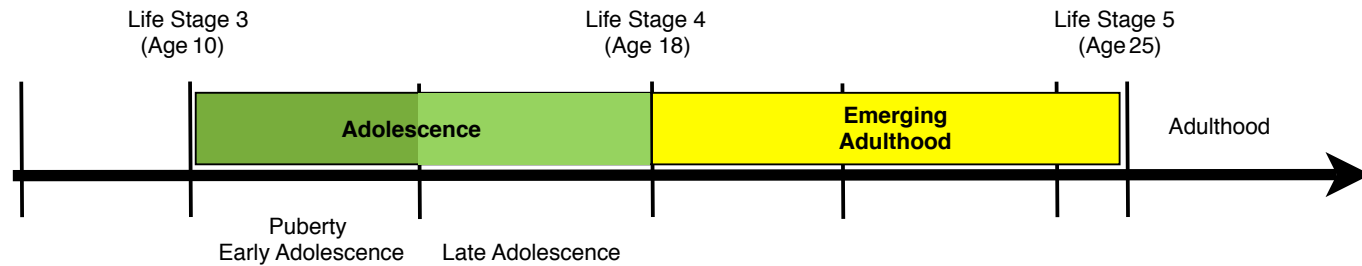
**“HOT, SWIFT & AUTOMATIC
BEHAVIORAL REGULATION”**

REFLEXES

BRAINSTEM



J.J. ARNETT and “EMERGING ADULTHOOD” - circa 1995 CE



Puberty / Limbic System Development → **Frontal Lobe Development**

- Appetite (eating, drinking)
 - Romantic Interest
 - Sexual Interest
 - Sleep/Arousal
 - Emotional Intensity
 - sensation and novelty seeking
 - Risk Taking
- Self Control
 - Planning
 - Abstract Reasoning
 - Perspective Taking

Passions vs Reason Asynchrony?

Accelerating the intensity of some emotional and motivational tendencies (due to puberty) at an earlier point in cognitive development and experience may create a situation, that is, metaphorically, like revving the engine without a skilled driver...

Fortunately, these emotional and motivational changes at puberty do not lead solely to bad outcomes...The ignited passions can be aligned in healthy ways, in the service of a higher good...

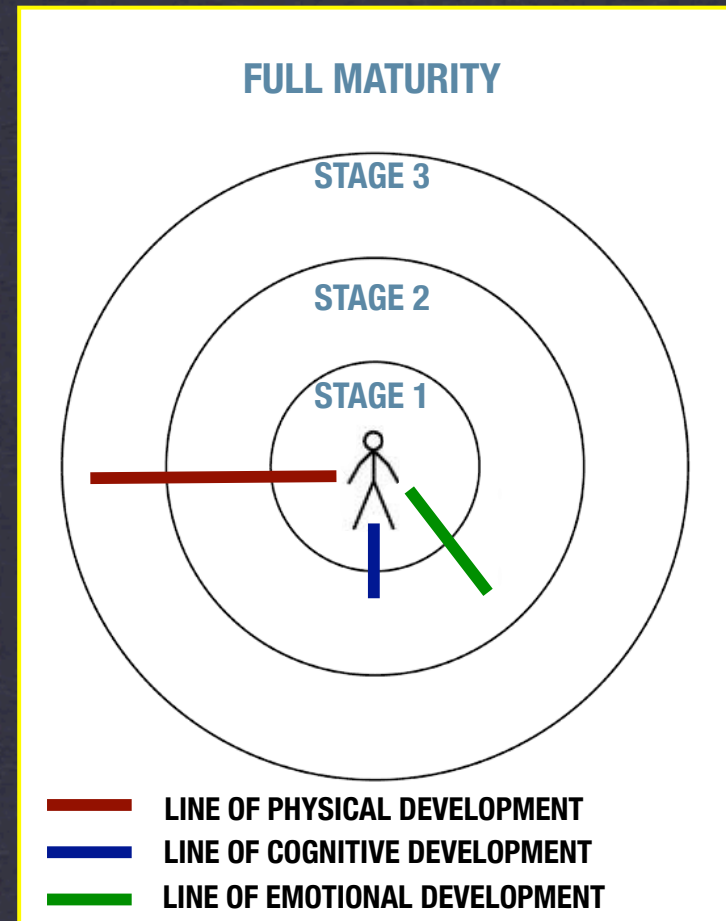
- Dahl (2007)

Puberty and Asynchronies

ASYNCHRONY IN DIFFERENT ASPECTS OF PUBERTAL DEVELOPMENT ASSOCIATED WITH THE “GROWTH SPURT” IS THE NORM (EXTREMITIES FIRST - CLUMSY, GANGLY)

ASYNCHRONIES BETWEEN BIOLOGICAL/ PHYSICAL AND PSYCHOLOGICAL / SOCIAL DEVELOPMENT ARE ALSO NORMATIVE. SOMETIMES OUR BODIES, HEARTS AND MINDS ARE NOT EQUALLY DEVELOPED.

FOR INSTANCE, PUBERTY AND PHYSICAL AND SEXUAL MATURITY CAN HAPPEN WELL BEFORE COGNITIVE AND EMOTIONAL MATURATION.



since feeling is first

since feeling is first
who pays any attention
to the syntax of things
will never wholly kiss you;

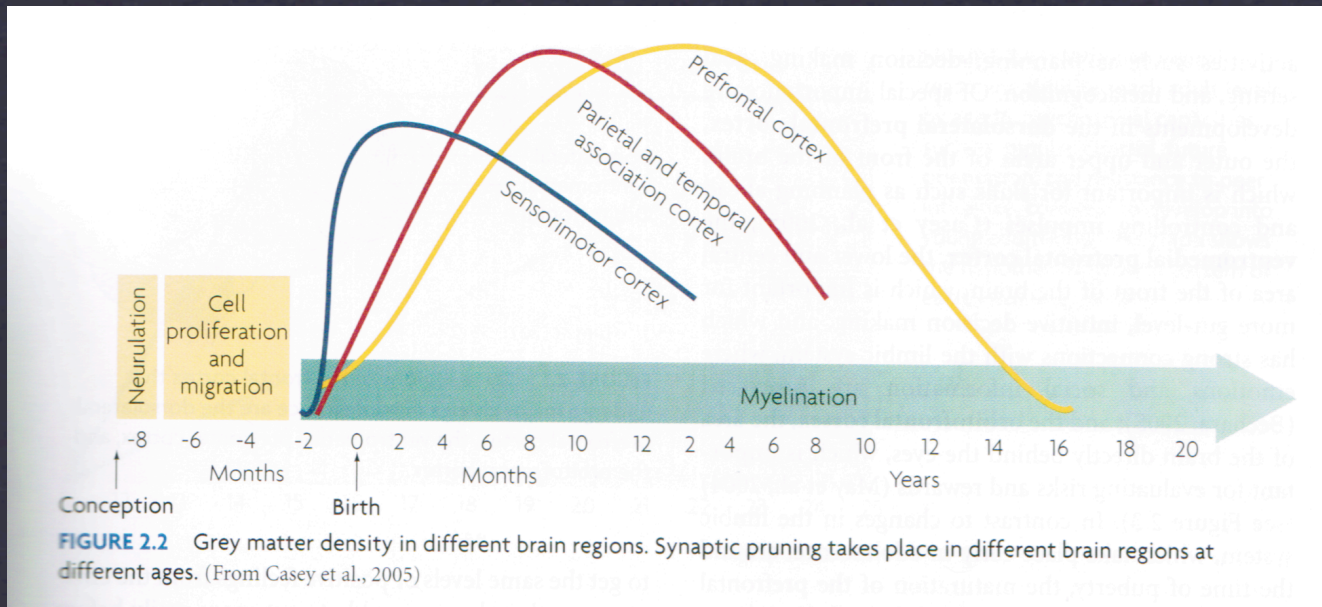
wholly to be a fool
while Spring is in the world

my blood approves,
and kisses are a far better fate
than wisdom
lady i swear by all flowers. Don't cry
--the best gesture of my brain is less than
your eyelids' flutter which says

we are for each other: then
laugh, leaning back in my arms
for life's not a paragraph

