

Neuropsychological development of emerging adults

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The meaning of life is to be what we are and to become what we're capable of becoming.

- Robert Louis Stevenson

Cognition

- The mental action or process of acquiring knowledge and understanding through
 - Thought (concrete and abstract)
 - Experience
 - The senses
- Encompasses:
 - Knowledge
 - Memory
 - Attention
 - Judgement and evaluation

Cognition

- Encompasses:
 - Reasoning
 - Problem-solving
 - Decision making
 - Comprehension
 - Language

Cognition

- Studied using different approaches
 - Stage
 - Psychometric
 - Information processing

Post-formal thought

- Practical
- Flexible
- Dialectical

The “in-between” years

- Verified by 18-25 year-olds
- Transitional age youth
- Delayed adulthood
- Extended adolescence
- Youthhood
- Adulthood
- Emerging adults*

*Arnett

"A Dr. Spock for parents with children in all stages of emerging adulthood."
—Robin Marantz Henig, coauthor, with Samantha Henig, of *Teenysomething*

WHEN WILL MY GROWN-UP KID GROW UP?

Loving and
Understanding Your
Emerging Adult

For Parents
Whose
Children Are
18 - 29

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Why emerging adults: Adulthood tasks not completed

- Three of the following:
 - Leaving home
 - Completing ones education
 - Becoming financially independent
 - Getting married
 - Having children

Why emerging adults: Living

- Half of individuals 18-24 who are not married live with their parents
- Smaller percentage live independently but rely on parents for financial support
- Children can remain on parents' health insurance policy until age 26

Why emerging adults: Education

- Increasing numbers of emerging adults enrolling in post-secondary education (60% following high school)

Why emerging adults: Work

- Economy has resulted in large numbers of emerging adults who are unemployed or underemployed
- Those who are employed work an average of seven jobs before the age of 30

Why emerging adults: \$

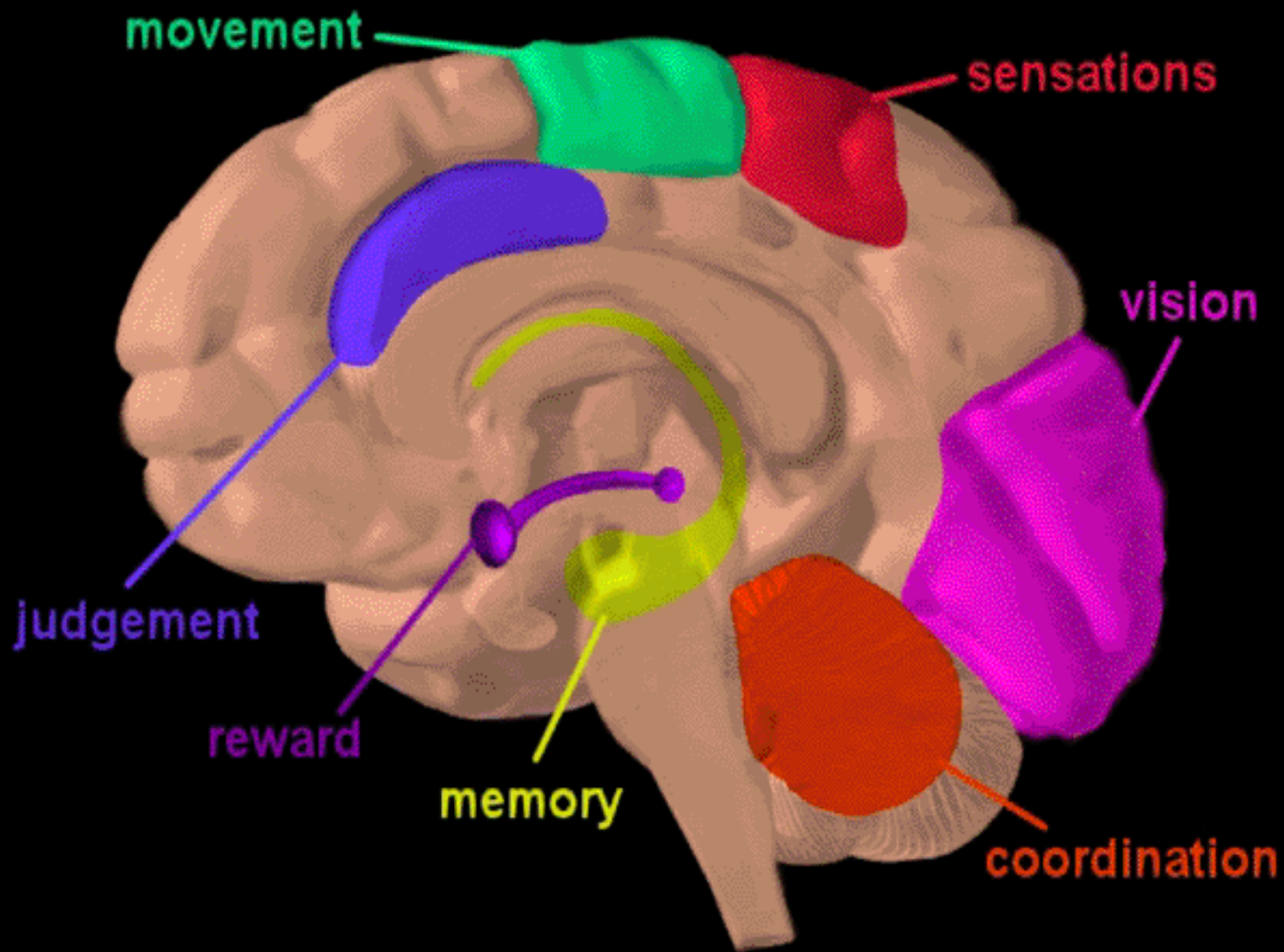
- Emerging adults are increasingly saddled with student debt
- Credit card debt can hold back financial independence

