Adolescents and Young Adults

Brain development

Jennifer Woolard
Georgetown University

Developmental questions

- At what age to individuals develop the capacities necessary to be held fully responsible for their actions?
- At what age do individuals develop the abilities and knowledge necessary to be a competent defendant?
- What do we know about the capacity of individuals to be rehabilitated at different ages?

Three assumptions that ignore developmental differences

- At time of offense, individual possessed capacities necessary for adult levels of blameworthiness
- At time of trial, individual possesses capacities necessary to act as competent defendant in criminal proceeding
- At time of sentencing, individual possesses qualities consistent with adult sanctioning

Developmental Questions

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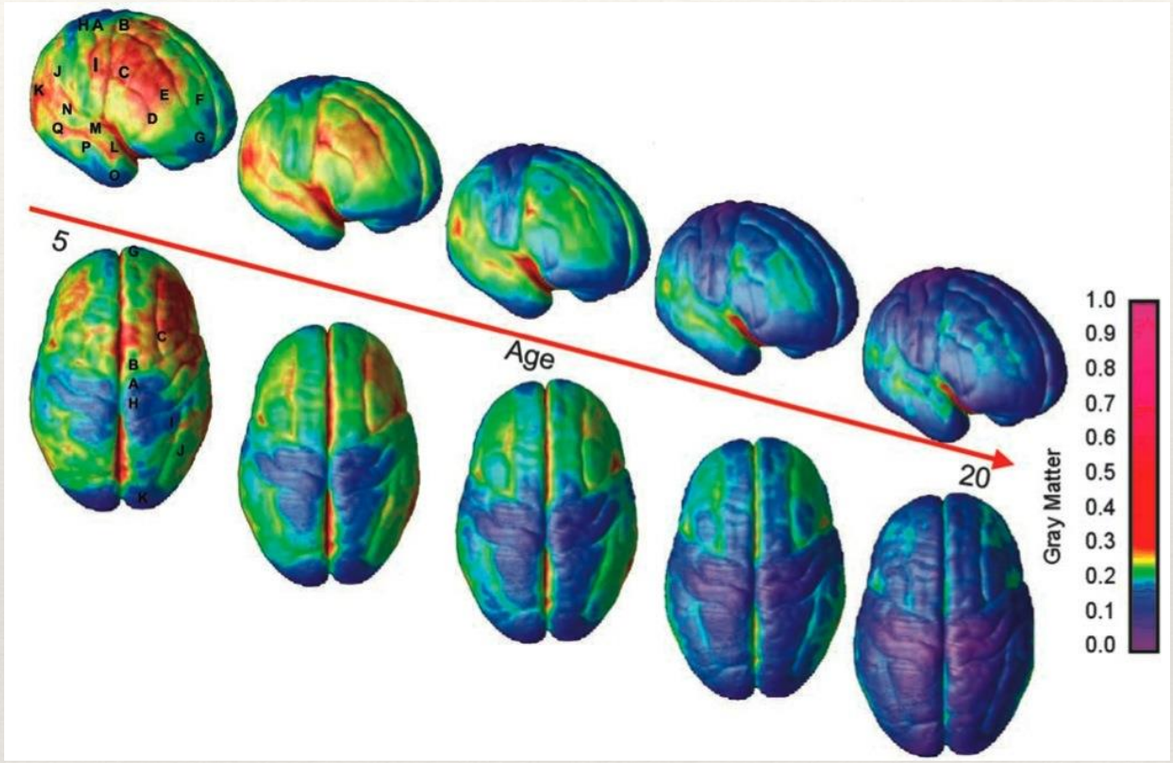
How could developmental differences matter?

- Adolescents may be less able than adults to participate effectively as defendants - *Competence*
- Adolescents may be less completely developed, making prediction of future behavior more difficult – *Amenability to treatment, recidivism*
- Adolescents may have certain deficiencies that diminish, or mitigate, their criminal responsibility - *Culpability*

