Human Development

PSY 1000:
Introduction to Psychology

Across the life span

- **Prenatal development** (conception until birth)
- **Infancy** (birth to 2 years)
- **Early childhood** (2 years to 6 years)
- **Middle childhood** (6 years to 12 years)
- **Adolescence** (12 years to 20 years)
- **Young adulthood** (20 years to 40 years)
- **Middle adulthood** (40 years to 65 years)
- **Late adulthood** (65 years and older)

Progress Before Birth: Prenatal Development

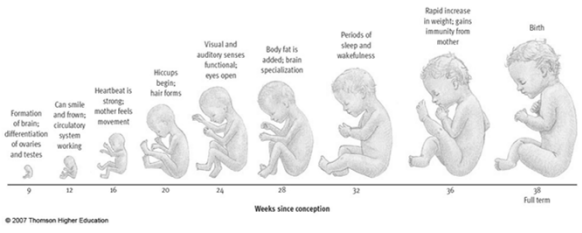
- **Germinal stage**: refers to the first two weeks of life
  - Development begins with conception (i.e., creation of a **zygote** which is a one-celled organism formed by the union of a sperm and an egg)
  - By the seventh day, the cell mass implants itself in the uterine wall
    - About 20% of pregnancies result in spontaneous abortions at this time…often without the mother's knowledge
  - The placenta begins to develop during implantation
    - The **placenta** is a structure that allows oxygen and nutrients to pass into the fetus from the mother's bloodstream and bodily wastes to be removed

Progress Before Birth: Prenatal Development

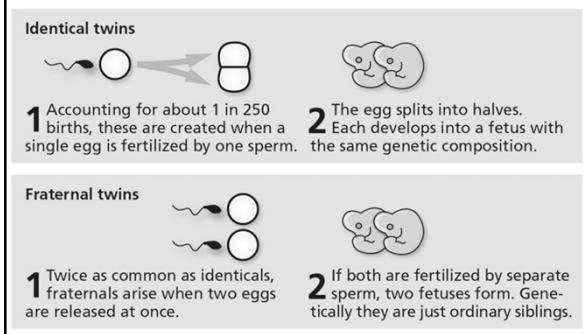
- **Embryonic stage**: spans from two weeks after conception to two months after conception
  - The developing child is now referred to as an **embryo**
  - Formation of vital organs and systems (e.g., heart, spine, brain)
    - Cell division becomes more specialized
  - Although the embryo is only about an inch long, it is already beginning to look human
  - The embryonic stage is a highly vulnerable time because nearly all the basic physiological structures are being formed (and the rate of development is very fast)
    - Most miscarriages occur during this stage
    - Most structural birth defects are also due to problems at this stage

Progress Before Birth: Prenatal Development

- **Fetal stage**: spans from two months after conception until birth
  - Developing child is now referred to as a **fetus**
  - Rapid bodily growth continues
  - Fetus becomes capable of movement
  - Brain cells multiply very rapidly during the last three months
  - **Age of viability** is the age at which a baby can survive in the event of a premature birth
    - Medical advances have decreased this to sometime between the 22nd and 26th week
    - Survival rate is much better for babies born in later weeks



Overview of fetal development



Environmental Factors and Prenatal Development

- **Critical periods** are times during which certain environmental influences can have an impact on the development of the child
- Maternal nutrition
  - Pregnant women should gain 25-35 pounds
  - Malnutrition linked to increased risk of birth complications, neurological problems, and psychopathology
- Maternal drug use
  - Most drugs consumed by pregnant women can pass through the membranes of the placenta
  - Pregnant women should avoid recreational drugs, alcohol, tobacco, and caffeine
- Maternal illness
  - Fetus is largely defenseless against infection…but the placenta screens out many infectious agents
  - Illnesses that raise the mother's body temperature may also cause damage to the developing child

