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Chapter

Chapter 9

Physical Disorders and Health Psychology

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Outline

- Psychological and Social Factors that Influence Health
- Psychosocial Effects on Physical Health
- Psychosocial Treatment of Physical Disorders

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Focus Questions

- *What is the difference between health psychology and behavioral medicine?
What are the relationships between the immune system, stress and physical health?*
- *How is stress related to AIDS, cancer and heart disease?*
- *How do stress management and prevention programs work?*

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Psychological and Social Factors: Some Definitions

- Behavioral medicine: Knowledge derived from behavioral science is applied to prevention, diagnosis, and treatment of medical problems
- Health psychology: Study of psychological factors that promote and maintain health as well as health care systems and health policy

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Psychological and Social Factors That Influence Health

- Psychological, behavioral, and social factors contribute to etiology and maintenance of medical disorders
- Two primary paths
 - Psychological factors influence biological processes
 - Behavior patterns increase disease risk
- Example: genital herpes
 - Sexual behavior affects chance of contracting the virus
 - Stress increases the likelihood of symptoms

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Leading Causes of Death in the US in 1900 and 2010

1900

- Pneumonia and influenza
- Tuberculosis
- Diarrhea, enteritis, and ulcers
- Heart diseases
- Intracranial lesions of vascular origin
- Kidney Disease
- Accidents
- Cancer and tumors
- Senility
- Diphtheria
- Other

2010

- Heart disease
- Cancer
- Chronic lower respiratory disease
- Stroke
- Accidents
- Alzheimer's
- Diabetes
- Nephritis
- Influenza and pneumonia
- Suicide
- Other

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Health and Health-Related Behavior

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- 50% of the leading causes of death in the U.S. are linked to behavioral / lifestyle patterns
 - Smoking
 - Poor eating habits
 - Lack of exercise
 - Insufficient injury control
 - E.g., failure to use seatbelts

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Stress and Stress Response

- Nature of stress: Increases vulnerability for developing physical and mental health problems
- General Adaptation Syndrome (GAS): theory of stress response
 - Phase 1 – Alarm response
 - Phase 2 – Resistance: attempt to cope with stress
 - Phase 3 – Exhaustion: body suffers damage

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The Physiology of Stress

- Stress activates the hypothalamic-pituitary-adrenocortical (HPA) axis
- Hypothalamus releases corticotropin-releasing factor (CRF) and stimulates pituitary gland
- Pituitary gland activates adrenal gland, secreting cortisol (stress hormone)
- Ordinarily hippocampus turns off stress response, but can be damaged by excessive or chronic stress

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Contributions to the Stress Response

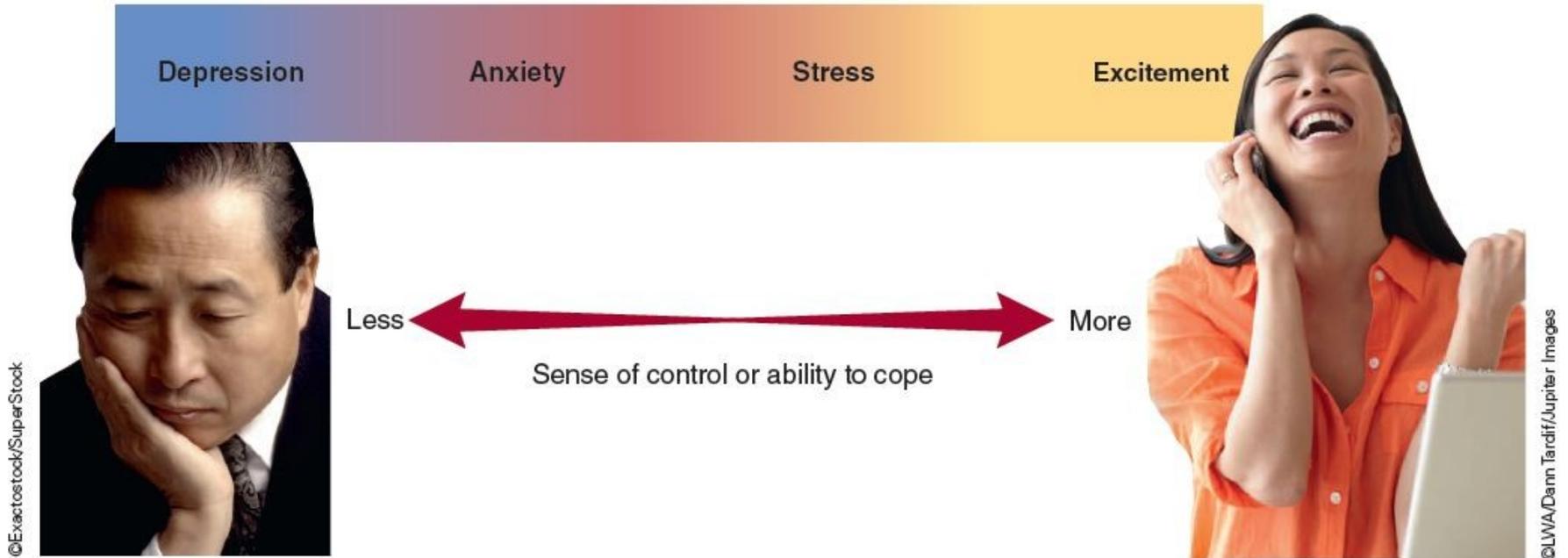
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- Primate research: social status
 - Subordinate animals have chronically high levels of stress, which compromises ability to respond to stress effectively over time
 - Also leads to compromised immune system
 - Benefit of high social status: predictability and controllability of the environment

