

**Brain Development and Adolescent
Mental Health:
*Implications for Juvenile Justice***

MARILYN B. BENOIT, M.D., FAACAP

Coalition for Juvenile Justice Conference

May 5, 2006

Washington, DC

Goals of Presentation

- Overview of Adolescent Developmental Goals.
- Brain Development: optimal and disordered.
- What this means for youth in JJ system.
- What we can do.

Adolescent Development

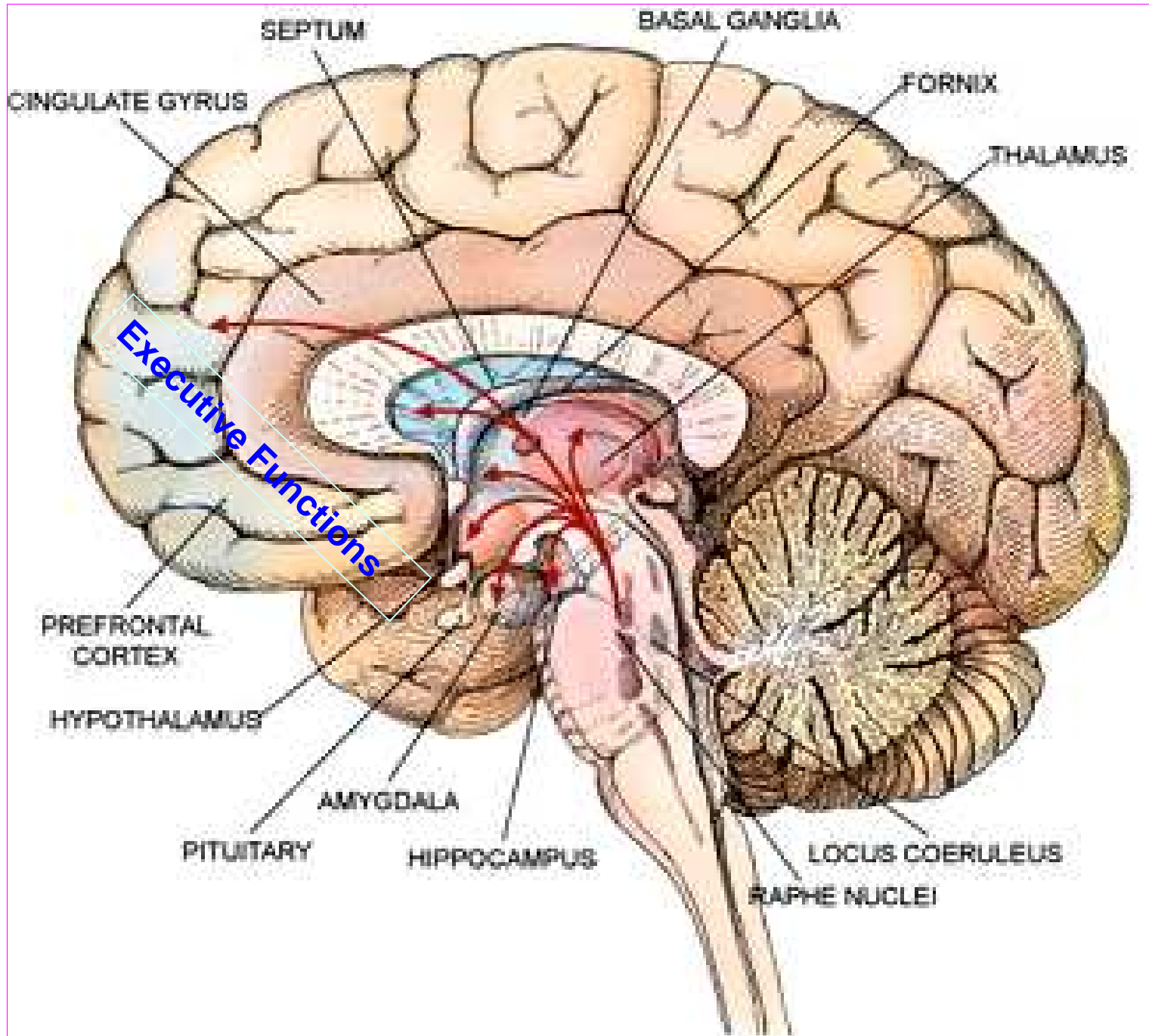
- Passage towards adulthood which leads to:
 - Identity consolidation
 - Self efficacy
 - Self agency
 - Autonomy
 - Development of significant intimate relationship