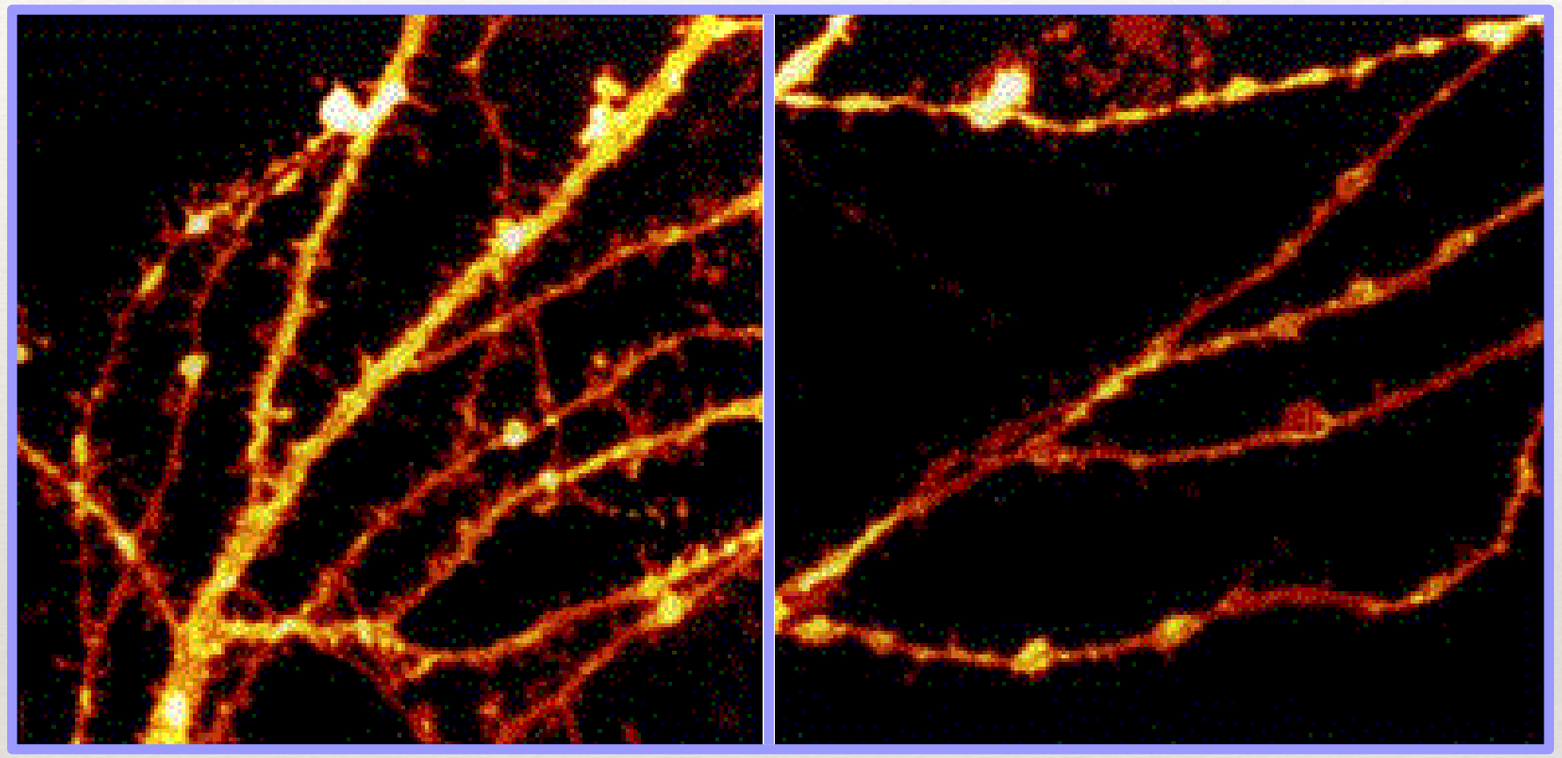
Brain Development

- Helpful to think of two types of changes
  - Structural
  - Functional
- Helpful to think of two sets of brain systems relevant to development
  - Socioemotional system
  - Cognitive control system



