Theories on Aging

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Definition of Aging based on 4 basic processes

- Chronological Aging
  - Aging based on calendar time, of a persons years from birth
- Biological Aging
  - Physical changes that reduce the efficiency of orgn systems
  - It is assessed by measuring the functioning of various organ systems
- Psychological Aging
  - Changes that occur in sensory and perceptual processes
  - Mental function in: intelligence, memory, learning
- Sociocultural Aging
  - The specific set of roles individuals adopt in relation to other members of the society and culture to which they belong

Erikson's 8 stages of Psychosocial theory

Stage	Fullfilled	Unfulfilled
1. Infancy	Trust	Mistrust
2. Toddler	Autonomy	Shame
3. Early Childhood	Initiative	Guilt
4. Middle Childhood	Industry	Inferiority
5. Adolescence	Identity	Identity Diffusion
6. Adulthood	Intimacy	Isolation
7. Middle Age	Generativity	Self-Absorption
8. Old Age	Integrity	Despair

Sociological Theories

- Activity
- Continuity
- Disengagement
- Gerotranscendence
- Role
- Social Age
- Socioeconomic Status
- Work Content
- Ethnicity
- Cohort
- Generation

Biological Theories

- Human aging is the synthesis of biological, psychological, and social factors
- The field of research is in early stage as reflected by dozens of theories

- GENETIC THEORY
- Animals and humans are born with a genetic program or biological clock that predetermines life span
- Various studies show a positive relationship between parental age and filial life span

- CELLULAR AGING THEORY
- Aging occurs as cells slow their number of replications
- Hayflick (1961) reported that cells grown in culture undergo a finite number of replication, approaching 50 doublings, older cells replicate fewer times

Biological Theories

- AUTOIMMUNE THEORY
- Aging is a function of the body's immune system becoming defective over time
- Attacking not just foreign proteins, bacteria, and viruses, but also producing antibodies against itself

- CROSS-LINKAGE THEORY
- Collagen is an important connective tissue found in most organ systems
- With aging, accumulation of cross-linking occurs which slows the cell function and aging occurs
- Observable changes
  - Skin wrinkling
  - Loss of elasticity in blood vessels, muscle tissue, lens of the eye

Biological Theories

- FREE RADICAL THEORY
- Highly reactive molecules that are produced in the cell, as result of normal oxygen metabolism, as well as radiation, ozone, pollutants, or drugs
- They accumulate in the body and may cause DNA mutations, cross-linking
- Damage to cell tissue has been implicated in
  - Normal aging, heart disease, cancers, cataracts, arthritis, Alzheimer's disease, Parkinson's disease
- It has been proposed that antioxidants can inhibit free radical damage
  - Selenium, Vitamin C, Vitamin E, Betacarotene, Copper, Magnesium, Zinc, Lycopene

Biological Theories

- SOMATIC MUTATION (ERROR THEORY)
- DNA, RNA, and proteins are constantly subjected to damage from both the external (e.g., radiation) and internal (e.g., free radicals) environment
- Mutation of DNA
  - Perpetuation of mutation during cell division
  - Increasing number of mutant cells in the body
  - Malfunction of tissues, organs
  - Decline in body function

Facts of Physiological Aging

- The aging process (senescence) is a gradual decline, after physical maturity (age 25-30)
- 1% rule: Most organ systems deteriorate about 1%/year beginning around age 30
- Individual differences: people age at different rates
- Different tissue and systems within the same person age at different rates
- It is important to differentiate primary from secondary aging
- Older people are less alike because of
  - Unique heredity – Gene
  - Life styles
  - Life experiences

Aging Consists of 3 Processes

- **Primary Aging**
  - Refers to normal and disease-free development during adulthood
  - Changes in biological, psychological, sociological processes
  - Example: Menopause, loss of family
- **Secondary Aging**
  - Refers to developmental changes that are related to
    - Diseases: heart, cancer
    - Lifestyles: alcohol, smoking, sedentary living
    - Environment: pollution, radiation
- **Tertiary Aging**
  - Refers to the rapid loss that occur shortly before death
  - Example: Terminal Drop-intellectual abilities show a marked decline in the last few years before death