

# DEVELOPMENTAL PSYCHOLOGY

DEVELOPING THROUGH THE LIFE SPAN

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## Prenatal Development and the Newborn

- Conception
- Prenatal Development
- The Competent Newborn

# Infancy and Childhood

- Physical Development
- Cognitive Development
- Social Development

## Adolescence

- Physical Development
- Cognitive Development
- Social Development
- Emerging Adulthood

# Adulthood

- Physical Development
- Cognitive Development
- Social Development

## ■ Reflections on Two Major Developmental Issues

- Continuity and Stages
- Stability and Change

# DEVELOPMENTAL PSYCHOLOGY

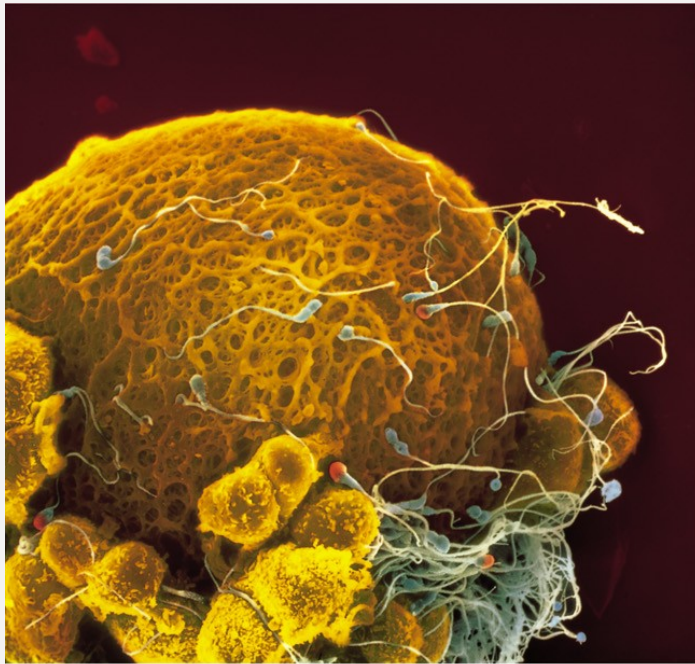
Issue	Details
Nature/Nurture	How do genetic inheritance ( <i>our nature</i> ) and experience ( <i>the nurture we receive</i> ) influence our behavior?
Continuity/Stages	Is development a gradual, continuous process or a sequence of separate stages?
Stability/Change	Do our early personality traits persist through life, or do we become different persons as we age.

# PRENATAL DEVELOPMENT AND THE NEWBORN

How, over time, did we come to be who we are?  
From zygote to birth, development progresses  
in an orderly, though fragile, sequence.

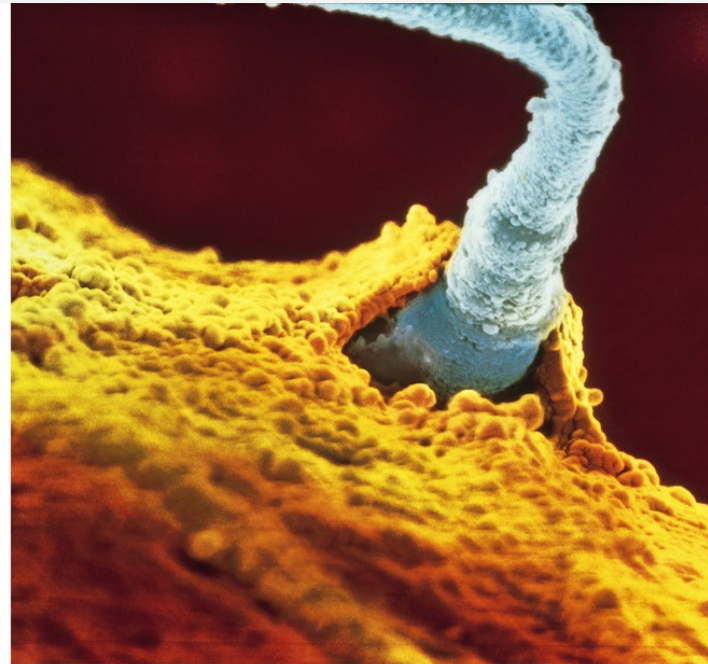
# CONCEPTION

A single sperm cell (male) penetrates the outer coating of the egg (female) and fuses to form one fertilized cell.



Lennart Nilsson/ Albert Bonniers Publishing Company

(a)



Lennart Nilsson/ Albert Bonniers Publishing Company

(b)

# PRENATAL DEVELOPMENT

A zygote is a fertilized egg with 100 cells that become increasingly diverse. At about 14 days the zygote turns into an embryo (a and b).



Lennart Nilsson/Albert Bonniers Publishing Company

(a)



Biophoto Associates/Photo Researchers, Inc.

(b)



# PRENATAL DEVELOPMENT

At 9 weeks, an embryo turns into a fetus (c and d).  
Teratogens are chemicals or viruses that can enter the placenta and harm the developing fetus.



Lennart Nilsson/Albert Bonniers Publishing Company

(c)



Lennart Nilsson/Albert Bonniers Publishing Company

(d)

# THE COMPETENT NEWBORN

- Infants are born with reflexes that aid in survival, including rooting reflex which helps them locate food.



# INFANCY AND CHILDHOOD

Infancy and childhood span from birth to the teenage years. During these years, the individual grows physically, cognitively, and socially.

<b>Stage</b>	<b>Span</b>
Infancy	Newborn to toddler
Childhood	Toddler to teenager

# PHYSICAL DEVELOPMENT

- Infants' psychological development depends on their biological development. To understand the emergence of motor skills and memory, we must understand the [developing brain](#).

# DEVELOPING BRAIN

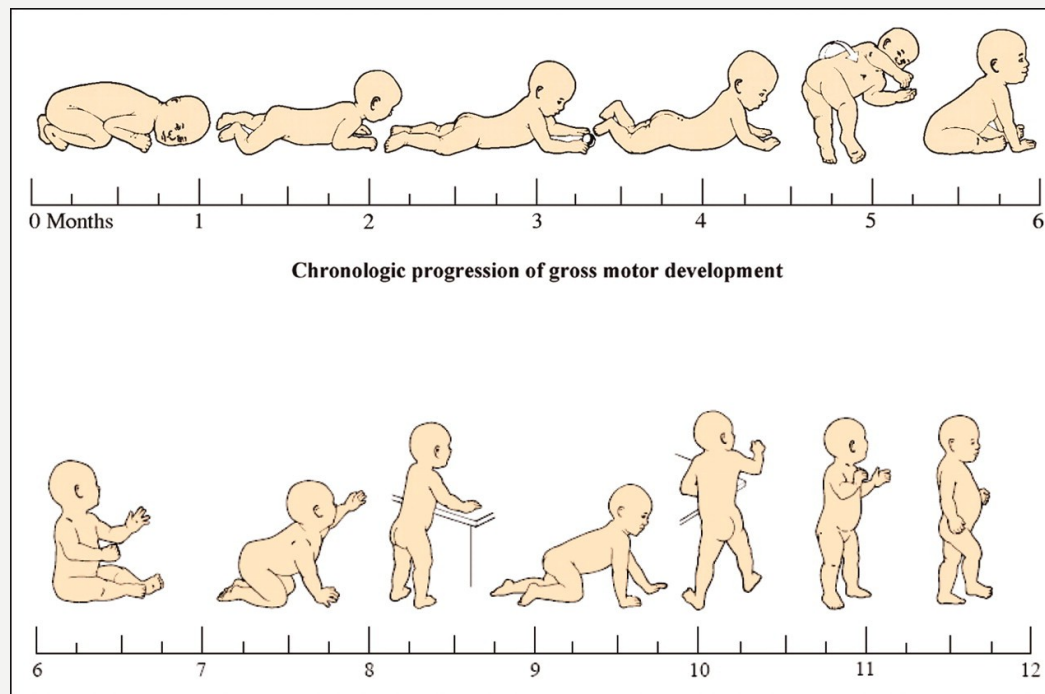
- At birth, most brain cells are present. After birth, the neural networks multiply resulting in increased physical and mental abilities.

# MATURATION

- The development of the brain unfolds based on genetic instructions, causing various bodily and mental functions to occur in sequence— standing before walking, babbling before talking—this is called **maturation**.
- Maturation sets the basic course of development, while experience adjusts it.

# MOTOR DEVELOPMENT

- First, infants begin to roll over. Next, they sit unsupported, crawl, and finally walk. Experience has little effect on this sequence.



# MATURATION AND INFANT MEMORY

- The earliest age of conscious memory is around 3½ years (Bauer, 2002). A 5-year-old has a sense of self and an increased long-term memory, thus organization of memory is different from 3-4 years.





# COGNITIVE DEVELOPMENT

- Piaget believed that the driving force behind intellectual development is our biological development amidst experiences with the environment. Our cognitive development is shaped by the errors we make.



