

Findings from the MacArthur Foundation Research Network on Adolescent Development and Juvenile Justice

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Three Research Questions

- **Competence.** At what age are individuals likely to have the capabilities necessary to be competent to be adjudicated in an adversarial context?
- **Culpability.** At what age are individuals likely to have the capabilities necessary to be held fully blameworthy for their offenses?
- **Amenability.** At what age are juveniles still capable of change? Can we identify the interventions that work for different offenders? What factors influence desistance from crime?

Why Understanding Adolescent Development Should Influence Juvenile Justice Policy and Practice

- Adolescents may be less competent than adults in ways that affect their ability to serve as defendants
- Adolescents may have certain deficiencies that diminish, or mitigate, their criminal responsibility
- Adolescents may be less completely developed, making prediction of future behavior more difficult

MAY 10, 2004

TIME

**TROY:
THE MAKING
OF AN EPIC**



**SECRETS
OF
THE
TEEN
BRAIN**

Research is revolutionizing our view of the adolescent mind—and explaining its mystifying ways

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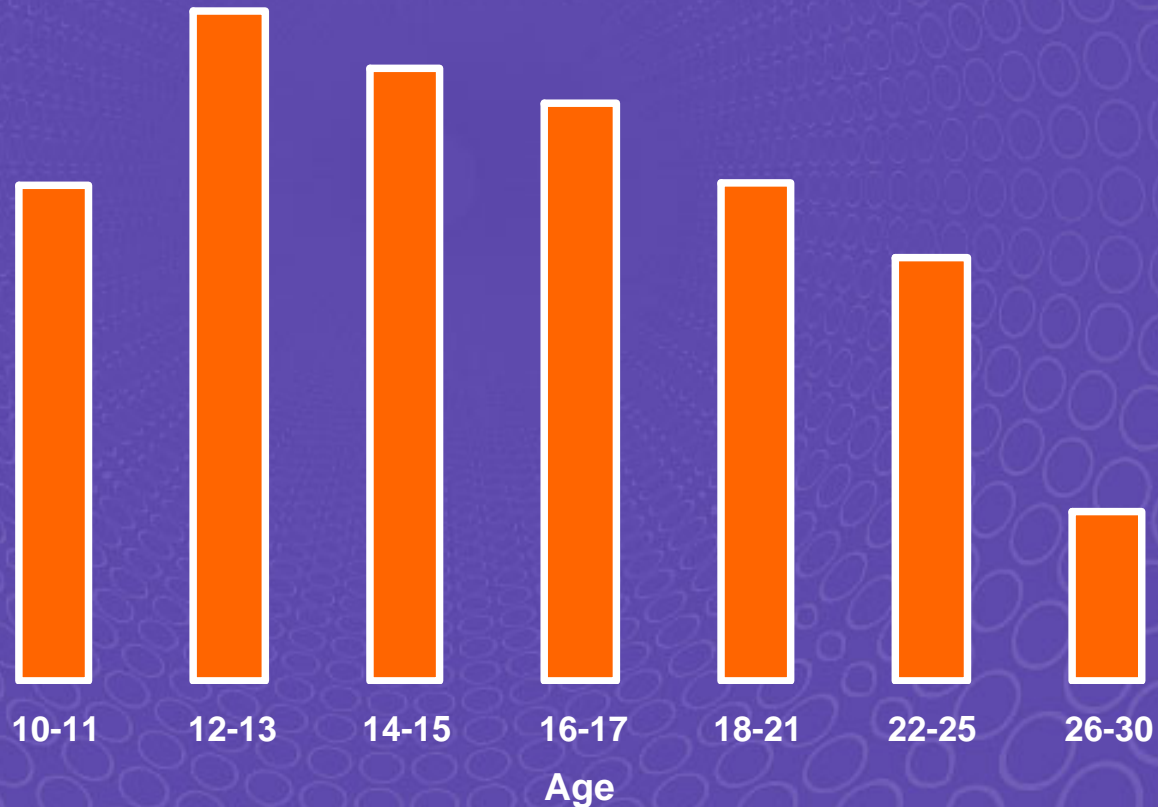
A Tale of Two Brain Systems

- Two distinct sets of brain systems relevant to decision-making and judgment in adolescence
- Systems involve different regions of the brain and mature along different timetables
- **Socio-emotional system** mainly involves limbic system and ventral areas of prefrontal cortex
- **Cognitive control system** mainly involves the dorsolateral prefrontal cortex and the parietal lobe
- **Connections within and between systems** also mature slowly and gradually during this time