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Diagram of the Contributions to the Stress Response



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Stress and the Immune Response

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- Higher levels of stress decrease immune function
 - More likely to catch a cold if you have been under more stress in the past year
- Early life stress contributes to inflammation in adulthood
- Psychoneuroimmunology: Psychological influences on the neurological component of immune response
 - Example: Rats given sugar water together with drug that suppresses immune system. Later, sugar water alone suppressed immune response

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Stress and the Immune Response

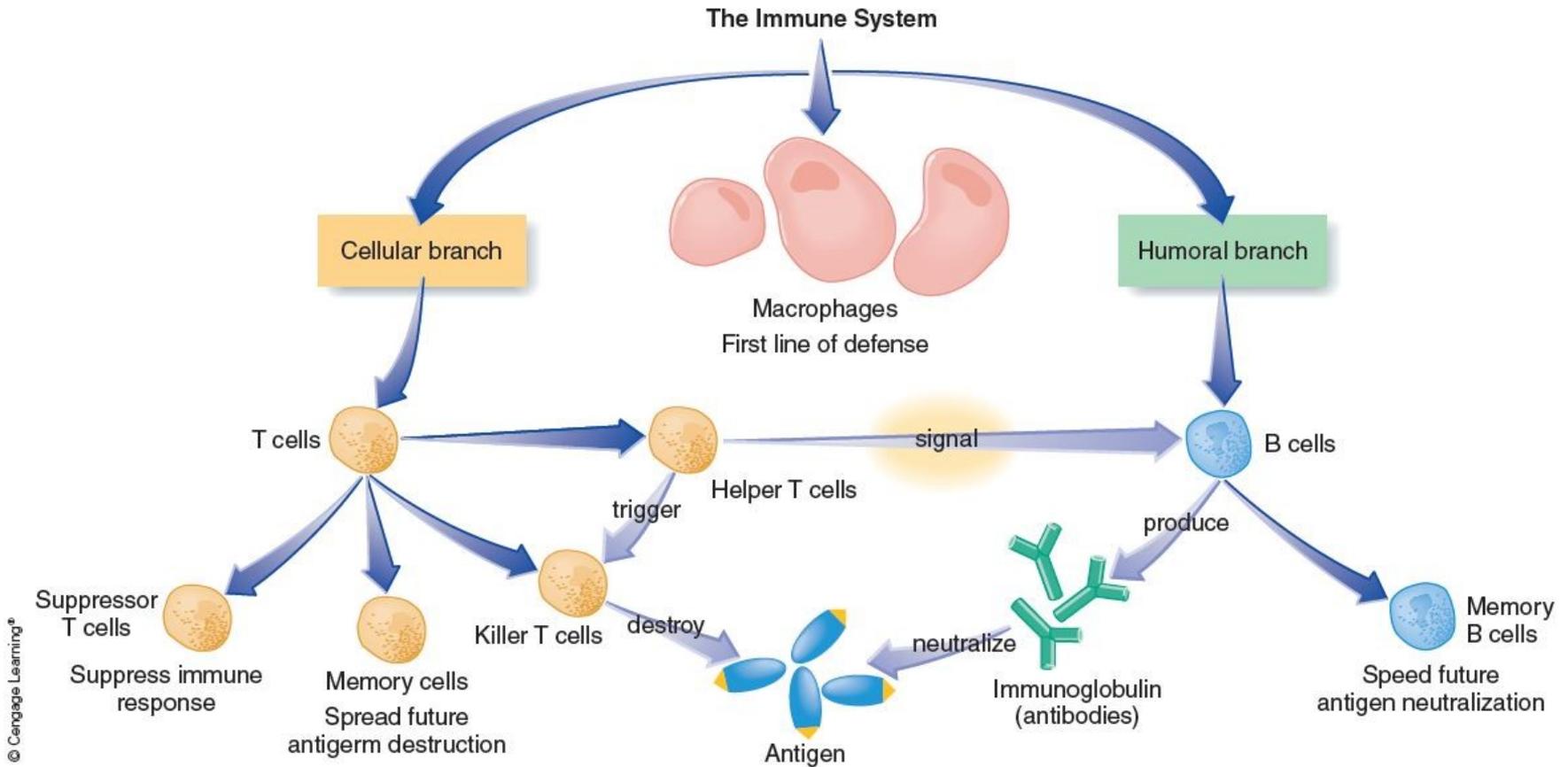
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- Immune system function
 - Identify and eliminate foreign materials (antigens)
 - Two parts: humoral and cellular
 - Includes white blood cells (leukocytes), B and T cells (lymphocytes), macrophages
 - Overreactive immune system may attack body's own cells

