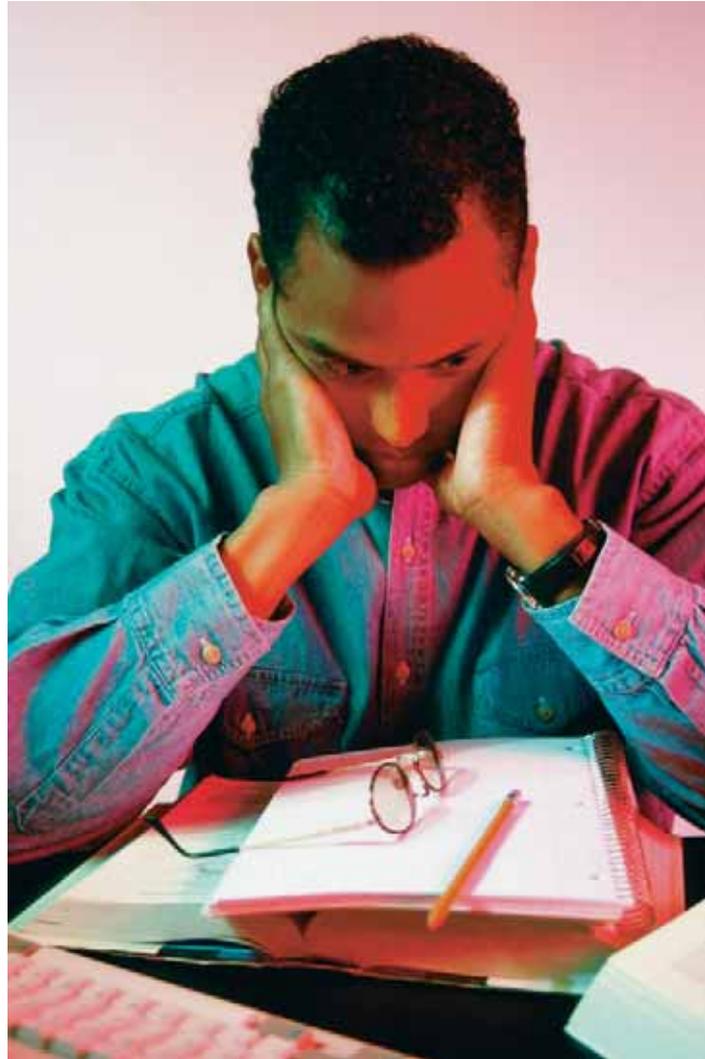


Stress, Psychological Factors, and Health



CHAPTER OUTLINE

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SUMMING UP 168

“Is there a problem?” I (J.S.N.) asked as I entered my classroom at St. John’s University in Queens, New York, on the morning of September 11, 2001. The students were gathered around the window. None replied, but one pointed out the window with a pained expression on her face that I’ll never forget. Moments later, I saw for myself the smoke billowing out of one of the towers of the World Trade Center, clearly visible some 15 miles to the west. Then the second tower suddenly burst into flames. We watched in stunned silence. Then the unthinkable occurred. Suddenly one tower was gone and then the other. A student who had come into the room asked, “Where are they?” Another answered that they were gone. The first replied, “What do you mean, gone?”

We watched from a distance the horror that we knew was unfolding. But many other New Yorkers experienced the World Trade Center disaster firsthand, including thousands like New York City police officer Terri Tobin, who risked their lives to save others. Here, Officer Tobin tells of her experience:

“Go! Go! It’s Coming Down!”

“Go! Go! It’s Coming Down!”

Then I saw people running toward me, and they were screaming. “Go! Go! It’s coming down!” Just for a second, I looked up and saw it. I thought, *I’m not going to outrun this*. But then I thought, *Maybe I can make it back to my car and jump in the back seat*. Before I could make a move, the force of the explosion literally blew me out of my shoes. It lifted me up and propelled me out, over a concrete barrier, all the way to the other side of the street. I landed face-first on a grassy area outside the Financial Center, and after I landed there, I just got pelted with debris coming out of this big black cloud.

And then I felt it, but what sticks with me is hearing it: The whomp of my helmet when I got hit in the head. The helmet literally went crack, split in half, and fell off my head. I realized then that I’d just taken a real big whack in the head. I felt blood going down the back of my neck, and when I was able to reach around, I felt this chunk of cement sticking out three or four inches from the back of my head. It was completely embedded in my skull.

Then it got pitch black, and I thought, *I must have been knocked unconscious, because it’s totally black*. But then I thought, *I wouldn’t be thinking about how black it is if I’m unconscious*. And it was really hard to breathe. All I heard were people screaming. Screaming bloody murder. All sorts of cries. At that moment, I thought, *This is it. We’re all going to die on the street*.

—From Hagen & Carouba, 2002, *Women at Ground Zero: Stories of Courage and Compassion*

EXPOSURE TO STRESS, ESPECIALLY TRAUMATIC STRESS LIKE THAT EXPERIENCED BY MANY thousands of people on 9/11, can have profound and enduring effects on our mental and physical health. This chapter focuses on the psychological and physical effects of stress. In the next chapter, we discuss the types of psychological disorders that can arise from exposure to traumatic stress.

The effects of psychological forms of stress bring into context the age-old debate about the relationship between the mind and the body. The 17th-century French philosopher René Descartes (1596–1650) influenced modern thinking with his belief in *dualism*, or separateness, between the mind and body. Today, scientists recognize that mind and body are much more closely intertwined than Descartes would have imagined. Psychological factors both influence and are influenced by physical functioning (Jones, 2006; Ryff et al., 2006). Psychologists who study the interrelationships between psychological factors and physical health are called **health psychologists**.

The study of the relationships between mind and body bring us to examining the role of stress in both mental and physical functioning. The term *stress* refers to pressure or

T F If concentrating on your schoolwork has become difficult because of the breakup of a recent romance, you could be experiencing a psychological disorder. (p. 143)

T F Your body continually conducts search-and-destroy missions to find and eradicate foreign invaders. (p. 145)

T F Surprisingly, stress makes you more resistant to the common cold. (p. 146)

T F Writing about traumatic experiences may be good for your physical and emotional health. (p. 146)

T F Immigrants show better psychological adjustment when they forsake their cultural heritage and adopt the values of the host culture. (p. 152)

T F Pregnant women with more optimistic attitudes tend to have higher birth-weight babies. (p. 155)

T F People can relieve the pain of migraine headaches by raising the temperature in a finger. (p. 160)

T F Compelling evidence now exists that psychotherapy can increase survival rates in cancer patients. (p. 165)

health psychologist A psychologist who studies the role of psychological factors in physical illness.

stress A demand made on an organism to adapt or adjust.

stressor A source of stress.

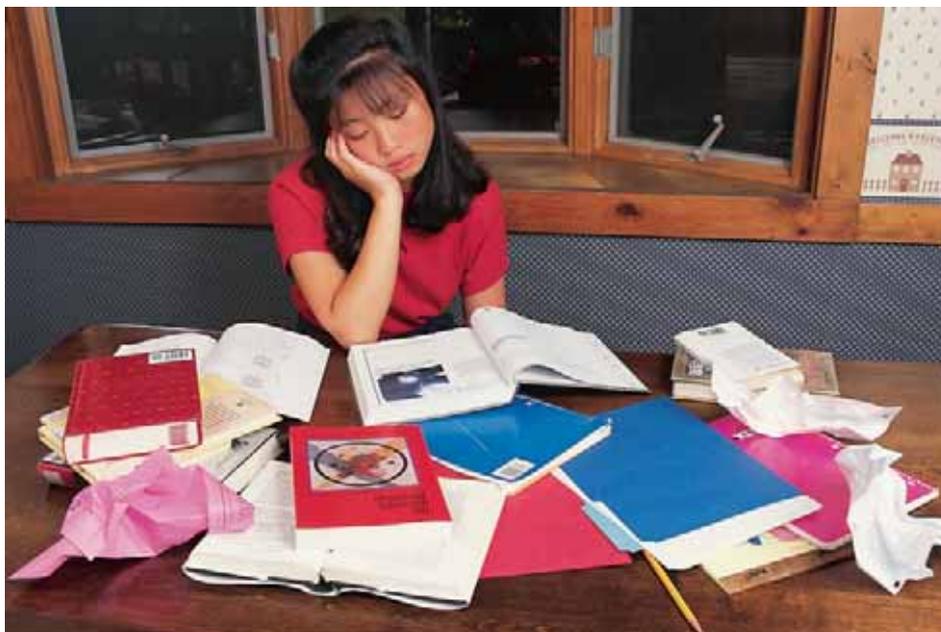
force placed on a body. In the physical world, tons of rocks that crash to the ground in a landslide cause stress on impact, forming indentations or craters when they land. In psychology, we use the term **stress** to refer to a pressure or demand that is placed on an organism to adapt or adjust. A **stressor** is a source of stress. Stressors (or stresses) include psychological factors, such as examinations in school and problems in social relationships, and life changes, such as the death of a loved one, divorce, or a job termination. They also include daily hassles, such as traffic jams, and physical environmental factors, such as exposure to extreme temperatures or noise levels. The term *stress* should be distinguished from *distress*, which refers to a state of physical or mental pain or suffering. Some amount of stress is probably healthy for us; it helps keep us active and alert. But stress that is prolonged or intense can overtax our coping ability and lead to states of emotional distress, such as anxiety or depression, and to physical complaints, such as fatigue and headaches. A recent survey by the American Psychological Association showed that 43% of adult Americans report suffering adverse health effects from stress (American Psychological Association, 2006).

