

## **I. Health Psychology: An Overview**

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## **II. Stress and Illness**

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  - b. Rates of decline show SES, gender trends
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### B. Heart disease

1. HDL and LDL contribute to atherosclerosis
  - a. Biology plays a role, but so too does behavior
    - i. Type A behavior can contribute to heart disease
2. The toxic component of Type A behavior
  - a. Hostility seems to be the component that causes problems

3. Reducing the risk of heart disease
- C. Acquired Immunodeficiency Syndrome (AIDS)
  1. HIV: A global perspective
    - a. HIV rates differ by gender, SES, behaviors
    - b. HIV is a fragile virus that doesn't survive long outside the body
    - c. HIV compromises the immune system, leaving it vulnerable
- D. Stress in the workplace
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#### **IV. Coping With Stress**

- A. Psychological moderators of stress
  1. Hardiness
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    - b. Belief in a sense of control
    - c. Change is a challenge that offers opportunities rather than threats
  2. Explanatory style
    - a. Pessimistic versus optimistic explanations for life events
  3. Distraction
    - a. Drawing attention away from a stressor can be effective
  4. Social support
    - a. A support network can provide advice, comfort during stress
    - b. Well-intentioned, but cloying, support can add additional stress
  5. Sense of humor
    - a. Effective as a coping strategy, pain reducer, tension release
- B. Reducing arousal with relaxation and physical activity
  1. Relaxation techniques
    - a. Progressive relaxation reduces muscle tension
    - b. Transcendental meditation reduces arousal levels
    - c. A relaxation response can generally be elicited by
      - i. Finding a quiet environment
      - ii. Using a mental device
        - a mantra, an image, a thought
      - iii. Adopting a passive attitude
    - d. Biofeedback helps train individuals to achieve a relaxed state
  2. Physical activity
    - a. A sedentary lifestyle can lower life expectancy
    - b. A well-planned regimen can be adopted and followed regularly

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a. Various lines of evidence point to the benefits of activity

## Health Psychology

To this point we have covered a number of basic processes that include communication in the nervous system, how we sense and understand the world around us, and how we learn. Such processes play a critical role in determining our health. Progress over recent decades has altered the threats to our health. Many of the current causes of illness and death are related to decisions we make about our behaviors, such as those regarding diet and exercise. We are in fact endowed with a powerful built-in response to threats to our well-being that has served us well over the centuries. As we shall see, however, that biological response is often elicited at times when it is not needed. Therefore, we must learn to redirect it to our benefit. How we react to difficult situations is also a function of how we interpret events; thus our cognitive capabilities are as important in understanding our health as biological factors are.

### Health Psychology: An Overview

#### How have the diseases experienced by Americans changed over the years?

Dramatic changes in the causes of death in the United States over the past century have led to a focus on how emotional reactions, social influences, and overt behaviors affect our health. In 1900, the major causes of death were contagious diseases, such as influenza, pneumonia, and tuberculosis. By about 1950, changes in sanitation and the introduction of mass vaccinations had enabled Americans to avoid or at least to recover from many of these diseases. Today the leading causes of death, heart disease and cancer (U.S. Bureau of the Census, 1994), are noncontagious diseases that are linked to our behaviors or lifestyle. Our behavior has a powerful influence on our health; behavior changes might have prevented half the deaths in the United States in 1990's.

Although noncontagious diseases are now responsible for most deaths, deaths due to infectious diseases have increased 58 percent from 1980 to 1992. Much of this increase was the result of acquired immunodeficiency syndrome (AIDS), in which certain behaviors put individuals at risk for a disease caused by a virus. However, when deaths due to AIDS were subtracted, there was still a 22 percent increase in deaths due to infectious diseases such as respiratory infections (Pinner et al., 1996).

Health psychology is the subfield of psychology that is devoted to understanding how psychological and social variables affect health and how we respond when we become ill. Health psychologists focus on how emotions, social factors, and behavior influence health and illness.

Past behavioral changes have been associated with notable improvements in health. For example, recent declines in deaths due to heart disease and stroke are related to the increased detection and treatment of high blood pressure, reduction in the number of smokers, and decreases in the consumption of fat (U.S. Department of Health and Human Services, 1990b).

Joseph Matarazzo (1984), a health psychologist, has offered a list of behaviors that are related to good health. These behaviors should not surprise you. Although initiating them seems difficult, they can easily become part of your daily routine. Begin each day by eating breakfast, and you will be less likely to eat snack foods to tide you over until lunch. Once you start buckling your seat belt, it becomes as automatic as putting the key in the ignition.