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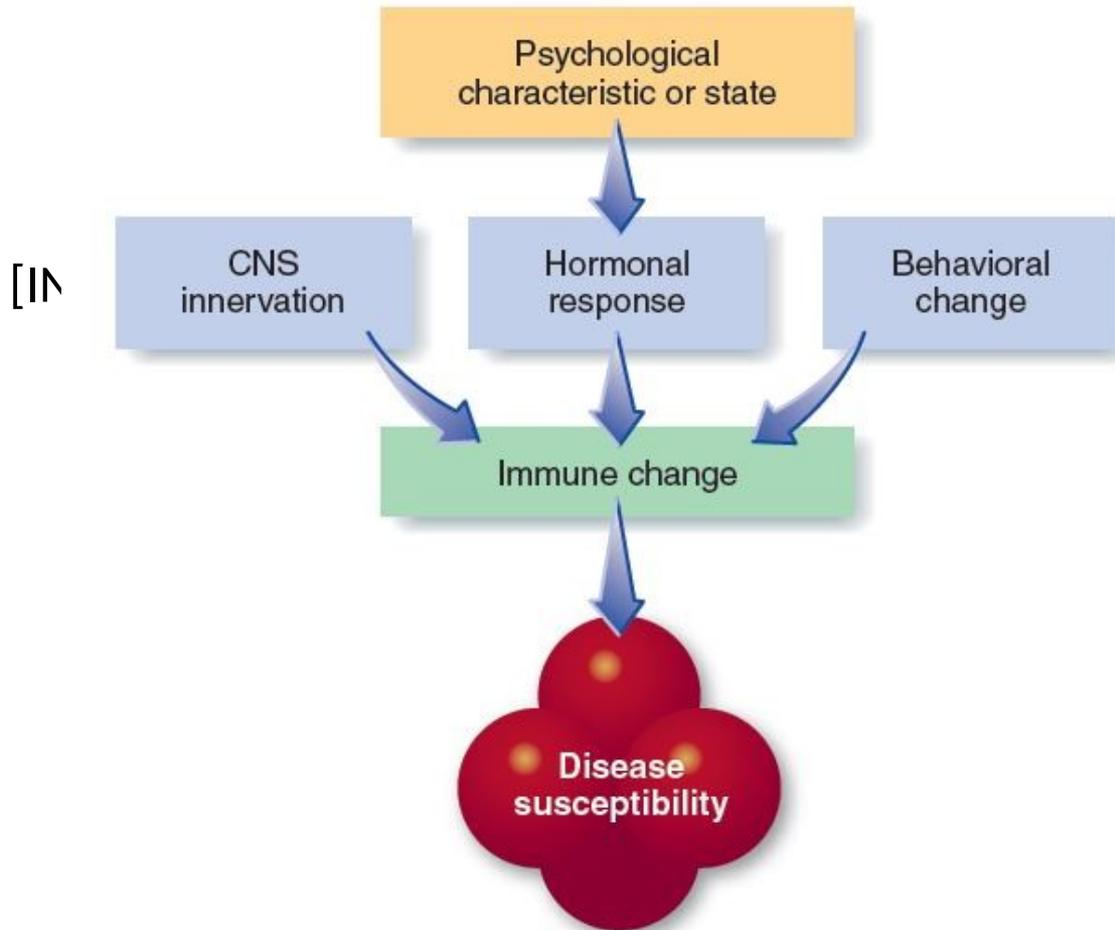
Diagram of the Stress and the Immune Response



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Disease Susceptibility



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Psychosocial Effects on Physical Disorders: AIDS