Stress is implicated in a wide range of physical and psychological problems. We begin our study of the effects of stress by discussing a category of psychological disorders called *adjustment disorders*, which involve maladaptive reactions to stress. We then consider the role of stress and other psychological and sociocultural factors in physical disorders.

ADJUSTMENT DISORDERS

adjustment disorder A maladaptive reaction to an identified stressor, characterized by impaired functioning or emotional distress that exceeds what would normally be expected.

Adjustment disorders are the first psychological disorders we discuss in this book, and they are among the mildest. An **adjustment disorder** is a maladaptive reaction to an identified stressor that develops within a few months of the onset of the stressor. According to the *DSM*, the maladaptive reaction is characterized by significant impairment in social, occupational, or academic functioning or by states of emotional distress that exceed those normally induced by the stressor. Prevalence estimates of the rates of the disorder in the population vary widely. However, the disorder is common among people seeking outpatient mental health care, with estimates indicating that between 5% and 20% of people receiving outpatient mental health services present with a diagnosis of adjustment disorder (APA, 2000).



Difficulty in concentrating or adjustment disorder? An adjustment disorder is a maladaptive reaction to a stressor that may take the form of impaired functioning at school or at work, such as having difficulties keeping one's mind on one's studies.

TABLE 5.1

Subtypes of Adjustment Disorders

Disorder	Chief Features
Adjustment Disorder with Depressed Mood Adjustment Disorder with Anxiety	Sadness, crying, and feelings of hopelessness Worrying, nervousness, and jitters (or in children, separation fears from primary attachment figures)
Adjustment Disorder with Mixed Anxiety and Depressed Mood	A combination of anxiety and depression
Adjustment Disorder with Disturbance of Conduct	Violation of the rights of others or violation of social norms appropriate for one's age. Sample behaviors include vandalism, truancy, fighting, reckless driving, and defaulting on legal obligations (e.g., stopping alimony payments)
Adjustment Disorder with Mixed Disturbance	Both emotional disturbance, such as depression or anxiety, and conduct disturbance (as described above)
Adjustment Disorder Unspecified	A residual category that applies to cases not classifiable in one of the other subtypes

Source: Adapted from the *DSM-IV-TR* (APA, 2000).

If your relationship with someone comes to an end (an identified stressor) and your grades are falling off because you are unable to keep your mind on schoolwork, you may fit the bill for an adjustment disorder. If Uncle Harry has been feeling down and pessimistic since his divorce from Aunt Jane, he too may be diagnosed with an adjustment disorder. So too might Cousin Billy if he has been cutting classes and spraying obscene words on the school walls or showing other signs of disturbed conduct. There are several subtypes of adjustment disorders that vary in terms of the type of maladaptive reaction (see Table 5.1).

The concept of “adjustment disorder” as a *mental disorder* highlights some of the difficulties in attempting to define what is normal and what is not. When something important goes wrong in life, we should feel bad about it. If there is a crisis in business, if we are victimized by a crime, or if there is a flood or a devastating hurricane, it is understandable that we might become anxious or depressed. There might, in fact, be something more seriously wrong with us if we did not react in a “maladaptive” way, at least temporarily. However, if our emotional reaction exceeds an expected response, or our ability to function is impaired (e.g., avoidance of social interactions, difficulty getting out of bed, or falling behind in schoolwork), then a diagnosis of adjustment disorder may be indicated. Thus, if you are having trouble concentrating on your schoolwork following the breakup of a romantic relationship and your grades are slipping, you may have an adjustment disorder.

For the diagnosis to apply, the stress-related reaction must not be sufficient to meet the diagnostic criteria for other clinical syndromes, such as anxiety disorders or mood disorders (see Chapters 6 and 8). The maladaptive reaction may be resolved if the stressor is removed or the individual learns to cope with it. If the maladaptive reaction lasts for more than 6 months after the stressor (or its consequences) have been removed, the diagnosis may be changed. Although the *DSM* system distinguishes adjustment disorder from other clinical syndromes, it may be difficult to identify distinguishing features of adjustment disorders that are distinct from other disorders, such as depression (Casey et al., 2006).

TRUTH or FICTION

If concentrating on your schoolwork has become difficult because of the breakup of a recent romance, you could be experiencing a psychological disorder.

TRUE. If you have trouble concentrating on your schoolwork following the breakup of a romantic relationship, you may have a mild type of psychological disorder called an adjustment disorder.

STRESS AND ILLNESS

Psychological sources of stress not only diminish our capacity for adjustment, but also may adversely affect our health. Many visits to physicians, perhaps even most, can be traced to stress-related illness. Stress is associated with an increased risk of various types of physical illness, ranging from digestive disorders to heart disease.

The field of *psychoneuroimmunology* studies relationships between psychological factors, especially stress, and the workings of the endocrine system, the immune system, and the nervous system (Kiecolt-Glaser et al., 2002). Here we examine what we've learned about these relationships.

Stress and the Endocrine System

endocrine system The system of ductless glands that secrete hormones directly into the bloodstream.

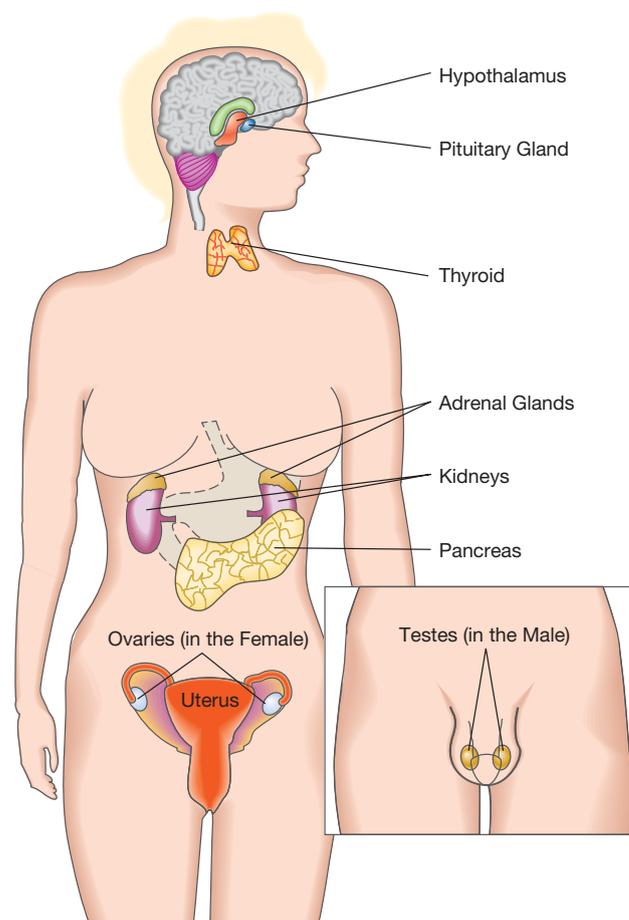
hormones Substances secreted by endocrine glands that regulate body functions and promote growth and development.

Stress has a domino effect on the **endocrine system**, the body's system of glands that release their secretions, called **hormones**, directly into the bloodstream. (Other glands, such as the salivary glands that produce saliva, release their secretions into a system of ducts.) The endocrine system consists of glands distributed throughout the body. Figure 5.1 shows the major endocrine glands in the body.

Several endocrine glands are involved in the body's response to stress. First, the hypothalamus, a small structure in the brain, releases a hormone that stimulates the nearby pituitary gland to secrete *adrenocorticotrophic hormone* (ACTH). ACTH, in turn, stimulates the adrenal glands, which are located above the kidneys. Under the influence of ACTH, the outer layer of the adrenal glands, called the *adrenal cortex*, releases a group of hormones called *cortical steroids* (cortisol and cortisone are examples). Cortical steroids (also called *corticosteroids*) have a number of functions in the body. They boost resistance to stress, foster muscle development, and induce the liver to

FIGURE 5.1 Major glands of the endocrine system.

The glands of the endocrine pour their secretions—called hormones—directly into the bloodstream. Although hormones may travel throughout the body, they act only on specific receptor sites. Many hormones are implicated in stress reactions and various patterns of abnormal behavior.



release sugar, which provides needed bursts of energy for responding to a threatening stressor (for example, a lurking predator or assailant) or an emergency situation. They also help the body defend against allergic reactions and inflammation.

The sympathetic branch of the autonomic nervous system, or ANS, stimulates the inner layer of the adrenal glands, called the *adrenal medulla*, to release a mixture of epinephrine (adrenaline) and norepinephrine (noradrenaline). These chemicals function as hormones when released into the bloodstream. Norepinephrine is also produced in the nervous system, where it functions as a neurotransmitter. Together epinephrine and norepinephrine mobilize the body to deal with a threatening stressor by accelerating the heart rate and by also stimulating the liver to release stored glucose (sugar), making energy available where it can be of use in protecting ourselves in a threatening situation.

The stress hormones produced by the adrenal glands help the body prepare to cope with an impending threat or stressor. Once the stressor has passed, the body returns to a normal state. This is perfectly normal and adaptive. However, when stress is enduring or recurring, the body regularly pumps out stress hormones and mobilizes other systems, which over time can tax the body's resources and impair health (Gabb et al., 2006; Kemeny, 2003). Chronic or repetitive stress can damage many bodily systems, including the cardiovascular system (heart and arteries) and the immune system.

Stress and the Immune System

Given the intricacies of the human body and the rapid advance of scientific knowledge, we might consider ourselves dependent on highly trained medical specialists to contend with illness. Actually our bodies cope with most diseases on their own, through the functioning of the immune system.