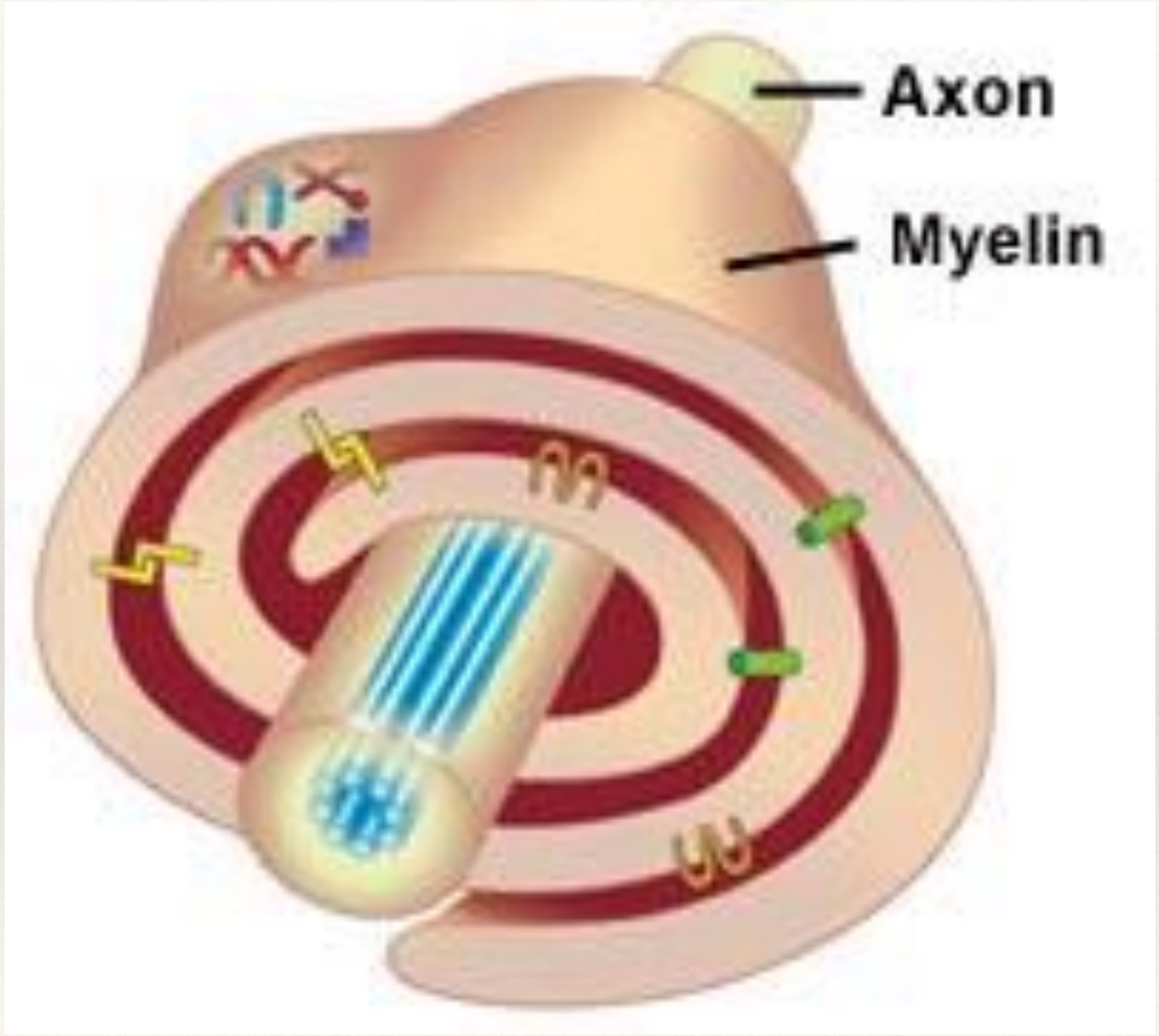
Synaptic Pruning

Before *After*