Teratogenic Agents

- **Teratogen** is any factor that can cause a birth defect

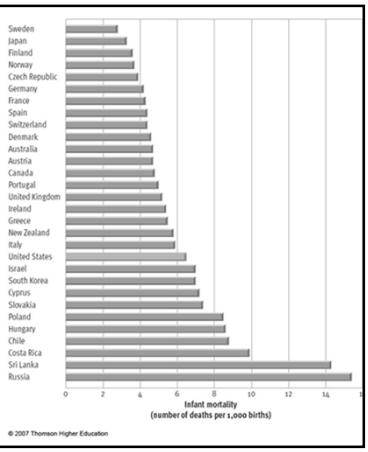
Table 8.2
Common Teratogens

TERATOGENIC AGENT	EFFECT ON DEVELOPMENT
Rubella	Blindness, deafness, heart defects, brain damage
Marijuana	Irritability, nervousness, tremors; infant is easily disturbed, startled
Cocaine	Decreased height, low birth weight, respiratory problems, seizures, learning difficulties; infant is difficult to soothe
Alcohol	Fetal alcohol syndrome (intellectual disability, delayed growth, facial malformation), learning difficulties, smaller than normal head
Nicotine	Miscarriage, low birth weight, stillbirth, short stature, intellectual disability, learning disabilities
Mercury	Intellectual disability, blindness
Syphilis	Intellectual disability, deafness, meningitis
Caffeine	Miscarriage, low birth weight
Radiation	Higher incidence of cancers, physical deformities
High Water Temperatures	Increased chance of neural tube defects

Source: Shepard, T. H. (2001).

Cross-cultural comparisons of infant mortality

Despite our pride in our medical system, we are only 20th in the prevention of infant mortality

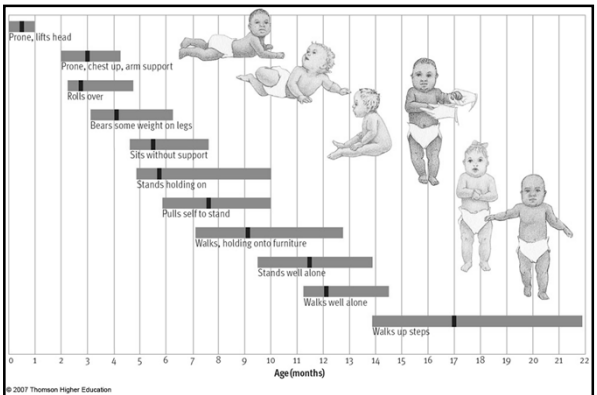


Reflexes

- Reflexes are innate involuntary behavioral patterns that help the infant survive until they can learn more complex strategies
  - A) Grasping reflex
  - B) Startle reflex (Moro reflex)
  - C) Rooting reflex (turn head toward touch on cheek)
  - D) Stepping reflex
  - E) Sucking reflex

Basic Principles of Motor Development

- **Motor development** refers to the progression of muscular coordination required for physical activities
- **Cephalocaudal trend**: the head-to-foot direction of motor development
  - Example: Learn to use their arms for crawling before their legs
- **Proximodistal trend**: the center-outward direction of motor development
  - Example: torso develops more quickly than limbs
- **Maturation** is the gradual unfolding of one's genetic blueprint
  - This is impacted by the experiences of the developing child



Landmarks in motor development
25%, 50%, and 90% mastery (median alone may be misleading)

Table 8.1
A Comparison of Three Developmental Research Designs

CROSS-SECTIONAL DESIGN		
Different participants of various ages are compared at one point in time to determine age-related *differences*.	**Group One:** 20-year-old participants **Group Two:** 40-year-old participants **Group Three:** 60-year-old participants	Research done in 2011
LONGITUDINAL DESIGN		
The **same** participants are studied at various ages to determine age-related *changes*.	**Study One:** 20-year-old participants **Study Two:** Same participants at 40 years old **Study Three:** Same participants are now 60 years old	Research done in 1971 Research done in 1991 Research done in 2011
CROSS-SEQUENTIAL DESIGN		
Different participants of various ages are compared at several points in time, to determine both age-related *differences* and age-related *changes*.	**Study One:** *Group One*: 20-year-old participants *Group Two*: 40-year-old participants **Study Two:** *Group One*: Participants will be 25 years old *Group Two*: Participants will be 45 years old	Research done in 2011 Research to be done in 2016

