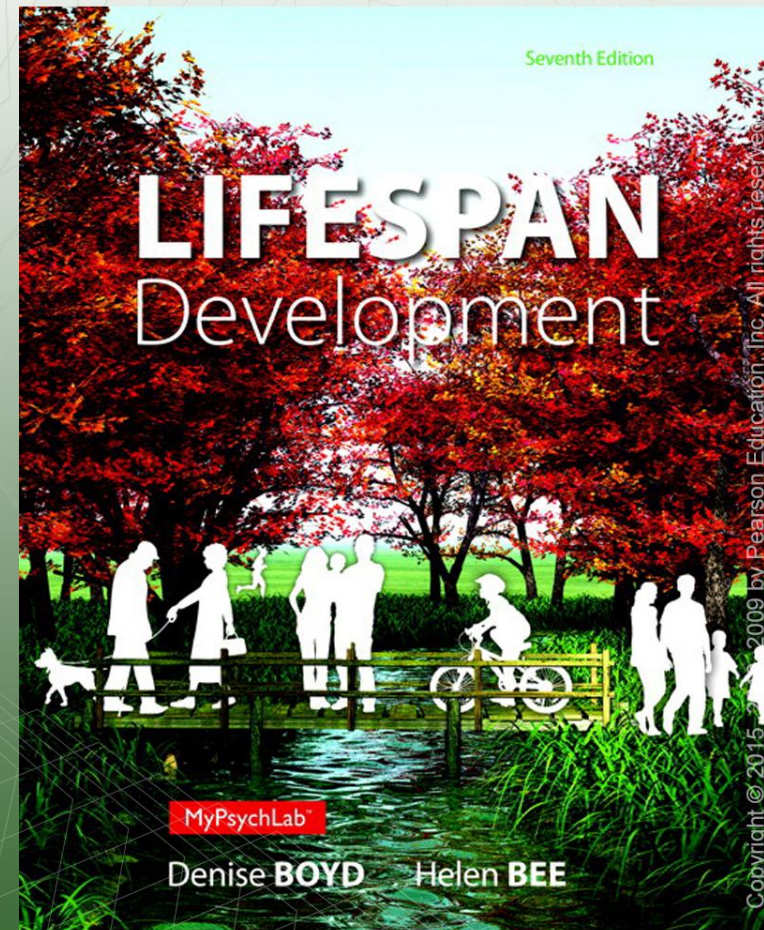


Chapter 15:

Physical and Cognitive Development in Middle Adulthood



IN THIS CHAPTER



- Physical Changes



- Health and Wellness



- Cognitive Functioning

LEARNING OBJECTIVES

- 15.1** What do researchers know about brain function in middle age?
- 15.2** How does reproductive function change in men and women in middle age?
- 15.3** What is osteoporosis, and what factors are associated with it?
- 15.4** How do vision and hearing change in middle age?
- 15.5** How does cardiovascular disease develop?
- 15.6** What factors contribute to cancer?
- 15.7** What are some important differences in the health of middle-aged men and women?
- 15.8** How are socioeconomic status and ethnicity related to health in middle adulthood?

LEARNING OBJECTIVES (con't)

- 15.9** What are some of the consequences of alcoholism for middle-aged adults?
- 15.10** How do Denney's and the Balteses' models explain the relationship between health and cognitive functioning in middle age?
- 15.11** What has research revealed about the link between health and cognitive functioning?
- 15.12** How do young and middle-aged adults differ in performance on memory tests?
- 15.13** What does research suggest about age-related changes in creativity?

PHYSICAL CHANGES

Diverse Physical Development in Middle Adulthood

- Primary aging
- Secondary aging
- More research on midlife is needed!

PHYSICAL CHANGES

The Brain and Nervous System

Cognitive tasks activate a larger area of brain tissue

Cognitive processing is less selective; react more slowly to cognitive tasks

Less ability to control attention inhibits responses to irrelevant stimuli

Sensory stimuli processed differently

PHYSICAL CHANGES

The Brain and Nervous System

Behavioral choices and mental health affect the brain.

- *Circulatory system health* affects parts of the brain involved with memory, planning, and processing speed.

PHYSICAL CHANGES

The Reproductive System: Males

Climacteric: loss of reproductive capacity

- Slight decline in the quantity of viable sperm produced
- Very slow drop in testosterone
- Erectile dysfunction or impotence increases.