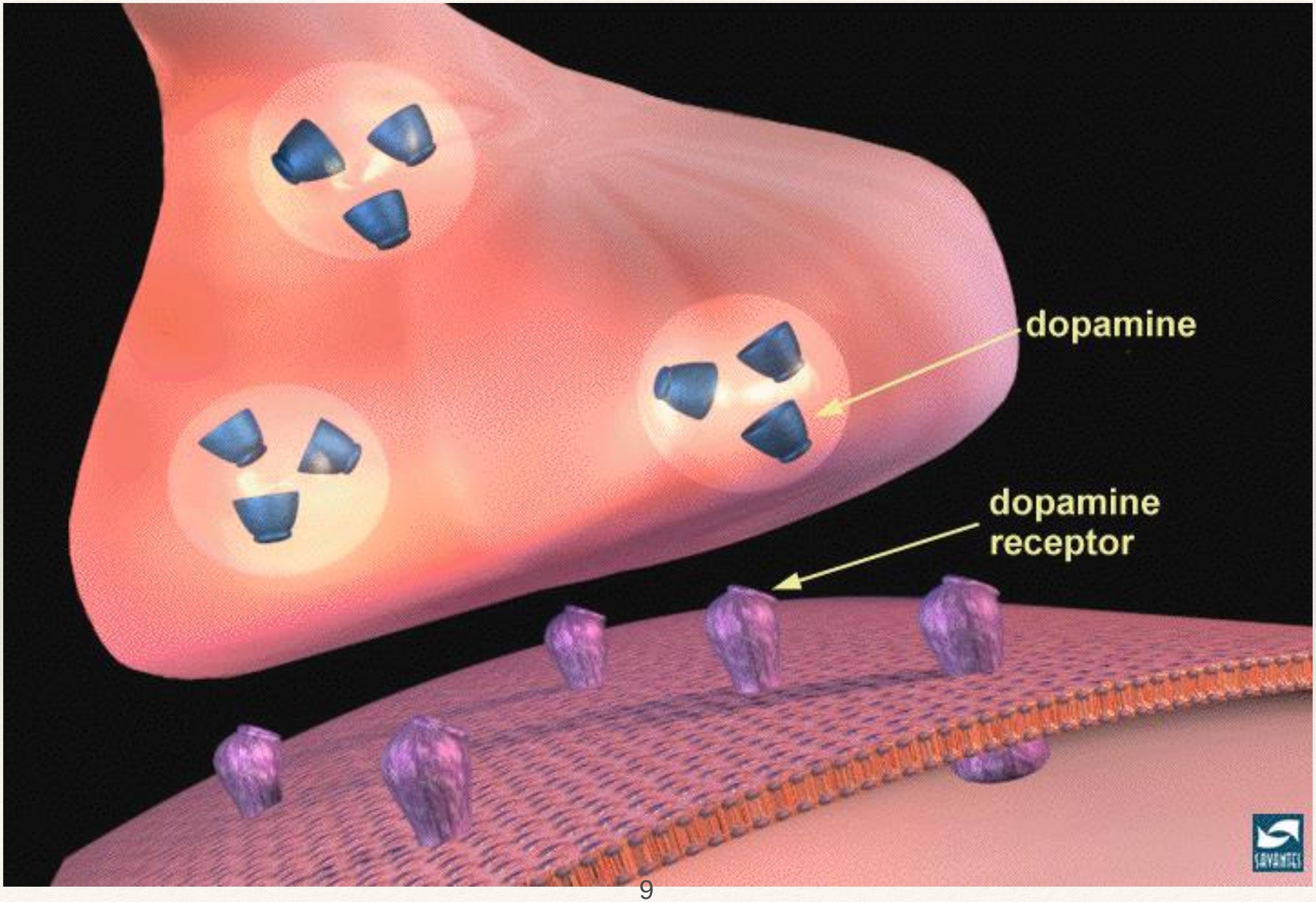
mages by Diane Murphy, PhD, National Institutes of Health