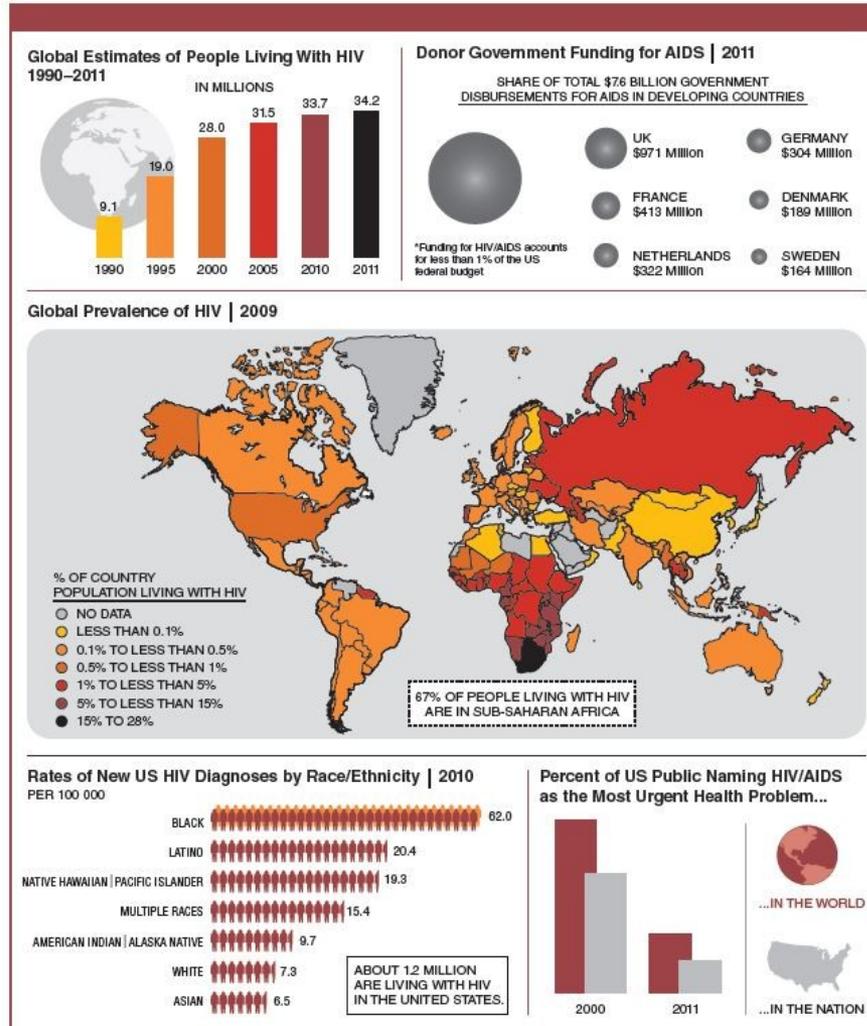
- Caused by HIV
- Symptoms may appear years after infection
 - AIDS-related complex: minor symptoms such as weight loss and fever
- May take as long as a decade to progress to full-blown AIDS (appearance of serious illness)
 - In developing world, most die within 1 year of AIDS
- Best treatment: Highly active antiretroviral therapy (HAART) – not a cure

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Prevalence of AIDS

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US AIDS Cases by Mode of Transmission

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- Male to Male Sexual Contact—50%
- Heterosexual Contact—32%
- Injection Drug Use—17%
- Other—1%

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Psychosocial Factors and AIDS

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- Exacerbation of AIDS progression:
 - High stress
 - Low social support
- Goals:
 - Reduce stress
 - Boost immune system
- Outcomes:
 - Increased T-helper cells
 - Lower antibodies
 - Enhanced psychological adjustment

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Increased Survival for HIV

- Randomized controlled trials examined efficacy of psychological interventions on neuroendocrine hormone regulation and immune status in HIV-positive individuals
- Little support for differential efficacy of different interventions
- Treatments that are successful in improving psychological adjustment are more likely to have beneficial effects on neuroendocrine regulation and immune status

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Psychological Effects on Physical Disorders: Cancer

- Psychoncology: Study of psychological factors in cancer
- Psychological and behavioral contributions to the etiology and maintenance of cancer
 - Perceived lack of control
 - Poor coping responses (e.g., denial)
 - Stressful life events
 - Life-style risk behaviors

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Cancer Mechanism

- Mechanism: Psychological factors impact cancer risk by impacting functions such as
 - Immune function
 - Viral activity
 - DNA repair processes
 - Gene expression