And death i think is no parenthesis

Brain Development in Adolescence & Emerging Adulthood



[HTTP://WWW.PBS.ORG/WGBH/PAGES/FRONTLINE/SHOWS/TEENBRAIN/VIEW/](http://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/view/)

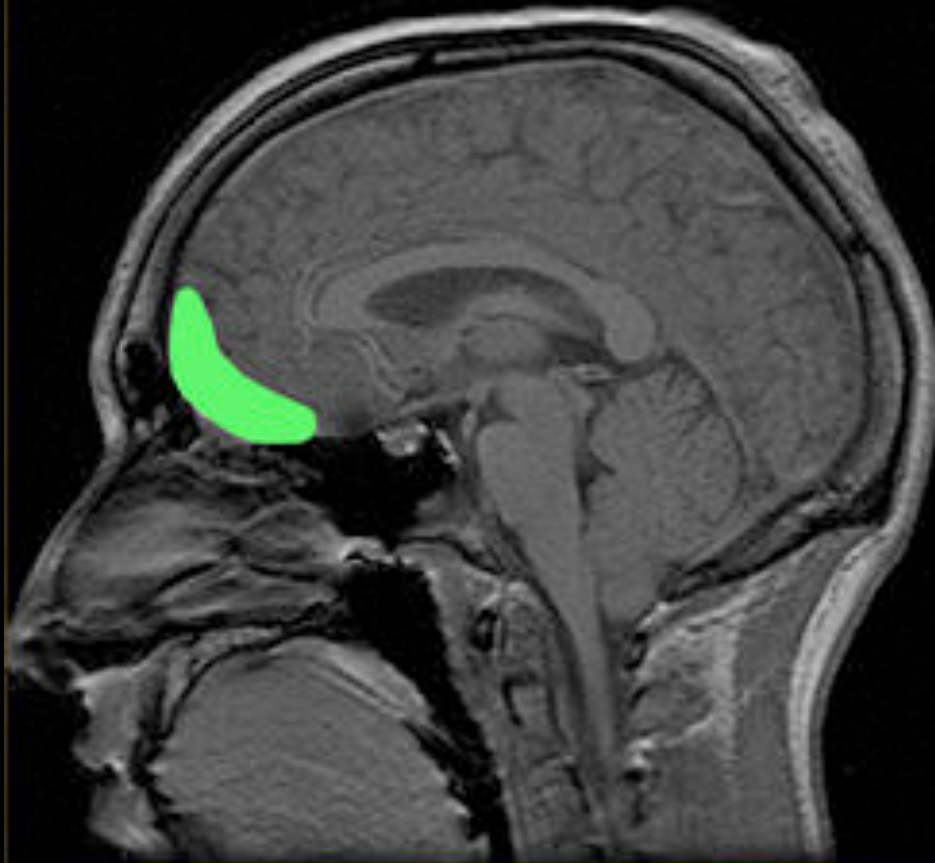
2:33-9:33

TEMPORAL LOBES ARE PARTS OF THE CEREBRUM THAT ARE INVOLVED IN SPEECH, MEMORY, AND HEARING.

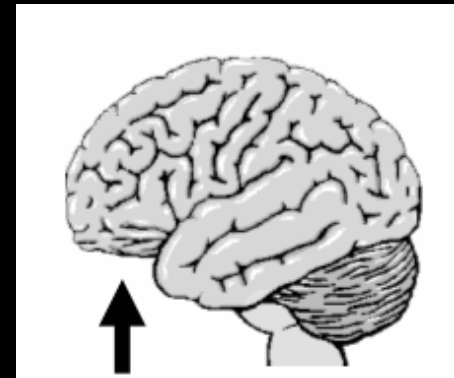
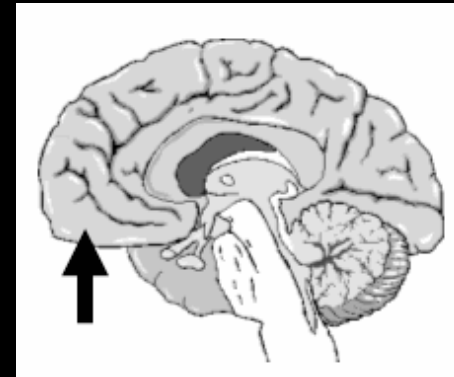
Five Major Changes in Cognition

- 1. ADOLESCENTS, MORESO THAN CHILDREN, CAN THINK ABOUT WHAT POSSIBLE (I.E., IDEAL) AND NOT JUST WHAT IS ACTUAL (I.E., REAL)**
(E.G., SENSITIVE TO HYPOCRISY)
- 2. ADOLESCENTS, MORESO THAN CHILDREN, CAN THINK ABOUT ABSTRACT THINGS** (E.G., LOVE, JUSTICE, SHY)
- 3. ADOLESCENTS ARE BETTER ABLE TO THINK ABOUT THINGS FROM MULTIPLE PERSPECTIVES AND ALONG MULTIPLE DIMENSIONS**
(E.G., PSEUDOSTUPIDITY)
- 4. ADOLESCENTS, MORESO THAN CHILDREN, THINK ABOUT THEIR OWN THINKING (E.G., INTROSPECT)**
(E.G., “METACOGNITION” / SELF-ABSORPTION/IMAGINARY AUDIENCE/PERSONAL FABLE)
- 5. ADOLESCENTS THINK MORE ABOUT FUTURE POSSIBILITIES & FEARS (E.G., IDENTITY & PURPOSE)**

Orbito-Prefrontal Cortex



Inferior Orbital-Prefrontal Cortex
(Inside View)



Inferior Orbital-Prefrontal Cortex
(Outside View)

Regulation of behavior through:

1. The evaluation of risks and rewards;
2. The calculation of outcome expectancies given situation and personal resources,
3. Decision-making / goal pursuit

Adolescents are aware of their thinking processes.

The capacity for "thinking about thinking" enables adolescents to learn and solve problems more efficiently

This is called

... Metacognition!