Myelination

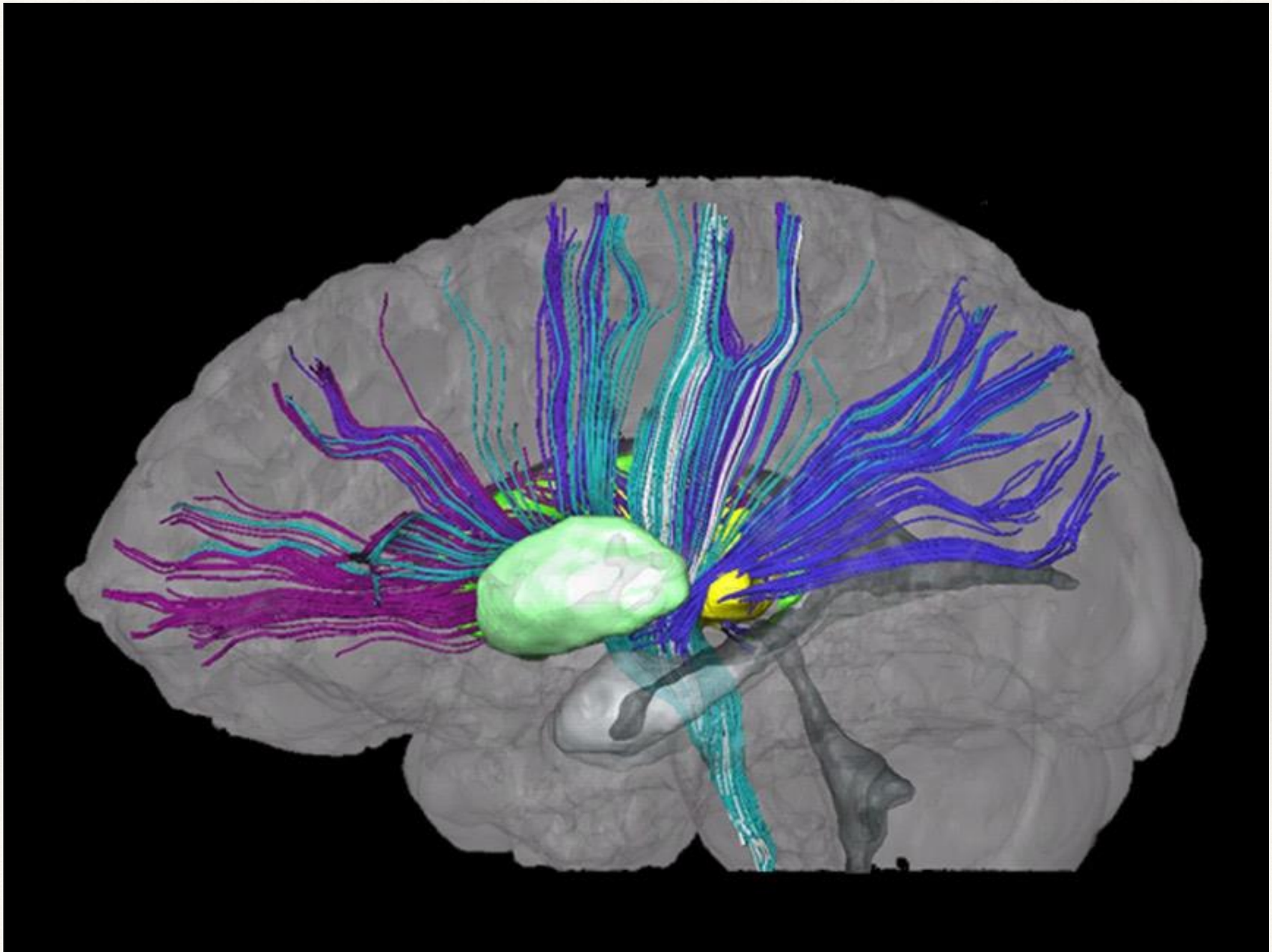


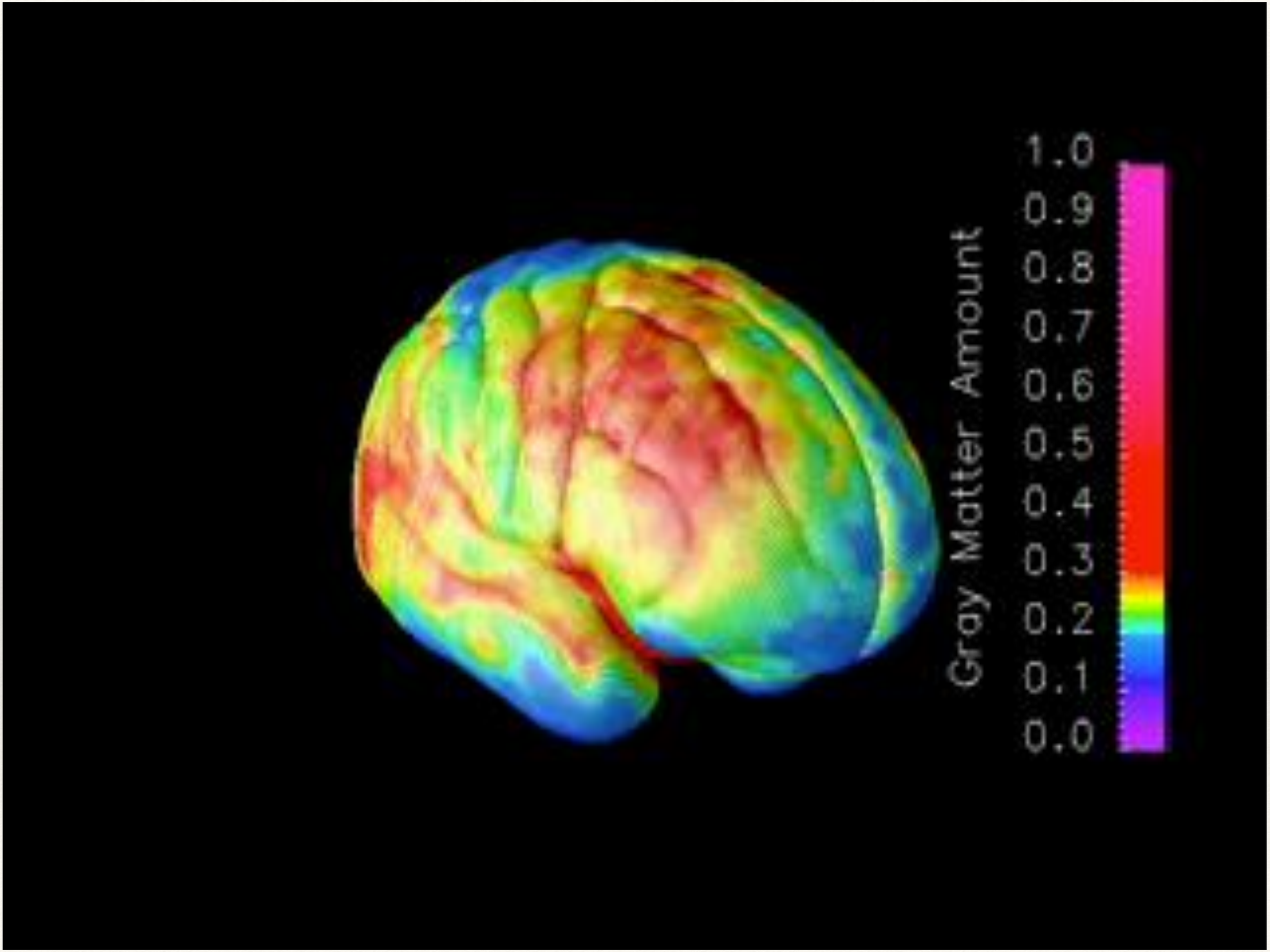
Improves speed of transmission 100X

Changes in Density and Distribution of Dopamine Receptors



Increased Connectivity Between Cortical and Subcortical Regions




Gray Matter Amount
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0

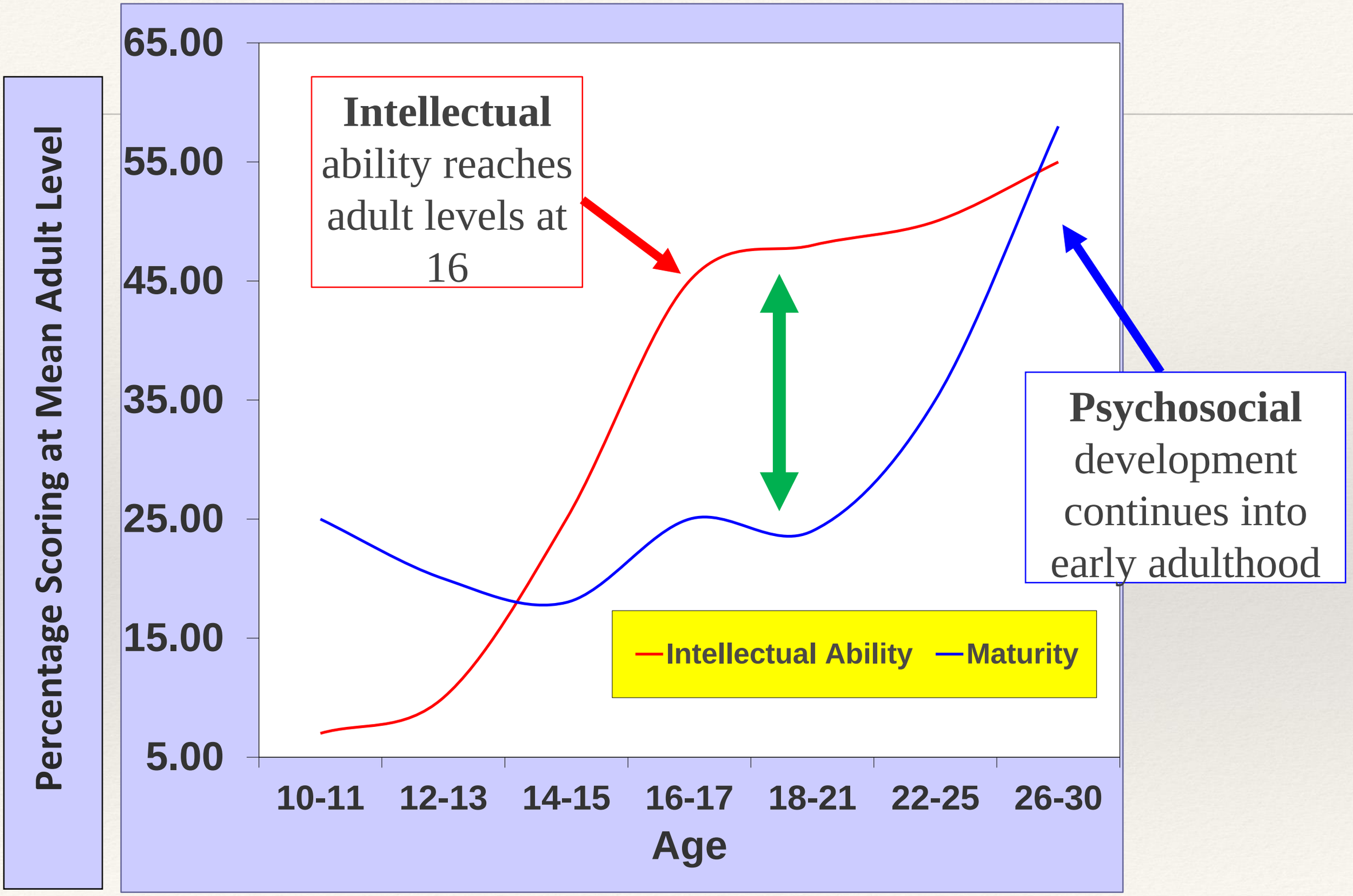
Socioemotional system

- Responsible for processing emotions, social information, reward and punishment
- Undergoes major changes in early adolescence that are related to hormonal changes of puberty
- Changes result in
  - Increased sensation-seeking
  - Increased/easier emotional arousal
  - Increased attentiveness to social information

Cognitive control system

- Responsible for deliberative thinking – weighing costs and benefits, thinking ahead, regulating impulses
- Develops gradually from preadolescence on, well into the mid-20s
- Changes result in