# SCHEMAS

Schemas are mental molds into which we pour our experiences.



Two-year-old Gabriella has learned the schema for "cow" from her picture books.



Gabriella sees a moose and calls it a "cow." She is trying to assimilate this new animal into an existing schema. Her mother tells her, "No, it's a moose."



Gabriella accommodates her schema for large, shaggy animals and continues to modify that schema to include "mommy moose," "baby moose," and so forth.

# ASSIMILATION AND ACCOMMODATION

The process of **assimilation** involves incorporating new experiences into our current understanding (schema). The process of adjusting a schema and modifying it is called **accommodation**.



Bill Anderson/Photo Researchers, Inc.

Jean Piaget with a subject

# PIAGET'S THEORY AND CURRENT THINKING

## PIAGET'S STAGES OF COGNITIVE DEVELOPMENT

Typical Age Range	Description of Stage	Developmental Phenomena
Birth to nearly 2 years	<i>Sensorimotor</i> Experiencing the world through senses and actions (looking, touching, mouthing, and grasping)	<ul style="list-style-type: none"><li>• Object permanence</li><li>• Stranger anxiety</li></ul>
2 to about 6 or 7 years	<i>Preoperational</i> Representing things with words and images; use intuitive rather than logical reasoning	<ul style="list-style-type: none"><li>• Pretend play</li><li>• Egocentrism</li><li>• Language development</li></ul>
About 7 to 11 years	<i>Concrete operational</i> Thinking logically about concrete events; grasping concrete analogies and performing arithmetical operations	<ul style="list-style-type: none"><li>• Conservation</li><li>• Mathematical transformations</li></ul>
About 12 through adulthood	<i>Formal operational</i> Abstract reasoning	<ul style="list-style-type: none"><li>• Abstract logic</li><li>• Potential for mature moral reasoning</li></ul>

# SENSORIMOTOR STAGE

In the **sensorimotor** stage, babies take in the world by looking, hearing, touching, mouthing, and grasping. Children younger than 6 months of age do not grasp **object permanence**, i.e., objects that are out of sight are also out of mind.



Doug Goodman

At 8 months of age what is out of sight is not out of mind.

# SENSORIMOTOR STAGE: CRITICISMS

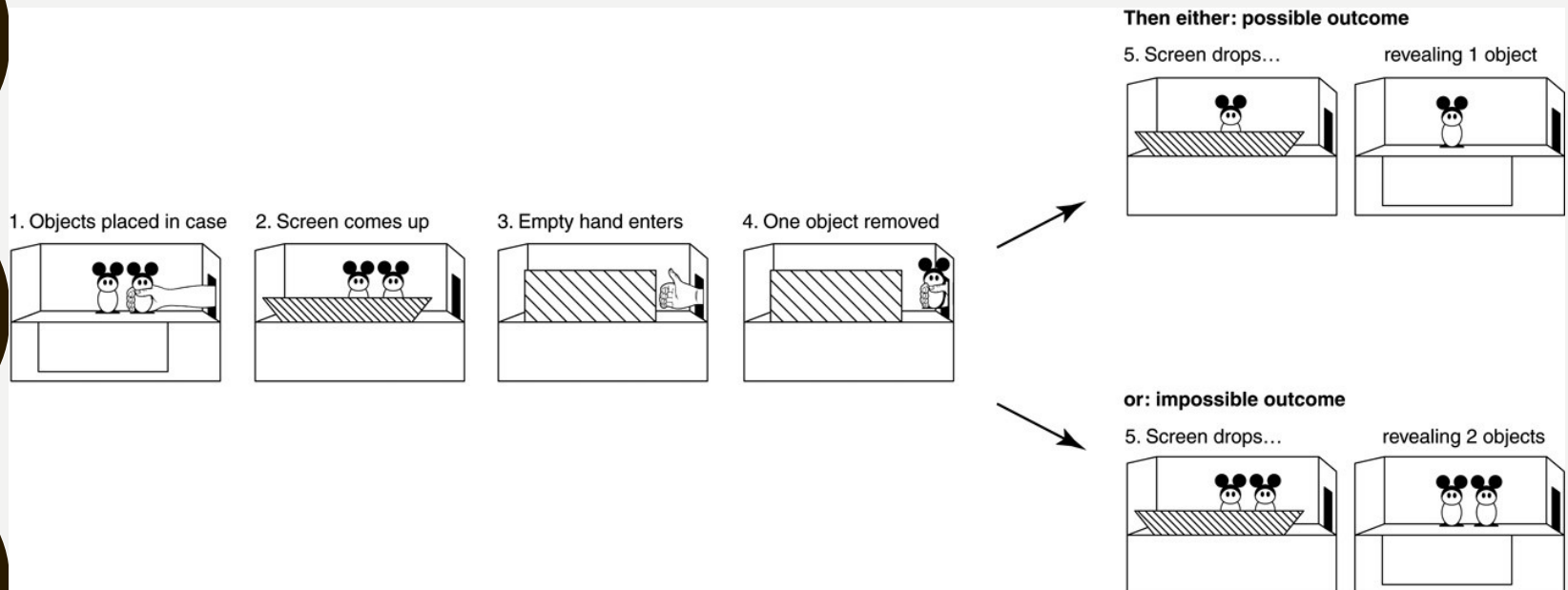
Piaget believed children in the sensorimotor stage could not think — they do not have any abstract concepts or ideas.

However, recent research shows that children in the sensorimotor stage can think and count.

1. Children understand the basic laws of physics. They are amazed at how a ball can stop in midair or disappear.

# SENSORIMOTOR STAGE: CRITICISMS

2. Children can also count. Wynn (1992, 2000) showed that children stared longer at the wrong number of objects than the right ones.



# PREOPERATIONAL STAGE

Piaget suggested that from 2 years old to about 6-7 years old, children are in the **preoperational** stage — too young to perform mental operations.



Ontario Science Center

The child points to the left flask as having more liquid when in fact the two flasks contain the same amount of liquid. The inability to use a mental *operation* and understanding conservation of liquid amounts is lacking at this stage.



# PREOPERATIONAL STAGE: CRITICISM

DeLoache (1987) showed that children as young as 3 years of age are able to use mental operations. When shown a model of a dog's hiding place behind the couch, a 2½-year-old could not locate the stuffed dog in an actual room, but the 3-year-old did.

# EGOCENTRISM

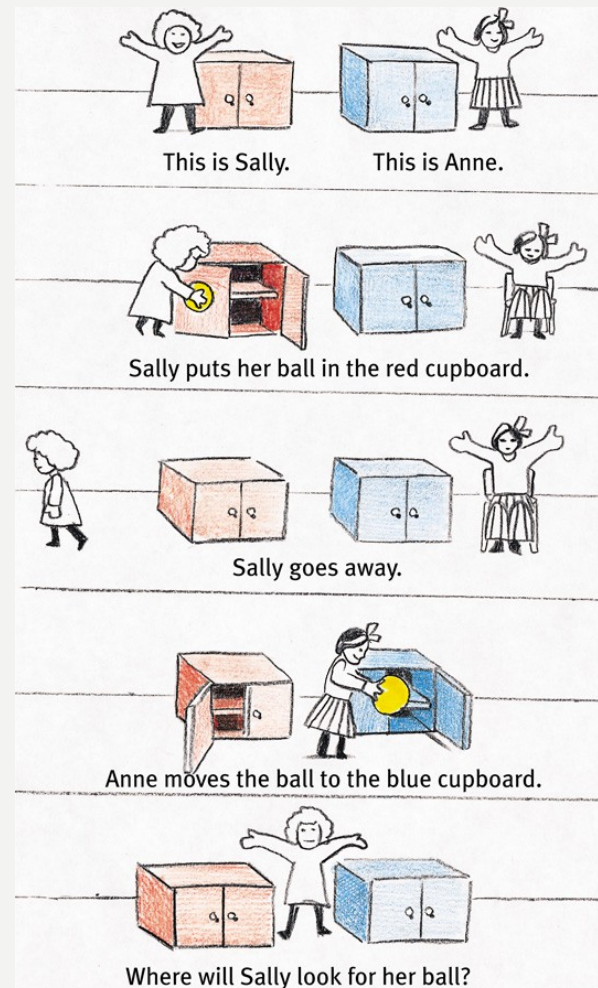
Piaget concluded that preschool children are egocentric. They cannot perceive things from another's point of view.

When asked to show her picture to mommy, 2-year-old Gabriella holds the picture facing her own eyes, believing that her mother can see it through her eyes.

# THEORY OF MIND

Preschoolers, although still egocentric, develop the ability to understand another's mental state when they begin forming a **theory of mind**.

The problem on the right probes such ability in children.



# CONCRETE OPERATIONAL STAGE

In concrete operational stage, given concrete materials, 6- to 7-year-olds grasp conservation problems and mentally pour liquids back and forth into glasses of different shapes conserving their quantities.