PHYSICAL CHANGES

Menopause in Women

- Timing
- Cessation of menses
- Secular trend

PHYSICAL CHANGES

Menopause Phases



Premenopausal
phase

Perimenopausal
phase

Postmenopausal
phase

PHYSICAL CHANGES

Hormone Therapy (HT)

Hormone therapy: progesterone and estrogen administration

- Women's Health Initiative Study
- Protocol
- Findings

THE PROS AND CONS OF HORMONE THERAPY (HT)

Results from Women's Health Initiative (WHI, 2002)

- PROS
 - Reduction of hot flashes
 - Protection against osteoporosis
- CONS
 - Long-term use is related to increased risks of breast and ovarian cancers.
 - No protection against cardiovascular disease

You Decide

Decide which of these two statements you most agree with and think about how you would defend your position:

1. Due to the risks involved, hormone therapy should be a last resort for menopausal women who have hot flashes and other symptoms.
2. No medical treatment is entirely free of risk, so women who want to take hormone therapy to relieve symptoms of menopause should do so.

PHYSICAL CHANGES

Menopause: Psychological Effects

Research is mixed regarding menopausal effects.

- Negativity and overall life stressors affect moods.
- Severe symptoms of sleep deprivation may related to additional anxiety.
- Ethnic influences

PHYSICAL CHANGES

Menopause: Psychological Effects

Does ethnicity influences attitudes about menopause and aging?

PHYSICAL CHANGES

Menopause: Sexual Activity

Most women remain sexually active, but with some decline in frequency.

- Demands of other roles compete with time for sex.
- Increasing illnesses explain declines.

PHYSICAL CHANGES

Skeletal System

- Osteoporosis begins around 30 for women—and men
- Loss of estrogens and progesterone in women
- Improved by regular weight-bearing exercise

RISK FACTORS FOR OSTEOPOROSIS

TABLE 15.1 Risk Factors for Osteoporosis

Risk Factor	Explanation
Race	Whites are at higher risk than other races.
Gender	Women have considerably higher risk than men.
Weight	Those who are underweight are at higher risk.
Timing of climacteric	Women who experience early menopause and those who have had their ovaries removed are at higher risk, presumably because their estrogen levels decline at earlier ages.
Family history	Those with a family history of osteoporosis are at higher risk.
Diet	A diet low in calcium during adolescence and early adulthood results in lower peak levels of bone mass and hence greater risk of falling below critical levels later. Whether there is any benefit in increasing intake of calcium postmenopausally remains in debate. Diets high in either caffeine (especially black coffee) or alcohol are also linked to higher risk.
Exercise	Those with a sedentary lifestyle are at higher risk. Prolonged immobility, such as bed rest, also increases the rate of bone loss. Exercise reduces the rate of bone loss.

(Sources: Duursma et al., 1991; Gambert, Schultz, & Hamdy, 1995; Goldberg & Hagberg, 1990; Gordon & Vaughan, 1986; Lindsay, 1985; Morrison et al., 1994; Smith, 1982.)

PHYSICAL CHANGES

Vision: Loss of Visual Acuity

Presbyopia: farsightedness

- The eye lens thickens.
- The total amount of light reaching the retina decreases.
- Reduced focus adjustment

PHYSICAL CHANGES

Hearing

Presbycusis: the auditory nerve and structures in the inner ear gradually deteriorate.

- Accelerates after 55
- Occurs in high and low frequencies
- Both primary aging and secondary aging effects occur.

STOP AND THINK

Why is there a different stereotype about the use of glasses versus hearing aids?

FILL IN THE BLANK

No single variable affects quality of life in middle and late adulthood as much as _____.

HEALTH AND WELLNESS

Cardiovascular Disease (CVD) Overview

CVD: disease process in heart and circulatory system that accounts for 27 percent of yearly death

- Myocardial infarction and atherosclerosis
- The majority of Americans have at least one risk factor; risks are cumulative.
- Available laboratory tests measure levels of C-reactive protein (CRP) in the bloodstream and can indicate that an individual has an undiagnosed build-up of plaque.
- Administration of statin drugs may reverse plaque build-up and reduced heart attack risk by 54 percent.

HEALTH AND WELLNESS

Cardiovascular Disease: Personality and Health

Friedman and Rosenman Personality Patterns

- Type A
- Type B
- Type D

WAIT A MINUTE!
DID YOU SAY “TYPE D”?

RISK FACTORS FOR HEART DISEASE AND CANCER

- Smoking
- Blood pressure
- Weight
- Cholesterol
- Inactivity
- Diet
- Alcohol
- Heredity

See Table 15.2 (p. 384) for additional information.

