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## MODULE 43

# Stress and Health

### Module Preview

Exposure to prolonged stress can increase our susceptibility to serious illness. Health psychology provides psychology's contribution to behavioral medicine. Among its concerns are the effects of stress and how to control it, how our emotions and personality influence our risk of disease, and the promotion of healthier living.

Walter Cannon viewed our response to stress as a fight-or-flight system. Hans Selye saw it as a three-stage general adaptation syndrome. Modern research assesses the health consequences of various life experiences. Coronary heart disease has been linked with the anger-prone Type A personality. Stress may also affect the progression of other serious illnesses, including AIDS and cancer.

### Module Guide

#### Introduction

- ▶ Project: Constructing a Family Health History
- ▶ Video: *Discovering Psychology, Updated Edition: Health, Mind, and Behavior*

#### 43-1. *Identify health psychology's contribution to the field of behavioral medicine.*

In a recent Gallup poll, three in four respondents reported that they “sometimes” or “frequently” experience stress in daily life. Prolonged stress increases our risk for serious illness and death. By studying how our emotions and personality influence our risk of disease, the effects of stress, and the promotion of healthier living, **health psychologists** contribute to **behavioral medicine**, the interdisciplinary field that integrates behavioral and medical knowledge.

#### Stress and Illness

- ▶ Exercises: Stress Level and Vulnerability to Stress; Stress Symptoms; The Stress Appraisal Measure
- ▶ Lecture: Tend and Befriend
- ▶ Project: Constructing a Family Health History
- ▶ Videos: Video Clips 38 and 39 of *Digital Media Archive: Psychology*, 1st ed.: *Stress on the Job* and *Selye's Stress Response Studies*; Module 35 of *Psychology: The Human Experience: What Is Stress?*
- ▶ Instructor Video Tool Kit: *Measuring Stress While Running With the Bulls; The Stress Response*

#### 43-2. *Discuss the concept of stress, and describe the biology of the fight-or-flight response as well as the physical characteristics and phases of the general adaptation syndrome.*

**Stress** is not just a stimulus or a response; rather, it is the process by which we appraise and cope with environmental events. When perceived as challenges, stressors can arouse and motivate us to

conquer problems. When perceived as threats, prolonged stressors can harm us and increase the risk of illness.

Walter Cannon observed that, in response to stress, the sympathetic nervous system activates the secretion of stress hormones, triggers increased heart rate and respiration, diverts blood to skeletal muscles, and releases sugar and fat from the body's stores, all to prepare the body for either *fight or flight*. In addition to this first (and faster) stress response system, a slower system involves the cerebral cortex stimulating the hypothalamus and the pituitary gland to trigger the release of *glucocorticoid* stress hormones, such as *cortisol*, from the outer part of the adrenal glands. A more common stress response in women is *tend and befriend*.

In Hans Selye's **general adaptation syndrome (GAS)**, the body's adaptive response to stress is composed of three stages. In Phase 1, we experience an *alarm reaction* due to the sudden activation of our sympathetic nervous system. Heart rate increases and blood is diverted to the skeletal muscles. With our resources mobilized, we then fight the challenge during Phase 2, *resistance*. Temperature, blood pressure, and respiration remain high, and there is a sudden outpouring of stress hormones. If the stress is persistent, it may eventually deplete our body's reserves during Phase 3, *exhaustion*. With exhaustion, we are more vulnerable to illness or even, in extreme cases, collapse and death.

- ▶ Exercises: College Undergraduate Stress Scale
- ▶ Lecture: Hassles and Uplifts
- ▶ PsychSim 5: All Stressed Out

43-3. *Discuss the health consequences of catastrophes, significant life changes, and daily hassles.*

Catastrophic floods, hurricanes, and fires are followed by increased rates of psychological disorders such as depression and anxiety. Those who experience significant life changes, such as the death of a spouse, divorce, or loss of a job, are vulnerable to disease. Experiencing a cluster of such crises puts one even more at risk. Daily hassles, such as rush-hour traffic, long lines at the store, aggravating housemates, and e-mail spam, may be the most significant sources of stress. Over time, these little stressors take a toll on our health and well-being.

## Stress and the Heart

- ▶ Lectures: Broken Heart Syndrome; Type A and Type B Personalities; Type D Personality
- ▶ Exercise: Hostility and Its Alleviation

43-4. *Discuss the role of stress in causing coronary heart disease, and contrast Type A and Type B personalities.*

Stress can increase the risk of **coronary heart disease**, the leading cause of death in North America. It has been linked with the competitive, hard-driving, and impatient **Type A** personality. The toxic core of Type A is negative emotions, especially the anger associated with an aggressively reactive temperament. Under stress, the sympathetic nervous system of the Type A person redistributes blood flow to the muscles and away from internal organs, such as the liver, which removes cholesterol and fat from the blood. The resulting excess cholesterol later gets deposited around the heart. The more easygoing **Type B** personality is less physiologically reactive when harassed or given a difficult challenge and less susceptible to coronary heart disease. Pessimism and depression also can have a toxic effect on a person's health.

## Stress and Susceptibility to Disease

- ▶ Video: Module 4 of *The Mind Series*, 2nd ed.: *Cognition and the Immune System: Mind/Body Interaction*
- ▶ Instructor Video Tool Kit: *Stress and the Immune System: Caretakers and Risk; Fighting Cancer: Mobilizing the Immune System*

43-5. *Define psychophysiological illness, and describe the effect of stress on immune system functioning, including its role in the progression of AIDS and cancer.*

**Psychophysiological illness** refers to any stress-related physical illnesses such as hypertension and some headaches. Our understanding of the impact of stress on resistance to disease has fostered the development of the field of **psychoneuroimmunology**, which studies how psychological, neural, and endocrine processes together affect our immune system and resulting health.

The secretion of stress hormones suppresses the immune system's white blood cells, called **lymphocytes**. *B lymphocytes* are important in fighting bacterial infections, and T lymphocytes fight cancer cells, viruses, and foreign substances. Two other agents of the immune system are the *macrophage* and the *natural killer cells (NK cells)*. When animals are physically restrained, given unavoidable electric shocks, or subjected to noise, crowding, cold water, social defeat, or maternal separation, they become more susceptible to disease. Studies suggest that stress similarly depresses the human immune system, making us more vulnerable to illness. The immune system can err in two directions: by overreacting it may attack the body's own tissues, or by underreacting it may allow a virus to erupt.

Stress and negative emotions correlate with a progression of HIV infection to AIDS and with the speed of decline in those infected. Efforts to reduce stress also help somewhat to control the disease. Educational initiatives, bereavement support groups, cognitive therapy, relaxation training, and exercise programs that reduce distress have all had positive consequences for HIV-positive individuals.

Although stress does not produce cancer cells, some researchers have reported that people are at risk for cancer a year or so after experiencing depression, helplessness, or bereavement. A large Swedish study found that people with a history of workplace stress had greater risk of colon cancer than those who reported no such problems. Although a relaxed, hopeful attitude may enhance the body's natural defenses against a few proliferating cancer cells, merely maintaining a determined attitude is not likely to derail the powerful biological forces at work in advanced cancer or AIDS.