The Socio-Emotional System

- Responsible for processing emotions, social information, reward and punishment
- Undergoes major changes in early adolescence that coincide with puberty
- Changes result from
 - Remodeling of dopaminergic system
 - Proliferation of oxytocin receptors
- Changes result in
 - Increased sensation-seeking
 - Increased reward salience
 - Increased attentiveness to social information
 - Intensification of reward salience in presence of peers
- Changes most evident between puberty and age 16

Sensation-Seeking Increases in Early Adolescence and Then Declines With Age



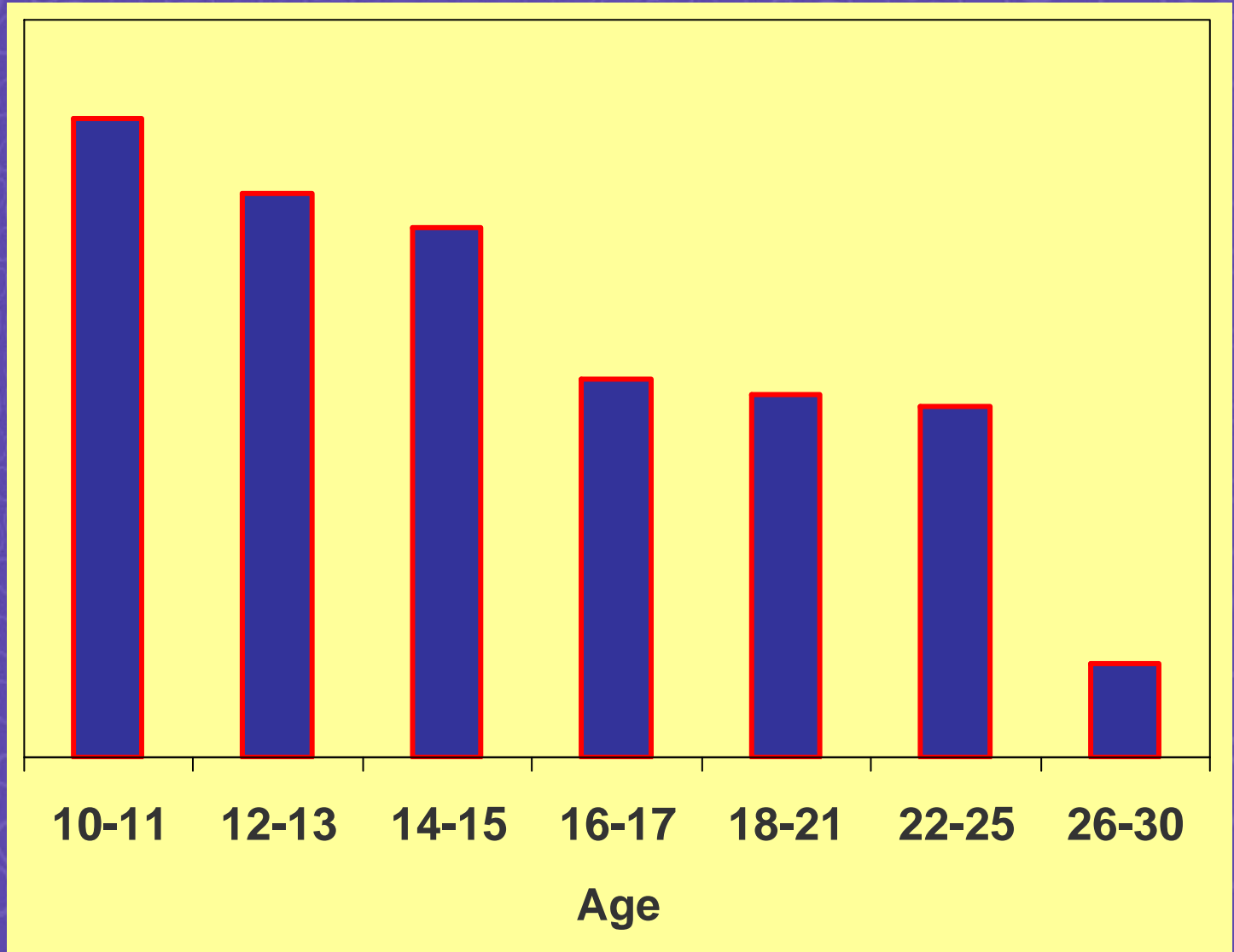
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The Cognitive Control System

- Responsible for deliberative thinking – weighing costs and benefits, thinking ahead, regulating impulses
- Develops gradually from preadolescence on, well into the late teens
- Changes result mainly from synaptic pruning and myelination of prefrontal cortex and parietal lobes
- Changes result in
 - More **foresight**
 - More **planning** ahead
 - Better **response inhibition**
- Changes gradual, but in general
 - Adolescents reach adult levels of performance in **basic intellectual abilities** by age 16
 - Performance on **more complicated tasks** improves until about age 20