Children in this stage are also able to transform mathematical functions. So, if  $4 + 8 = 12$ , then a transformation,  $12 - 4 = 8$ , is also easily doable.

# FORMAL OPERATIONAL STAGE

Around age 12, our reasoning ability expands from concrete thinking to abstract thinking. We can now use symbols and imagined realities to systematically reason. Piaget called this **formal operational** thinking.

# FORMAL OPERATIONAL STAGE

Rudiments of such thinking begin earlier (age 7) than what Piaget suggested, since 7-year-olds can solve the problem below (Suppes, 1982).

If John is in school, Mary is in school. John is in school. What can you say about Mary?

# REFLECTING ON PIAGET'S THEORY

Piaget's stage theory has been influential globally, validating a number of ideas regarding growth and development in many cultures and societies. However, today's researchers believe the following:

1. Development is a continuous process.
2. Children express their mental abilities and operations at an earlier age.
3. Formal logic is a smaller part of cognition.

# SOCIAL DEVELOPMENT

**Stranger anxiety** is the fear of strangers that develops at around 8 months. This is the age at which infants form schemas for familiar faces and cannot assimilate a new face.



© Christina Kennedy/PhotoEdit



# PROBLEMS OF CHILDHOOD

## Normal Problems

- Overprotection
- Sibling Rivalry
- Childhood Rebellion
- Divorce

## • Serious Problems

- Autism
- Toilet Training disturbances
- Feeding Disturbances
  - Overeating
  - Anorexia Nervosa
  - Pica

## – Speech Disturbances

- Delayed speech
- Telegraphic speech
- Stuttering

## – Learning Disorders

- Dyslexia
- ADHD

## – Conduct Disorders

# ADOLESCENCE

Many psychologists once believed that our traits were set during childhood. Today psychologists believe that development is a lifelong process.

**Adolescence** is defined as a life between childhood and adulthood.



AP Photo/Jeff Chiu

# PUBERTY-BIOLOGICAL EVENT

- Girls- 9-12 years old, begin
- Boys- 11-14 years
- Hormonal changes
  - Cause rapid physical and sexual maturity
- Immature- social experience, intellectual and knowledge
- **Identity Formation-** puberty- “Time to begin a new self image”

# ADOLESCENCE TRANSITION

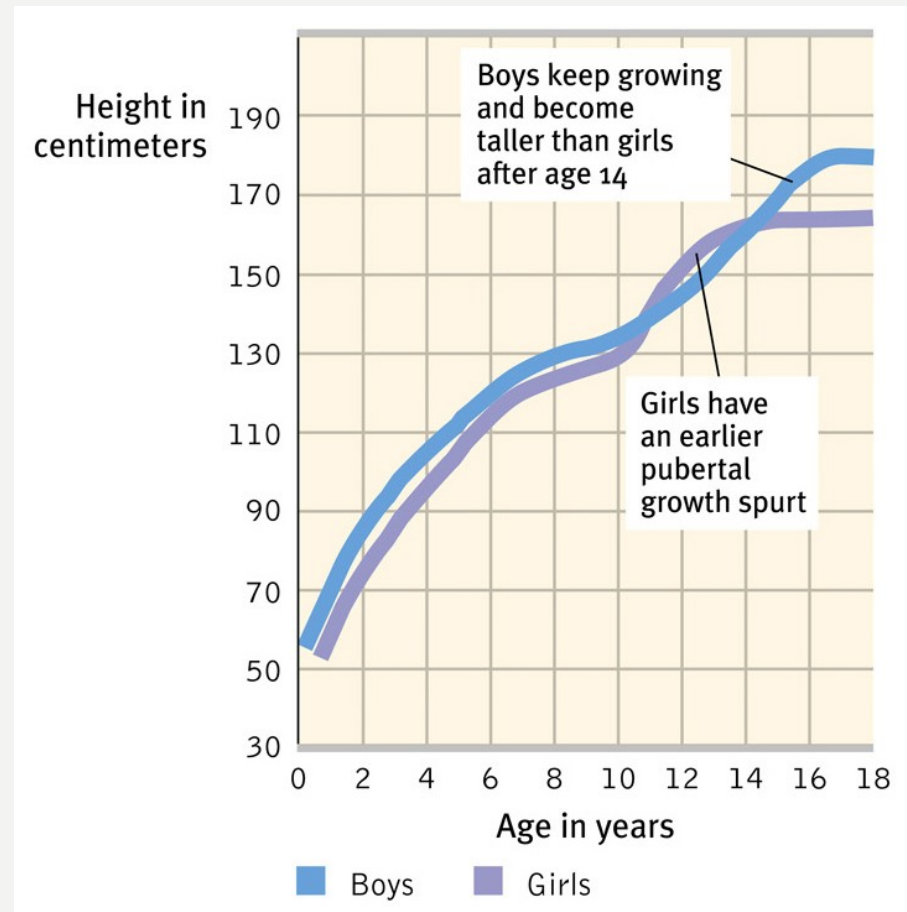
- Adulthood transition
  - Responsibility for oneself
  - Independent decisions
  - Financial independence

# EARLY AND LATE MATURATION

- Bodily awareness concerns
- Timing of puberty → may cause dissatisfaction over body
- Early maturation for boys is seen positive in society (seen as athletic, self assured...)
- Girls seen as less prestige
  - Poor self image.. (not in middle school)

# PHYSICAL DEVELOPMENT

Adolescence begins with **puberty** (sexual maturation). Puberty occurs earlier in females (11 years) than males (13 years). Thus height in females increases before males.



# PRIMARY SEXUAL CHARACTERISTICS

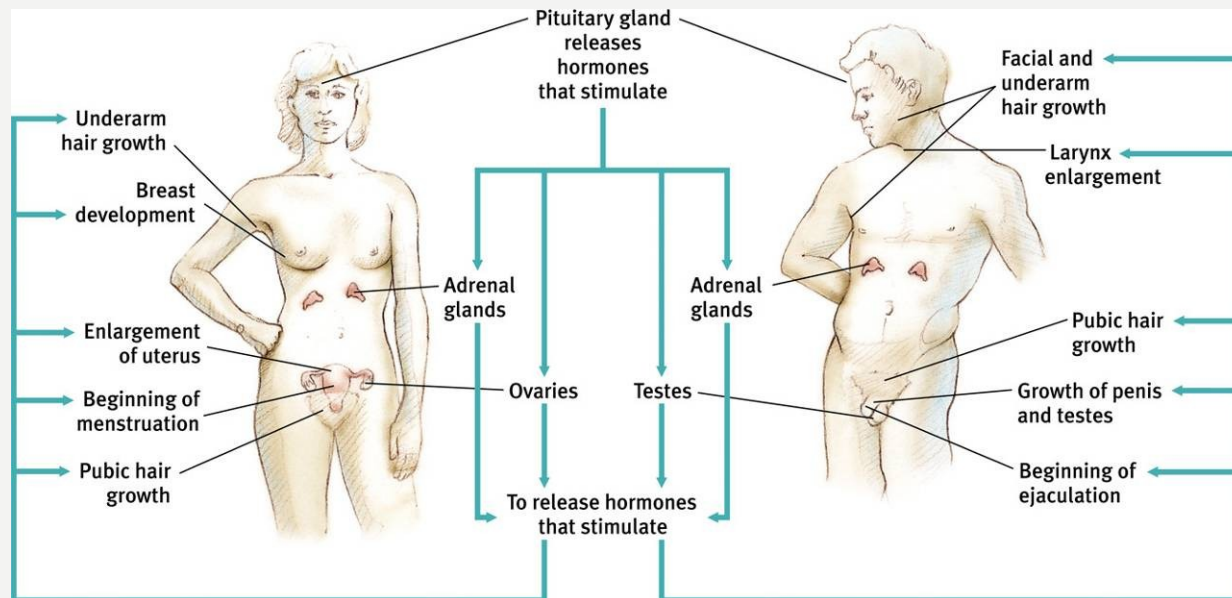
During puberty **primary sexual characteristics** — the reproductive organs and external genitalia — develop rapidly.



Ellen Senisi/The Image Works

# SECONDARY SEXUAL CHARACTERISTICS

Also **secondary sexual characteristics** — the nonreproductive traits such as breasts and hips in girls and facial hair and deepening of voice in boys develop. Pubic hair and armpit hair grow in both sexes.