HEALTH AND WELLNESS

Cancer

Second Leading Cause of Death for Adults 45+ Years of Age

- Risk factors similar to those for heart disease
- Good health habits early on reduce risks.
- The dietary fat role is a controversial risk factor.
- Some cancer is caused by viruses and infectious agents (i.e., *Helicobacter pylori*).

HEALTH AND WELLNESS

Gender and Health

Men's life expectancy is less than women's.

- Men have fewer diseases and disabilities that limit daily activity.
- Men die of CVD at higher rates than women do.

Women have a greater ability to recover.

- Women recover higher levels of physical functioning from heart attacks than men do.

HEALTH AND WELLNESS

Socioeconomic Class, Race, and Health

- Social class discrepancies in secondary aging
- Occupational level and education differences
- Ethnicity related to overall health

HEALTH AND WELLNESS

Ethnicity and Gender: Cardiovascular Disease

Cardiovascular disease: heart attack and stroke

- Ethnicity influences
- Risk factors by gender

HEALTH AND WELLNESS

Socioeconomic Class, Ethnicity, and Health

Diabetes

- Growing for all racial groups
- Risk factor for CVD, blindness, and kidney failure
- Race differences

HEALTH AND WELLNESS

Socioeconomic Class, Ethnicity, and Health

Cancer

- Incidence and race
- Failure to receive screening and care
- Prevention strategies

HEALTH AND WELLNESS

Alcoholism

Alcoholism: physical and psychological dependence on alcohol

- Incidence by gender
- Risk (alcohol x aging)
- Long-term effects

INTERNET ADDICTION DISORDER

Internet addiction (IAD): person must demonstrate a pattern of internet use that interferes with normal educational, occupational, and social functioning

- Often involves disorder of impulse control; often coupled with other types of disorders (e.g., compulsive behavior patterns)
- Can also be part of symptom set that includes depressive behavior

Treatment Approach

- Acceptance and Commitment Therapy (ACT)

Critical Analysis

1. In your view, why is the internet a more attractive means of “escaping” from the stresses of everyday life than books, movies, and other forms of entertainment?
2. How can researchers determine whether depressive symptoms drive internet use or spending large amount of time online produces such symptoms?

COGNITIVE FUNCTIONING

Overview

Cognitive loss and cognitive improvement

Role of knowledge and experience

Compensation

COGNITIVE FUNCTIONING

Physical and Cognitive Aging

Denny's Model of Physical and Cognitive Aging

- Typical curve of age-related changes
- Effects of exercise of the skill or ability
- Underlying age-related decay curves

Let's take a closer look!