Developmental Research Designs

Easy and Difficult Babies: Differences in Temperament

- **Temperament** refers to characteristic mood, activity level, and emotional reactivity
  - Often considered to be a precursor to personality
- Thomas, Chess, and Birch (1970): Identified 3 basic temperamental styles – based on parental reports – that were somewhat stable over time (but they could change)
  - **Easy** (40%): tended to be happy, regular in sleep and eating, adaptable, and not readily upset
  - **Slow-to-warm-up** (15%): tended to be less cheery, less regular in their sleep and eating, and slower in adapting to change
    - These children were wary of new experiences and their emotional reactivity was moderate
  - **Difficult** (10%): tended to be glum, erratic in sleep and eating, resistant to change, and relatively irritable
  - The remaining 35% were **Mixed** (i.e., showed a combination of these behaviors)

Easy and Difficult Babies: Differences in Temperament

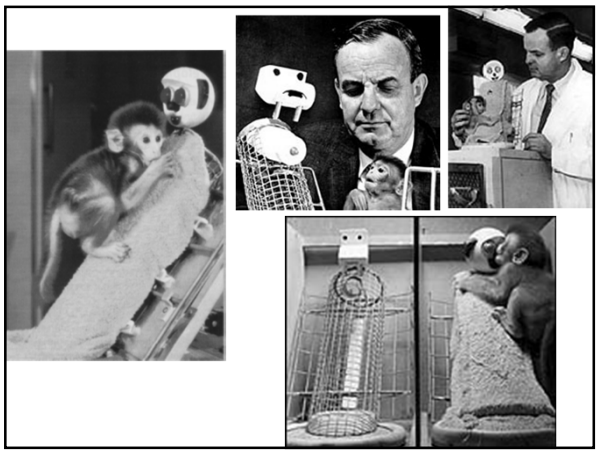
- Kagan & Snidman (1991): Directly studied child behavior
  - **Inhibited temperament** (15%-20%): Shyness, timidity, and wariness of unfamiliar people, objects, and events
  - **Uninhibited temperament** (25%-30%): Less restrained, approaching unfamiliar people, objects, and events with little trepidation
  - Evidence suggests a genetic basis for these temperaments and that temperament is relatively stable into young adulthood

Early Emotional Development: Attachment

- Do parents and children form bonds in the first few hours after birth?
- Do early emotional bonds affect later development?
- **Attachment** refers to the close, emotional bonds of affection that develop between infants and their caregivers
  - Much focus on initial attachment to mother (because of her role as primary caregiver) with other attachments typically coming later (e.g., father, grandparents)
  - The infant's attachment to the mother is not instantaneous
    - Infants show little preference for mother during the first few months (e.g., can be given to babysitters with little trouble)
  - However, by about 6-8 months, the child develops a deep preference for the mother and will often protest when separated
    - This is the first indication of **separation anxiety** (emotional distress seen in many infants when they are separated from people with whom they have formed an attachment)

Early Emotional Development: Attachment

- Why do infants form a special attachment to their mothers?
- Behaviorists argued that it was due to the mother being associated with the reinforcement of being fed
- However, Harry Harlow's (1958, 1959) famous studies of attachment in rhesus monkeys called this into question
  - Raised with a wire mother and a terrycloth mother
  - Half were fed from a bottle attached to the wire mother and half from the terrycloth mother
  - When babies were frightened by a strange toy, they ran to the terrycloth mother (regardless of which mother fed them)