Social Cognition

Social cognition is the term used to describe the way we think about other people, social relationships and social institutions



Perspective Taking

- Is the ability to understand the thoughts and feelings of others
- Selman's theory of perspective taking is based on a stage approach that children and adolescents go through
- The egocentrism of childhood gradually develops into the mature perspective-taking ability of adolescence

Perspective Taking in Adolescence

- In **early** adolescence (ages 10-12) children become capable for the first time of **mutual perspective taking**

Just as you understand that another person has a perspective that is different from your own, you also realize that other persons understand that you have a perspective that is different from theirs



Perspective Taking in Adolescence

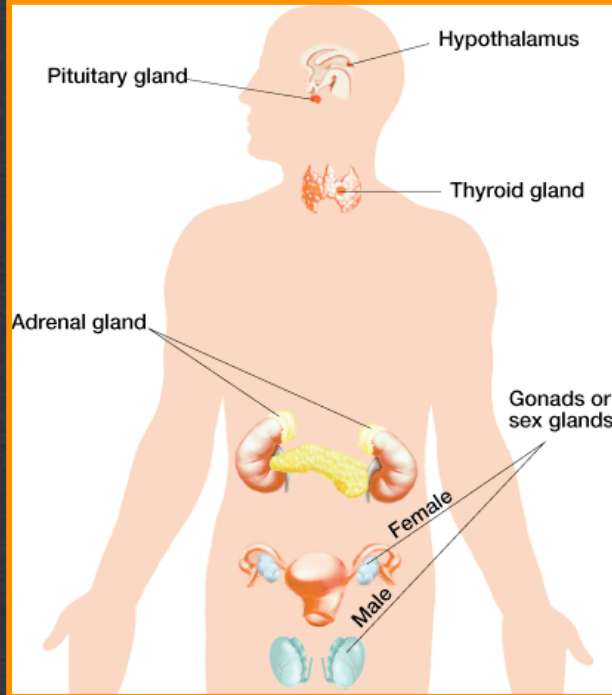
- In late adolescence children become capable of social and conventional perspective taking



Adolescents come to realize that their social perspectives and those of others are influenced not just by their interaction with each other but also by their roles in the larger society

The H-P-G Axis

FAT CELLS PRODUCE "LEPTIN" THAT TURNS ON NEURONS IN HYPOTHALAMUS



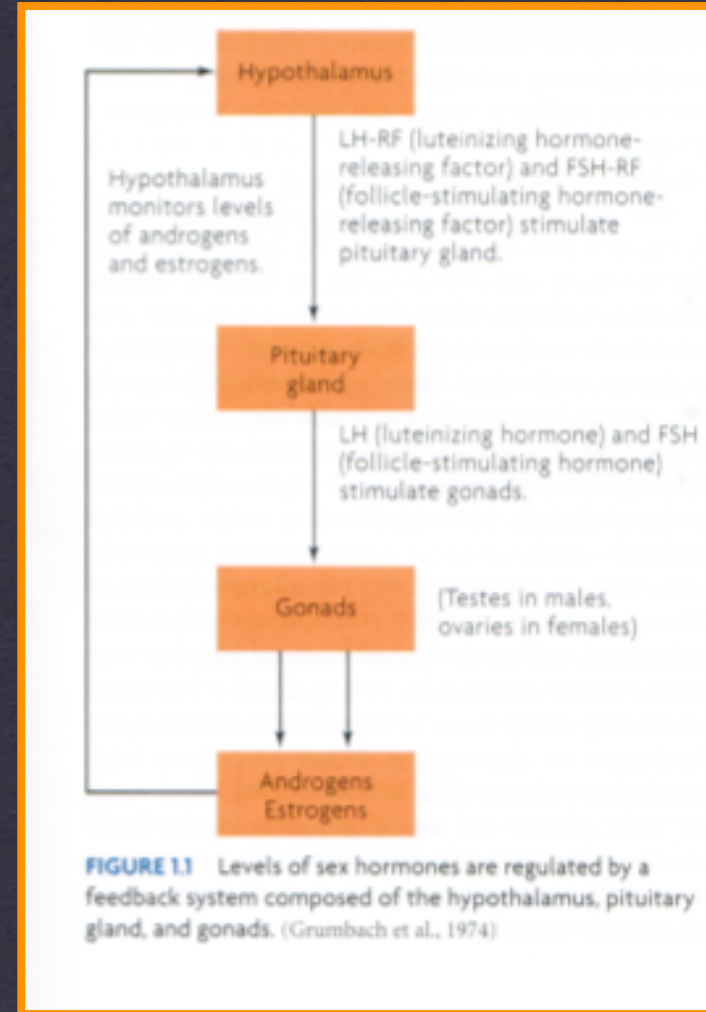
HYPOTHALAMUS STIMULATES PITUITARY GLAND TO RELEASE HORMONES



PITUITARY GLAND STIMULATES THYROID, ADRENALS, WHICH IN TURN STIMULATE GONADS TO RELEASE SEX HORMONES



SUITE OF BIOLOGICAL CHANGES FOLLOW



Five Physical Changes of Puberty

- 1. THE GROWTH SPURT - A RAPID ACCELERATION IN HEIGHT AND WEIGHT**
- 2. DEVELOPMENT OF PRIMARY SEX CHARACTERISTICS NECESSARY FOR REPRODUCTION**
- 3. DEVELOPMENT OF SECONDARY SEX CHARACTERISTICS LEADING TO ADULT-LIKE APPEARANCE (E.G., CURVES, BODY HAIR, VOICE)**
- 4. CHANGES IN BODY FAT AND MUSCLE**
- 5. CHANGES IN HEART AND LUNGS LEADING TO GREATER STRENGTH AND ENDURANCE**

**On or off-time
with respect to peers?**

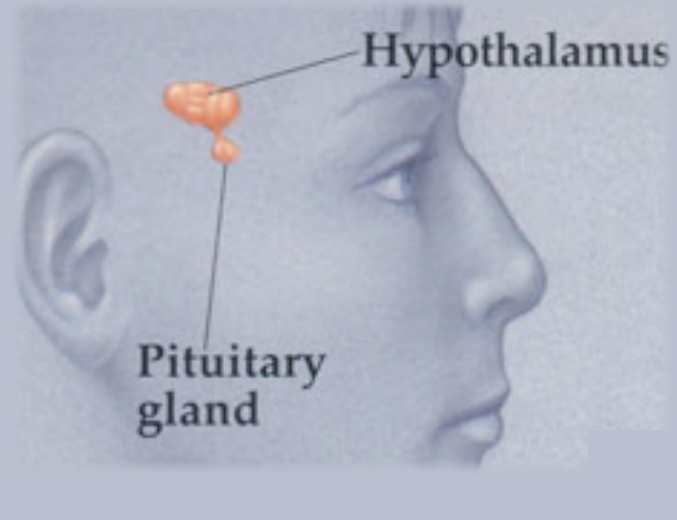
The *hypothalamus*, a key brain structure that initiates pubertal development, is also integrally related to emotional arousal and the motivation of behaviors associated with:

- Appetite (eating, drinking)
- Romantic partnerships
- Sexuality
- Sleep/Arousal
- Sensation- and Novelty-Seeking
- Risk-Taking
- Emotional Intensity

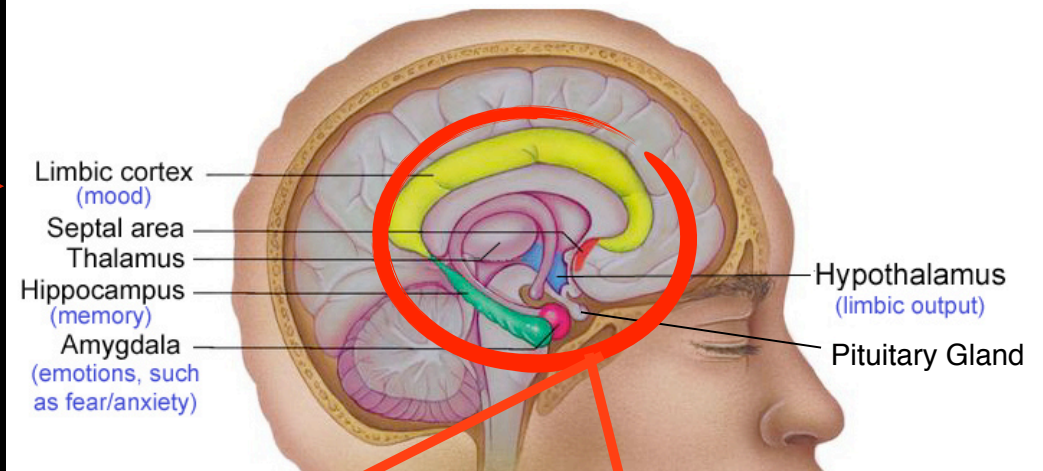


Motivation in relation to each of these areas grows stronger with the onset of puberty!