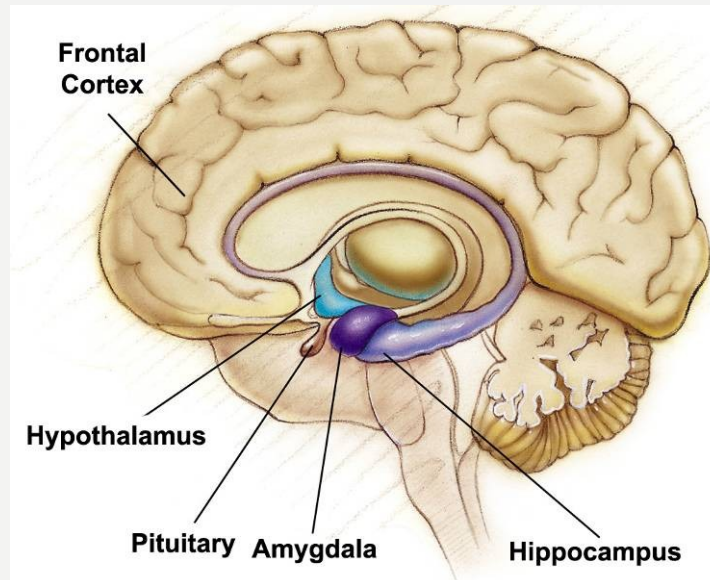


# BRAIN DEVELOPMENT

Until puberty, neurons increase their connections. However, at adolescence, selective pruning of the neurons begins. Unused neuronal connections are lost to make other pathways more efficient.

# FRONTAL CORTEX

During adolescence, neurons in the frontal cortex grow myelin, which speeds up nerve conduction. The frontal cortex lags behind the limbic system's development. Hormonal surges and the limbic system may explain occasional teen impulsiveness.



# COGNITIVE DEVELOPMENT

Adolescents' ability to reason gives them a new level of social awareness. In particular, they may think about the following:

1. Their own thinking.
2. What others are thinking.
3. What others are thinking about them.
4. How ideals can be reached. They criticize society, parents, and even themselves.

# DEVELOPING REASONING POWER

According to Piaget, adolescents can handle abstract problems, i.e., they can perform *formal operations*. Adolescents can judge good from evil, truth and justice, and think about God in deeper terms.



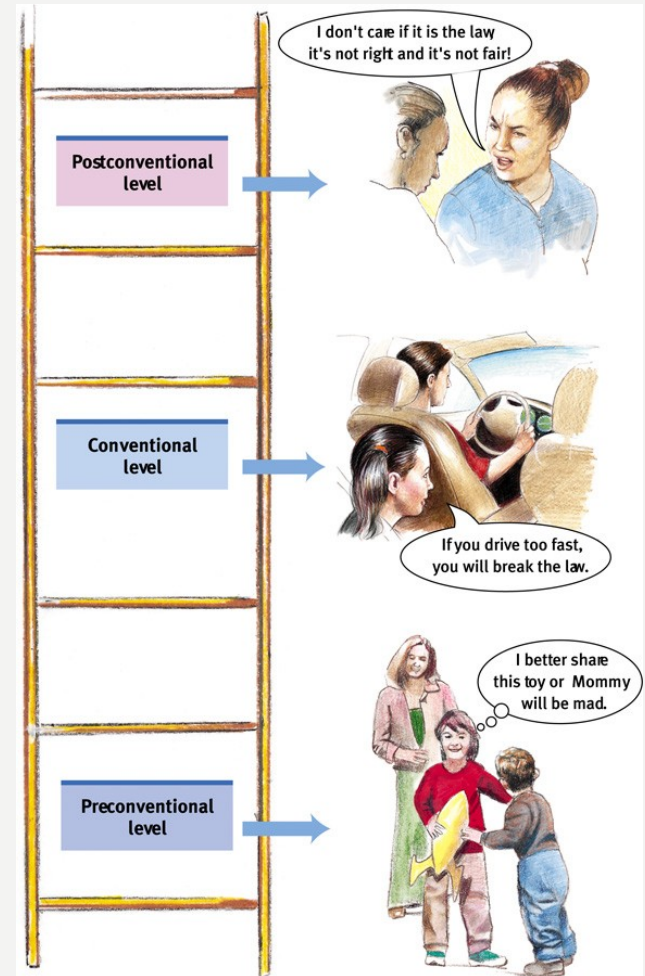
William Thomas Cairn/ Getty Images



AP/Wide World Photos

# 3 BASIC LEVELS OF MORAL THINKING

1. **Preconventional Morality:**  
Before age 9, children show morality to avoid punishment or gain reward.
2. **Conventional Morality:** By early adolescence, social rules and laws are upheld for their own sake.
3. **Postconventional Morality:**  
Affirms people's agreed-upon rights or follows personally perceived ethical principles.



# MORALITY

As our thinking matures, so does our behavior in that we become less selfish and more caring. People who engage in doing the right thing develop empathy for others and the self-discipline to resist their own impulses.

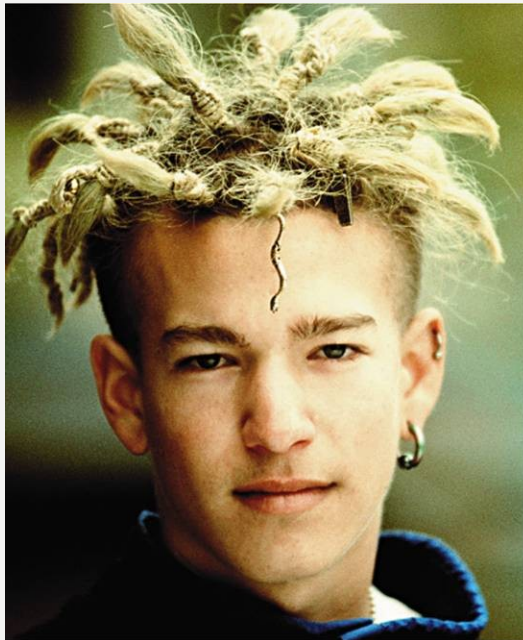
# SOCIAL DEVELOPMENT

## ERIKSON'S STAGES OF PSYCHOSOCIAL DEVELOPMENT

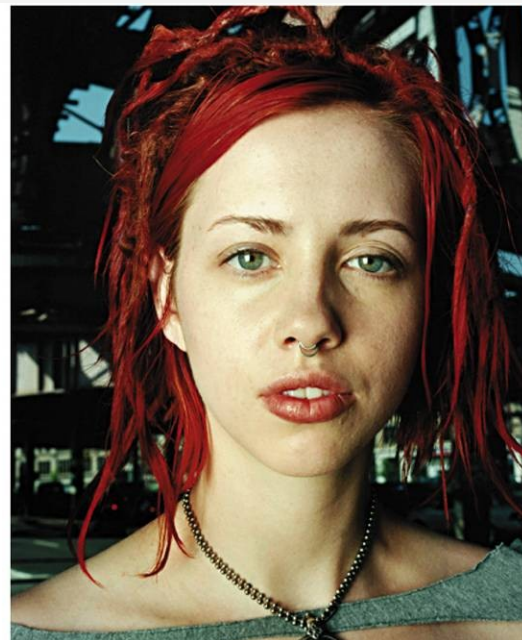
Stage (approximate age)	Issues	Description of Task
<i>Infancy</i> (to 1 year)	<i>Trust vs. mistrust</i>	If needs are dependably met, infants develop a sense of basic trust.
<i>Toddlerhood</i> (1 to 2 years)	<i>Autonomy vs. shame and doubt</i>	Toddlers learn to exercise will and do things for themselves, or they doubt their abilities.
<i>Preschooler</i> (3 to 5 years)	<i>Initiative vs. guilt</i>	Preschoolers learn to initiate tasks and carry out plans, or they feel guilty about efforts to be independent.
<i>Elementary school</i> (6 years to puberty)	<i>Competence vs. inferiority</i>	Children learn the pleasure of applying themselves to tasks, or they feel inferior.
<i>Adolescence</i> (teen years into 20s)	<i>Identity vs. role confusion</i>	Teenagers work at refining a sense of self by testing roles and then integrating them to form a single identity, or they become confused about who they are.
<i>Young adulthood</i> (20s to early 40s)	<i>Intimacy vs. isolation</i>	Young adults struggle to form close relationships and to gain the capacity for intimate love, or they feel socially isolated.
<i>Middle adulthood</i> (40s to 60s)	<i>Generativity vs. stagnation</i>	In middle age, people discover a sense of contributing to the world, usually through family and work, or they may feel a lack of purpose.
<i>Late adulthood</i> (late 60s and up)	<i>Integrity vs. despair</i>	When reflecting on his or her life, the older adult may feel a sense of satisfaction or failure.

# FORMING AN IDENTITY

In Western cultures, many adolescents try out different selves before settling into a consistent and comfortable identity. Having such an identity leads to forming close relationships.