The **immune system** is the body's system of defense against disease. It combats disease in a number of ways (Jiang & Chess, 2006). Your body is constantly engaged in search-and-destroy missions against invading microbes, even as you're reading this page. Millions of white blood cells, or *leukocytes*, are the immune system's foot soldiers in this microscopic warfare. Leukocytes systematically envelop and kill pathogens such as bacteria, viruses, and fungi, worn-out body cells, and cells that have become cancerous.

Leukocytes recognize invading pathogens by their surface fragments, called *antigens*, literally *antibody generators*. Some leukocytes produce *antibodies*, specialized proteins that lock into position on an antigen, marking them for destruction by specialized "killer" lymphocytes that act like commandos on a search-and-destroy mission (Greenwood, 2006; Kay, 2006).

Special "memory lymphocytes" (lymphocytes are a type of leukocyte) are held in reserve rather than marking foreign bodies for destruction or going to war against them. They can remain in the bloodstream for years and form the basis for a quick immune response to an invader the second time around.

Although occasional stress may not impair our health, chronic or repetitive stress can eventually weaken the body's immune system (Epstein, 2003; Kemeny, 2003). A weakened immune system increases our susceptibility to many illnesses, including the common cold and the flu, and may increase the risk of developing chronic diseases, including cancer.

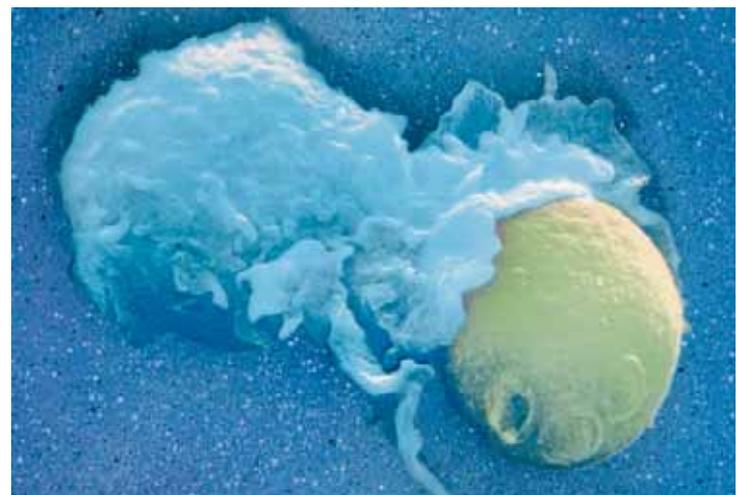
Psychological stressors can dampen the response of the immune system, especially when the stress is intense or prolonged (Segerstrom & Miller, 2004). Even relatively brief periods of stress, such as final exam time, can weaken the immune system, although these effects are more limited than those associated with chronic or prolonged stress. The kinds of life stressors that can take a toll on the immune system and leave us more vulnerable to disease include marital conflict, divorce, and chronic unemployment (e.g., Kiecolt-Glaser et al., 2002). Traumatic stress,

immune system The body's system of defense against disease.

TRUTH or FICTION

Your body continually conducts search-and-destroy missions to find and eradicate foreign invaders.

TRUE. Your immune system is always on guard against invading microbes and continuously dispatches specialized white blood cells to identify and eliminate infectious organisms.



The war within. White blood cells, shown here (colored purple) attacking and engulfing a pathogen, form the major part of the body's system of defense against bacteria, viruses, and other invading organisms.



Stress and the common cold. Are you more likely to develop a cold during stressful times in your life? Investigators find that people under severe stress are more likely to become sick after exposure to cold viruses.

TRUTH or FICTION

Surprisingly, stress makes you more resistant to the common cold.

✓ **FALSE.** Stress increases the risk of developing a cold.

TRUTH or FICTION

Writing about traumatic experiences may be good for your physical and emotional health.

✓ **TRUE.** Talking or writing about your feelings can help enhance both psychological and physical well-being.

such as exposure to earthquakes, hurricanes, or other natural or technological disasters, or to terrorist attacks or other forms of violence, can also impair immunological functioning (Solomon et al., 1997).

Scientists recently discovered that one way chronic stress damages the body's immune system is by increasing levels of a chemical in the body called *interleukin-6* (Kiecolt-Glaser et al., 2003). Sustained high levels of this chemical are linked to inflammation, which in turn can contribute to the development of many disorders, including cardiovascular disease, cancer, and arthritis.

Social support appears to moderate the harmful effects of stress on the immune system. For example, investigators in two landmark studies found that medical and dental students with large numbers of friends showed better immune functioning than students with fewer friends (Jemmott et al., 1983; Kiecolt-Glaser et al., 1984). Consider too the results of a classic study reporting that lonely students showed greater suppression of immune responses than did students with more social support (Glaser et al., 1985).

Exposure to stress is also linked to greater risk of developing the common cold. In another landmark study in this field, people who reported high levels of daily stress, such as pressures at work, showed low blood levels of antibodies that fend off cold viruses (Stone et al., 1994). A later study by the same research group showed that more sociable people had greater resistance to developing the common cold than their less sociable peers after these groups voluntarily received injections of a cold virus (Cohen et al., 2003). These results point to a possible role of socialization or social support in buffering the effects of stress.

We should caution that much of the research in the field of psychoneuroimmunology is correlational. Researchers examine immunological functioning in relation to different indices of stress, but do not (nor would they!) directly manipulate stress to observe its effect on subjects' immune systems or general health. Correlational research helps us better understand relationships between variables and may point to possible underlying causal factors, but does not in itself demonstrate causal connections.

Investigators have learned that expressing emotions through writing about stressful or traumatic events has positive effects on both psychological and physical health and well-being (Frattaroli, 2006). Evidence shows that people assigned to an expressive writing program show fewer psychological and physical symptoms than do control participants (Low, Stanton, & Danoff-Burg, 2006; Sloan & Marx, 2005; Sloan et al., 2007; Smyth & Pennebaker, 2001). In addition, terminally ill cancer patients asked to write about their cancer had less sleep disturbance than did control patients who wrote about neutral topics (de Moor et al., 2003).

Why might expressive writing produce such beneficial effects? One possibility is that keeping thoughts and feelings about traumatic events tightly under wraps places a stressful burden on the autonomic nervous system, which in turn may weaken the immune system and thereby increase susceptibility to stress-related disorders. We should caution, however, that more research is needed before we can reach any definite conclusions about the effects of writing or other psychological interventions on the workings of the immune system (Miller & Cohen, 2001).

Terrorism-Related Trauma

The September 11, 2001 terrorist attacks on America changed everything. Before 9/11 we may have felt secure in our homes, offices, and other public places from the threat of terrorism. But now, terrorism looms as a constant threat to our safety and sense of security. Still, we endeavor to maintain a sense of normalcy in our lives. We travel and attend public gatherings, although the ever-present security regulations are a constant reminder of the heightened concern about terrorism. Many of us who were directly affected by 9/11 or lost friends or loved ones may still be trying to cope with the emotional consequences of that day. Many survivors, like survivors of other forms of trauma, such as floods and tornadoes, may experience prolonged, maladaptive stressful reactions, such as posttraumatic stress disorder (PTSD) (discussed in Chapter 6).

TABLE 5.2

Stress-Related Symptoms Reported by Americans in the Week Following the Terrorists Attacks of September 11, 2001

	Depression	Lack of Focus (difficulty concentrating)	Insomnia
Men	62	44	26
Women	79	53	40
Genders combined	71	49	33

Source: Pew Research Center. (2002, September 20). *American psyche reeling from terror attacks*. www.people-press.org/terrorist01rpt.htm.

Evidence from a recent community-based study in Michigan shows that the number of suicide attempts jumped in the months following the 9/11 attacks (Starkman, 2006). But even those free of serious mental health problems may be emotionally affected in one way or another by the events of 9/11 (Galea et al., 2002).

Most Americans reported feeling depressed in the immediate aftermath of 9/11, and a substantial proportion reported difficulty concentrating or suffered from insomnia (see Table 5.2). Not surprisingly, factors such as direct exposure to the attacks in New York City and Washington, D.C., and time spent viewing TV coverage of the attacks were linked to higher levels of posttraumatic stress disorder (PTSD) symptoms (Schlenger et al., 2002). Although most people exposed to traumatic events do not develop PTSD, many do experience symptoms associated with the disorder, such as difficulties concentrating and high levels of arousal. In more than 60% of households in New York City, parents reported that their children were upset by the attacks. Since 9/11, many of us have become sensitized to the emotional consequences of traumatic stress. The accompanying *A Closer Look* feature focuses on the warning signs of trauma-related stress.

People vary in their reactions to traumatic stress. Investigators trying to pinpoint factors that account for resiliency in the face of stress suggest that positive emotions can play an important role. Evidence gathered since 9/11 shows that experiencing positive emotions such as feelings of gratitude and love, helped buffer the effects of stress (Fredrickson et al., 2003).

The General Adaptation Syndrome

Stress researcher Hans Selye (1976) coined the term **general adaptation syndrome (GAS)** to describe a common biological response pattern to prolonged or excessive stress. Selye pointed out that our bodies respond similarly to many kinds of unpleasant stressors, whether the source of stress is an invasion of microscopic disease organisms, a divorce, or the aftermath of a flood. The GAS model suggests that our bodies, under stress, are like clocks with alarm systems that do not shut off until their energy is perilously depleted.