Impulsivity Declines With Age



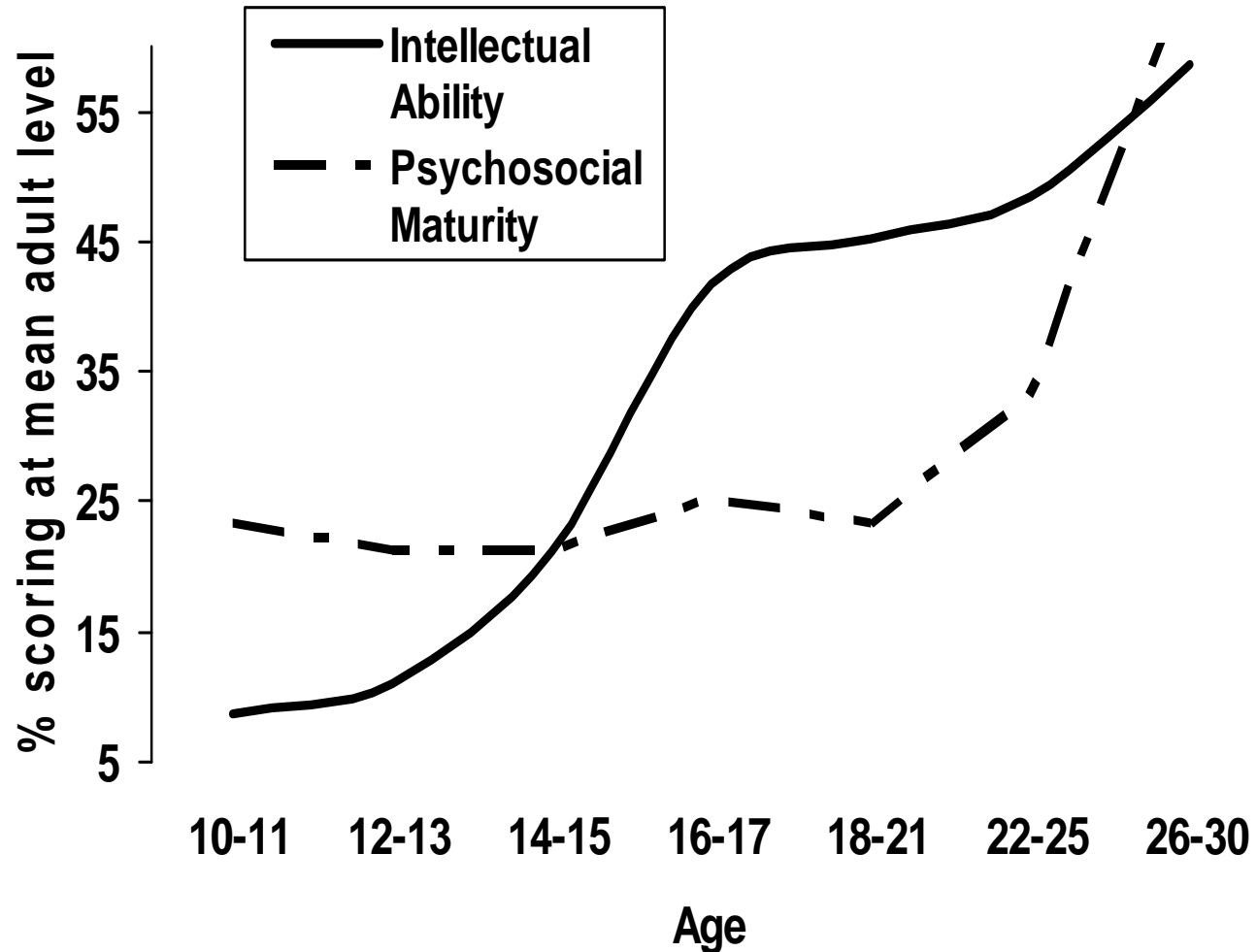
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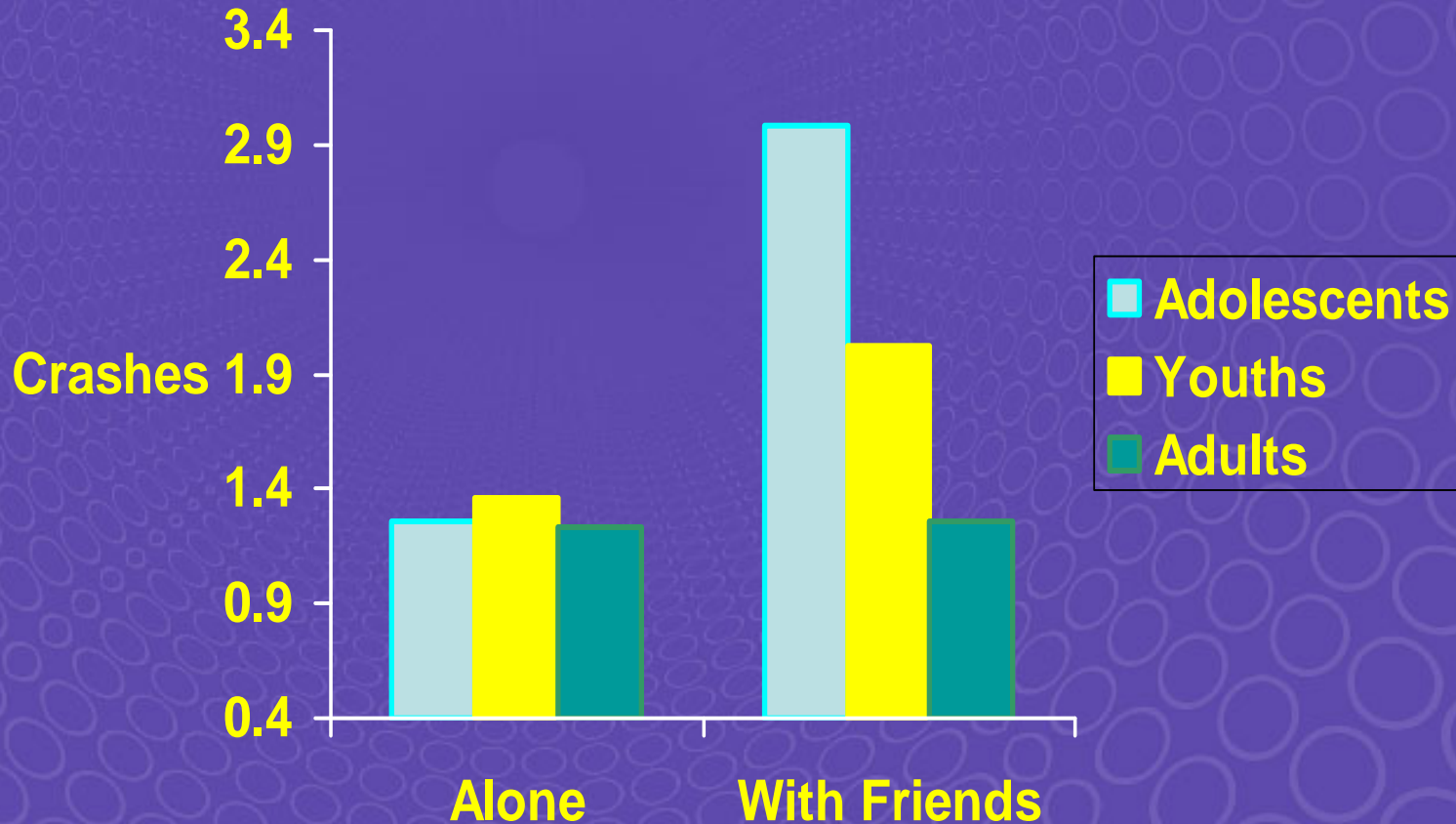
Connections Within and Between Systems

- Mature throughout adolescence and into early 20s
- Changes result in
 - Better **coordination of emotion and cognition**
 - Better **impulse control**
 - Better **emotion regulation**
 - Less **susceptibility to peer pressure**
- Lack of coordination leads to two distinctly different types of deficiencies
 - Acting impulsively without deliberating
 - Not following “gut” feelings to avoid risk
- Adolescents are still less emotionally mature than adults even after they have become as “smart” as adults
- Adolescents’ self-control easily disrupted

Developmental Course of Intellectual and Psychosocial Maturity



Presence of Peers Increases Risky Behavior Among Adolescents and Youths, But Not Adults



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Implications for Policy and Practice

- Different capacities mature along different timetables
 - Competence-related abilities mature by age 16
 - Capacities relevant to decisions about criminal culpability still maturing into young adulthood
- Adolescents are responsible for their behavior, but not **as** responsible as adults
 - Self-control is still developing and easily disrupted by emotionally or socially arousing situations
 - Context matters – adolescents need support, structure, and adult supervision
- Adolescents are still works in progress
 - Most will mature out of reckless and impetuous behavior by their early 20s without any intervention
 - Important that involvement with system not derail transition into productive adulthood