What Mentally Healthy Adolescents look like:

- Flexible emotional regulation
- Pro-social behavior
- Empathy
- Sense of well-being and self-esteem
- Coherent “life-story”

Maria Montessori wrote about a child's experience of the environment:

“These impressions not only penetrate the mind of the child, but they *form* it. They become incarnated, for the child makes his own *mental flesh* in using the things that are in his environment. We have called this type of mind the absorbent mind and it is difficult for us to conceive *the magnitude of its powers.*”



From IOM's *Neurons to Neighborhoods*

- “The purpose of a brain is to store, use, and create information.”
- Humans acquire information primarily from experience, including their systems for thinking, feeling and communicating.

From IOM's *Neurons to Neighborhoods*

- New experiences trigger new brain growth and this is how memories, knowledge and learning takes place across the life span.
- Genes and environment have delicate interplay (nurture/nature).
- Relationships provide critical transactional variable.

From IOM's *Neurons to Neighborhoods*

- All children are born wired for feelings and ready to learn.
- Early environments matter.
- Nurturing relationships are essential.
- Concepts of sensitive periods and developmental plasticity.

Mental Health as Social-Emotional Intelligence

- Gardner describes emotional intelligence as “the capacity to discern and respond appropriately to the moods, temperaments, motivations and desires of other people.”

Mental Health as Social-Emotional Intelligence (Valliant)

- “The benefits of being able to read feelings from non-verbal cues have been demonstrated in almost a score of countries. These benefits include being better emotionally adjusted, more popular, and more responsive to others. Empathic children , without being more intelligent, do better in school and are more popular with their peers.”

Neuroscience Insights Cont'd

- Large amount of brain dedicated to social-emotional tasks.
- Different systems do not necessarily grow "in sync."

Mental Health as Social-Emotional Intelligence (Valliant)

- Criteria for social-emotional intelligence:
 - Accurate conscious perception and monitoring of one's own emotions.
 - Modification of one's emotions so that their expression is appropriate. This involves the capacity to self soothe anxiety and to shake off hopelessness and gloom.
 - Accurate recognition of and response to emotions in others.

Mental Health as Social-Emotional Intelligence (Valliant)

- Criteria Cont'd:
 - Skill in negotiating close relationships with others.
 - Capacity for focusing emotions (motivation) on a desired goal. This involves delayed gratification and adaptively displacing and channeling impulse.