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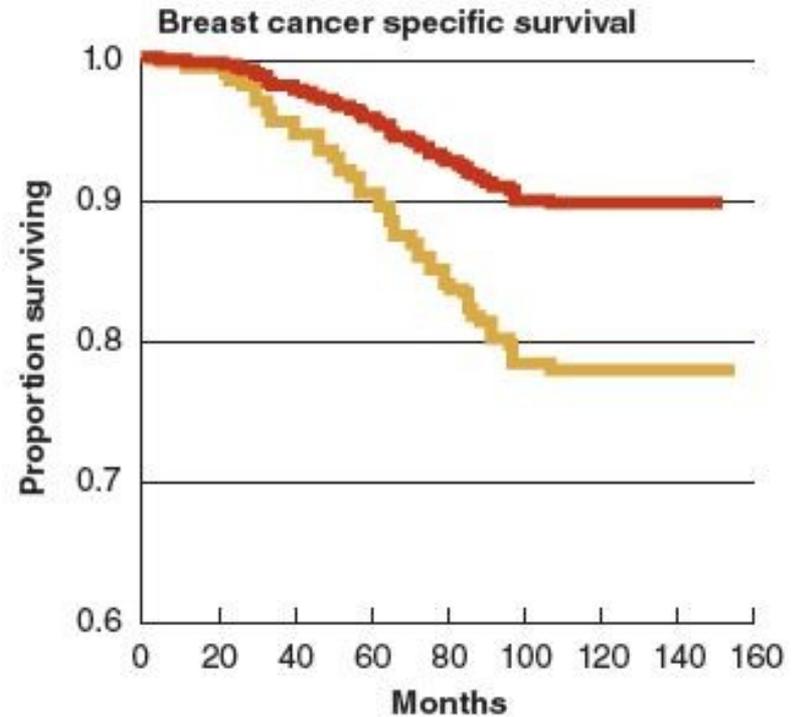
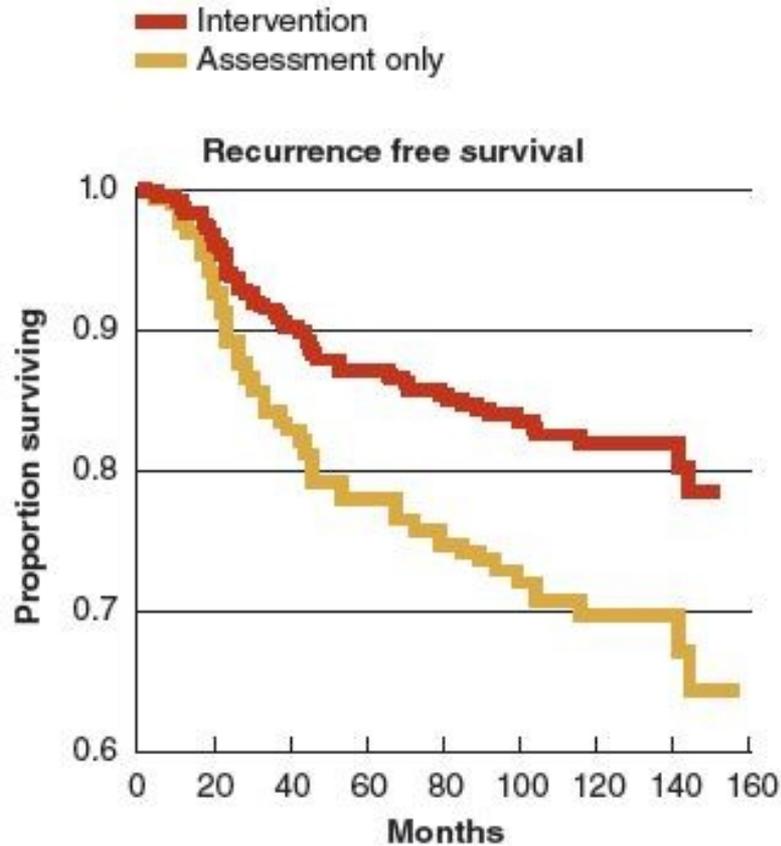
Cancer Treatments

- Psychosocial treatments for cancer improve:
 - Health habits
 - Treatment adherence
 - Endocrine function
 - Stress response/coping
- May lead to better remission and decreased mortality

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Effect of Psychological Intervention for Breast Cancer



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Psychological Effects on Physical Disorders: Cardiovascular Problems

- Cardiovascular disease
 - System includes heart, blood vessels, and regulatory mechanisms
 - Problems may include heart attack, high blood pressure, stroke
 - Heightened responsiveness to acute mental stress has adverse effects on cardiovascular health
 - Chronic stress and personality factors are also very important

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Example: Hypertension

- Hypertension (high blood pressure)
 - Increases risk for:
 - Heart disease
 - Kidney disease
 - Taxes the blood vessels