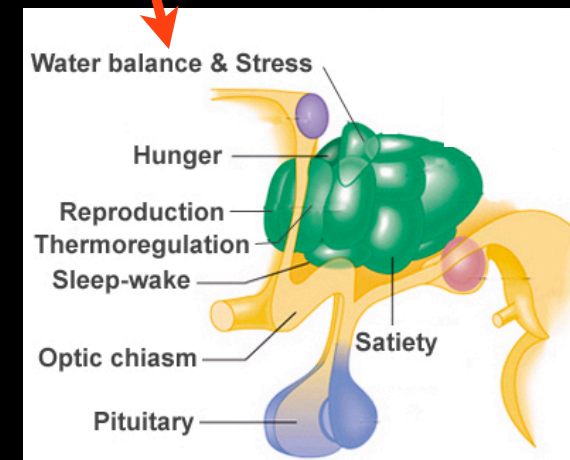
Pubertal Onset



Change in Emotion, Mood & Physiology



- Greater emotional intensity & mood changes
- Changes in appetite, including eating and drinking
- Increase in sexual motivation
- Increase in interest in romantic partners
- Changes in sleep / wake cycles
- Increases in sensation- and novelty-seeking
- Increases in risk-taking



Empirical evidence for increased vulnerability to emotional changes, negative mood and stress in adolescence (Arnett, 1999)

- Increased conflicts with parents (emotional intensity)
- Increased mood volatility and negative mood (emotional swings)
- Increased risk behavior, recklessness, and sensation-seeking (impulsivity)

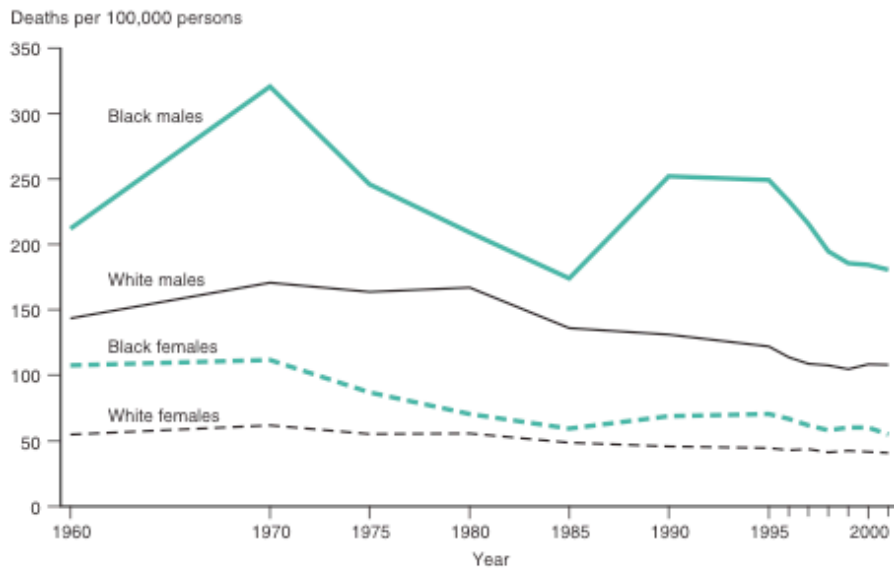
<http://www.nimh.nih.gov/health/publications/teenage-brain-a-work-in-progress.shtml>

<http://video.pbs.org/video/1218735872/search/adolescent%20brain>

Risk Taking & Consequences in Adolescence

Indicator 51. Death and Causes of Death

Figure 51. Number of deaths per 100,000 persons 15 to 24 years old, by sex and race: Various years, 1960 to 2001



NOTE: For the year 1960, Black category includes all races except White. Black and White include persons of Hispanic origin. Rates for 2000 and 2001 were computed using 2000-based postcensal estimates and may differ from previously published estimates.

SOURCE: U.S. Department of Health and Human Services, *Vital Statistics of the United States, Vol. II, Mortality, Part A*, various years; *Monthly Vital Statistics Report*, vols. 43, 44, and 45; *National Vital Statistics Report*, 1999 and 2000.

The majority of deaths of persons 15 to 24 years old can be attributed to behavioral or accidental causes over the past 40 years. Since 1960, deaths by accidents have been the leading cause of death for individuals in both the 5 to 14 and 15 to 24 age groups, with motor vehicle accidents making up a large proportion of these accidental deaths in the 15- to 24-year-old group. Between 1985 and 1990, there was a rapid rise in the homicide rate and a continuing drop in the motor vehicle accident rate among 15- to 24-year-olds. The accidental death rate among both the 5- to 14-year-old group and 15- to 24-year-old group has steadily declined since 1970, while the homicide rate among the 15- to 24-year-old group has likewise steadily declined since 1995. Among 15- to 24-year-olds, the homicide rate for Black males has remained significantly higher than the rate for Black females and White males and females. Deaths resulting from cancer, heart disease, and pneumonia/influenza have shown steady declines since the late 1960s and early 1970s.

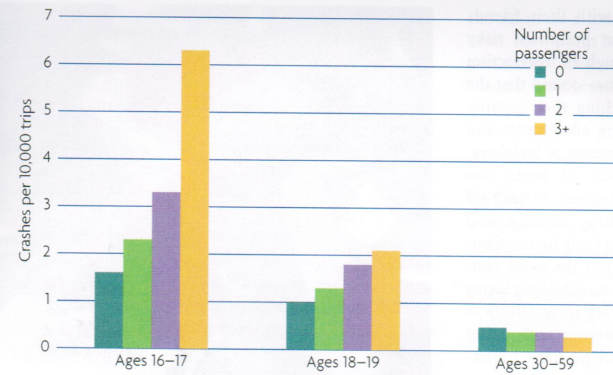
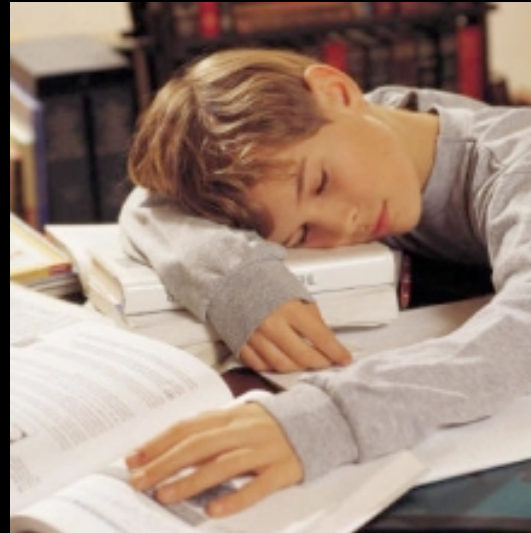


FIGURE 2.7 Crash rates are significantly higher when teenage drivers have passengers in the car. This is less true for college-age drivers and not at all true for middle-aged adults, however. (Williams, 2003)

Sleep Changes During Puberty



Frontline's "Inside the Teen brain" (10 min)

<http://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/view/>



The case of the frozen police officer. A true story

Two young police officers are called to a domestic incident by a neighbor who is worried about the screams coming from next door.