DENNEY'S MODEL OF PHYSICAL AND COGNITIVE AGING

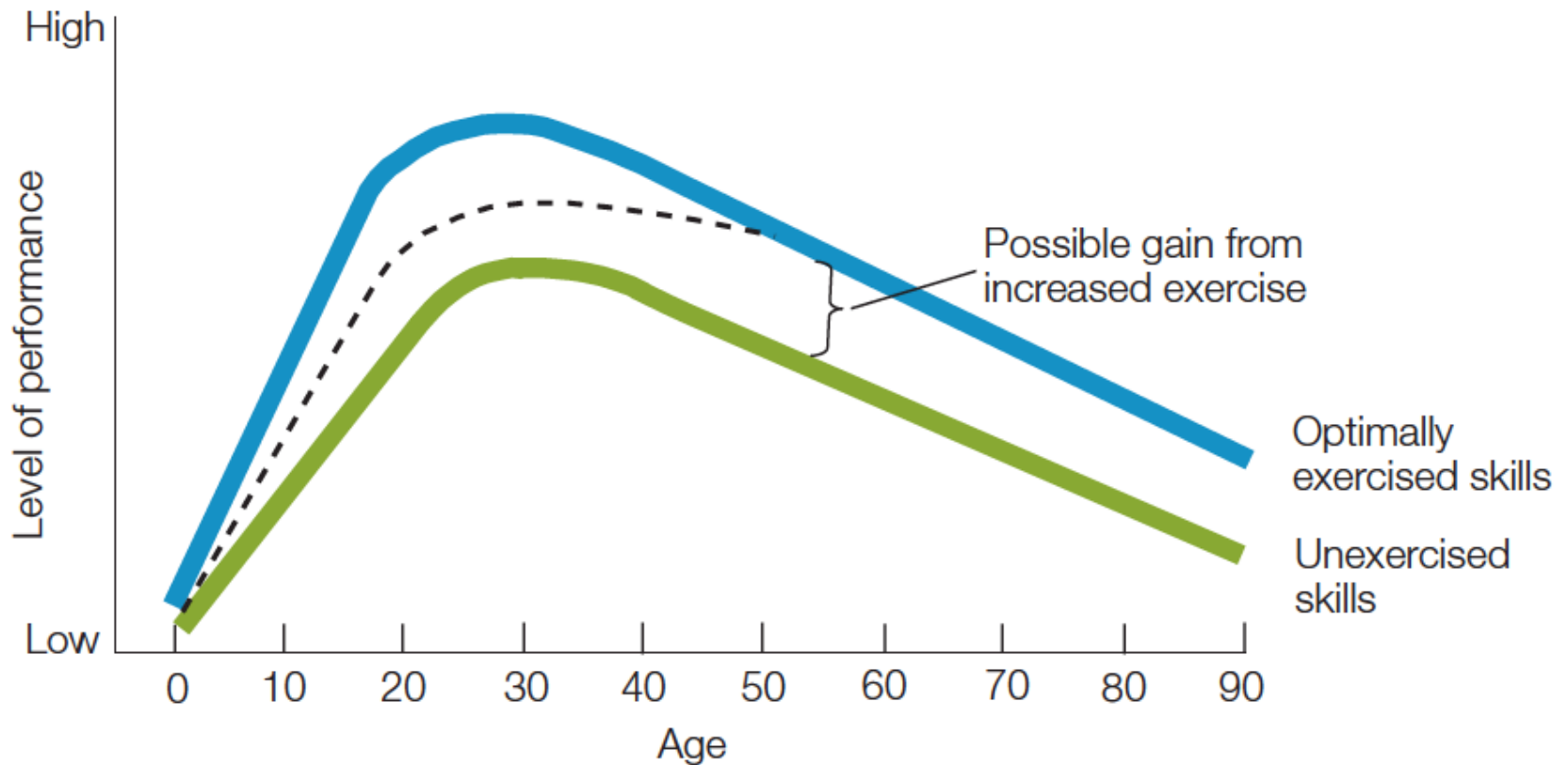


Figure 15.2 Denney's Model of Physical and Cognitive Aging

COGNITIVE FUNCTIONING

Physical Decline and Compensation

Baltes and Baltes's Model of Selective Optimization

- Physical declines create selective optimization with compensation to combat aging effects.
- Selective optimization strategies

HEALTH AND COGNITIVE FUNCTIONING

Schie's Analysis of Seattle Longitudinal Study

- Earlier cardiovascular disease is related to earlier and larger declines on intellectual tests.
- Exercise lowers mortality risks.
- Physical activity is related to maintenance of cognitive functions.

COGNITIVE FUNCTIONING

Memory

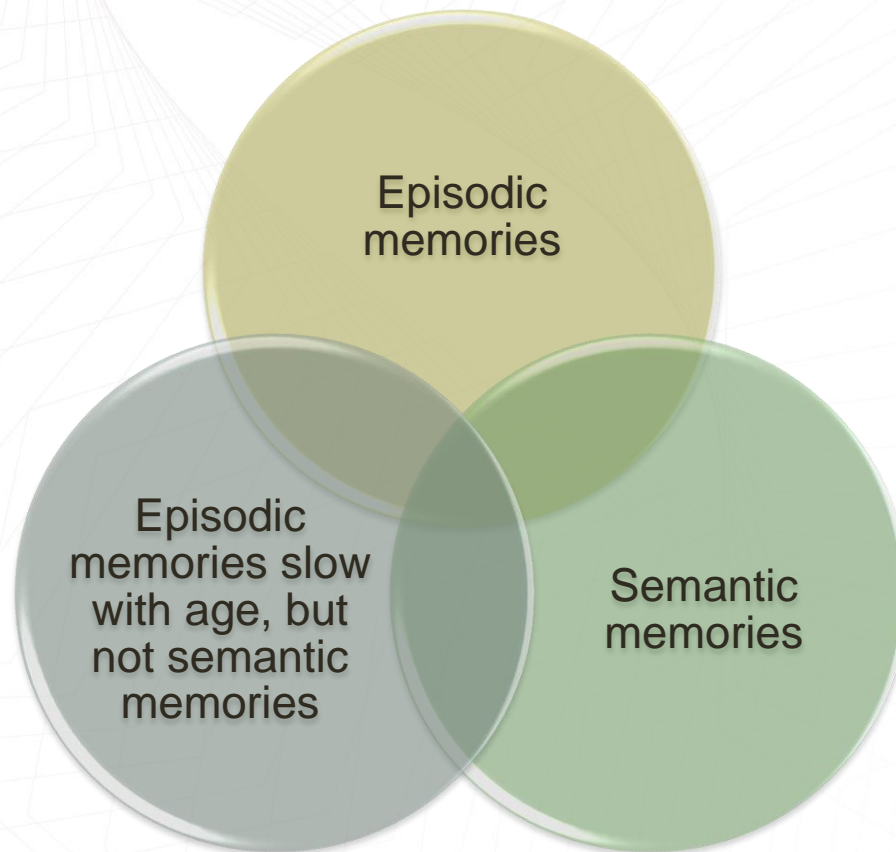
Memory: subjective experience of forgetfulness