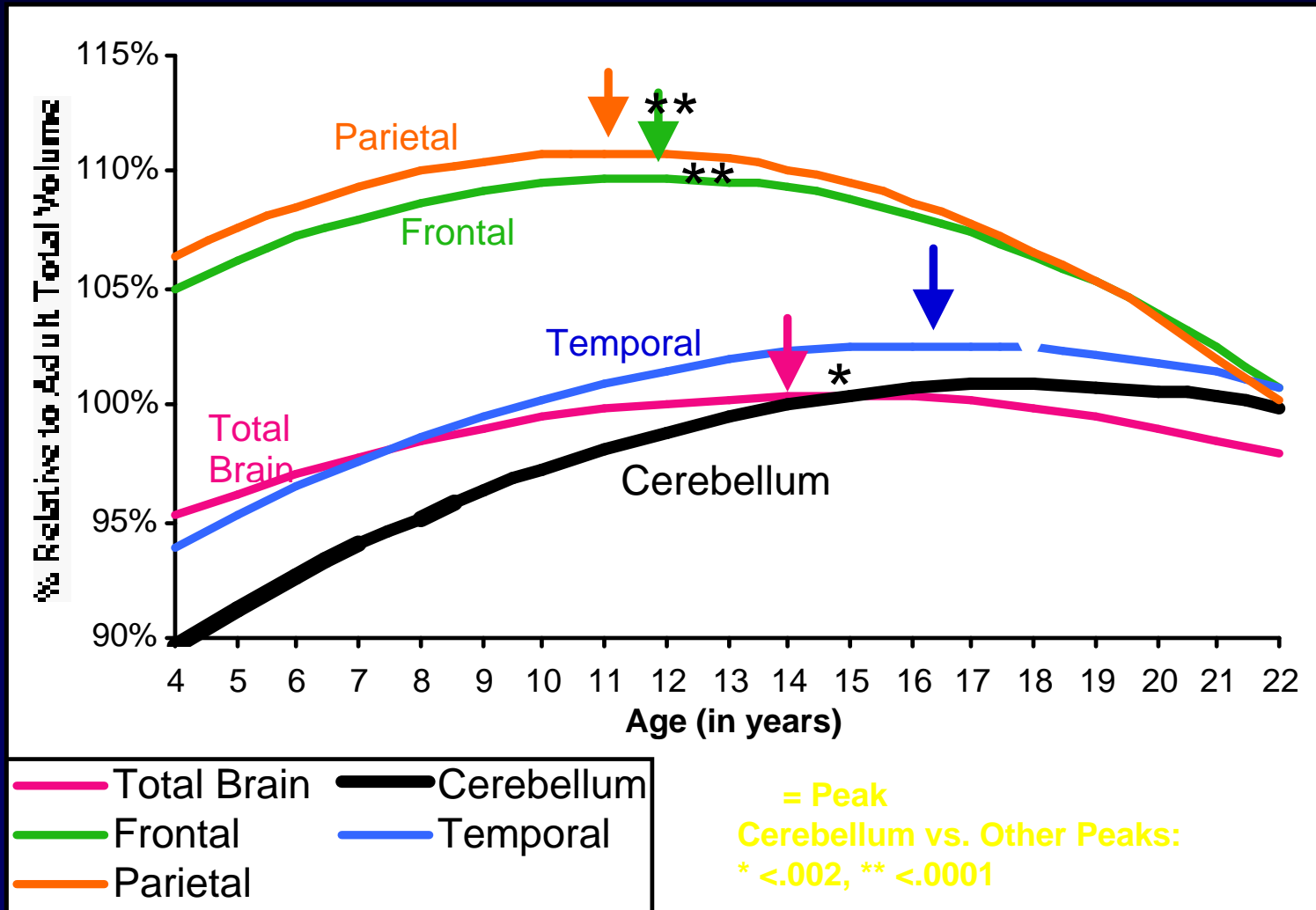
Insights from Brain Research

- Frontal lobe rapid growth ages 3 to 6: attention, vigilance, alertness.

Insights from Brain Research Cont'd

- Temporal/parietal lobes ages 7 to 15 rapid growth with focus on language and mathematics.

Cerebellar Development for 145 Children and Adolescents (Ages 4-22) Based on 243 Brain MRI Scans



Brain development during Adolescence

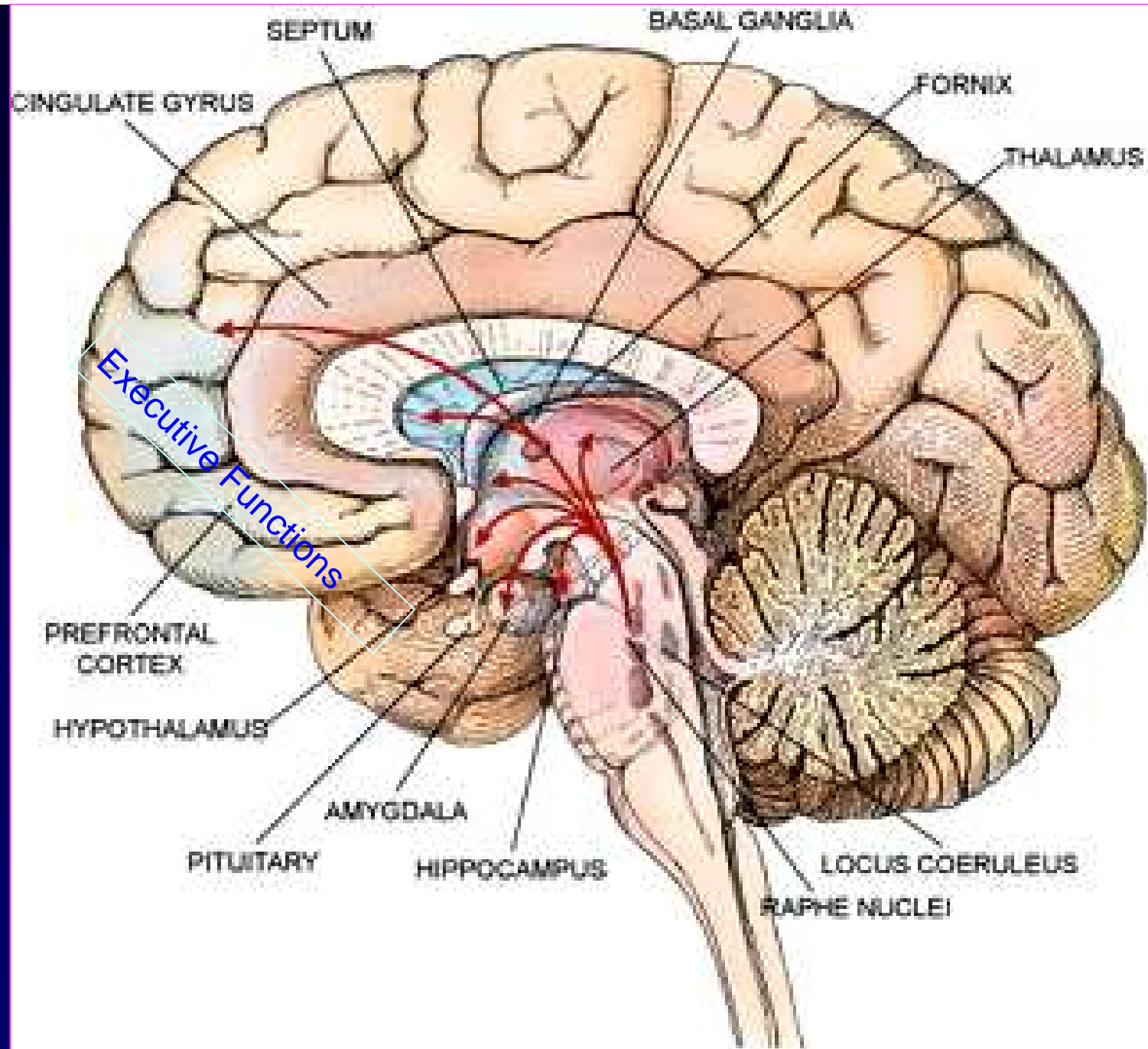
- Concept of adolescence as “Second Chance.”
- Significant neural maturation takes place during puberty and into late adolescence.