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Hypertension

- Prevalence = 27.6% of North Americans age 35 to 64
- African Americans = 2x greater risk
- Risk factors :
 - Excessive sodium intake
 - Sympathetic arousal
 - Stress level
 - Expressed anger
 - Hostility

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Causes of Hypertension

- Psychological factors, such as personality, coping style, and, again, level of stress, have been used to explain individual differences in blood pressure
- Social support important contributor to cardiovascular
- Loneliness, depression, and feelings of uncontrollability are psychological factors that contribute to cardiovascular
- Happiness and optimism are associated with cardiovascular health

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Example: Coronary Heart Disease

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- Coronary heart disease (CHD)—blockage of arteries supplying blood to the heart muscle
- Psychological and behavioral risk factors
 - Stress, anxiety, anger
 - Poor coping skills
 - Low social support

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Coronary Heart Disease and Behavior Patterns

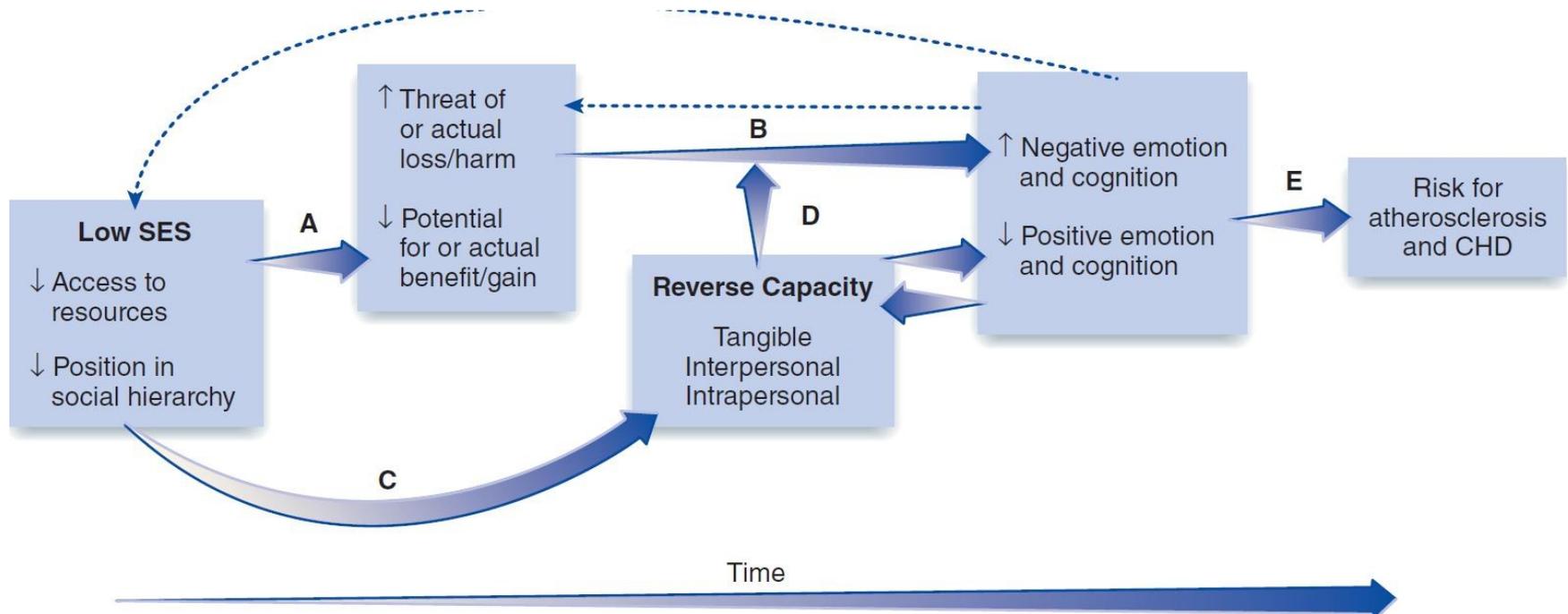
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- CHD linked to Type A behavior pattern
 - Anger
 - Excessive drive and competitiveness
 - Impatience
 - Accelerated speech
 - Agitated motor activity
- CHD also linked to chronic negative affect, low SES and stressful experiences

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Interaction of Risk Factors for CHD



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Psychological Effects on Physical Disorders: Chronic Pain

- Features of pain
 - May be acute or chronic
 - May include pain behaviors (e.g., limping, complaining, avoiding certain activities)
- Experience is highly influenced by psychological factors
 - Severity of pain is not a good predictor of one's reaction to it

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Chronic Pain

- Psychological and social factors
- Pain may be worsened by:
 - Low perceived control
 - Negative emotion
 - Poor coping skills
 - Low social support
- Pain behaviors may be increased by:
 - Compensation (e.g., paid time off)
 - Social reinforcement (e.g., sympathy)