Leland Bobble/ Getty Images

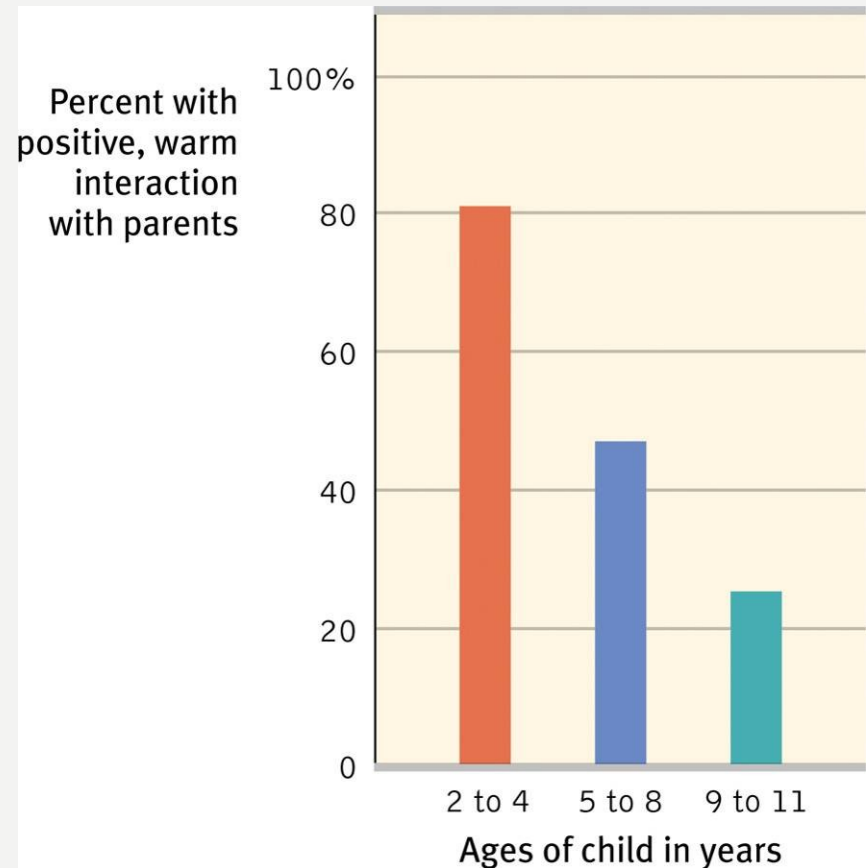


Matthias Clamer/ Getty Images



# PARENT AND PEER INFLUENCE

Although teens become independent of their parents as they grow older, they nevertheless relate to their parents on a number of things, including religiosity and career choices. Peer approval and relationships are also very important.



# PARENTS AND TEENS

## DAVID ELKIND (RESEARCHER)

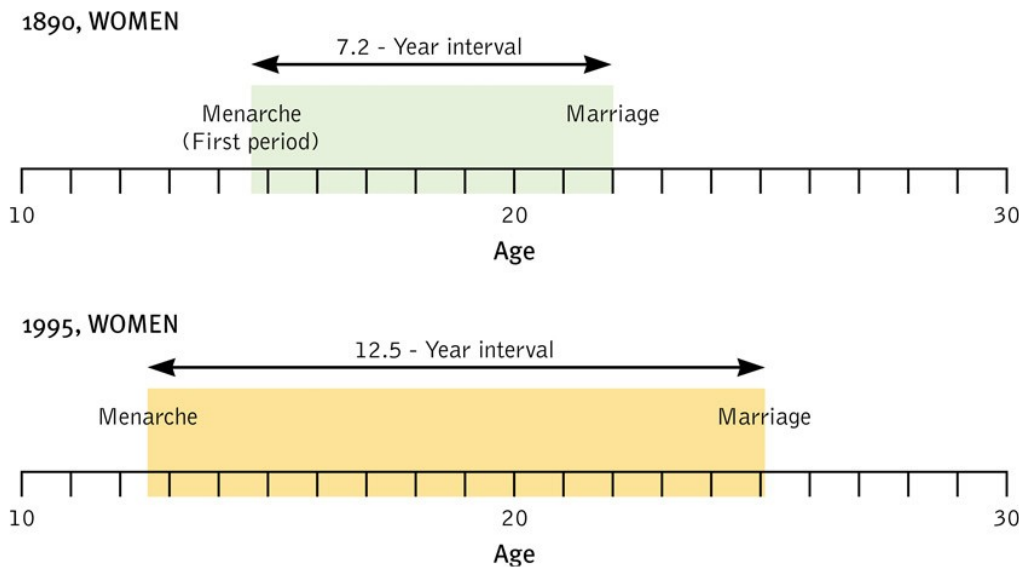
- **Hurried Adulthood**- parents push kids too much
  - Causes too much stress
- **Parents affect Identity** Formation: sometimes creates- conflict
  - Dating, sex, substance abuse, freedom
- **Parents** should be authoritative- don't give in or give up

# ADOLESCENT PERCEPTIONS ELKIND

- **Imaginary Audiences:** teens are preoccupied by imagining audiences-
  - Concerned that they are being watched
  - Affects behavior
  - Kids try to control outside impressions

# EMERGING ADULTHOOD

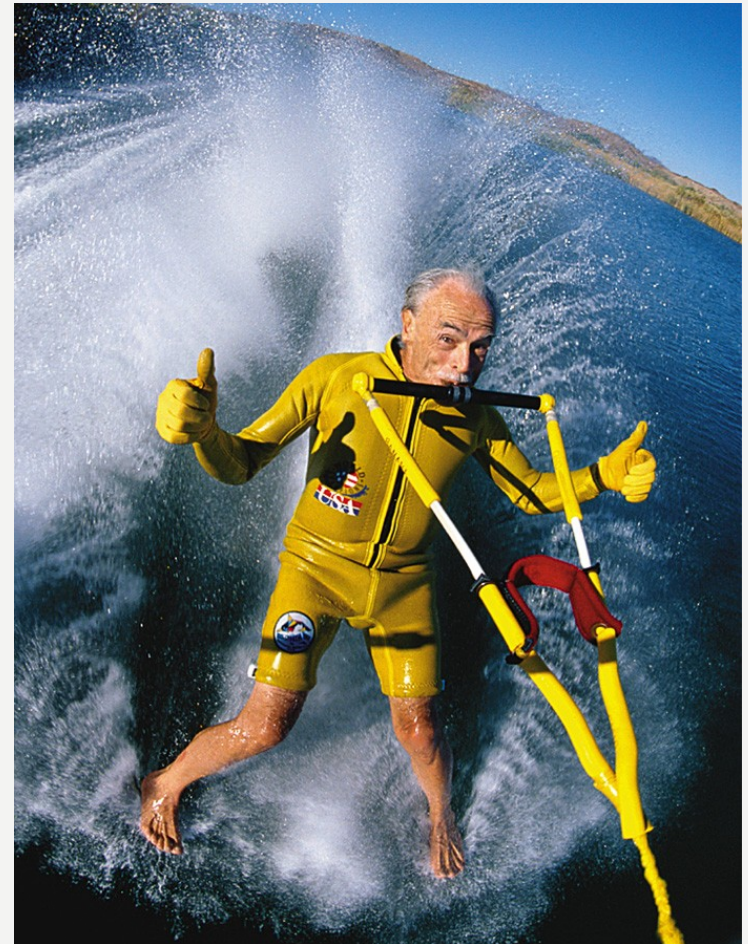
Emerging adulthood spans ages 18-25. During this time, young adults may live with their parents and attend college or work. On average, emerging adults marry in their mid-twenties.



Ariel Skelley/Corbis

# ADULTHOOD

Although adulthood begins sometime after a person's mid-twenties, defining adulthood into stages is more difficult than defining the stages of childhood or adolescence.



Rick Doyle / Corbis

# PHYSICAL DEVELOPMENT

The peak of physical performance occurs around 20 years of age, after which it declines imperceptibly for most of us.

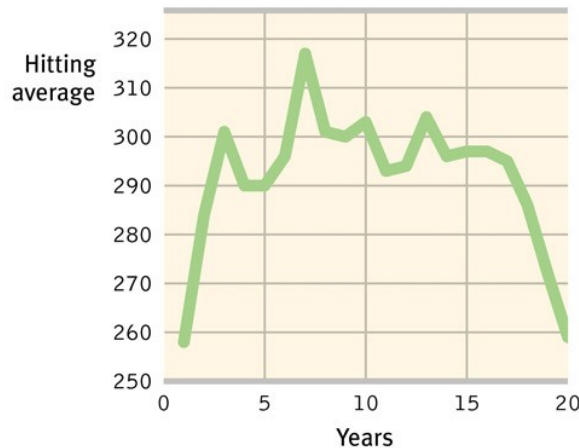
# MIDDLE ADULTHOOD

Muscular strength, reaction time, sensory abilities and cardiac output begin to decline after the mid-twenties. Around age 50, women go through menopause, and men experience decreased levels of hormones and fertility.