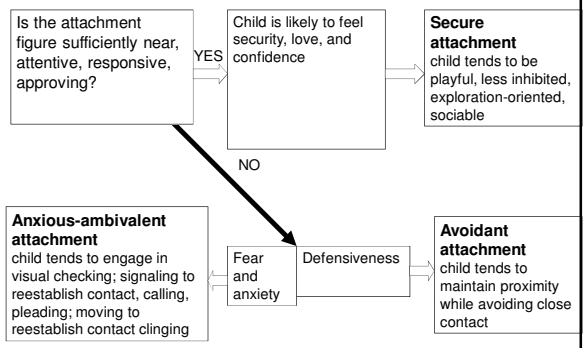
Early Emotional Development: Attachment

- Bowlby (1969) believed that there must be a biological basis for attachment
  - Infants are programmed to emit behavior (smiling, cooing, clinging, etc.) that triggers affectionate, protective responses from adults
  - Adults are programmed to respond with love, warmth, and protection
  - These behaviors are adaptive for promoting children's survival

Early Emotional Development: Attachment

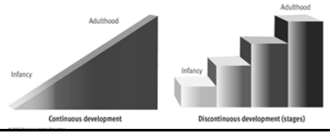
- Ainsworth (1979) used the strange situation to understand attachment types
  - **Secure**: use mother as a secure base to explore the world
    - Comfortable with mother present, becomes upset when she leaves, but quickly calmed by return
  - **Anxious-ambivalent**: appears anxious even when mother is near
    - Excessive protest when separated but not calmed by return
  - **Avoidant**: seek little contact with mother and not visibly distressed by her departure
  - **Disorganized-disoriented** (added later): children are confused about whether to approach or avoid mother; especially insecure

Attachment Process



Stage Theories of Development: Personality

- **Stage** is a developmental period during which characteristic patterns of behavior are exhibited and certain capacities are established
- **Stage theories** have three components
  - Progress through stages in order
  - Progress through stages related to age
  - Major discontinuities in development



Erik Erikson (1963)

-Eight stages spanning the life span

-Psychosocial crises determining balance between opposing polarities in personality

Table 8.4

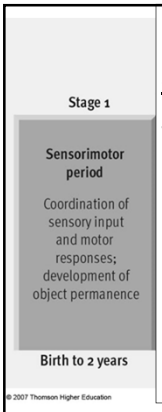
Erikson's Psychosocial Stages of Development

STAGE	DEVELOPMENTAL CRISIS	SUCCESSFUL DEALING WITH CRISIS	UNSUCCESSFUL DEALING WITH CRISIS
1. Infant Birth to 1 year old	**Trust Versus Mistrust** Babies learn to trust or mistrust others based on whether or not their needs—such as food and comfort—are met.	If babies' needs are met, they learn to trust people and expect life to be pleasant.	If babies' needs are not met, they learn not to trust.
2. Toddler 1 to 3 years old	**Autonomy Versus Shame and Doubt** Toddlers realize that they can direct their own behavior.	If toddlers are successful in directing their own behavior, they learn to be independent.	If toddlers' attempts at being independent are blocked, they learn self-doubt and shame for being unsuccessful.
3. Preschool Age 3 to 5 years old	**Initiative Versus Guilt** Preschoolers are challenged to control their own behavior, such as controlling their exuberance when they are in a restaurant.	If preschoolers succeed in taking responsibility, they feel capable and develop initiative.	If preschoolers fail in taking responsibility, they feel irresponsible, anxious, and guilty.
4. Elementary School Age 5 to 12 years old	**Industry Versus Inferiority** School-aged children are faced with learning new social and academic skills. Social comparison is a primary source of information.	When children succeed at learning new skills, they develop a sense of industry, a feeling of competence and self-esteem arising from their work and effort.	If children fail to develop new abilities, they feel incompetent, inadequate, and inferior.
5. Adolescence 13 to early 20s	**Identity Versus Role Confusion** Adolescents are faced with deciding who or what they want to be in terms of occupation, beliefs, attitudes, and behavior patterns.	Adolescents who succeed in defining who they are and finding a role for themselves develop a strong sense of identity.	Adolescents who fail to define their identity become confused and withdraw or want to inconspicuously blend in with the crowd.
6. Early Adulthood 20s and 30s	**Intimacy Versus Isolation** The task facing those in early adulthood is to be able to share who they are with another person in a close, committed relationship.	People who succeed in this task will have satisfying intimate relationships.	Adults who fail at this task will be isolated from other people and may suffer from loneliness.
7. Middle Adulthood 40s and 50s	**Generativity Versus Stagnation** The challenge is to be creative, productive, and nurturant of the next generation.	Adults who succeed in this challenge will be creative, productive, and nurturant, thereby benefiting themselves, their family, community, country, and future generations.	Adults who fail will be passive, and self-centered, feel that they have done nothing for the next generation, and feel that the world is no better off for their being alive.
8. Late Adulthood 60s and beyond	**Ego Integrity Versus Despair** The issue is whether a person will reach wisdom, spiritual tranquility, a sense of wholeness, and acceptance of his or her life.	Elderly people who succeed in addressing this issue will enjoy life and not fear death.	Elderly people who fail will feel that their life is empty and will fear death.