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Chronic Pain: Some Psychological Mechanisms

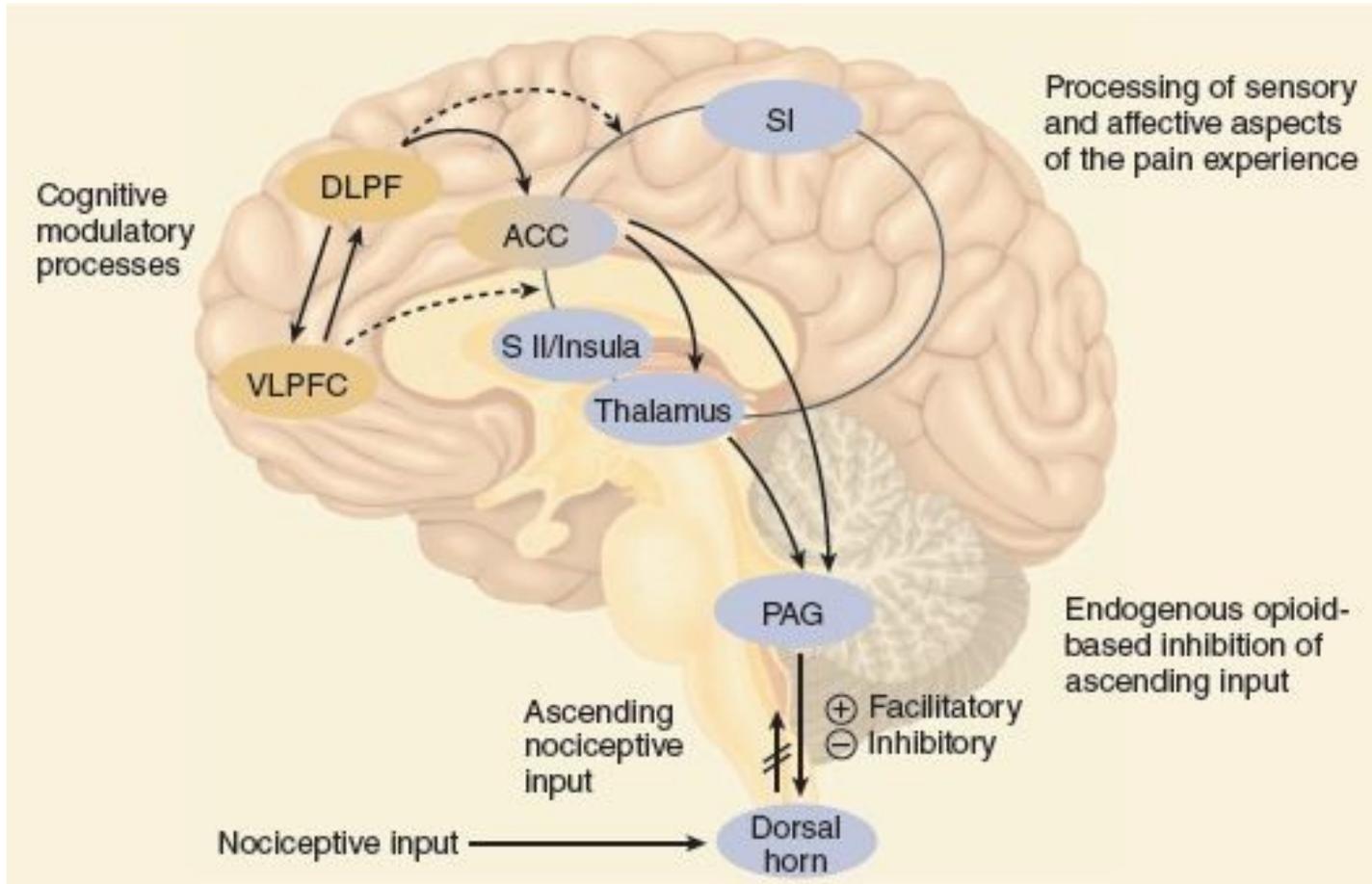
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- Gate control theory of pain: Neurological processes (e.g, anxiety, fear, intense concentration) affect the degree to which pain is detected
- Endogenous opioids: pain-inhibiting natural chemicals that may be increased by exercise
- Females have additional pain-regulation mechanisms that may have evolved to facilitate childbirth

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Diagram of Chronic Pain



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Psychological Effects on Physical Disorders: Chronic Fatigue Syndrome

- Nature of chronic fatigue (CF)
 - Lack of energy and marked fatigue that does not improve with adequate sleep
 - May have aches and pains or low fever
- More common in females than males
- Incidence increasing in Western countries
- Often severe enough that it is difficult to work