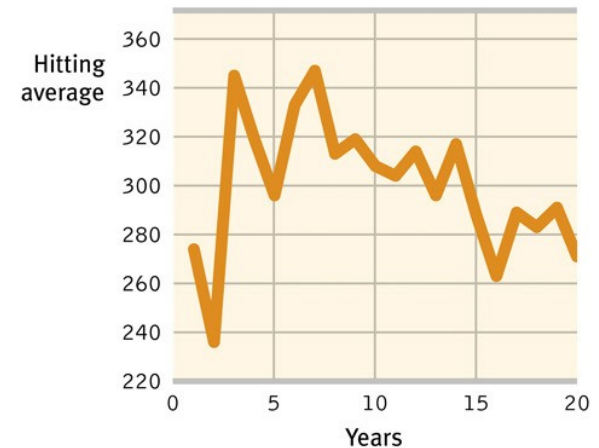


Betman/Corbis

Baseball averages—18 players with 20-year careers



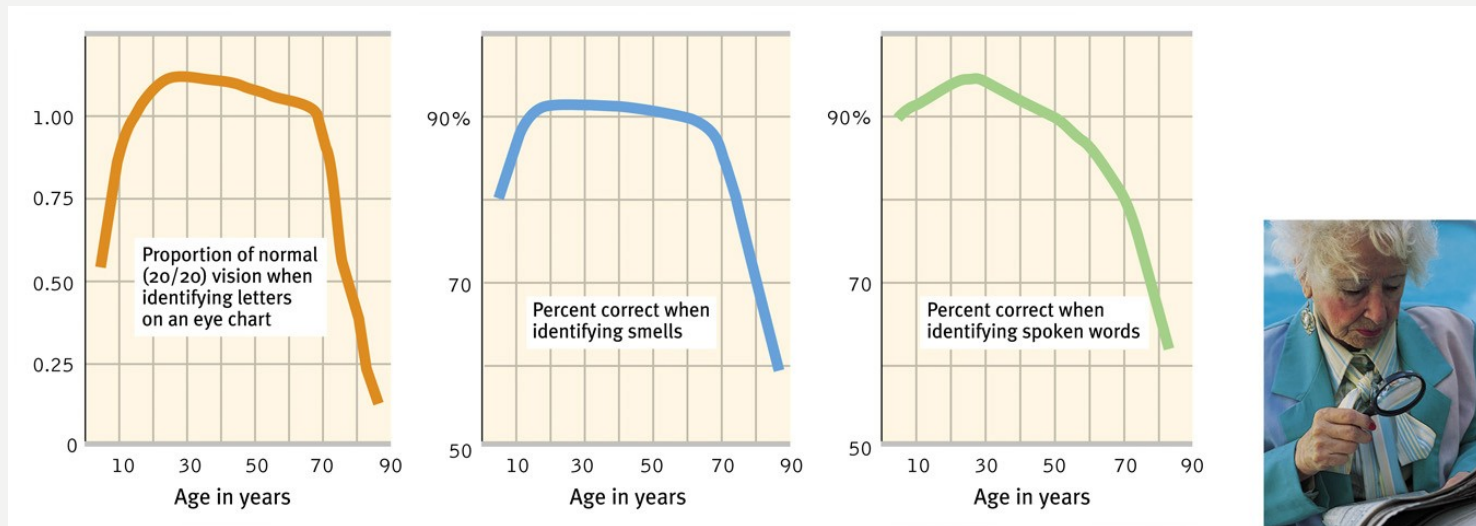
Baseball averages over 20 years for Willie Mays



Batting performance of Willie Mays.

# OLD AGE: SENSORY ABILITIES

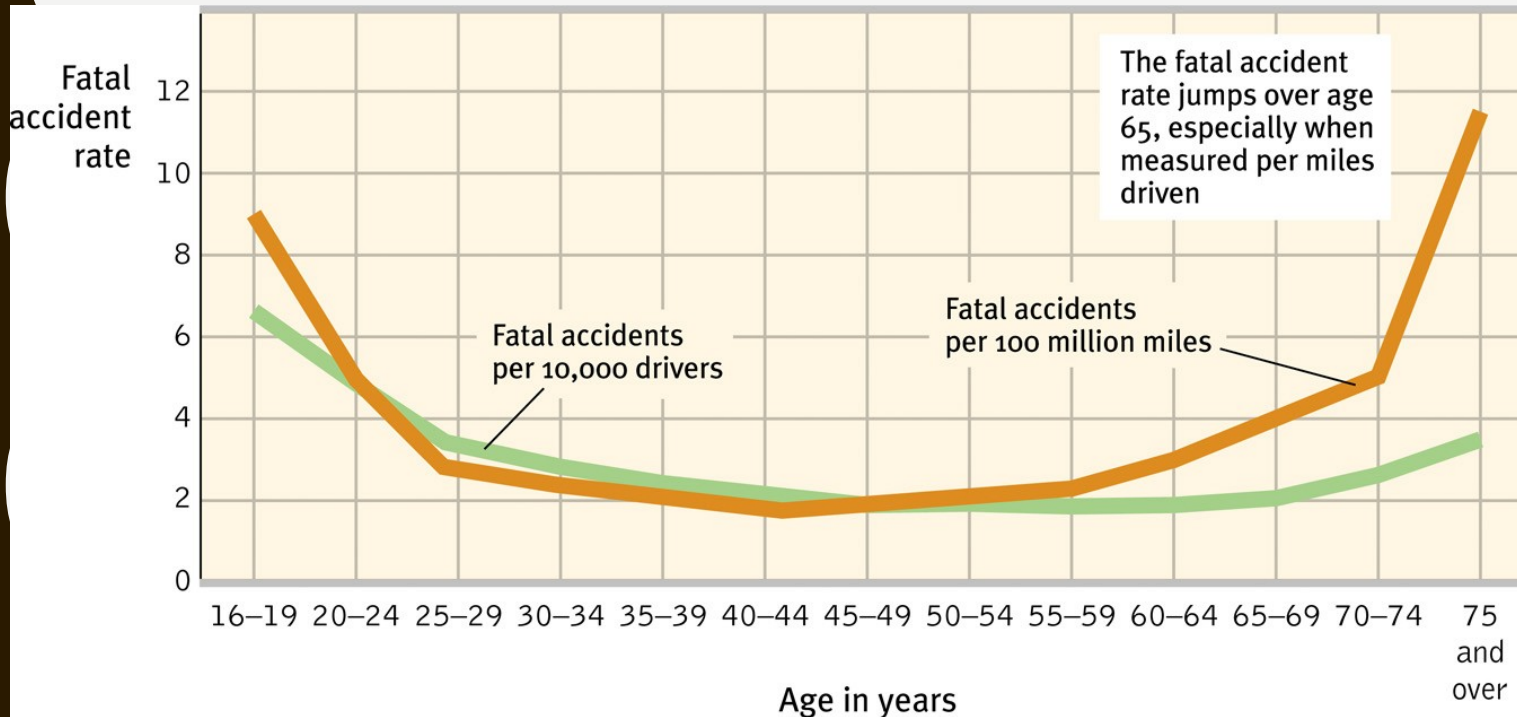
After age 70, hearing, distance perception, and the sense of smell diminish, as do muscle strength, reaction time, and stamina. After 80, neural processes slow down, especially for complex tasks.





# OLD AGE: MOTOR ABILITIES

At age 70, our motor abilities also decline. A 70-year-old is no match for a 20-year-old individual. Fatal accidents also increase around this age.