  - More impulse control
  - Better emotion regulation
  - More foresight
  - More planning ahead
  - Better reasoning

The Immaturity Gap



Steinberg, Cauffman, Woolard, Graham, & Banich (2009)

What are the limitations of this science for policy and law?

- Immaturity is not a diagnosis
- We can not often take data about adolescents or young adults as groups and apply them to individuals
  - Policy changes use information about groups
  - Legal cases more often use information about individuals
- No one can look at neuroimages and tell you if a brain is functioning in a mature or immature way
- Individual differences exist and are important – there are plenty of mature adolescents and immature adults

Immaturity is not a diagnosis

Immaturity is relative (compared to whom?)

Immaturity is not all or none (in what way?)

Age does not define degree of maturity

E.g., mental disorders and mental retardation may produce developmental delays in older adolescents

Assertion 1

- Not supported: Adolescents are incapable of making optimal decisions – their behavior is irrational
  - They can but it depends on the context
- Supported: Emotion-laden contexts are challenging

Casey & Caudle (2013)

Assertion 2

- Not supported: Adolescents can’t make mature decisions because they have no prefrontal cortex

- Supported: They have one but the strength of connections in the brain continue to grow stronger with maturity and experience

- Supported: Adolescents are less able than adults to exert self control in the face of strong motivation or incentive

Assertion 3

- Not supported: All adolescents experience similar degrees of storm and stress
- Supported: Most survive adolescence just fine
- Supported: Individual differences (among people, not between age groups) are still important
  - How we adapt to stress and challenge depends on our experience *and* our biology