The GAS consists of three stages: the alarm reaction, the resistance stage, and the exhaustion stage. Perception of an immediate stressor (for example, a car that swerves in front of your own on the highway) triggers the **alarm reaction**. The alarm reaction mobilizes the body to prepare for challenge or stress. We can think of it as the body's first line of defense against a threatening stressor. The body reacts with a complex, integrated response involving both the central nervous system and endocrine system (Ellis, Jackson, & Boyce, 2006).

In 1929, Harvard University physiologist Walter Cannon termed this response pattern the **fight-or-flight reaction**. We noted earlier how the endocrine system responds to stress. During the alarm reaction, the adrenal glands, under control by the pituitary

general adaptation syndrome (GAS)

The body's three-stage response to states of prolonged or intense stress.

alarm reaction The first stage of the GAS, characterized by heightened sympathetic activity.

fight-or-flight reaction The inborn tendency to respond to a threat by either fighting or fleeing.



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resistance stage The second stage of the GAS, involving the body's attempt to withstand prolonged stress and preserve resources.



A CLOSER LOOK

Warning Signs of Trauma-Related Stress

People normally experience psychological distress in the face of trauma. If anything it would be abnormal to remain blasé at a time of crisis or disaster. But stress reactions that linger beyond a month and affect an individual's ability to function in everyday life can be a cause for concern. The American Psychological Association lists the following symptoms as warning signs of traumatic stress reactions.

- Recurring thoughts or nightmares about the event
- Having trouble sleeping or changes in appetite
- Experiencing anxiety and fear, especially when exposed to events or situations reminiscent of the trauma
- Being on edge, being easily startled, or becoming overly alert
- Feeling depressed, sad, and having low energy
- Experiencing memory problems including difficulty in remembering aspects of the trauma
- Feeling "scattered" and unable to focus on work or daily activities
- Having difficulty making decisions
- Feeling irritable, easily agitated, or angry and resentful

TABLE 5.3

Stress-Related Changes in the Body Associated with the Alarm Reaction

Corticosteroids are released.
 Epinephrine and norepinephrine are released.
 Heart rate, respiration rate, and blood pressure increase.
 Muscles tense.
 Blood shifts from the internal organs to the skeletal muscles.
 Digestion is inhibited.
 Sugar is released by the liver.
 Blood-clotting ability is increased.
 Stress triggers the alarm reaction. The reaction is defined by secretion of corticosteroids, catecholamines, and activity of the sympathetic branch of the ANS. The reaction is defined by secretion of stress hormones and increased activity of the sympathetic branch of the ANS.

gland in the brain, pump out cortical steroids and stress hormones that help mobilize the body's defenses (see Table 5.3).

The fight-or-flight reaction most probably helped our early ancestors cope with the many perils they faced. The reaction may have been provoked by the sight of a predator or by a rustling sound in the undergrowth. But our ancestors usually did not experience prolonged activation of the alarm reaction. Once a threat was eliminated, the body reinstated a lower level of arousal. Our ancestors fought off predators or fled quickly; then their bodies returned to the normal, nonaroused state. Sensitive alarm reactions increased their chances of survival. Yet our ancestors did not remain for long in a state of heightened arousal after the immediate danger was past. In contrast, people today are continually bombarded with stressors—everything from battling traffic in the morning to balancing school and work, or rushing from job to job. Consequently, our alarm system is turned on much of the time, which may eventually increase the likelihood of developing stress-related disorders.

When a stressor is persistent, we progress to the **resistance stage**, or adaptation stage, of the GAS. Endocrine and sympathetic system responses (release of stress hormones,

- Feeling emotionally "numb," withdrawn, disconnected or different from others
- Spontaneously crying, feeling a sense of despair and hopelessness
- Feeling extremely protective of, or fearful for, the safety of loved ones
- Not being able to face certain aspects of the trauma, and avoiding activities, places, or even people that remind you of the event

If you or a loved one has experienced these symptoms for more than a month, it would be worthwhile to seek professional mental health assistance. Assistance is available through your college health services (for registered students) or through networks of trained professionals. For more information or a referral, you may contact your local American Red Cross chapter or the American Psychological Association at 202-336-5800. Also see *A Closer Look* in Chapter 4 for guidelines to follow in choosing a mental health professional.

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for example) remain at high levels, but not quite as high as during the alarm reaction. During this stage the body tries to renew spent energy and repair damage. But when stressors continue or new ones enter the picture, we may progress to the final stage of the GAS, which is called the **exhaustion stage**. Although there are individual differences in capacity to resist stress, all of us will eventually exhaust our bodily resources. The exhaustion stage is characterized by dominance of the parasympathetic branch of the ANS. Consequently, our heart and respiration rates decelerate. Do we benefit from the respite? Not necessarily. If the source of stress persists, we may develop what Selye termed “diseases of adaptation.” These range from allergic reactions to heart disease—and, at times, even death. The lesson is clear: Chronic stress can damage our health, leaving us more vulnerable to a range of diseases and other physical health problems.

Cortical steroids are perhaps one reason that persistent stress may eventually lead to health problems. Although cortical steroids help the body cope with stress, they also suppress the activity of the immune system. Cortical steroids have negligible effects when they are only released periodically. Continuous secretion, however, weakens the immune system by disrupting the production of antibodies, which can over time increase vulnerability to colds and other infections.

Although Selye’s model speaks to the general response pattern of the body under stress, different biological processes may respond to particular kinds of stressors. For example, persistent exposure to excessive noise may invoke different bodily processes than other sources of stress, such as overcrowding, or psychological sources of stress, such as divorce or separation.

Stress and Life Changes

Researchers have investigated the stress–illness connection by quantifying life stress in terms of life changes (also called *life events*). Life changes are sources of stress because they force us to adjust. They include both positive events, such as getting married, and negative events, such as the death of a loved one. You can gain insight into the level of stressful life changes you may have experienced during the past year by completing the College Life Stress Inventory on page 150.

Evidence shows that people who experience greater numbers of life changes are more likely to suffer from psychological and physical health problems (Dohrenwend, 2006). Again, we need to be cautious when interpreting these findings. The reported links are correlational and not experimental. In other words, researchers did not (and would not!) assign subjects to conditions in which they were exposed to either a high or low level of life changes to see what effects these conditions might have on their health over time. Rather, existing data are based on observations of relationships, say, between life changes on the one hand and physical health problems on the other. Such relationships are open to other interpretations. It could be that physical symptoms are sources of stress in themselves and lead to more life changes. Physical illness may cause disruptions of sleep or financial burdens, and so forth. Hence, in some cases at least, the causal direction may be reversed: Health problems may lead to life changes. We can’t yet tease out the possible cause-and-effect relationships.

Although both positive and negative life changes can be

exhaustion stage The third stage of the GAS, characterized by lowered resistance, increased parasympathetic activity, and eventual physical deterioration.



For better or for worse. Life changes such as marriage and the death of loved ones are sources of stress that require adjustment. The death of a spouse may be one of the most stressful life changes that people ever face.

QUESTIONNAIRE

Going Through Changes



How stressful has your life been lately? The College Life Stress Inventory contains a listing of stressful events that college students may face. Circle each of the events that you have experienced in the past year. Then compute your total, and look at the guide at the end of the chapter to interpret your score.

EVENT	STRESS RATING	EVENT	STRESS RATING
Being raped	100	Drunk driving	82
Finding out that you are HIV-positive	100	Sense of overload in school or work	82
Depression or crisis in your best friend	73	Two exams in one day	80
Difficulties with parents	73	Cheating on your boyfriend or girlfriend	77
Talking in front of a class	72	Getting married	76
Lack of sleep	69	Negative consequences of drinking or drug use	75
Change in housing situation (hassles, moves)	69	Declaring a major or concerns about future plans	65
Competing or performing in public	69	A class you hate	62
Getting in a physical fight	66	Drinking or use of drugs	61
Difficulties with a roommate	66	Confrontations with professors	60
Job changes (applying, new job, work hassles)	65	Starting a new semester	58
Being accused of rape	98	Going on a first date	57
Death of a close friend	97	Registering for classes	55
Death of a close family member	96	Maintaining a steady dating relationship	55
Contracting a sexually transmitted disease (other than AIDS)	94	Commuting to campus or work, or both	54
Concerns about being pregnant	91	Peer pressures	53
Finals week	90	Being away from home for the first time	53
Concerns about your partner being pregnant	90	Getting sick	52
Oversleeping for an exam	89	Concerns about your appearance	52
Flunking a class	89	Getting straight As	51
Having a boyfriend or girlfriend cheat on you	85	A difficult class that you love	48
Ending a steady dating relationship	85	Making new friends; getting along with friends	47
Serious illness in a close friend or family member	85	Fraternity or sorority rush	47
Financial difficulties	84	Falling asleep in class	40
Writing a major term paper	83	Attending an athletic event (e.g., football game)	20
Being caught cheating on a test	83		

Source: Renner, M. J., & Mackin, R. S. (1998). "A life stress instrument for classroom use." *Teaching of Psychology*, 25, 46–48. Reprinted with permission.

stressful, it is reasonable to assume that positive life changes are generally less disruptive than negative life changes. In other words, marriage tends to be less stressful than divorce or separation. Or to put it another way, a change for the better may be a change, but it is less of a hassle.

Acculturative Stress: Making It in America

Should Hindu women who immigrate to the United States give up the sari in favor of California casuals? Should Russian immigrants continue to teach their children Russian in the home? Should African American children be acquainted with the music and art of African peoples? Should women from traditional Islamic societies remove the veil and enter the competitive workplace? How do the stresses of acculturation affect the psychological well-being of immigrants and their families?