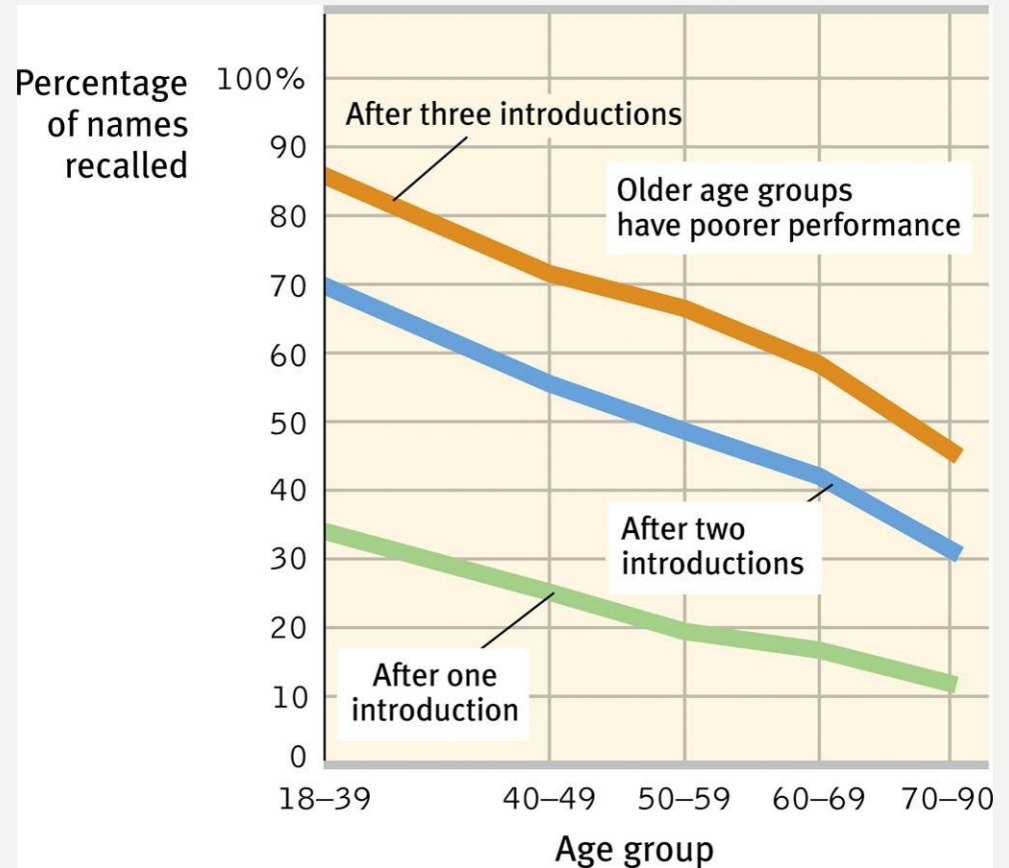


# COGNITIVE DEVELOPMENT

Do cognitive abilities like memory, creativity, and intelligence decline with age the same way physical abilities do?

# AGING AND MEMORY

As we age, we remember some things well. These include recent past events and events that happened a decade or two back. However, recalling names becomes increasingly difficult.

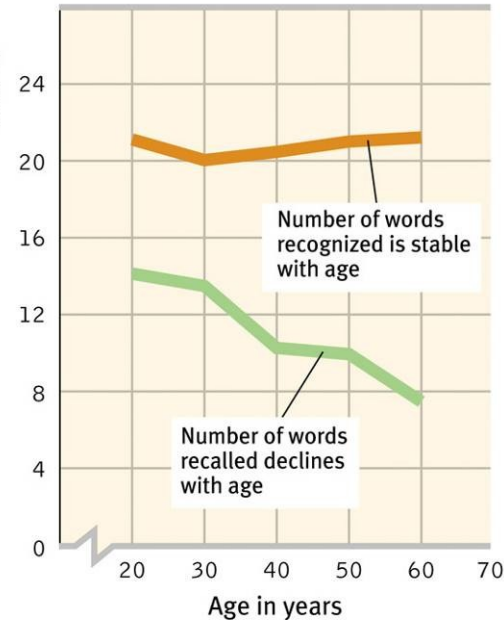


# AGING AND MEMORY

Recognition memory does not decline with age, and material that is meaningful is recalled better than meaningless material.



Number of words remembered

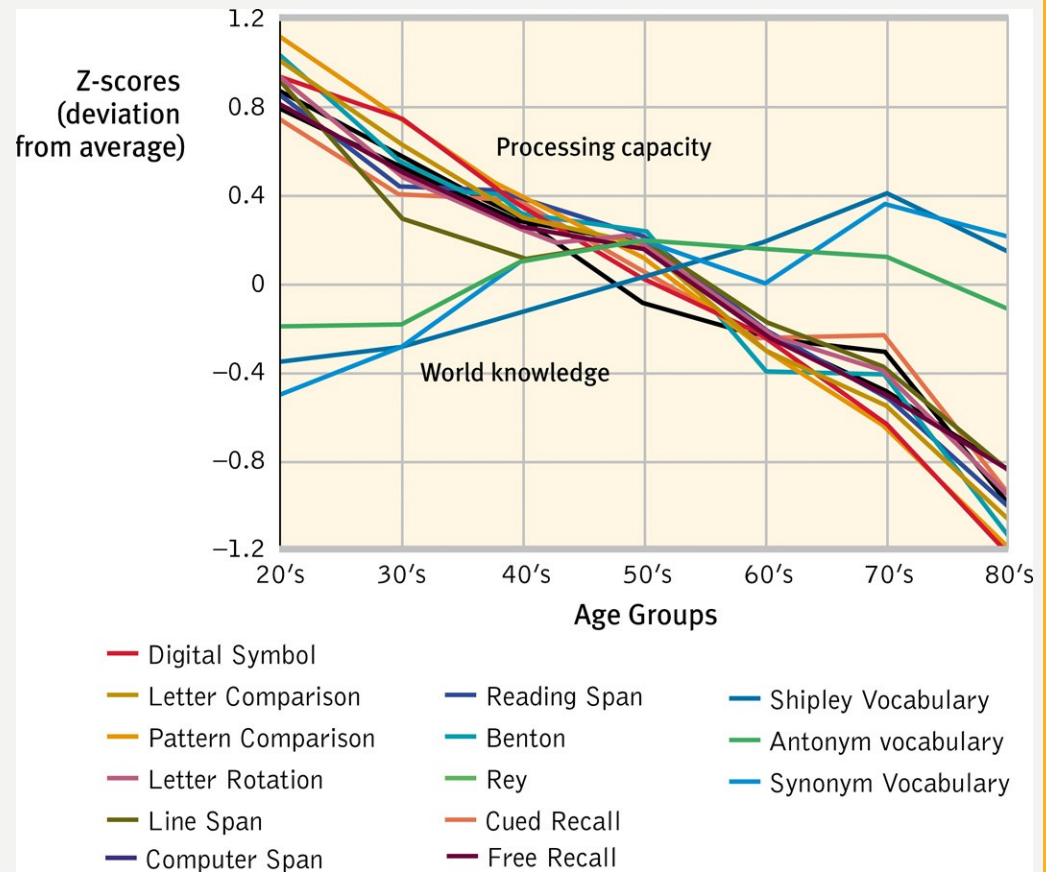


# AGING AND INTELLIGENCE

It is believed today that **fluid intelligence** (ability to reason speedily) declines with age, but **crystalline intelligence** (accumulated knowledge and skills) does not. We gain vocabulary and knowledge but lose recall memory and process more slowly.

# AGING AND INTELLIGENCE

A number of cognitive abilities decline with age. However, vocabulary and general knowledge increase with age.

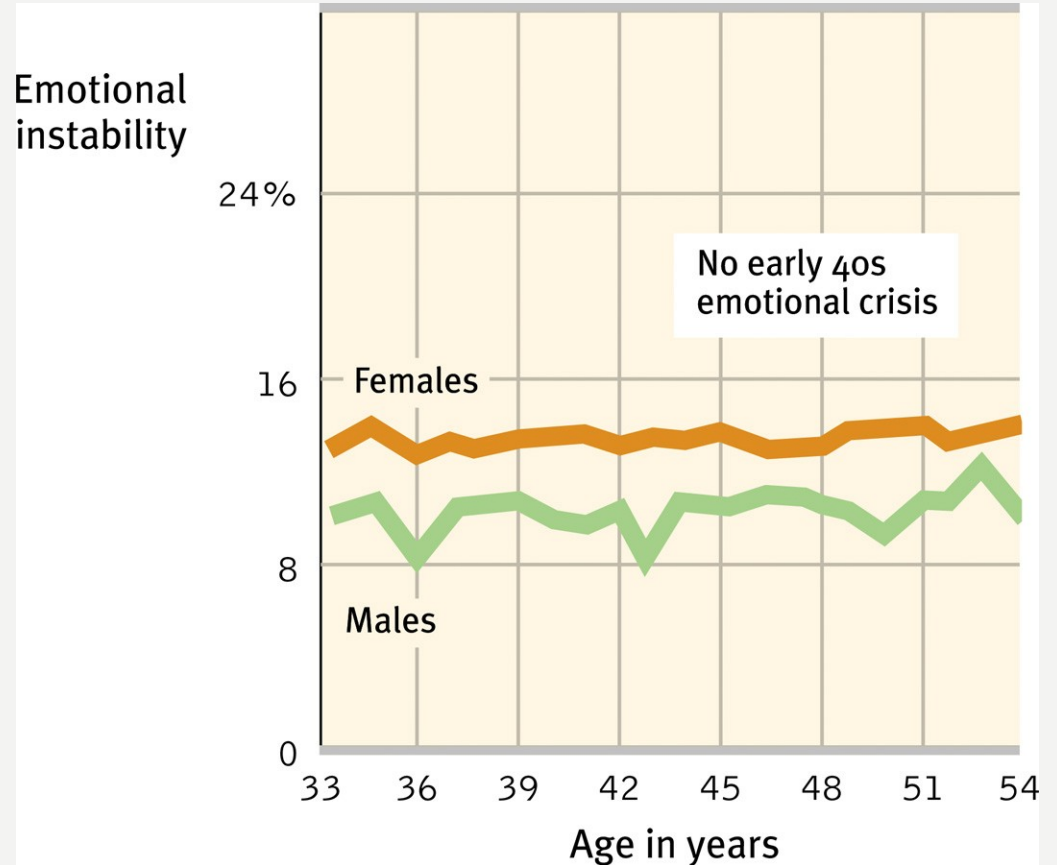


# SOCIAL DEVELOPMENT

Many differences between the young and old are not simply based on physical and cognitive abilities, but may instead be based on life events associated with family, relationships, and work.