This is the sort of situation the police hate. What will they find when they get there? A violent crime? Or will they simply be abused by everyone in the house?

As the two police officers arrive, a frightened six year old boy runs out into the garden. Rushing into the living room, they find a sobbing woman being threatened by a man with a kitchen knife. The younger of the two police officers is really scared, he's never faced an armed man before. He turns to his colleague to see what they should do. But his colleague has frozen.

He's the victim of an Amygdala Hijack. The frozen police officer is in the grip of a sudden surge of adrenalin that has stopped him dead in his tracks. But this is no help to his young colleague and, after the adrenaline stops flowing, he will regret not having done something.

It's a neurological thing

A quick biology lesson

The amygdala is an almond shaped cluster of interconnected structures perched above the brain stem near the bottom of the limbic ring.

End of lesson

All you really need to know is that the amygdala is the brain's specialist for emotional matters. Think of it as an emotional stormtrooper, able to hijack the brain, causing it to flood the body with stress hormones geared to 'fight' or 'flight'.

So what happened next?

Fortunately, there's a lot more to a brain than the amygdala, otherwise we'd all be quivering wrecks of emotion. In this case, the colleague of the frozen police officer realized that what he was seeing in the knifeman was fear.

The police officer reports saying quietly, without thinking about it: 'Are you OK, sir?' It's almost funny, really – a silly question. But suddenly the anger drained out of the knifeman and he started crying.

No weapons. No shouts of:

Just the question:

“put the
knife down now” “are you
OK, sir?”

It's good policing and an example of how the brain's prefrontal lobes act as a manager for the emotions and help us decide how to use the range of emotional tricks up our sleeves. When to praise, when to persuade, when to laugh uproariously at your client's unfunny joke or, for this police officer, when to show sympathy.

These emotional skills and our ability to use them are what we call Emotional Intelligence (EI).

What is Emotional Intelligence?

In the words of EI guru Dr Daniel Goleman (more about him later), Emotional Intelligence is: 'the capacity for recognizing our own feelings and those of others, for motivating ourselves, for managing emotions well in ourselves and in our relationships.'

In this case, the police officer acknowledged his own feelings and inexperience, but wasn't overwhelmed by them. Indeed, he took the lead when he realized that his colleague had 'frozen'. He was demonstrating some of the elements that are so important in Emotional Intelligence: emotional self-awareness, empathy, and influence.

Self-Awareness

Knowing your emotions and their effects.

Self-Management

Knowing how to manage your emotions, how to keep disruptive impulses in check. Being flexible and comfortable with new ideas.

Social Awareness

An ability to listen, to be persuasive, to collaborate, to nurture relationships.

Relationship Management

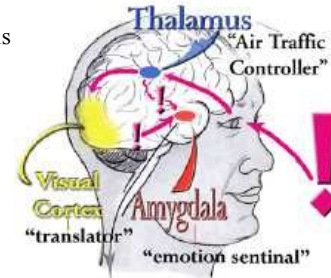
An ability to influence others, handle conflict, develop, lead and work with others.

Hijacking of the Amygdala

by Joshua Freedman

**This is what happens in your brain when you get really mad
-- or really *anything!***

The routes from sensation to action are depicted in this brain. The journey begins with sensation -- in this case vision -- which is routed to the thalamus. The thalamus acts as "air traffic controller" to keep the signals moving. In a typical situation, the thalamus directs the impulse to the cortex -- in this case the visual cortex -- for processing. The cortex "thinks" about the impulse and makes sense. "Aha," it says, "this is an exclamation mark! It means I should get excited." That signal is then sent to the amygdala where a flood of peptides and hormones are released to create emotion and action.



In what Dan Goleman labeled "The Hijacking of the Amygdala," the thalamus has a different reaction. Like any skilled air traffic controller, the thalamus can quickly react to potential threat. In that case, it bypasses the cortex -- the thinking brain -- and the signal goes straight to the amygdala. The amygdala can only react based on previously stored patterns.

Sometimes this kind of reaction can save our lives. More frequently it leads us to say something harmful, to escalate the situation, or even to violence.

To minimize the damage from hijacking, it is important to practice patterns which lead to de-escalation.

From that hijacked state, that condition where your brain is flooded with electro-chemicals, you still have options. You do not need to stay hijacked -- you still can choose actions. After all, the chemicals do not persist -- they will dissipate in three to six seconds.

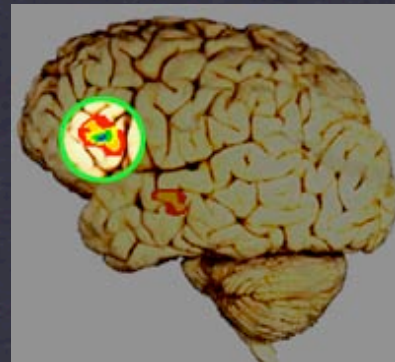
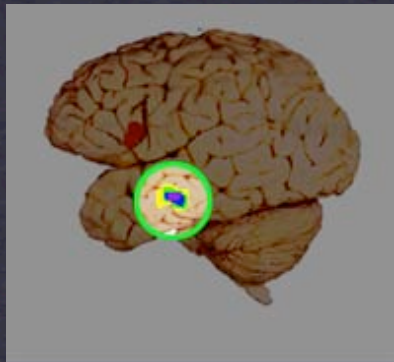
The Six Second Pause

by Joshua Freedman

One of Six Seconds' techniques helps create a pause so you can act instead of react. This simple tool is essential!

Emotional and Rational Responding

IN A RECENT STUDY MAPPING DIFFERENCES BETWEEN THE BRAINS OF ADULTS AND TEENS, TODD PUT TEENAGE AND ADULT VOLUNTEERS THROUGH A MRI AND MONITORED HOW THEIR BRAINS RESPONDED TO A SERIES OF PICTURES. THE VOLUNTEERS WERE ASKED TO DISCERN THE EMOTION A SERIES OF FACES LIKE THIS ONE. THE RESULTS WERE SURPRISING. ALL THE ADULTS IDENTIFIED THE EMOTION AS FEAR, BUT MANY OF THE TEENAGERS SAW SOMETHING DIFFERENT, SUCH AS SHOCK OR ANGER. WHEN SHE EXAMINED THEIR BRAIN SCANS, TODD FOUND THAT THE TEENAGERS WERE USING A DIFFERENT PART OF THEIR BRAIN WHEN READING THE IMAGES.



TEENS (**LEFT**) USED LESS OF THE PREFRONTAL (UPPER) REGION THAN ADULTS (**RIGHT**) WHEN READING EMOTION.