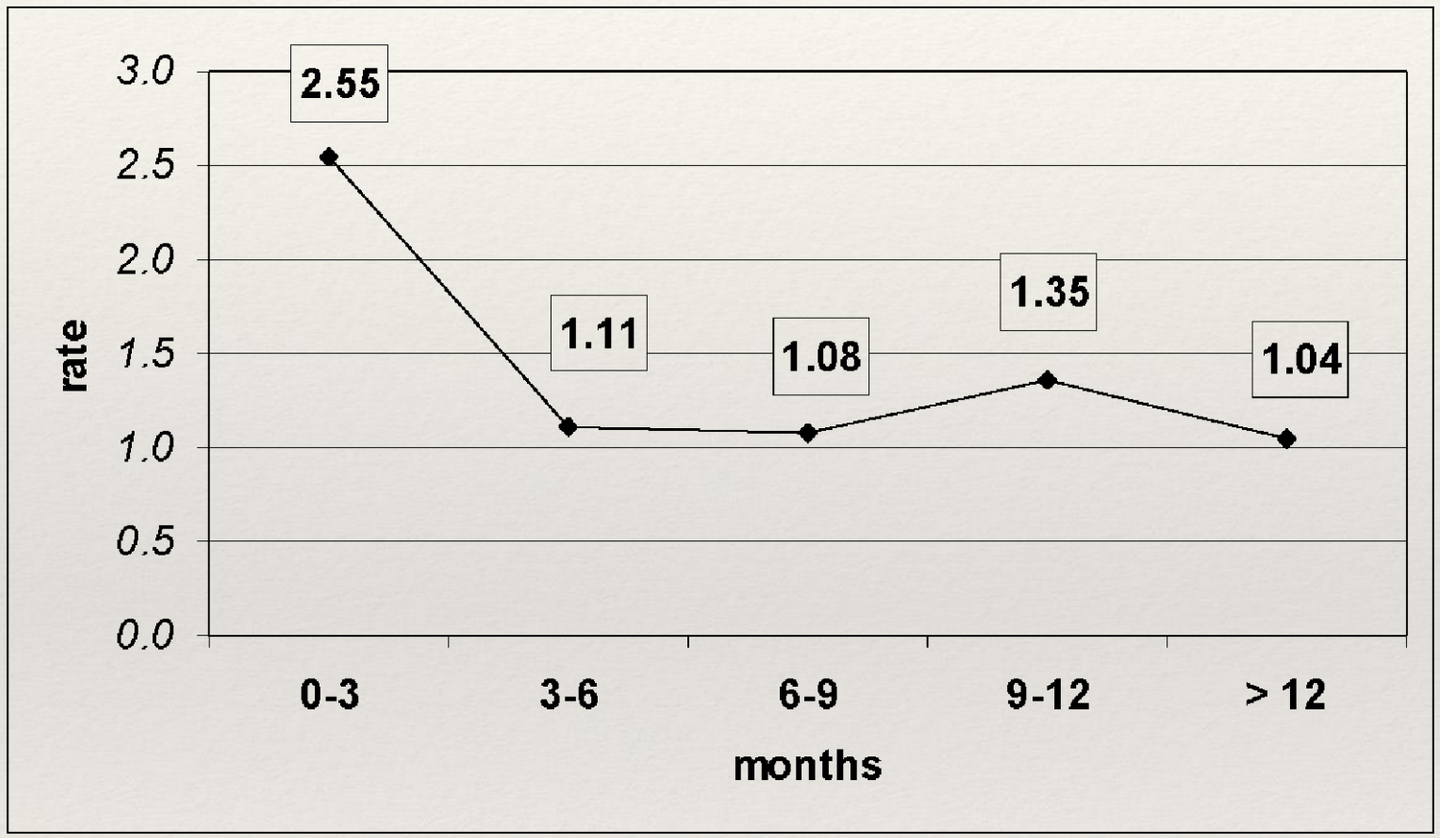
Recidivism

Effects of incarceration
and transfer to adult court

Effect of juvenile incarceration on rate of rearrest

Figure 4. Response Curves by 3-Month Dose Category

A. Expected Rate of Rearrest



Loughran et al., 2009, p. 725

Effect of transfer on rearrest

- 654 serious offenders (128 transferred) - average 17 years old

- Average arrest rate per year – no statistically significant effect of transfer compared to remaining in the juvenile justice system
  - Transferred adolescents charged with person crimes – lower rates of rearrest
  - Regardless of court, adolescents with 0 or 1 prior arrest have lower rates of rearrest than those with more prior arrests

Loughran et al. 2010

Research *alone* can not

- Tell us where to draw the age boundary between adolescence and adulthood
- Distinguish individuals who are psychologically immature from those who are mature
- Identify individuals who have “bad” brains or who will definitely reoffend
- Substitute for an assessment of an individual’s actual behavior

What research tells us

- Reaffirms that juveniles are different from adults
  - Early and mid-adolescents are different intellectually and emotionally
  - Late adolescents and many young adults are still different emotionally
- Immature juveniles almost always grow into mature, law-abiding adults

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jlw47@georgetown.edu