Sociocultural theorists have alerted us to the importance of accounting for social stressors in explaining abnormal behavior. One of the primary sources of stress imposed on immigrant groups, or on native groups living in the larger mainstream culture, is the need to adapt to a new culture. We can define *acculturation* as the process of adaptation by which immigrants, native groups, and ethnic minority groups adjust to the new culture or majority culture through making behavioral and attitudinal changes. **Acculturative stress** is pressure that results from the demands placed on immigrant, native, and ethnic minority groups to adjust to life in the mainstream culture.

acculturative stress Pressure to adjust to a host or mainstream culture.

Consider the challenges faced by Hispanic Americans. There are two general theories of the relationships between acculturation and adjustment. One theory, dubbed the *melting pot theory*, holds that acculturation helps people adjust to living in the host culture. From this perspective, Hispanic Americans might adjust better by replacing Spanish with English and adopting the values and customs associated with mainstream American culture. A competing theory, the *bicultural theory*, holds that psychosocial adjustment is fostered by identification with both traditional and host cultures. That is, the ability to adapt to the ways of the new society, combined with a supportive cultural tradition and a sense of ethnic identity, may predict good adjustment. From a bicultural perspective, immigrants maintain their ethnic identity and traditional values while learning to adapt to the language and customs of the host culture.

If we are to investigate acculturation and its relationship to mental health we first must be able to measure it. Measures of acculturation vary. In assessing acculturation among Hispanic Americans, for example, researchers assess variables such as the degree to which people favor English or Spanish in social situations, when reading, or while watching TV; preferences for types of food and styles of clothing; and self-perceptions of ethnic identity.

We've learned that relationships between acculturation and psychological adjustment are complex. Some research links higher acculturation status to a greater likelihood of developing psychological problems, whereas other research shows the opposite to be the case. First, let us note some findings from research with Hispanic (Latino) Americans that highlight psychological risks associated with acculturation.

- *Increased risk of heavy drinking among women.* Evidence shows that highly acculturated Hispanic American women are more likely than relatively unacculturated Hispanic American women to become heavy drinkers (Caetano, 1987). In Latin American cultures, men tend to drink much more alcohol than women, largely because gender-based cultural prohibitions against drinking constrain alcohol use among women. These constraints appear to have loosened among Hispanic American women who adopt "mainstream" U.S. attitudes and values.
- *Increased risk of delinquency, smoking, and sexual intercourse among adolescents.* Third-generation Mexican American male adolescents—who are more likely to be acculturated than first- or second-generation Mexican Americans—were at higher risk of delinquency (Buriel, Calzada, & Vasquez, 1982). Higher levels of acculturation are also linked to increased risks of smoking (Ribisl et al., 2000; Unger, Cruz, & Rohrbach, 2000) and participation in sexual intercourse among Latino teens (Adam et al., 2005).
- *Increased risk of disturbed eating behaviors.* Highly acculturated Hispanic American high school girls were more likely than their less-acculturated counterparts to show test scores associated with anorexia (an eating disorder characterized by excessive weight loss and fears of becoming fat—see Chapter 10) on an eating attitudes questionnaire (Pumariega, 1986). Acculturation apparently made these girls more vulnerable to the demands of striving toward the contemporary American ideal of the (very!) slender woman.

From this evidence, we might gather that acculturation has a negative influence on psychological adjustment. Acculturation may contribute to an erosion of traditional family networks and values, which in turn may increase susceptibility to psychological disorders in the face of stress (Ortega et al., 2000). On the other hand, we also have evidence of psychological benefits of a pattern of bicultural identification in which the individual makes efforts to adjust to the host culture while also maintaining an identity with the traditional culture. Consider a study of Mexican American elders (Zamanian et al., 1992). Those who were minimally acculturated showed higher levels of depression than did those who were either acculturated or bicultural. The bicultural and highly acculturated groups were similar in levels of depression, whereas those who were minimally acculturated had a greater risk of depression. However, people with a bicultural identity in which they maintained identification with their original culture, while also adapting to the new one, experienced no greater vulnerability to depression.

Why would low acculturation status be linked to increased risk of depression? The answer may be that low acculturation status is often a marker for low socioeconomic



Maintaining ethnic identity. Some studies point to psychological benefits in immigrant groups that adapt to the host culture while maintaining ethnic identity.

status (SES). People who are minimally acculturated often face economic hardship and occupy the lower strata of socioeconomic status. Social stress resulting from financial difficulties, lack of proficiency in the host language, and limited economic opportunities add to the stress of adapting to the host culture, all of which may contribute to increased risk of depression and other psychological problems (Ryder, Alden, & Paulhus, 2000; Yeh, 2003). Not surprisingly, evidence shows that Mexican Americans who were more proficient in English generally had fewer signs of depression and anxiety than did their less English-proficient counterparts (Salgado de Snyder, 1987; Warheit et al., 1985). Yet socioeconomic status and language proficiency are not the only, nor necessarily the most important, determinants of mental health among immigrant groups. Consider the findings from a northern California sample that showed better mental health profiles among Mexican immigrants than among people of Mexican descent born in the United States, despite the greater socioeconomic disadvantages faced by the immigrant group (Vega et al., 1998).

It appears that “Americanization” may have damaging effects on mental health of Mexican Americans and that retention of cultural traditions may have a protective or “buffer” effect (Escobar, 1998).

In sum, the erosion of traditional family networks and traditional values that may accompany acculturation among immigrant groups might increase the risk of psychological problems (Ortega et al., 2000). Studies with other ethnic groups also point to the benefits of adapting to the host culture while maintaining ties to the traditional culture. Among Asian Americans, for example, investigators find that establishing contacts with the majority culture while maintaining traditional ethnic identity appears to generate less stress than withdrawal and separation from the host culture (Huang, 1994). Maintaining one’s ethnic identity also seems to hold a psychological benefit. Studies with Asian American adolescents show that those who with a strong ethnic identity are better adjusted psychologically and have higher self esteem than others who are less strongly identified with their traditional culture (Huang, 1994; Phinney & Alipuria, 1990). Let us also note that a recent study of Asian immigrant adolescents in the United States showed that feelings of being alienated from both cultures or feeling caught between the two—the United States and the traditional culture—can lead to mental health problems (Yeh, 2003).

Moreover, some outcomes need careful interpretation. For example, does the finding that highly acculturated Hispanic American women are more likely to drink heavily argue in favor of placing greater social constraints on women? Perhaps a loosening of restraints is a double-edged sword, and all people—male and female, Hispanic and non-Hispanic—encounter adjustment problems when they gain new freedoms.

Finally, we need to consider gender differences in acculturation. In one study, female immigrants showed higher levels of depression than male immigrants (Salgado de Snyder, Cervantes, & Padilla, 1990). Their higher levels of depression may be linked to the greater level of stress women typically encounter in adjusting to changes in family patterns and personal issues, such as the greater freedom of gender roles for men and women in U.S. society. Because they were reared in cultures in which men are expected to be breadwinners and women homemakers, immigrant women may encounter more family and internal conflict when they enter the workforce, regardless of whether they work because of economic necessity or personal choice. Given these factors, we shouldn’t be surprised that wives in more acculturated Mexican American couples tend to report greater marital distress than those in less-aculturated couples (Negy & Snyder, 1997). The lead author of this study, psychologist Charles Negy of the University of Central Florida, explores the role of acculturation among Latinos in the *Controversies in Abnormal Psychology* feature on page 153.

TRUTH or FICTION

Immigrant groups show better psychological adjustment when they forsake their cultural heritage and adopt the values of the host culture.

FALSE. Retention of cultural traditions may have a protective or “buffer” effect against the stresses associated with adjusting to a new culture.



CONTROVERSIES IN ABNORMAL PSYCHOLOGY

Coming to America: The Case of Latinos

—CHARLES NEGY

As a young man of part Mexican American heritage, I worked in a grocery store in East Los Angeles and was intrigued by the wide range of people of Mexican ancestry I encountered. Many recent immigrants from Mexico seemed eager to practice the little English they knew and were interested in learning more about mainstream American culture. I also knew many immigrants, including many who had lived in California for more than 20 years, who spoke barely any English and hardly ever ventured beyond the local community.

When I entered graduate school it seemed natural for me to study acculturation among Latino or Hispanic Americans. Acculturation refers to adopting the values, attitudes, and behaviors of a host culture. In my early studies, I quickly observed what other researchers had already discovered; namely, that Latinos in the United States varied greatly in their degree of acculturation toward the U.S. culture. In general, the longer time they had lived in the United States, the more acculturated they tended to be, and the more acculturated they were, the more they resembled non-Hispanic Whites in their values, attitudes, and customs.

In my early studies (e.g., Negy & Woods, 1992a; 1993), I found that the more acculturated Mexican American college students were, the more similar their scores were to those of non-Hispanic Whites on standardized personality tests. I wasn't surprised to find that those who were more acculturated tended to come from higher socioeconomic backgrounds (Negy & Woods, 1992b). I also found that among lower-income Mexican American adolescents who showed signs of depression, the more acculturated they were, the more likely they were to have experienced thoughts of committing suicide (Rasmussen, Negy, Carlson, & Burns, 1997).