## Stress and Illness

### Can stress make us more vulnerable to illness?

Just about every day we hear or use the word stress in conversations, yet the term did not come into widespread use until 1936, when a Canadian endocrinologist, Hans Selye (1907-1982), published a book titled *The Stress of Life* (1978). While he was in medical school, Selye noticed that many patients had similar symptoms—fatigue, loss of appetite, fever—regardless of the particular disease that was diagnosed.

Later in his career, Selye injected laboratory rats with an extract from ovarian cells and found some intriguing results. No matter what he did to the rats—injecting them with extracts, exposing them to extreme temperatures or shock—their biological response was similar. These experiments and observations led Selye to conclude that regardless of the external or internal event, the body (whether of a rat or a human being) responds in comparable ways, which he described as a “stress syndrome.” He defined stress as the nonspecific response of the body to any demand. A stressor is anything that causes an organism to adjust and display this nonspecific stress response.

### The General Adaptation Syndrome

Selye outlined a series of biological responses, called the **general adaptation syndrome (GAS)**, that occur as the body deals with stressors. The nervous and endocrine systems orchestrate this series of responses. The alarm stage of the GAS is equivalent to the well-known fight-or-flight response. During this “call to arms,” the hypothalamus signals the sympathetic nervous system and the pituitary. The combination of the activation of the sympathetic nervous system and an outpouring of stress hormones prepares the body for a brief period of physical action in response to a threat. One consequence of the release of these hormones is easily recognized—your heart races. You may also experience “butterflies” in your stomach because digestion slows and blood is redirected to the muscles in preparation for action. The body burns more energy, which may provide physical strength that we did not believe we possessed. The last time you faced a stressor, you probably experienced many, perhaps all, of the following reactions:

- The adrenal gland releases epinephrine (adrenaline) and norepinephrine (noradrenaline) to increase heart rate and blood pressure, which forces more blood and oxygen to the locations where it is most needed.
- The liver releases stored fat to provide energy to the muscles.
- Increased perspiration cools the body, which is burning more energy than usual.
- Muscles tense in preparation for action.
- Chemicals released into the bloodstream reduce possible blood loss by hastening the clotting process.
- Breathing becomes more rapid to supply more oxygen to the muscles.

The fight-or-flight response prepared our ancestors exceptionally well for physical actions such as fleeing from a dangerous woolly mammoth. But this response is not always useful today. Modern stressors like mammoth traffic jams do not call for physical responses; nevertheless, our biological equipment and responses to stressors are the same as those of our ancestors (Chrousos & Gold, 1992).

When a stressor continues past the alarm stage, the body moves to the second stage of the general adaptation syndrome, resistance. The body maintains a moderate level of arousal, which enhances our ability to withstand the original stressor. However, if new stressors are introduced, the ability to resist the demands of all these stressors decreases. For example, a laboratory animal in the resistance stage may have greater ability to resist extreme cold, but it becomes more vulnerable to bacterial infections.

## Myth Or Science

Have you wondered if feeling overwhelmed by a set of circumstances—term papers, exams, job searching—could make you more vulnerable to a virus that can cause a cold? Such circumstances can affect your ability to resist new stressors, such as problems with a roommate; they may also reduce the ability of your immune system to fight a virus. Sheldon Cohen and his colleagues (Cohen, Tyrrell, & Smith, 1991) intentionally exposed students (with their informed consent) to one of several types of respiratory viruses. Did all the students develop colds after being infected? No. Students who were experiencing high levels of stressors were more likely to develop colds than students who were experiencing low levels of stressors.

When demands for adjustment exceed the body's ability to respond, the body enters the third stage of the GAS, exhaustion. At this point, the stress response has lost its adaptive quality and actually contributes to pathological changes that result in disease. For example, continued high levels of heart rate and blood pressure raise the risk of heart disease. Moreover, the stress response actually suppresses the body's immune system, which leaves us more vulnerable to diseases (Maier, Watkins, & Fleshner, 1994). When the body has reached the limits of its ability to adapt to stress, various physical disorders known as psychophysiological disorders (formerly called psychosomatic disorders) may develop. A wide range of diseases has been linked to stress, including asthma, herpes, hypertension, and ulcers. In short, certain diseases are influenced by our inability to adapt to excessive stress.

Consider an example. Poised at the end of a small platform more than 150 feet above the ground, Chantel prepares for her first bungee jump. She screams as she jumps off and then bounces back up like a giant yo-yo. When the bungee cord stops moving, Chantel is disconnected. You are certain that she could not be persuaded to jump again, yet she sprints past you to line up for another go!