Why emerging adults: Marriage and parenthood

- Age at first marriage approaching 30
- Parenthood delayed because of older age at marriage

Why emerging adults: Brain development

- By age 6, brain is at 90% of it's adult size
- Brain function not fully mature until 25 or so
- Last section to develop is prefrontal cortex



Development of the brain

Dynamic mapping of human cortical development



Source: "Dynamic mapping of human cortical development during childhood through early adulthood," Nitin Gogtay et al., Proceedings of the National Academy of Sciences, May 25, 2004; California Institute of Technology.

Building on changes in adolescence

- Abstract thinking
- Right/wrong framework
- Instrumental relationships
- Intensity of emotion
- Sensation seeking

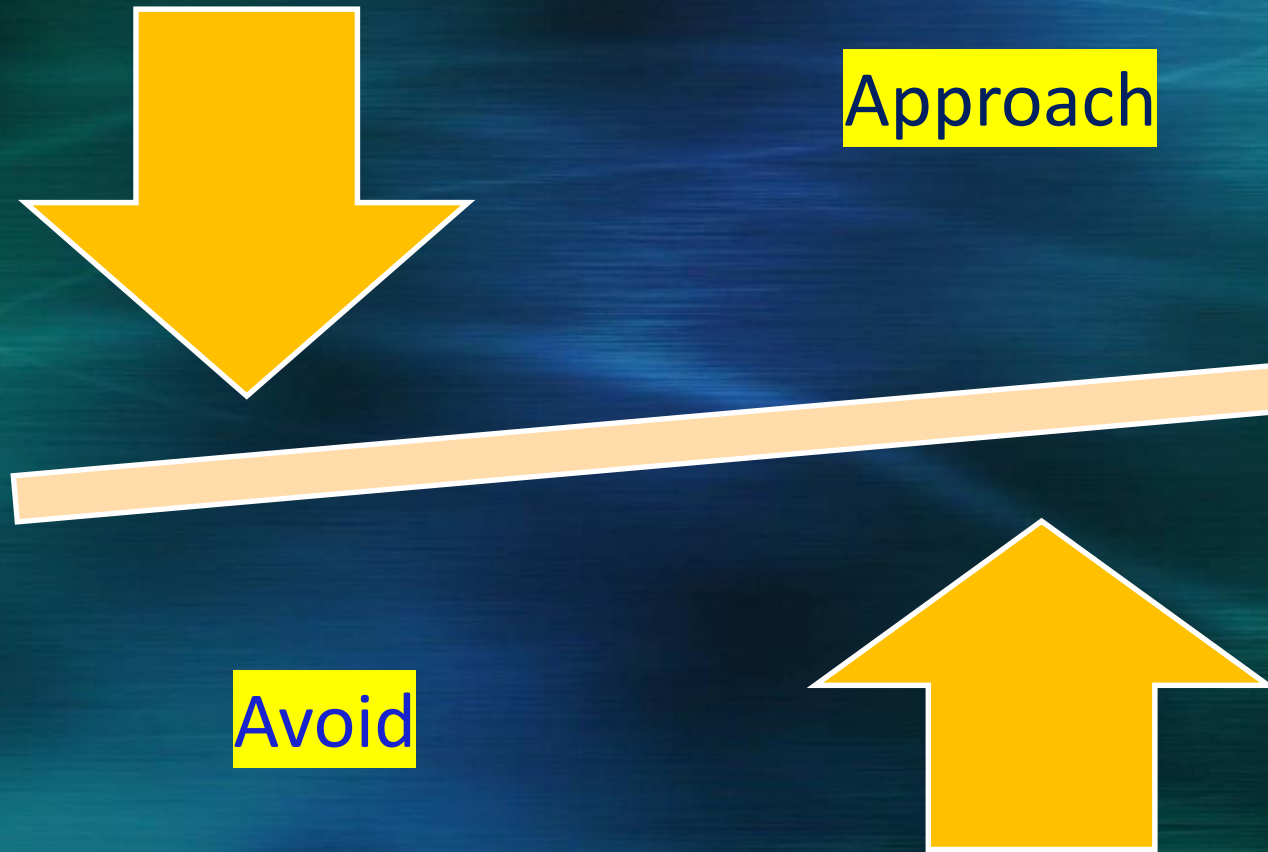
Brain changes during emerging adulthood

- Prefrontal cortex
 - Calibration of risk and reward
 - Problem-solving
 - Prioritizing
 - Thinking ahead
 - Impulse control
 - Self-evaluation
 - Long-term planning
 - Regulation of emotion
 - Pruning
 - Myelination