- Visual memory
- Overcoming perceived memory limitations

COGNITIVE FUNCTIONING

Semantic and Episodic Memories

Do you know the difference?



COGNITIVE FUNCTIONING

Practiced and Unpracticed Skills

Why does practice matter?

- Helps maintain or gain cognitive skill
- Helps compensate for age-related deficits in cognitive functioning
- Provides practice with different strategies to remember expository text

COGNITIVE FUNCTIONING

Creativity

Creativity: the ability to produce original, appropriate, and valuable ideas or solutions to problems

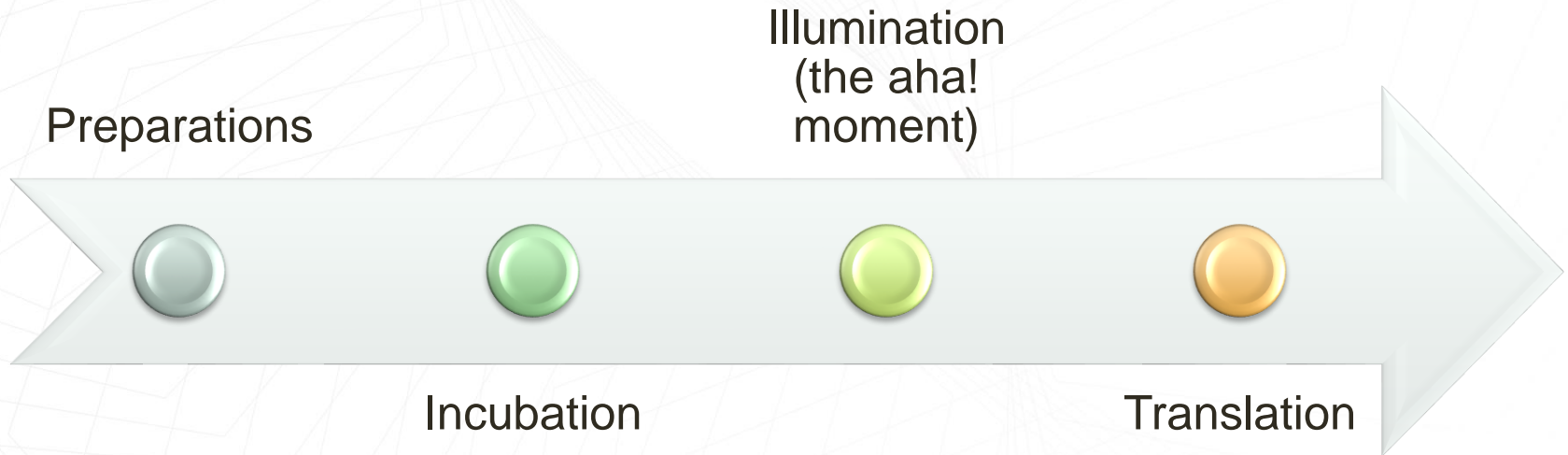
- Simonton studied creativity and productivity in the work of thousands of notable scientists.
- Best work produced around age 40; outstanding work published in their 50s

What will you be doing when you are 40 years old?

COGNITIVE FUNCTIONING

Creativity

Goleman's stages focus on divergent thinking.



MAINTAINING THE CREATIVE “EDGE” AT MIDLIFE AND BEYOND

Creative Process

- Creative process is a highly individualized intellectual activity.
- Each creative person, in one way or another, recognized the value of accumulated knowledge and experience.

Maintenance and Productivity

- Being consciously aware of one’s own creative process—and accepting its boundaries—is crucial.
- Demonstrating some degree of humility, a sense of indebtedness to those who have contributed to and supported one’s creative development, appears useful.

Reflection

1. To what extent can a young adult improve his or her own creativity and productivity by following the example of a successful middle-aged or older adult?
2. Why is humility important to maintaining creativity?