# ADULTHOOD'S AGES AND STAGES

Psychologists doubt that adults pass through an orderly sequence of age-bound stages. Mid-life crises at 40 are less likely to occur than crises triggered by major events (divorce, new marriage).



Neuroticism scores, 10,000 subjects  
(McCrae & Costa, 1996).



# ADULTHOOD'S COMMITMENTS

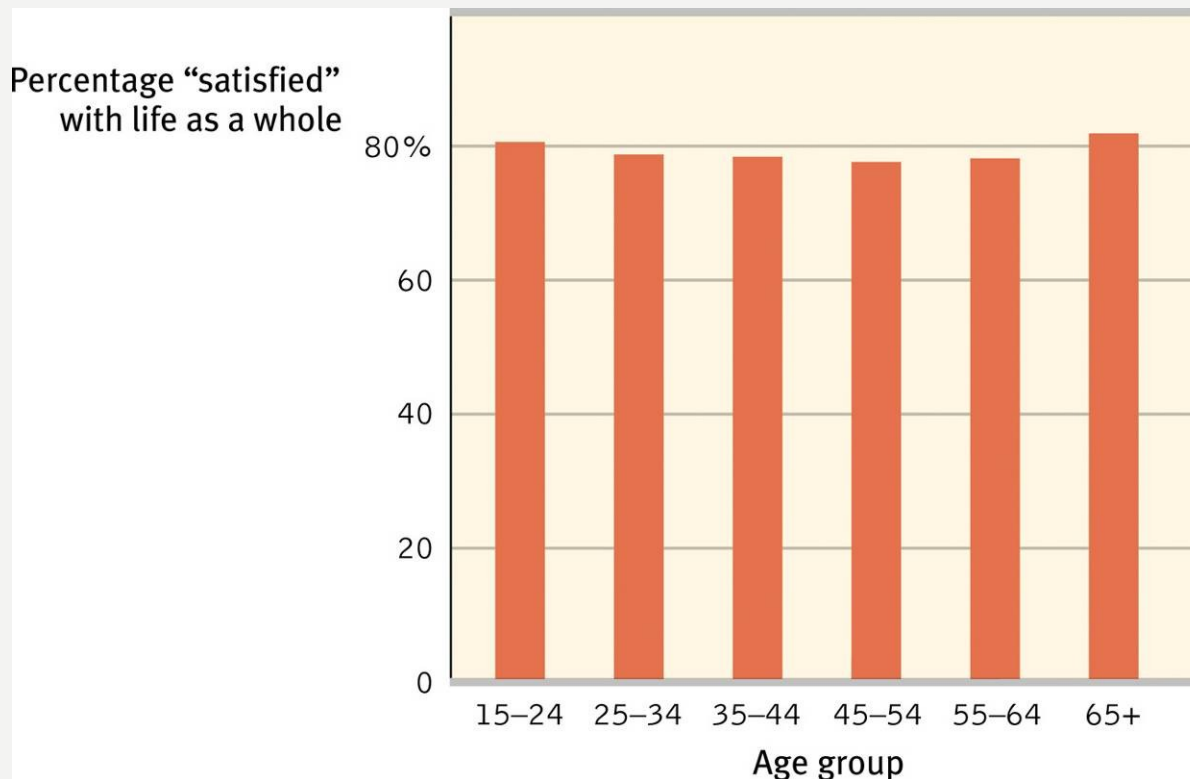
- Love and work are defining themes in adult life. Evolutionary psychologists believe that commitment has survival value. Parents that stay together are likely to leave a viable future generation.

# ADULTHOOD'S COMMITMENTS

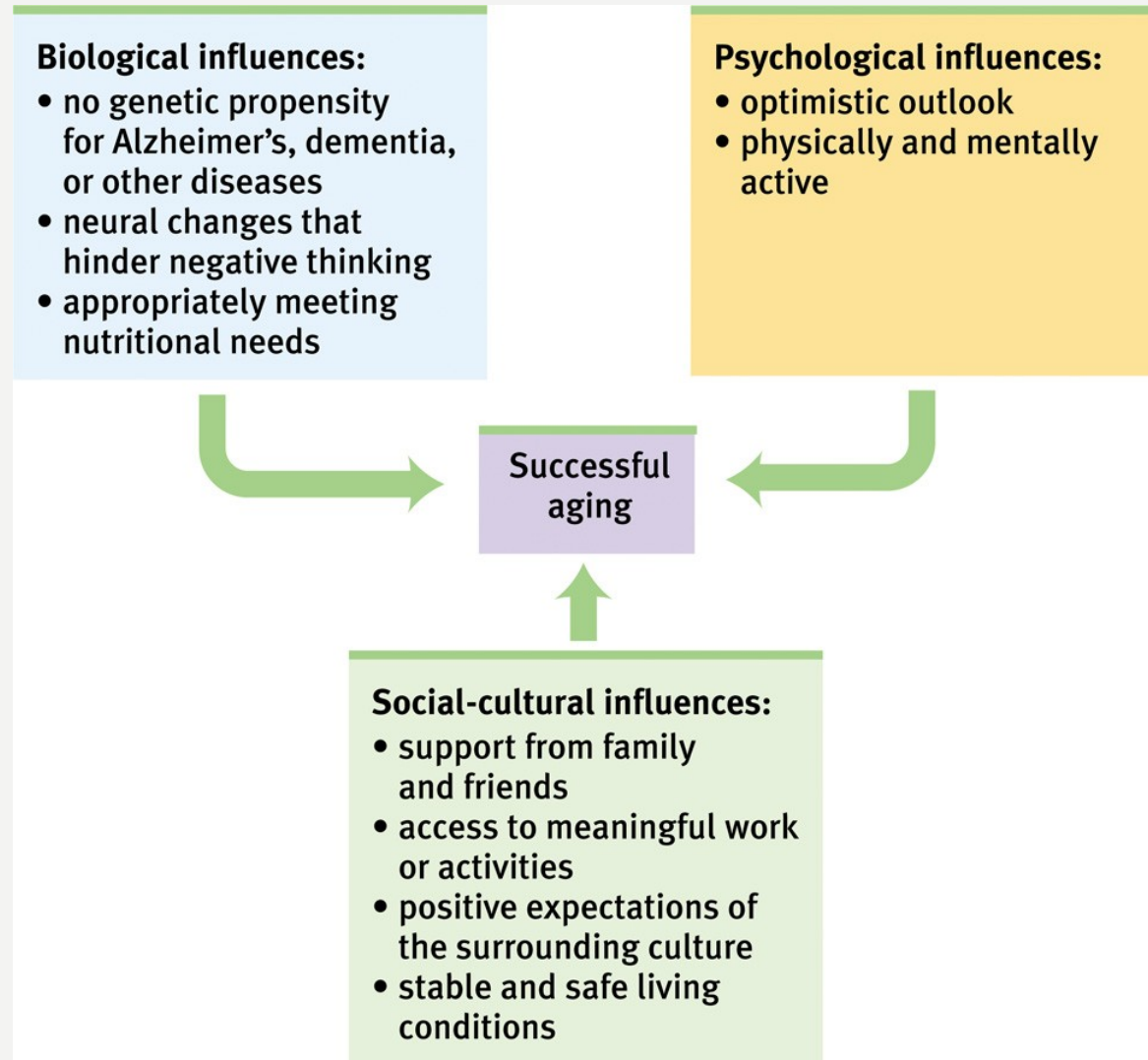
Happiness stems from working in a job that fits your interests and provides you with a sense of competence and accomplishment.

# WELL-BEING ACROSS THE LIFE SPAN

Well-being and people's feelings of satisfaction are stable across the life span.



# SUCCESSFUL AGING



# DEATH AND DYING

- The “normal” range of reactions or grief stages after the death of a loved one varies widely. Grief is more severe if death occurs unexpectedly. People who view their lives with a sense of integrity (in Erikson’s terms) see life as meaningful and worthwhile.

# REFLECTIONS ON TWO MAJOR DEVELOPMENTAL ISSUES

## Continuity and Stages

Researchers who view development as a slow, continuous process are generally those who emphasize experience and learning. Those with a biological perspective, on the other hand, view maturation and development as a series of genetically predisposed steps or stages. These include psychologists like Piaget, Kohlberg and Erikson.

# DEVELOPMENTAL ISSUES

## Stability and Change

Lifelong development requires both stability and change. Personality gradually stabilizes as people age. However, this does not mean that our traits do not change over a lifetime. Some temperaments are more stable than others.