Source: Erikson, 1950.

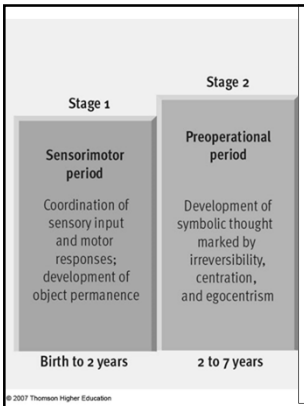
Stage Theories: Cognitive Development

- **Cognitive development** refers to transitions in youngsters' patterns of thinking, including reasoning, remembering, and problem solving
- Jean Piaget (1920s-1980s): children actively construct their cognitive world using **assimilation** and **accommodation**
  - **Schemas** are concepts or frameworks that organize information
  - **Assimilation** involves interpreting new experiences in terms of existing mental structures
  - **Accommodation** involves changing existing mental structures to explain new experiences
  - Piaget's model of cognitive development had four stages



Object permanence develops when a child recognizes that objects continue to exist even when they are no longer visible

Piaget's stage theory

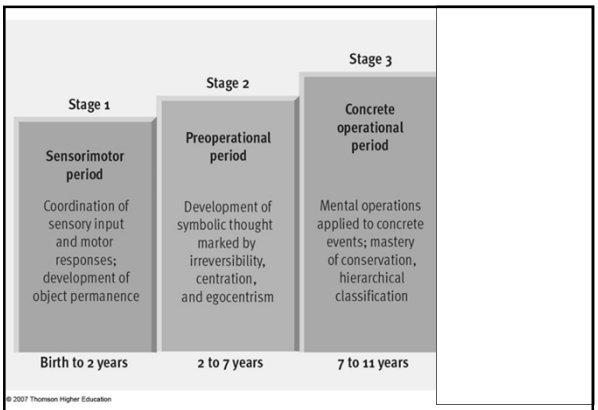


Irreversibility is the inability to envision reversing an action

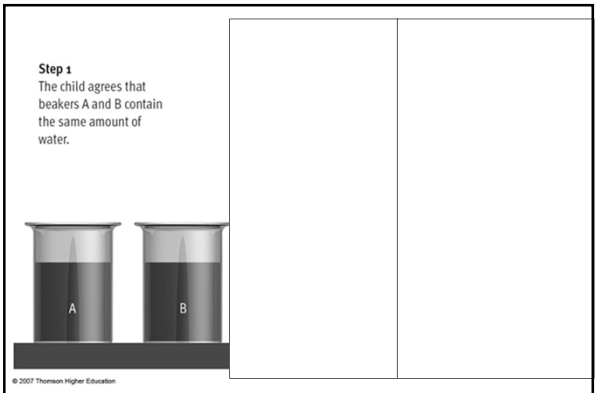
Centration is the tendency to focus on just one feature of a problem, neglecting other important aspects

Egocentrism in thinking is characterized by a limited ability to share another person's viewpoint