I later began a line of research examining ethnic differences in marital relationships by comparing Mexican American couples to (non-Hispanic) White couples and Mexican couples (Negy, & Snyder, 1997; Negy, Snyder, & Diaz-Loving, 2004). As a group, Mexican couples reported more verbal and/or physical aggression in their relationships than did Mexican American couples, who in turn reported more aggression in their relationships than did White couples. We also observed that Mexican American couples had more egalitarian (equal) relationships and higher levels of marital satisfaction than Mexican couples (Negy & Snyder, 2004). We learned from these findings that living in the United States was associated with relationship patterns among Mexican Americans that were closer to the Americanized ideal of mutual respect and shared decision-making. Our more recent research showed that the more acculturated Cuban Americans and Puerto Ricans were, the more positive attitudes they held toward mental illness (in terms of being treatable and being associated with less social stigma) and the more open they were to seeking professional therapy for themselves (Rojas-Vilches & Negy, in preparation).

Taken together, my research suggests that more highly acculturated Hispanic couples have less conflicted, more egalitarian, and more satisfying marriages. On the other hand, acculturation is also linked to some mental health problems, such as increased likelihood of suicidal thinking as a way of dealing with depression. This mixed picture of acculturation among Latinos is similar to

the complex and sometimes conflicting results from studies examining relationships between acculturation and mental health reported in this chapter.

We also observed in our study of Mexican American couples that more highly acculturated women reported less satisfaction with the sexual component of their relationships than did less well acculturated women. These findings lead us to wonder whether American culture imparts greater expectations of female sexual satisfaction in marriages that translate into lower satisfaction when these expectations are not fulfilled.

There are important issues to keep in mind when interpreting our research findings. For starters, the research is correlational in nature. As you may recall about correlational data, we cannot say whether one variable causes another variable. For example, based on the findings from my study of marital couples, I cannot conclude that acculturation is causally related to the development of more egalitarian marriages. It is possible that causation works in the opposite direction—that having an egalitarian marriage influences acculturation. How? We can speculate that Mexican Americans with more egalitarian relationships may be more accepted by mainstream society, and the more interactions they have within the general society, the more opportunities they have to acculturate. It may also be the case that having egalitarian marriages tends to be associated (correlated) with acculturation, but there is no causal link between the two.

Learning more about Hispanics' relationships, particularly in the context of acculturation and mental health, is important because for many Latinos, the family, including the marital relationship, is the cornerstone of their identity and functioning. Our research may help inform the treatment interventions clinicians can offer to Hispanic couples and families struggling with adjustment and acculturation challenges.

Critical Thinking

- Do you believe that it desirable for recent immigrants to balance assimilation into mainstream society and ethnic identity? Why or why not?
- How strong an influence is your own cultural or ethnic heritage in your life? Explain.



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Psychological Factors That Moderate Stress

Stress may be a fact of life, but the ways in which we handle stress help determine our ability to cope with it. Individuals react differently to stress depending on psychological factors such as the meaning they ascribe to stressful events. For example, whether a major life event, such as pregnancy, is a positive or negative stressor depends on a couple's desire for a child and their readiness to care for one. We can say the stress of pregnancy is moderated by the perceived value of children in a couple's eyes and their self-efficacy—their

confidence in their ability to raise a child. As we see next, psychological factors such as coping styles, self-efficacy expectancies, psychological hardiness, optimism, social support, and ethnic identity may moderate or buffer the effects of stress.

Styles of Coping What do you do when faced with a serious problem? Do you pretend it does not exist? Like Scarlett O’Hara in the classic film *Gone With the Wind*, do you say to yourself, “I’ll think about it tomorrow,” and then banish it from your mind? Or do you take charge and confront it squarely?

Pretending that problems do not exist is a form of denial. Denial is an example of **emotion-focused coping** (Lazarus & Folkman, 1984). In emotion-focused coping, people take measures that immediately reduce the impact of the stressor, such as denying its existence or withdrawing from the situation. Emotion-focused coping, however, does not eliminate the stressor (a serious illness, for example) or help the individual develop better ways of managing it. In **problem-focused coping**, by contrast, people examine the stressors they face and do what they can to change them or modify their own reactions to render stressors less harmful. These basic styles of coping—emotion-focused and problem-focused—have been applied to ways in which people respond to illness.

Denial of illness can take various forms, including the following.

1. Failing to recognize the seriousness of the illness
2. Minimizing the emotional distress the illness causes
3. Misattributing symptoms to other causes (for example, assuming the appearance of blood in the stool represents nothing more than a local abrasion)
4. Ignoring threatening information about the illness

Denial can be dangerous to your health, especially if it leads to avoidance of, or noncompliance with, needed medical treatment. Avoidance is another form of emotion-based coping. Like denial, avoidance may deter people from complying with medical treatments, which can lead to a worsening of their medical conditions. Evidence supports the negative consequences of avoidant coping. In one study, people who had an avoidant style of coping with cancer (for example, by trying not to think or talk about it) showed greater disease progression when evaluated a year later than did people who more directly confronted the illness (Epping-Jordan, Compas, & Howell, 1994). Other investigators link avoidance coping to the later development of depression and to PTSD among combat veterans (Holahan et al., 2005; Stein et al., 2005).

Another form of emotion-focused coping, the use of wish-fulfillment fantasies, is also linked to poor adjustment in coping with serious illness. Examples of wish-fulfillment fantasies include ruminating about what might have been had the illness not occurred and longing for better times. Wish-fulfillment fantasy offers the patient no means of coping with life’s difficulties other than an imaginary escape.

Does this mean that people are invariably better off when they know all the facts concerning their illnesses? Not necessarily. Whether you will be better off knowing all the facts may depend on your preferred style of coping. A mismatch between the individual’s style of coping and the amount of information provided may hamper recovery. In one study, cardiac patients with a repressive style of coping (relying on denial) who received information about their conditions showed a higher incidence of medical complications than repressors who were largely kept in the dark (Shaw et al., 1985). Sometimes ignorance helps people manage stress—at least temporarily.

Problem-focused coping involves strategies that address the source of stress, such as seeking information about the illness through self-study and medical consultation. Information seeking may help the individual maintain a more optimistic frame of mind by creating an expectancy that the information will prove to be useful.

emotion-focused coping A coping style that attempts to minimize emotional responsiveness rather than deal with the stressor directly.

problem-focused coping A coping style that attempts to confront the stressor directly.

self-efficacy expectancies Beliefs in one’s ability to accomplish particular tasks.

Self-Efficacy Expectancies Self-efficacy expectancies refer to our expectations regarding our abilities to cope with the challenges we face, to perform certain behaviors skillfully, and to produce positive changes in our lives (Bandura, 1982, 1986).

We may be better able to manage stress, including the stress of coping with illness, if we feel confident (have higher self-efficacy expectancies) in our ability to cope effectively. A forthcoming exam may be more or less stressful depending on your confidence in your ability to achieve a good grade.

In a classic study, psychologist Albert Bandura and colleagues found that spider-phobic women showed high levels of the stress hormones epinephrine and norepinephrine when they interacted with the phobic object, such as by allowing a spider to crawl on their laps (Bandura et al., 1985). However, as their confidence or self-efficacy expectancies for coping with these tasks increased, the levels of these stress hormones declined. Epinephrine and norepinephrine arouse the body by way of the sympathetic branch of the ANS. They make us feel shaky, have “butterflies in the stomach,” and generally feel nervous. Because high self-efficacy expectancies appear to be associated with lower secretion of these stress hormones, people who believe they can cope with their problems may be less likely to feel nervous.

Psychological Hardiness Psychological hardiness refers to a cluster of traits that may help people manage stress. Suzanne Kobasa (1979) and her colleagues investigated business executives who resisted illness despite heavy burdens of stress. Three key traits distinguished the psychologically hardy executives (Kobasa, Maddi, & Kahn, 1982, pp. 169–170):

1. *Commitment.* Rather than feeling alienated from their tasks and situations, hardy executives involved themselves fully. That is, they believed in what they were doing.
2. *Challenge.* Hardy executives believed change was the normal state of things, not sterile sameness or stability for the sake of stability.
3. *Control over their lives* (Maddi & Kobasa, 1984). Hardy executives believed and acted as though they were effectual rather than powerless in controlling the rewards and punishments of life. In terms suggested by social-cognitive theorist Julian Rotter (1966), psychologically hardy individuals have an *internal locus of control*.

Psychologically hardy people appear to cope more effectively with stress by using more active, problem-solving approaches. They are also likely to report fewer physical symptoms and less depression in the face of stress than nonhardy people (Ouellette & DiPlacido, 2001; Pengilly & Dowd, 2000). Kobasa suggests that hardy people are better able to handle stress because they perceive themselves as *choosing* their stress-creating situations. They perceive the stressors they face as making life more interesting and challenging, not as simply burdening them with additional pressures. A sense of control is a key factor in psychological hardiness.

Optimism Seeing the proverbial glass as half full rather than half empty is linked to better outcomes in terms of both physical and psychological health. Among heart disease patients, optimistic attitudes are associated with less emotional distress; among cancer patients, optimism is associated with lower levels of emotional distress, better psychological adjustment, and lower levels of reported pain; and among pregnant women, it is linked to better birth outcomes, such as higher infant birth weights (Bjerklie, 2005; Carver et al., 2005; Shnek et al., 2001; Trunzo & Pinto, 2003).

Among pain patients, those expressing more pessimistic thoughts during flare-ups of pain tended to report more severe pain and distress (Gil et al., 1990). The pessimistic thoughts included, “I can no longer do anything,” “No one cares about my pain,” and “It isn’t fair I have to live this way.” Research to date shows only correlational links between optimism and health. Perhaps we shall soon learn whether learning to alter attitudes—to learn to see the glass as half filled—plays a causal role in maintaining or



Coping with stress. Psychologically hardy people appear to cope more effectively with stress by adopting active, problem-solving approaches and by perceiving themselves as choosing high-stress situations.

psychological hardiness A cluster of stress-buffering traits characterized by commitment, challenge, and control.