Responses to novel opportunities



A delicate balance



Brain changes during emerging adulthood

- Prefrontal cortex
 - Calibration of risk and reward
 - Problem-solving
 - Prioritizing
 - Thinking ahead
 - Impulse control
 - Self-evaluation/awareness
 - Long-term planning
 - Regulation of emotion
 - Pruning
 - Myelination

Brain changes during emerging adulthood

- Connections among regions

Timing of developmental changes varies

- Trauma
- Race, Ethnicity, Sexual Identity
- Parenting Style
- Illness (Especially mental illness)
- AOD use

Developmental tasks of emerging adulthood

- Autonomy from parents
- Self awareness
- Emotional regulation
- Motivation
- Empathy
- Social skills
- Development of a heightened sense of internalized morality
- Determine a career choice

Autonomy from parents

- Independence of behaviors, thoughts and emotions
- Not rejection, alienation or separation
- IS:
 - Regulation of behavior
 - Decision-making and acting to achieve meaningful goals without undue control or from or dependence on parents
 - Behavior due to personal will, not imposed or controlled
 - Acceptance of individuality between parents and children

Autonomy from parents

- Requires:
 - Psychological sense of confidence
 - Ability to express opinions and beliefs that may differ from parents'
- Supported by cognitive maturity:
 - Problem solving
 - Evaluating information from multiple sources
 - Capacity to plan for future
- Significance varies depending on personal/family/cultural values

Autonomy from parents

- Three possible routes:
 - Leaving home
 - Attending college
 - Becoming self-sufficient

Self awareness

- The process of more completely understanding and accurately labeling their own feelings and emotions
- “Bad” and “good” feelings become more appropriately identified

Emotional regulation

- Better management of emotions
- Identification of source of feelings
- More concern for how the expression of emotion affects others
- Redirection of emotion

Motivation

- Less focus on parents and other authority figures
- Stronger sense of agency
- Different reasons for working (trying)

Empathy

- Progresses from childhood origins
- Heightened ability to appreciate more than one viewpoint
- Ability to interpret non-verbal signals

Social skill

- Firmer sense of self and personal identity
- Self representation
- Skill in interacting, initiating relationships, building rapport

Development of internalized morality

- Sense of self as moral being whose actions have implications for the well-being of others
- Dependent on new cognitive capabilities:
 - Abstract reasoning
 - Projection of alternative paths in probable future
 - Consideration of multiple perspectives

Development of internalized morality

- Progression from:
 - Pre-conventional (I will not break the law because I might get punished)
 - Conventional: (I will not break the law because it goes against what our society has decided is legal)
 - Post-conventional: (I will not break this particular law because I believe that it is a just and moral law / I will break this law because I do not believe that it is a just and moral law)
 - Consequential-social-personal

Development of internalized morality

- Gender difference: “Caring” Vs. “Justice”

Identity development

- Pulling together components of the self into single, unified image of self
- Identity exploration (Arnett):
 - Love
 - Work
 - Worldview

Establishment of a career choice

- Begins after high school
- Tasks:
 - Initial awareness of ones interests and abilities
 - Identification of career values and goals
 - Engagement in information gathering
 - Exploration of work experiences
 - Making a commitment
 - Evaluating the fit of work and ones emerging identity

AOD use and neurodevelopment

- NIDA “Work in progress”
- Lack of development of coping strategies
- Delay in problem-solving capability
- Poor impulse control
- Continued risk-taking
- Exacerbation of existing psychiatric illness
- Altered neurochemistry
- Persistent anhedonia
- Increased risk of addiction

AOD use and neurodevelopment

- NIDA “National Longitudinal Study of Neurodevelopmental Consequences of Substance Use”

AOD use and neurodevelopment

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- Persistent anhedonia
- Increased risk of addiction (?)

Adolescent cannabis use and IQ decline

- Early research suggested adolescent cannabis use might result in IQ decline
- More recent research suggests that:
 - Adolescent marijuana users fall behind because of adverse familial influences
 - Predisposition to engage in delinquency and deviant behaviors, including substance use
 - Slow normal accumulation of vocabulary and information

Adolescent cannabis use and psychosis

- Users who begin smoking at an early age may have a high risk of psychosis as adults.
- This finding has also been questioned

Adolescent alcohol use and neurodevelopment

- Binge drinking associated with prefrontal cortex “thinness”

THE FOUR STAGES OF **ADULTHOOD**

-RADULT-



-SADULT-



-MADULT-



-DEADULT-