TEENS MAY USE EMOTIONAL (LIMBIC-MEDIATED) REACTIONS MORE THAN REASONED ONES EARLY IN ADOLESCENCE, AND THIS FACT MAY BE RELATED TO GREATER IMPULSIVITY & RISK TAKING NOTED DURING THESE YEARS (MORE TRUE OF MALES THAN FEMALES)

[HTTP://WWW.PBS.ORG/WGBH/PAGES/FRONTLINE/SHOWS/TEENBRAIN/](http://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/)

STROOP TASK



INHIBITION OF DOMINANT (AUTOMATIC) RESPONSE TENDENCIES

The Strange Case of Phineas Gage

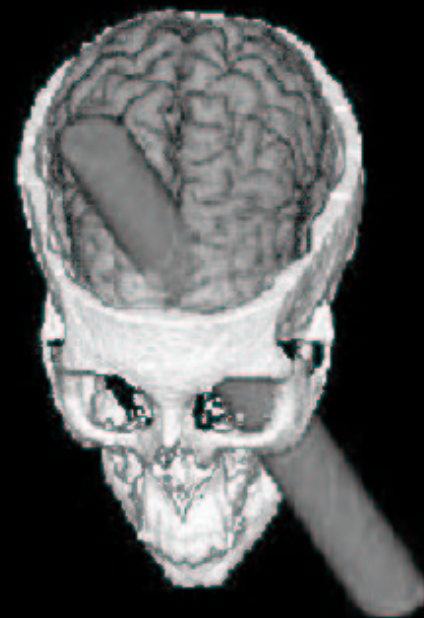


Mr Joseph Larkin Austin, eldest son of Mr Eleazer Austin, was found drowned near the south bridge in Salem; it is supposed he fell overboard between 2 and 3 o'clock in the morning, while fishing.

Horrible Accident.—As Phineas P. Gage, a foreman on the railroad in Cavendish, was yesterday engaged in tamping for a blast, the powder exploded, carrying an iron instrument through his head an inch and a fourth in circumference, and three feet and eight inches in length, which he was using at the time. The iron entered on the side of his face, shattering the upper jaw, and passing back of the left eye, and out at the top of the head.

The most singular circumstance connected with this melancholy affair is, that he was alive at two o'clock this afternoon, and in full possession of his reason, and free from pain — *Ludlow, Vt., Union.*

The chief of the Philadelphia dogkillers, a black man named George Horsey, attempted to kill his wife. He broke into her room armed with a pistol and knife; she threw herself out of the second story window to escape, breaking her leg in the fall; he pursued her, and attacked and injured her severely. She was taken to the hospital. Horsey was fully committed for trial.



The Strange Case of Phineas Gage

It was not until his 1868 report that Harlow gave particulars of the mental changes found today (often in exaggerated or distorted form — see below) in most textbooks. In memorable language, he now described the pre-accident Gage as having been hard-working, responsible, and "a great favorite" with the men in his charge, his employers having regarded him as "the most efficient and capable foreman in their employ." But these same employers, after Gage's accident, "considered the change in his mind so marked that they could not give him his place again":

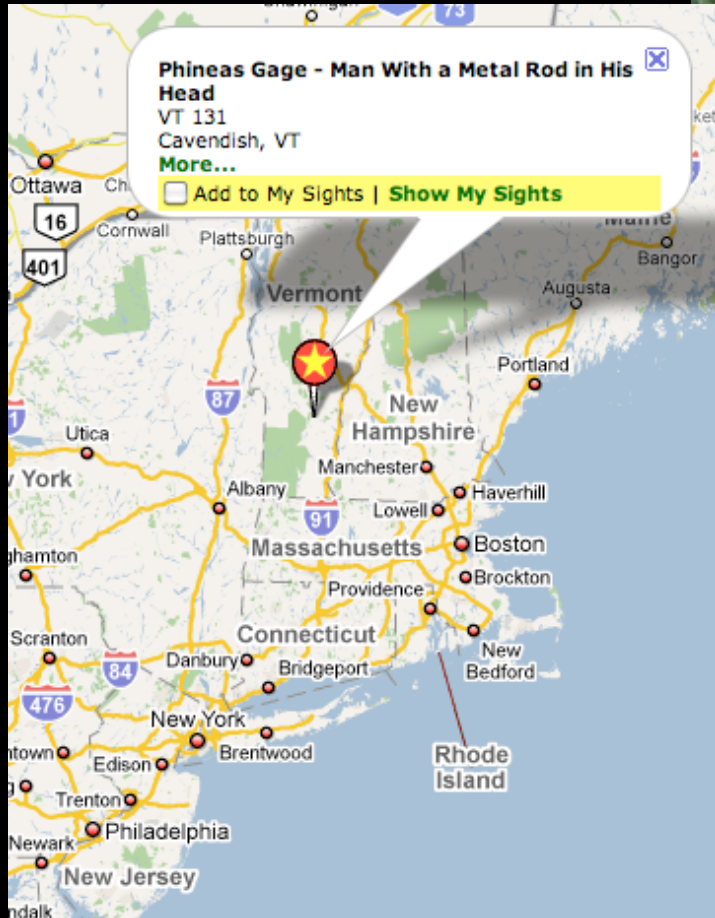
“

The equilibrium or balance, so to speak, between his intellectual faculties and animal propensities, seems to have been destroyed. He is fitful, irreverent, indulging at times in the grossest profanity (which was not previously his custom), manifesting but little deference for his fellows, impatient of restraint or advice when it conflicts with his desires, at times pertinaciously obstinate, yet capricious and vacillating, devising many plans of future operations, which are no sooner arranged than they are abandoned in turn for others appearing more feasible. A child in his intellectual capacity and manifestations, he has the animal passions of a strong man. Previous to his injury, although untrained in the schools, he possessed a well-balanced mind, and was looked upon by those who knew him as a shrewd, smart businessman, very energetic and persistent in executing all his plans of operation. In this regard his mind was radically changed, so decidedly that his friends and acquaintances said he was 'no longer Gage.' [20]

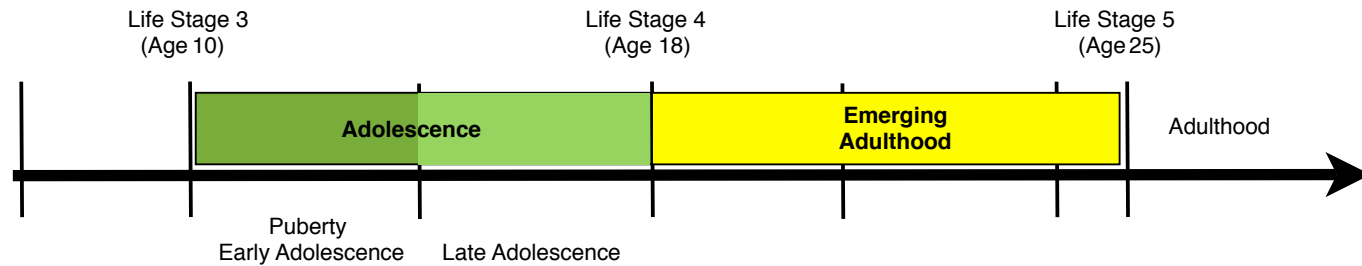
”

It is difficult to find anything written about Gage which does not draw on this passage, particularly its existentially troubling conclusion. Yet it is unknown on just what exactly Harlow based this description, set down twenty years after his treatment of Phineas

Roadtrip!