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Symptoms of Chronic Fatigue Syndrome

- Subjective memory impairment
- Sore throat
- Tender lymph nodes
- Muscle pain
- Joint pain
- Headache
- Unrefreshing sleep
- Malaise lasting more than 24 hours

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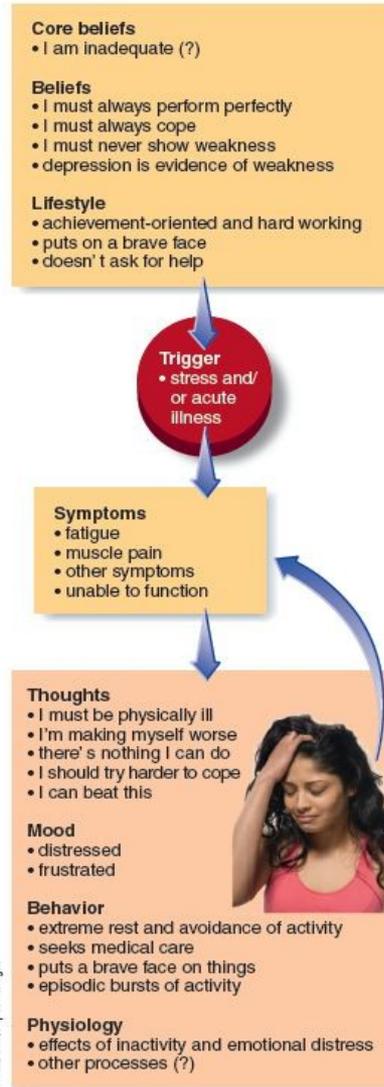
Chronic Fatigue Syndrome

- Causes
 - Largely unknown
 - Biological or viral cause has not yet been found
 - May be a response to stress
- Treatment
 - Medications are generally ineffective
 - CBT may be helpful
 - Includes increasing activity, regulating rest, stress reduction

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Psychological Factors in Chronic Fatigue Syndrome



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Psychosocial Treatment of Physical Disorders: Biofeedback

- Biofeedback
 - Monitor and control bodily responses
 - Heart rate
 - Blood pressure
 - Muscle tension
 - EEG rhythms
 - Increase sense of control
 - Efficacy:
 - Improves patient's ability to control bodily processes such as the severity of a headache

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Psychosocial Treatment of Physical Disorders: Relaxation and Meditation

- Relaxation and meditation
 - Progressive muscle relaxation
 - Transcendental meditation (TM) focuses attention on a repeated mantra
 - Increased sense of control and mastery
 - May improve headache, hypertension, acute and chronic pain

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Example: A Comprehensive Stress- and Pain-Reduction Program

- Monitor and identify stressful events
 - Times, intensity, triggers
- Monitor somatic symptoms
- Muscle relaxation
- Cognitive therapy
- Increase coping strategies
 - Time management
 - Assertiveness training
- More effective than individual components

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Drugs and Stress Reduction Programs

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- Medication may decrease efficacy of comprehensive programs
 - Example: rebound headaches when not on medication for headaches
 - High relapse when stopped
 - Tolerance may be built over time

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Denial as a Means of Coping

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- In some circumstances, denial about the seriousness of a physical condition can be helpful
- Especially helpful at early stages of the disease
- Later, it is more helpful to face the situation and process emotions fully

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Modifying Behaviors to Promote Health: Injury

- Injury prevention
 - Accidents are leading cause of death from ages 1 to 45
 - Repeated warnings are not enough
 - Programmatic efforts needed
 - Example: Successful programs have taught children how to escape fires and cross streets

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Modifying Behaviors to Promote Health: AIDS

- AIDS prevention
 - Highly preventable by changing behaviors
 - Safe-sex practices
 - Sanitary use of needles
 - Regular check-ups
 - Strong peer support programs

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Modifying Behaviors to Promote Health: Smoking

- Smoking cessation in China
 - Capitalize on family relationships
 - E.g., children persuade fathers to quit smoking
 - Distribute anti-smoking literature
 - Target at-risk populations

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Modifying Behaviors to Promote Health

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- Stanford Three Community Study
 - Goal: Reduce risk factors of CHD
 - Conducted in three entire, similar communities
 - Each community got either:
 - No intervention
 - Media blitz
 - Media blitz plus face-to-face intervention
 - Highest benefit from media blitz plus live intervention

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Summary of Physical Disorders and Health Psychology

- Risk for physical illness
 - Related to long-standing patterns of behavior & lifestyle factors
- Psychosocial treatments
 - Aim to prevent and/or treat physical disorders
 - Comprehensive, targeted individual or community programs are best