Adolescent Brain Development

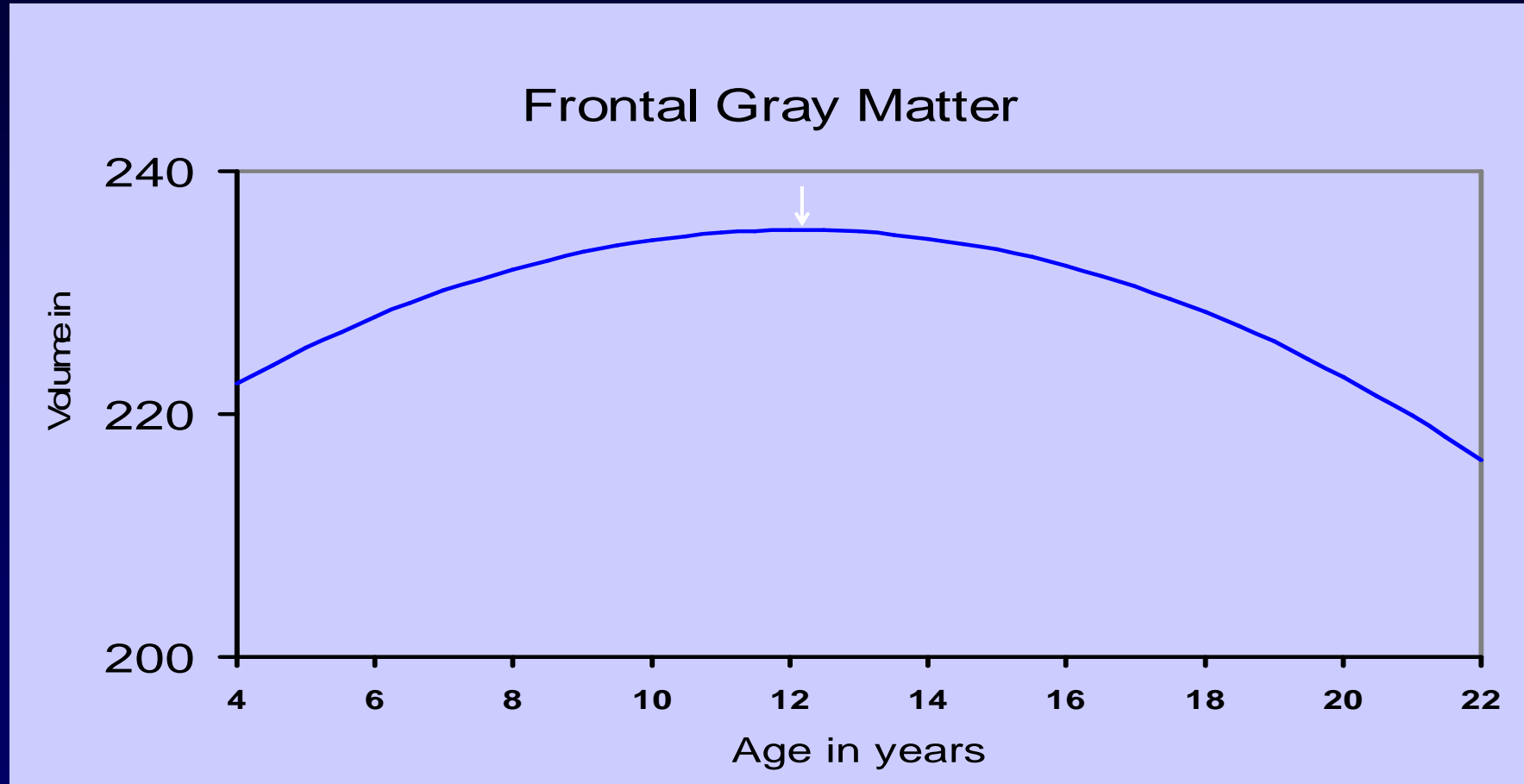
- Frontal lobe structures highly affected throughout adolescence and involve:
- regulation of affective behavior
- cognitive/emotional link leading to self-control