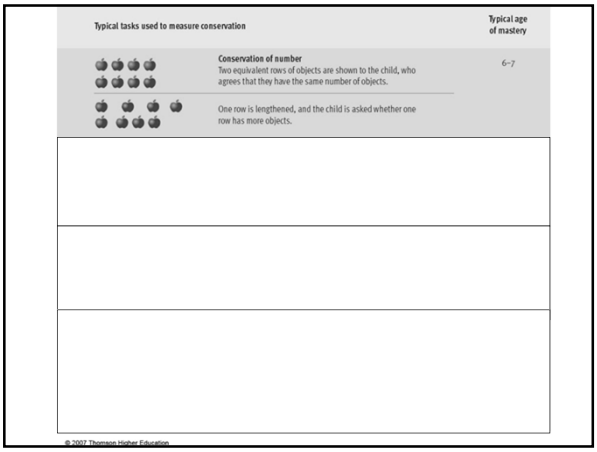
Piaget's stage theory

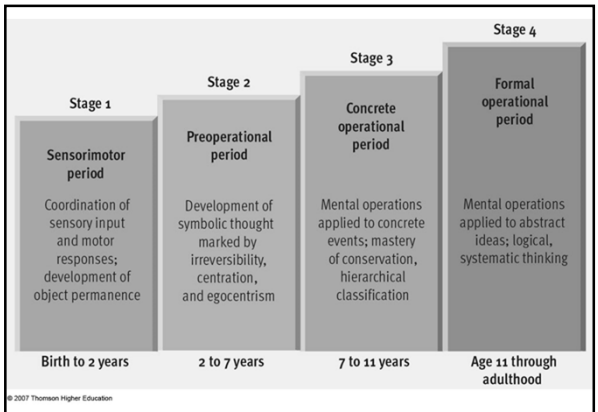


Piaget's stage theory



Piaget's conservation task





Piaget's stage theory

Vygotsky's Theory: The Importance of Being There

- Vygotsky stressed the importance of social interactions with other people (especially other children or adults with greater skill)
- **Scaffolding** is a process in which a more skilled learner gives help to a less skilled learner, reducing the amount of help as the less skilled learner becomes more capable
- **Zone of proximal development** is the difference between what a child can do alone (e.g., 4th grade math problems) and what he can do with the help of a teacher (e.g., 6th grade math problems)
  - This leads to a different way of thinking about intelligence

Language Development

- Children appear to have an innate capacity to learn language
- **Receptive-productive lag** refers to the fact that infants appear to understand language more readily than they can produce it
- Stages of language development
  - **Cooing** (around 2 months): make vowel-like sounds
  - **Babbling** (around 6 months): add consonant sounds to the vowels and sounds closer to real speech
  - **One-Word Speech** (around 1 year): begin to say actual words which are often nouns
    - **Holophrase**: use of one word for a phrase (e.g., "Milk!" means "I want milk!")
  - **Telegraphic speech** (around 18 months): string words together to make short sentences (e.g., "Mommy go")
  - **Whole sentences** (continues to develop until age 6 or so)

The Development of Moral Reasoning

- In Europe, a woman was near death from cancer. One drug might save her, a form of radium that a druggist in the same town had recently discovered. The druggist was charging $2,000, ten times what the drug cost him to make. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about half of what it cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said, "No." The husband got desperate and broke into the man's store to steal the drug for his wife.
- Should the husband have done that? Why?

The Development of Moral Reasoning

- Kohlberg (1976) wanted to know how we develop our sense of right and wrong
  - Focused on reasoning as opposed to behavior
  - Presented moral dilemmas to individuals across the life span

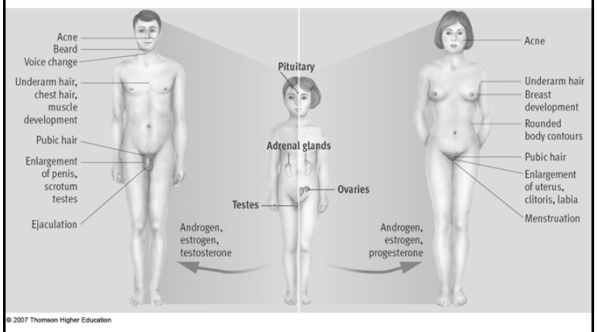
Table 8.5
Kohlberg's Three Levels of Morality