Chantel experienced the fight-or-flight response during her bungee jump, but in this case the stress was positive, and the physiological arousal was pleasant and exciting. Under some conditions, this arousal can even lead to emotional or intellectual growth and development. Selye called this pleasant, positive kind of stress eustress (from the Greek eu, meaning "good," as in euphoria); the damaging form of stress is called distress. Thus you should not seek to avoid stress altogether; instead, you should find ways to channel the physiological arousal of the stress response more effectively. However, some stressful events are easier to avoid or channel than others.

## Sources of Stress

Every day we encounter minor irritations: The toaster doesn't work, someone backs into our car and dents it, and so on. Such minor annoyances can affect our sense of well-being and our health.

**Catastrophes.** Catastrophes test our ability to adapt. Natural disasters like earthquakes, hurricanes, and tornados can cause devastation over vast areas. To this list of natural disasters we add a growing number of disasters caused by human error, such as toxic spills, nuclear accidents, and transportation accidents.

In 1979, a nuclear reactor accident at Three Mile Island in Pennsylvania caused a 2-week state of emergency that required the people living in the area to make major adaptive responses. Psychologist Andrew Baum and his colleagues (Baum, Gatchel, & Schaeffer, 1983) wondered whether the effects of the incident might extend beyond the emergency period. To answer this question, they compared people who lived near Three Mile Island to three other groups: people living near an undamaged nuclear reactor, people living near a coal-fired power plant, and people living more than 20 miles from any power plant. The people who lived near Three Mile Island reported more stress symptoms, responded poorly on tasks that required concentration, and had elevated levels of the stress hormones epinephrine and norepinephrine. The worry and uncertainty experienced in the aftermath of the accident persisted for about a year and a half.

## **Major Life Events.**

Major life events require significant adjustments in almost all aspects of our lives; therefore, they can be powerful stressors. Thomas Holmes and Richard Rahe (1967) wished to determine how much adjustment such events require. To accomplish their goal, they developed the 43-item Social Readjustment Rating Scale, which is often printed in magazines, newspapers, and textbooks. A number expressed in **life change units (LCUs)** indicates the amount of adjustment each item requires. Holmes and Rahe determined the LCUs by asking groups of people to compare the amount of adjustment required by each item to the amount of adjustment that occurs when a person is married. (The amount of adjustment required by marriage was set at 50 LCUs.)

The death of a spouse was rated as the item requiring the greatest adjustment (100 LCUs). A study of almost 96,000 widowed people in Finland supports this assessment. The death rate for recently widowed people was higher than average; the greatest increase (twofold) occurred during the week following the loss of their spouse (Kaprio, Koskenvuo, & Rita, 1987).

Holmes and Rahe administered the Social Readjustment Rating Scale to many people who were also asked to report their illnesses across some span of time, usually one year. Those with high scores reported more illnesses than those with low scores. This dramatic finding seemed to support the notion that too much change is really bad for us.

Moreover, some events on the Social Readjustment Rating Scale could be viewed as positive and therefore are not necessarily troublesome or disturbing. Starting a new job and moving to a new city can signify exciting opportunities that are likely sources of eustress, not distress. Moreover, events that do not occur can be just as stressful, perhaps more so, than events that do occur. To take just one example, imagine being jilted at the altar.

**Posttraumatic Stress Disorder.** Some events are so far beyond our usual experience that they would deeply disturb almost anyone who encountered them. Events like being raped or observing a violent death are not included in the Social Readjustment Rating Scale, yet their impact can be so great that they may result in posttraumatic stress disorder (PTSD). The primary symptom of PTSD is experiencing intense fear while reliving a shocking event in dreams, flashbacks, or intrusive thoughts. PTSD victims are often anxious and irritable, find it difficult to concentrate, suffer from sleep disturbances, and experience guilt. (PTSD is classified as an anxiety disorder; we discuss the other anxiety disorders in Chapter 12.)

**PTSD occurs in about 5 men and 13 women per 1,000 American adults. Being in combat and seeing someone hurt or die are the most common traumatic events that bring on PTSD in men; common events that precipitate PTSD in women are physical attacks, especially rape (Helzer, Robins, & McEvoy, 1987).**

Most victims of PTSD avoid circumstances associated with the shocking event because such circumstances can cause these victims to relive the experience. For example, some Vietnam veterans suffered flashbacks of their own war experiences after watching televised coverage of Operation Desert Storm in 1991.