J.J. ARNETT and “EMERGING ADULTHOOD” - circa 1995 CE



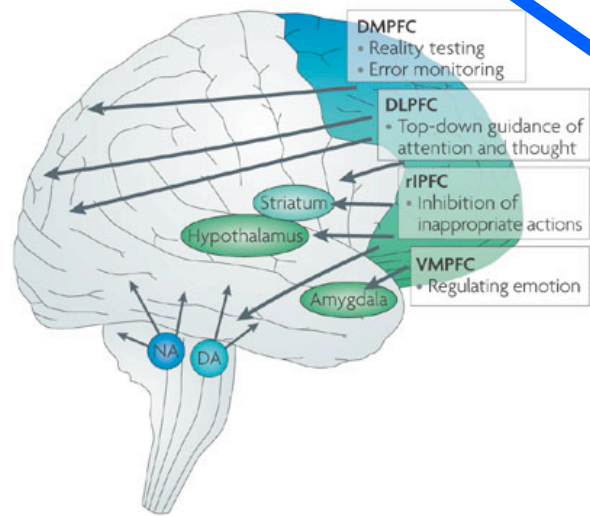
Puberty / Limbic System Development → **Frontal Lobe Development**

- Appetite (eating, drinking)
 - Romantic Interest
 - Sexual Interest
 - Sleep/Arousal
 - Emotional Intensity
 - sensation and novelty seeking
 - Risk Taking
- Self Control
 - Planning
 - Abstract Reasoning
 - Perspective Taking

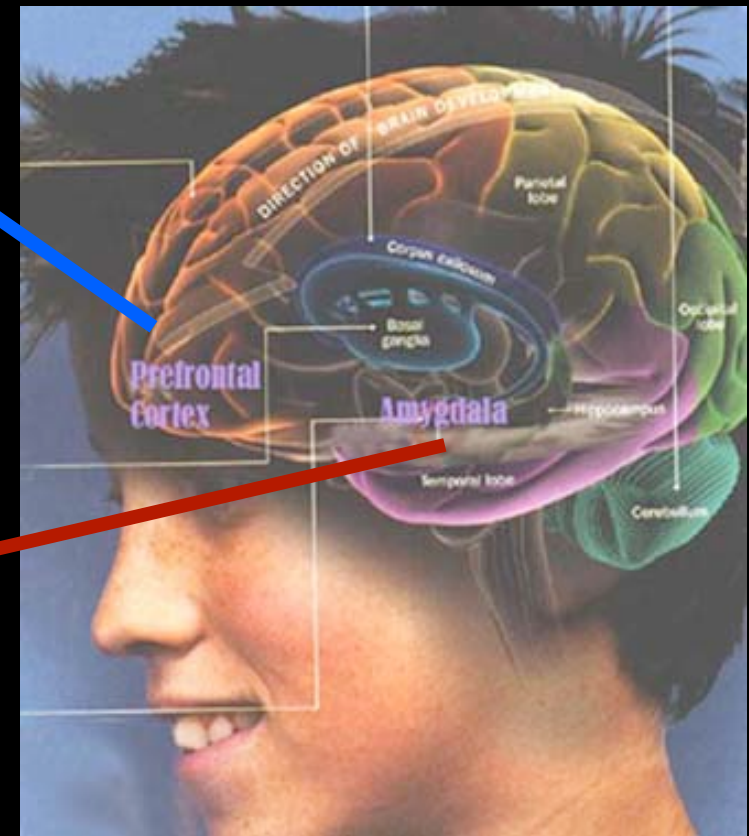
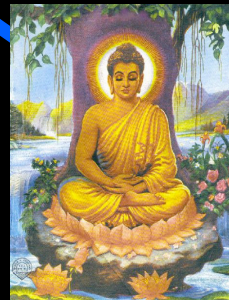
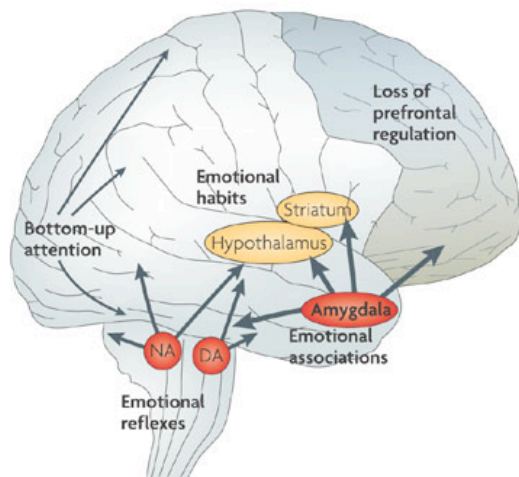
Passions vs Reason Asynchrony?

Which Area is Regulating Which?

a Prefrontal regulation during alert, non-stress conditions



b Amygdala control during stress conditions



EXECUTIVE FUNCTIONS

- forethought
- concentration
- abstract reasoning
- behavioral inhibition
- programming and planning goal-oriented behaviors
- executing a sequence of responses to avoid negative consequences or interactions
- generating alternative socially-adaptive behavioral responses
- learning from experience
- interpreting social cues
- problem solving
- verbal ability
- attention