LEVEL OF MORALITY	HOW RULES ARE UNDERSTOOD	EXAMPLE
Preconventional morality (typically very young children)	The consequences determine morality; behavior that is rewarded is right; that which is punished is wrong.	A child who steals a toy from another child and does not get caught does not see that action as wrong.
Conventional* morality (older children, adolescents, and most adults)	Conformity to social norms is right; nonconformity is wrong.	A child criticizes his or her parent for speeding because speeding is against the stated laws.
Postconventional morality (about 20 percent of the adult population)	Moral principles determined by the person are used to determine right and wrong and may disagree with societal norms.	A reporter who wrote a controversial story goes to jail rather than reveal the source's identity.

*The term conventional refers to general standards or norms of behavior for a particular society, which will differ from one social group or culture to another.

Adolescence: Physiological Changes

- **Puberty** is the stage during which sexual functions reach maturity; marks the beginning of adolescence
  - **Primary sex characteristics**: necessary for reproduction
    - **Menarche**: first menstruation (12-13 years)
    - **Spermarche**: first occurrence of ejaculation (13-14 years)
    - Begins earlier than in the past; highly variable
  - **Secondary sex characteristics**: physical features that distinguish males from females but that are not essential for reproduction
  - **Maturation**: early or late maturation may lead to problems
    - Example: Females who develop early tend to have sex earlier and more unwanted pregnancies



Physical development at puberty

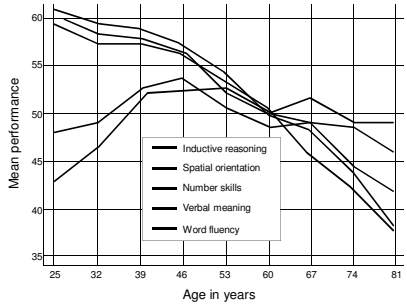
The Expanse of Adulthood

- Personality development
  - Personality is characterized by both stability and change (i.e., percentile scores are consistent)
  - Only a minority go through **midlife crisis**
- Social development
  - Marriage
    - Average age is 27 for men and 25 for women; over 90% eventually marry
  - Parenthood
    - Parents exhibit lower marital satisfaction
    - Mothers of infants report the steepest decline in marital satisfaction
    - The more children couples have, the lower their marital satisfaction tends to be

The Expanse of Adulthood

- Physical changes
  - Thinning and graying hair; baldness
  - Increased weight; increased proportion of body fat
  - Sensory decline; reflexes slow; loss of stamina and strength
  - Hormonal changes (e.g., menopause)
- Cognitive changes
  - Intelligence is stable over the life span for most individuals
  - Loss in working memory in late adulthood
  - Speed of cognitive tasks declines in late adulthood
  - Many individuals are healthy, active, and productive in their 70s, 80s, and 90s

Characteristics of Aging: Cognitive Change



Age-related changes in intellectual skills vary according to the specific cognitive ability in question.

Source: Schaie, 1994

Theories of Aging

- **Cellular Clock Theory**: cells have a limited number of times they can reproduce to repair damage
  - e.g., chromosomes appear to shorten each time a cell reproduces
- **Wear-and-Tear Theory**: organs and cells wear out as a result of repeated use and abuse
  - e.g., collagen is an elastic tissue that wears out over time causing wrinkles
- **Free Radical Theory**: a variation of wear-and-tear theory in which free radicals (oxygen molecules with an unstable electron) inflict cellular damage

Stages of Death and Dying

- Elizabeth Kubler-Ross theorized 5 stages of death and dying:
  - **Denial**: people refuse to believe the diagnosis of death
  - **Anger**: people are angry about dying and their feelings of helplessness
  - **Bargaining**: people try to make deals with doctors or supernatural forces to prevent death
  - **Depression**: people feel sad about impending loss
  - **Acceptance**: people accept the inevitability of death