**Everyday Hassles.** Hassles are minor, everyday occurrences that are distressing, frustrating, and irritating, such as slow-moving traffic, long lines at the supermarket, and lost keys. Each hassle may elicit a minor alarm reaction; thus we can say that some people have their alarms going off continuously! Although such minor alarms may not seem capable of major consequences, psychologist Richard Lazarus and his colleagues have found that hassles can accumulate and become associated with physical and psychological problems. In one investigation, researchers found a correlation between the occurrence of daily hassles and the presence of current and subsequent health problems such as flu, headaches, and sore throats (De Longis, Folkman, & Lazarus, 1988).

A number of hassles may involve conflict among competing desires or motives. Some conflicts require that we select between two attractive alternatives. These approach-approach conflicts are usually easy to resolve.

In an approach-avoidance conflict, the positive values of a goal attract us while its negative features repulse us. Such conflicts often result in vacillation; one moment the answer is yes, the next moment it is no. Only when one motive (attraction or repulsion) becomes stronger than the other will this conflict be resolved. A child who is told he will be punished if he eats any ice cream might find that the immediate temptation of the ice cream outweighs the threat of punishment at a later time.

In an avoidance-avoidance conflict, you must choose between two unpleasant alternatives. For example, when you have a toothache, you may face a choice between continuing to suffer the pain and visiting the dentist, neither of which is a pleasant choice.

Multiple approach-avoidance conflicts are similar to many everyday experiences in which we are attracted and repulsed by a variety of goals. When such conflicts occur over interpersonal relationships that may have several positive and several negative factors, such as marriage or divorce, they can have serious, long-lasting effects.

The effect of several minor daily annoyances can accumulate and raise the levels of your body's stress hormones, which are released early in the GAS.

### **What Makes Events Stressful?**

Richard Lazarus and Susan Folkman (1984) believe that the way we deal with potential stressors begins with our appraisal of the event. Our first task when faced with a potential stressor is to determine whether the event or situation is stressful. In other words, should we be upset? This evaluation, called primary appraisal, can result in several conclusions. We may determine that an event or situation is irrelevant because it has little or no consequence to us. In other cases we may determine that an event is actually beneficial (a form of eustress). Finally, we may determine that an event or situation is stressful, is potentially harmful, or creates a loss such as illness or injury. When we decide that an event is a stressor, we must determine how we will deal with it—a process called secondary appraisal.

Jobs that demand a great deal of responsibility but do not permit workers to control their time are more likely to lead to stress-induced illnesses (Bernard & Krupat, 1994). Air traffic controllers at large airports, medical interns, police officers, and secretaries experience high levels of stress for these reasons. Race car drivers may not be bothered by speeds that reach more than 200 miles per hour, but they tense up when they pull off the track and turn over control of their car to their pit crew. The same is true of corporate managers and employees whose companies are being acquired by other firms. Their sense of control is lost for a time, and as a result they may experience a variety of stress symptoms.

### **How Stress and Disease May Be Related**

The immune system serves as a sensory organ that recognizes foreign invaders and then deactivates them and removes them from the body (Maier, Watkins, & Fleshner, 1994). The substances that trigger an immune response are called antigens and include bacteria, fungi, parasites, and viruses (Schindler, 1991). The task of ridding the body of these substances falls to a variety of specialized cells including two forms of white blood cells: lymphocytes, which are small white cells that are produced in the bone marrow or the thymus, and phagocytes (literally "eater cells"), which are large white cells that engulf foreign matter, such as viruses.

**Psychoneuroimmunology.** A new science called psychoneuroimmunology (PNI) focuses on how the body defends itself against foreign substances and how psychological and physiological factors influence the immune system. The term focuses attention on the interactions of the brain, endocrine system, and immune system.

How can stress affect the immune system? We know that stress leads to activity in the sympathetic nervous system and the release of the hormones cortisol, epinephrine, and norepinephrine. These hormones help us resist stress, but in the long run they reduce the effectiveness of the immune system. A variety of stressful events—loss of a spouse, divorce, depression, exams, even daily mood fluctuations—have been found to suppress the functioning of the immune system and make people more susceptible to disease (Evans et al., 1992; Glaser et al., 1993; Kiecolt-Glaser & Glaser, 1992). Long-term stressors are associated with lowered immune system functioning. For example, Janice Kiecolt-Glaser and her colleagues (1991) studied the health status of individuals who cared for spouses suffering from Alzheimer's disease. These individuals had been providing daily care for an average of 5 years. Compared to a group of individuals with similar demographic characteristics who were not caring for such patients, the caregivers had lowered immune functioning and reported more days of infectious illnesses. A recent review summarized the relationship between stress levels and immune system functioning by noting that there were “relatively strong and consistent associations” (Herbert & Cohen, 1993).