TRUTH or FICTION

Pregnant women with more optimistic attitudes tend to have higher birth-weight babies.

✓ **TRUE.** Yes, optimism in the mother is associated with better birth outcomes, including higher infant birth weights.



Ethnic pride as a moderator of the effects of stress. Pride in one's racial or ethnic identity may help the individual withstand the stress imposed by racism and intolerance.

positive psychology A growing contemporary movement within psychology that focuses on the positive attributes of human behavior.

restoring health. You can evaluate your own level of optimism by completing the Life Orientation Test in this section.

The study of optimism falls within a broader contemporary movement in psychology called **positive psychology**. The developers of this movement believe that psychology should focus more of its efforts on the positive aspects of the human experience, rather than just the deficit side of the human equation, such as problems of emotional disorders, drug abuse, and violence (Gable & Haidt, 2005; Lyubomirsky, Sheldon, & Schkade, 2005; Seligman et al., 2005; Simonton & Baumeister, 2005; Vallea, Huebner, & Suldo, 2006). Although we shouldn't turn away from the study of emotional problems, we need to explore how positive attributes, such as optimism, love, and hope, affect our ability to lead satisfying and fulfilling lives. Another positive aspect of the human experience is the ability to help others in need and be helped by others in turn, as in the case of social support.

Social Support The role of social support as a buffer against stress is well documented (e.g., Wills & Filer Fegan, 2001). In one study, having a broad network of social contacts was associated with greater resistance to developing an infection following exposure to a common cold virus (Cohen & Mannarino, 1997). The investigators believe that having a wide range of social contacts may help protect the body's immune system by serving as a buffer against stress.

Ethnic Identity African Americans, on the average, stand a greater risk than Euro Americans of suffering chronic health problems, such as obesity, hypertension, heart disease, diabetes, and certain types of cancer (Brown, 2006; "CDC Finds," 2005; Shields, Lerman, & Sullivan, 2005). The particular stressors that African Americans often face, such as racism, poverty, violence, and overcrowded living conditions, may contribute to their heightened risks of serious health-related problems. Yet African Americans often demonstrate a high degree of resilience in coping with stress (Cutrona et al., 2000). Among the factors that help buffer stress among African Americans are strong social networks of family and friends, beliefs in one's ability to handle stress (self-efficacy), coping skills, and ethnic identity. Interestingly, African Americans in a recent study who reported more active attempts to seek social support showed less physiological responsiveness to the effects of perceived racism, a significant life stressor, than did those who were low in support seeking (Clark, 2006).

Ethnic identity is associated with perceptions of a better quality of life among African Americans (Utsey et al., 2002) and appears to be more strongly related to psychological well-being among African Americans than among White Americans (Gray-Little & Hafdahl, 2000). Acquiring and maintaining pride in one's racial identity and cultural heritage may help African Americans and other ethnic minorities withstand stresses imposed by racism. Although more research is needed to elucidate the links among racial identity, self-esteem, and tolerance of stress, the available evidence suggests that African Americans who become alienated from their culture develop more negative self-images and stand a greater risk of developing not only physical and psychological disorders, but also academic underachievement and marital conflicts (Anderson, 1991).

PSYCHOLOGICAL FACTORS AND PHYSICAL DISORDERS

We noted at the start of the chapter that psychological factors can influence physical functioning. Here we take a closer look at the role of psychological factors in physical disorders.

QUESTIONNAIRE

The Life Orientation Test



Do you see the glass as half full or half empty? Do you expect bad things to happen or do you find the silver lining in every cloud? The Life Orientation Test can afford you insight as to how optimistic or pessimistic you are.

Directions: Indicate whether or not each of the items represents your feelings by writing a number in the blank space according to the following code. Then turn to the scoring key at the end of the chapter.

- 4 = strongly agree
- 3 = agree
- 2 = neutral
- 1 = disagree
- 0 = strongly disagree

1. _____ In uncertain times, I usually expect the best.
2. _____ It's easy for me to relax.
3. _____ If something can go wrong for me, it will.
4. _____ I always look on the bright side of things.
5. _____ I'm always optimistic about my future.
6. _____ I enjoy my friends a lot.
7. _____ It's important for me to keep busy.
8. _____ I hardly ever expect things to go my way.
9. _____ Things never work out the way I want them to.
10. _____ I don't get upset too easily.
11. _____ I'm a believer in the idea that "every cloud has a silver lining."
12. _____ I rarely count on good things happening to me.

Source: Questionnaire—The Life Orientation Test, from Scheier, M. F., & Carver, C. S., "Optimism, Coping, and Health: Assessment and implication of Generalized Outcome Expectancies," *Health Psychology*, 4, 1985, pp. 219–247. Reproduced with permission of Lawrence Erlbaum Associates Inc. in the format Textbook via Copyright Clearance Center.



A CLOSER LOOK

Psychological Methods for Lowering Arousal

Stress induces bodily responses such as excessive levels of sympathetic nervous system arousal, which if persistent may impair our ability to function optimally and possibly increase the risk of stress-related illnesses. Psychological treatments have been shown to lower states of bodily arousal that may be prompted by stress. In this feature, we consider two widely used psychological methods of lowering arousal: meditation and progressive relaxation.

MEDITATION

Meditation comprises several ways of narrowing consciousness to moderate the stressors of the outer world. Yogis (adherents to Yoga philosophy) study the design on a vase or a mandala. The ancient Egyptians riveted their attention on an oil-burning lamp, which is the inspiration for the tale of Aladdin's lamp. In Turkey, Islamic mystics called whirling dervishes fix on their motion and the cadences of their breathing. We've learned that meditation has measurable benefits in treating many psychological and physical disorders, especially those in which stress plays a contributing role, such as cardiovascular disorders (Walsh & Shapiro, 2006). For example, a recent clinical trial showed improvements in coronary heart disease risk factors, including lower blood pressure, among heart patients who practiced meditation (Paul-Labrador et al., 2006).

There are many meditation methods, but they share the common thread of narrowing one's attention by focusing on repetitive stimuli. Through passive observation, the regular person–environment connection is transformed. Problem solving, worry, planning, and routine concerns are suspended, and consequently, levels of sympathetic nervous system arousal are reduced.

Many thousands of Americans regularly practice *transcendental meditation (TM)*, a simplified kind of Indian meditation brought to the United States in 1959 by Maharishi Mahesh Yogi. Practitioners of TM repeat *mantras*—relaxing sounds such as *ieing* and *om*.

Benson (1975) studied TM practitioners ages 17 to 41—students, businesspeople, artists. His subjects included relative novices and veterans of 9 years of practice. Benson found that TM yields a *relaxation response* in many people. The relaxation response is characterized by reduced heart rate and metabolic rate and by lower blood pressure in people with hypertension (Benson, Manzetta, & Rosner, 1973; Gatchel, 2001). Meditators also tend to produce more alpha waves, which are brain waves connected with relaxation. Critics of meditation do not argue that meditation is without value; they suggest, instead, that meditation may have no distinct effects when compared to other forms of relaxation or even taking a restful break from a stressful routine.

In *mindfulness meditation*, a form of meditation practiced by Tibetan Buddhists, the person focuses on conscious experience (thoughts, feelings,

(continued)

(continued)

and sensations) on a moment-to-moment basis, without judging or evaluating the experience (Baer, 2003; Kabat-Zinn, 2003). This practice has been likened to observing the flow of a river. Mindfulness meditation shows promise in treating various physical and mental health problems, including chronic pain and stress, as well as improving psychological well-being and reducing relapse rates in depressed patients (Baer, 2003; Logsdon-Conradsen, 2002; Ma & Teasdale, 2004; Roemer & Orsillo, 2003).

Although there are differences among meditative techniques, the following suggestions illustrate some general guidelines.

1. Try meditation once or twice a day for 10 to 20 minutes at a time.
2. When you meditate, what you *don't* do is more important than what you do. So embrace a passive attitude: Tell yourself, "What happens, happens." In meditation, you take what you get. You don't *strive* for more. Striving of any kind hinders meditation.
3. Place yourself in a hushed, calming environment. For example, don't face a light directly.
4. Avoid eating for an hour before you meditate. Avoid caffeine (found in coffee, tea, many soft drinks, and chocolate) for at least 2 hours before meditation.
5. Get into a relaxed position. Modify it as needed. You can scratch or yawn if you feel the urge.
6. For a focusing device, you can concentrate on your breathing or sit in front of a serene object, such as a plant or incense. Benson suggests "perceiving" (not "mentally saying") the word *one* each time you breathe out. That is, think the word, but "less actively" than you normally would. Other researchers suggest thinking the word *in* as you breathe in and *out*, or *ah-h-h*, as you breathe out. They also suggest mantras, such as *ah-nam*, *rah-mah*, and *shi-rim*.
7. When preparing for meditation, repeat your mantra aloud many times—if you're using a mantra. Enjoy it. Then say it progressively more softly. Close your eyes. Focus on the mantra. Allow thinking the mantra to become more and more "passive" so you "perceive" rather than think it. Again, embrace your "what happens, happens" attitude. Keep on focusing on the mantra. It may become softer or louder, or fade and then reappear.
8. If unsettling thoughts drift in while you're meditating, allow them to "pass through." Don't worry about squelching them, or you may become tense.
9. Remember to take what comes. Meditation and relaxation cannot be forced. You cannot force the relaxing effects of meditation. Like sleep, you can only set the stage for it and then permit it to happen.
10. Let yourself drift. (You won't get lost.) What happens, happens.