Insights from Brain Research Cont'd

- Frontal lobe from age 16 to 20 undergoes dendritic pruning with focus on self control, planning, behavior regulation.



Brain Development in Healthy Children and Adolescents: Longitudinal and Cross-Sectional Data (243 Scans from 145 Subjects)



Executive Functions

- Organizing
- Prioritizing
- Planning
- Utilizing working memory
- Accessing recall
- Focusing
- Work Initiation
- Sustaining a task
- Shifting attention (transitioning)
- Regulating alertness
- Pacing oneself (time management)
- Managing frustration
- Modulating emotions

Role of Stress

- Small amounts have neutral effect on memory.
- Moderate amounts facilitate memory.
- Large amounts overwhelm the system and impair memory.

Seigel, 1999

Brain Development & Early Trauma

- Amygdala and role in fear arousal.
- High arousal and its effect on logical thinking and decision making.

Risk Factors In JJ Youth

- Dorothy Ortnow Lewis reported increased incidence of learning disabilities in juvenile detainees.
- Also increased rates of head trauma in their histories.

RISK FACTORS OF NEGLECT & ABUSE

- Head trauma
- Traumatic separations
- Attachment difficulties: *“The disruption of attachment is itself a primary form of trauma, which may intensify the effects of other stressors, particularly if disruption occurs at critical stages of development.”*
(Bowlby, 1973)

RISK FACTORS

- Regulation problems (sleep, impulse control, affect regulation, behavioral regulation).
- Psychosocial stress *in the first two years of life* may have an enduring negative effect on children's brain development, emotional regulation, and social development.
- Stress has suppressive effect on hippocampal neurogenesis (*this may at some point be irreversible*).

- *“The most debilitating disturbances in self-esteem are those resulting from childhood trauma, particularly repetitive traumatization in an abusive family.”*
Elizabeth Waites in Trauma and Survival
1993

Northwestern Juvenile Project

- 66% of males and 75% females met diagnostic criteria for one or more psychiatric disorders.
- Most common disorders were substance use disorders and disruptive disorders.

PSYCHIATRIC OUTCOMES

- Developmental disorders
- Reactive Attachment Disorders
- ADHD; ODD
- PTSD
- Dissociative Disorders

Psychiatric Disorders

Cont'd

- Mood disorders
- Anxiety disorders
- Impulse control disorders
- Narcissistic problems
- Personality disorders



Psychiatric illnesses are
BRAIN BASED DISORDERS

From IOM's *Neurons to Neighborhoods*

- Safe and nurturing environments promote healthy physical, cognitive, linguistic, social, emotional, and moral development.
- *We should integrate above in designing juvenile detention centers for our troubled youth.*

Helping Kids with Mastery

- Provide a sense of Safety
- Focus on the positive
- Start with success
- Consistency
- Rituals
- Predictability
- Secondary relationships that endure

- The Juvenile Justice system was initially intended to rehabilitate “wayward youth.”
- Given the high prevalence of psychiatric disorders in the JJ population, it is imperative that each detainee be screened for psychiatric illness.
- We should have our policies driven by science, not by political whims.