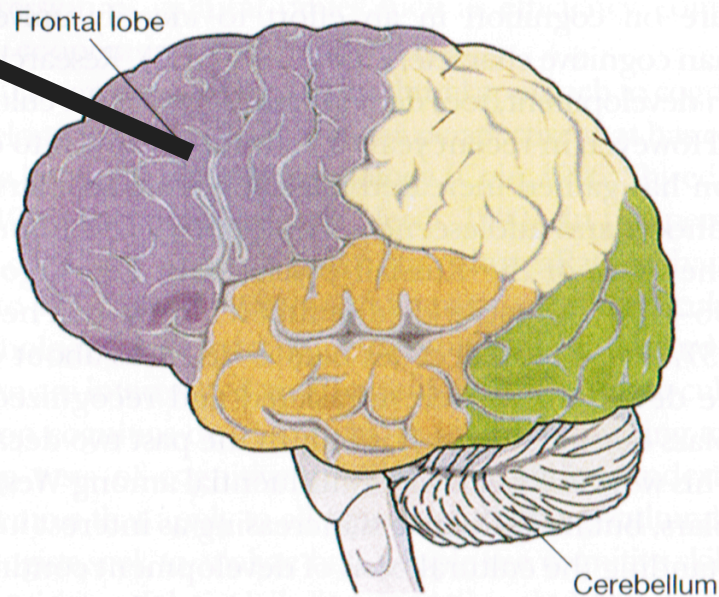
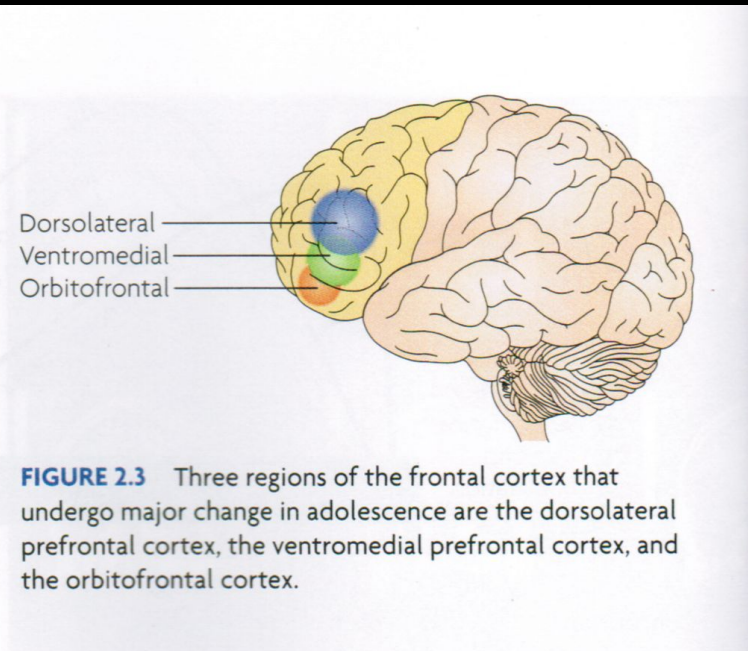
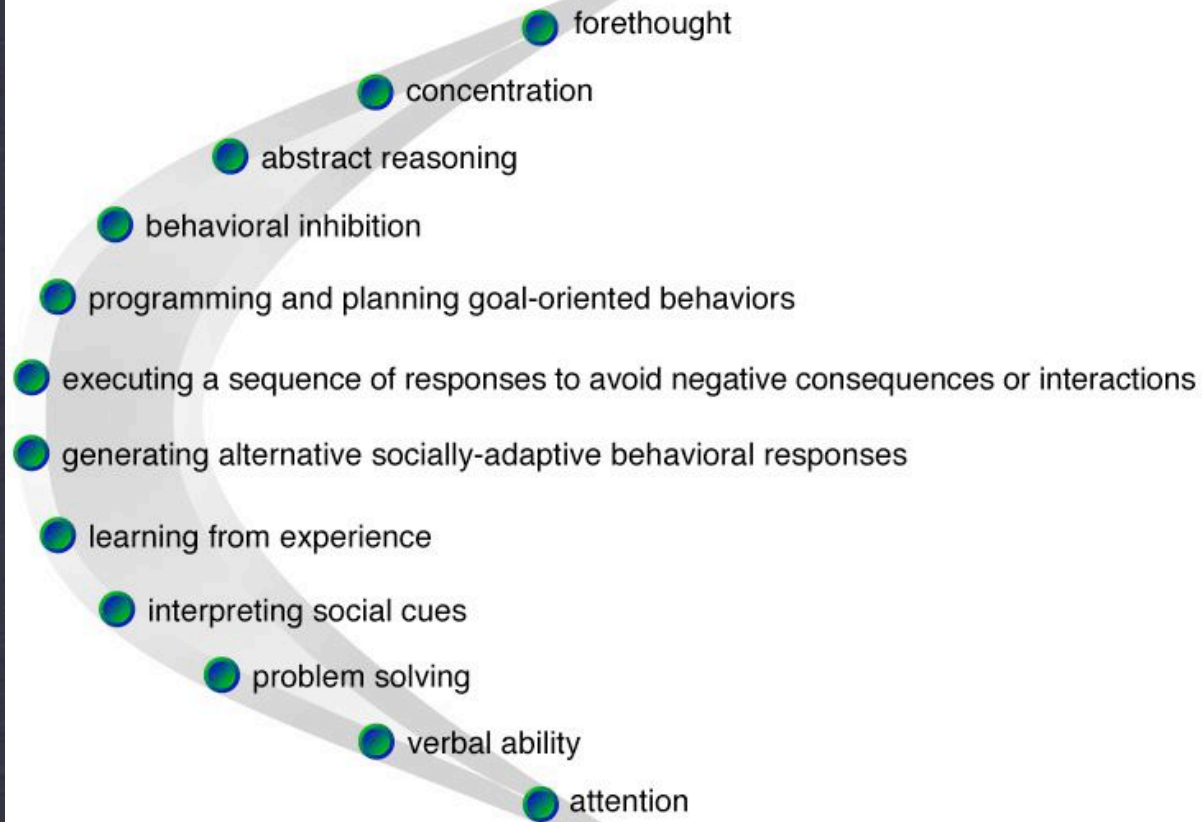


FIGURE 3.5 The most important recent findings on adolescent brain development involve the frontal lobes and the cerebellum.

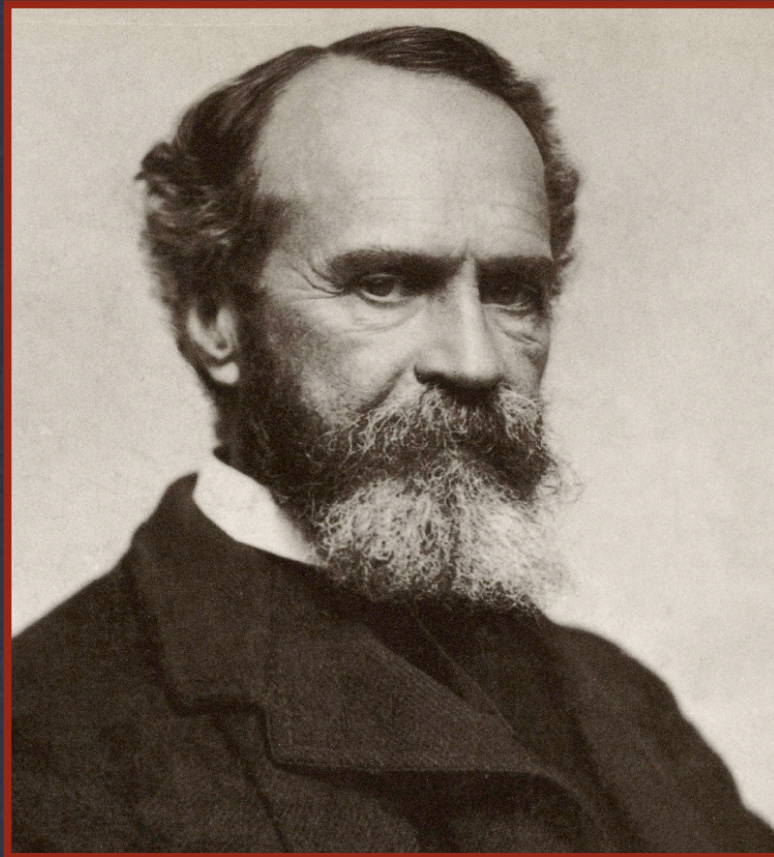
Planning & Impulse Control



EXECUTIVE FUNCTIONS

- 
- forethought
 - concentration
 - abstract reasoning
 - behavioral inhibition
 - programming and planning goal-oriented behaviors
 - executing a sequence of responses to avoid negative consequences or interactions
 - generating alternative socially-adaptive behavioral responses
 - learning from experience
 - interpreting social cues
 - problem solving
 - verbal ability
 - attention

An Education 'Par Excellence'



WILLIAM JAMES
1890

THE FACULTY OF VOLUNTARILY BRINGING BACK A WANDERING ATTENTION, OVER AND OVER AGAIN, IS THE VERY ROOT OF JUDGMENT, CHARACTER, AND WILL.... AN EDUCATION WHICH SHOULD IMPROVE THIS FACULTY WOULD BE THE EDUCATION PAR EXCELLENCE. BUT IT IS EASIER TO DEFINE THIS IDEAL THAN TO GIVE PRACTICAL DIRECTIONS FOR BRINGING IT ABOUT. (P. 424).

SHAMBHALA SUN

BUDDHISM CULTURE MEDITATION LIFE

JANUARY 2007

Educating the Heart

The **DALAI LAMA** leads a movement to teach children about compassion & empathy. He says our future depends on it.

The Zen of
Joan Didion