Going with the flow.

Meditation is a popular method of managing the stresses of the outside world by reducing states of bodily arousal. This young woman practices yoga, a form of meditation. She "goes with the flow," allowing the distractions of her environment to, in a sense, "pass through." Contrast her meditative state with the apparently stressful features of the young man sitting behind her.

PROGRESSIVE RELAXATION

Progressive relaxation was originated by University of Chicago physician Edmund Jacobson in 1938. Jacobson noticed that people tense their muscles under stress, intensifying their uneasiness. They tend to be unaware of these contractions, however. Jacobson reasoned that if muscle contractions contributed to tension, muscle relaxation might reduce tension. But clients who were asked to focus on relaxing muscles often had no idea what to do.

Jacobson's method of progressive relaxation teaches people how to monitor muscle tension and relaxation. With this method, people first tense, then relax, selected muscle groups in the arms; facial area; the chest, stomach, and lower back muscles; the hips, thighs, and calves; and so on. The sequence heightens awareness of muscle tension and helps people differentiate feelings of tension from relaxation. The method is progressive in that people progress from one group of muscles to another in practicing the technique. Since the 1930s, progressive relaxation has been used by a number of behavior therapists, including Joseph Wolpe and Arnold Lazarus (1966).

The following instructions from Wolpe and Lazarus (1966, pp. 177–178) illustrate how the technique is applied to relaxing the arms. Relaxation should be practiced in a favorable setting. Settle back on a recliner, a couch, or a bed with a pillow. Select a place and time when you're unlikely to be disturbed. Make the room warm and comfortable. Dim sources of light. Loosen tight clothing. Tighten muscles about two thirds as hard as you could if you were trying your hardest. If you sense that a muscle could have a spasm, you are tightening too much. After tensing, let go of tensions completely.

Relaxation of Arms (time: 4–5 minutes)

Settle back as comfortably as you can. Let yourself relax to the best of your ability. . . . Now, as you relax like that, clench your right fist, just clench your fist tighter and tighter, and study the tension as you do so. Keep it clenched and feel the tension in your right fist, hand, forearm . . . and now relax. Let the fingers of your right hand become loose, and observe the contrast in your feelings. . . . Now let yourself go and try to become more relaxed all over. . . . Once more, clench your right fist really tight . . . hold it, and notice the tension again. . . . Now let go, relax; your fingers straighten out, and you notice the difference once more. . . . Now repeat that with your left fist. Clench your left fist while the rest of your body relaxes; clench that fist tighter and feel the tension . . . and now relax. Again enjoy the contrast. . . . Repeat that once more, clench the left fist, tight and tense. . . . Now do the opposite of tension—relax and feel the difference. Continue relaxing like that for a while. . . . Clench both fists tighter and together, both fists tense, forearms tense, study the sensations . . . and relax; straighten out your fingers and feel that relaxation. Continue relaxing your hands and forearms more and more. . . . Now bend your elbows and tense your biceps, tense them harder and study the tension feelings . . . all right, straighten out your arms, let them relax and feel that difference again. Let the relaxation develop. . . . Once more, tense your biceps; hold the tension and observe it carefully. . . . Straighten the arms and relax; relax to the best of your ability. . . . Each time, pay close attention to your feelings when you tense up and when you relax. Now straighten your arms, straighten them so that you feel most tension in the triceps muscles along the back of your arms; stretch your arms and feel that tension. . . . And now relax. Get your arms back into a comfortable position. Let the relaxation proceed on its own. The arms should feel comfortably heavy as you allow them to relax. . . . Straighten the arms once more so that you feel the tension in the triceps muscles; straighten them. Feel that tension . . . and relax. Now let's concentrate on pure relaxation in the arms without any tension. Get your arms comfortable and let them relax further and further. Continue relaxing your arms even further. Even when your arms seem fully relaxed, try to go that extra bit further; try to achieve deeper and deeper levels of relaxation.

Physical disorders in which psychological factors are believed to play a causal or contributing role have traditionally been termed **psychosomatic** disorders. The term *psychosomatic* is derived from the Greek roots *psyche*, meaning “soul” or “intellect,” and *soma*, which means “body.” Disorders such as asthma and headaches have traditionally been labeled as psychosomatic because of the belief that psychological factors play an important role in their development.

Ulcers are another ailment traditionally identified as a psychosomatic disorder. Ulcers affect about 1 in 10 people in the United States. However, their status as a psychosomatic disorder has been reevaluated in the light of recent landmark research showing that a bacterium, *H. pylori*, not stress or diet, is the major cause of the types of ulcers called *peptic ulcers*, which are sores in the lining of the stomach or upper part of the small intestine (Jones, 2006). Ulcers may arise when the bacterium damages the protective lining of the stomach or intestines. Treatment with a regimen of antibiotics may cure ulcers by attacking the bacterium directly. We don’t yet know why some people who harbor the bacterium develop ulcers and others do not. The virulence of the particular strain of *H. pylori* may determine whether infected people develop peptic ulcers. Stress may also play a role, although we lack definitive evidence that stress contributes to vulnerability (Jones, 2006).

The field of psychosomatic medicine explores health-related connections between the mind and the body. Today, evidence points to the importance of psychological factors in a much wider range of physical disorders than those traditionally identified as psychosomatic. In this section we discuss several traditionally identified psychosomatic disorders as well as other diseases in which psychological factors may play a role in the course or treatment of the disease—cardiovascular disease, cancer, and HIV/AIDS.

Headaches

Headaches are symptoms of many medical disorders. When they occur in the absence of other symptoms, however, they may be classified as stress-related. By far the most frequent kind of headache is the *tension headache*. Stress can lead to persistent contractions of the muscles of the scalp, face, neck, and shoulders, giving rise to periodic or chronic tension headaches. Such headaches develop gradually and are generally characterized by dull, steady pain on both sides of the head and feelings of pressure or tightness.

Most other headaches, including the severe migraine headache, appear to involve changes in the blood flow to the brain (Durham, 2004; Linde et al., 2005). Migraine headaches affect more than 28 million Americans. Typical migraines last for hours or days. They may occur as often as daily or as seldom as every other month. They are characterized by piercing or throbbing sensations on one side of the head only or centered behind an eye. They can be so intense that they seem intolerable. Sufferers may experience an *aura*, or cluster of warning sensations that precedes the attack. Auras are typified by perceptual distortions, such as flashing lights, bizarre images, or blind spots. Coping with the misery of brutal migraine attacks can take its toll, impairing the quality of life and leading to disturbances of sleep, mood, and thinking processes.

Theoretical Perspectives The underlying causes of headaches remain unclear and subject to continued study. One factor contributing to tension headaches may be increased sensitivity of the neural pathways that send pain signals to the brain from the face and head (Holroyd, 2002). Migraine headaches may involve an underlying central nervous system disorder involving nerves and blood vessels in the brain. The neurotransmitter serotonin is also implicated. Falling levels of serotonin may cause blood vessels in the brain to contract (narrow) and then dilate (expand). This stretching stimulates sensitized nerve endings that give rise to the throbbing, piercing

psychosomatic Pertaining to a physical disorder in which psychological factors play a causal or contributing role.



Migraine! Migraine headaches involve intense throbbing pain on one side of the head. They may be triggered by many factors, such as hormonal changes, exposure to strong light, changes in barometric pressure; hunger, exposure to pollen, red wine, and use of certain drugs and even monosodium glutamate (MSG).

biofeedback training (BFT) A method of feeding back to the individual information about bodily functions so that the person can gain some degree of control over these functions.

cardiovascular disease A disease or disorder of the cardiovascular system, such as coronary heart disease or hypertension.

TRUTH or FICTION

People can relieve the pain of migraine headaches by raising the temperature in a finger.

✓ **TRUE.** Some people have relieved migraine headaches by raising the temperature in a finger. This biofeedback technique modifies patterns of blood flow in the body.

sensations associated with migraines. Evidence also points to a strong genetic contribution to migraine (“Scientists Discover,” 2003).

Many factors may trigger a migraine attack. These include stress; stimuli such as bright lights; changes in barometric pressure; pollen; certain drugs; the chemical monosodium glutamate (MSG), which is often used to enhance the flavor of food; red wine; and even hunger. Hormonal changes of the sort that affect women prior to and during menstruation can also trigger attacks, and the incidence of migraines among women is about twice that among men.

Treatment Commonly available pain relievers, such as aspirin, ibuprofen, and acetaminophen, may reduce or eliminate pain associated with tension headaches. Drugs that constrict dilated blood vessels in the brain or help regulate serotonin activity are used to treat the pain from migraine headache (Brandes, 2006; Silberstein et al., 2000).

Psychological treatment can also help relieve tension or migraine headache pain in many cases. These treatments include training in biofeedback, relaxation, coping-skills training, and some forms of cognitive therapy (Gatchel, 2001; Holroyd, 2002). **Biofeedback training (BFT)** helps people gain control over various bodily functions, such as muscle tension and brain waves, by giving them information (feedback) about these functions in the form of auditory signals (e.g., “bleeps”) or visual displays. People learn to make the signal change in the desired direction. Training people to use relaxation skills combined with biofeedback has also been shown to be effective. *Electromyographic* (EMG) biofeedback is a form of BFT that involves relaying information about muscle tension in the forehead. EMG biofeedback thus heightens awareness of muscle tension in this region and provides cues that people can use to learn to reduce it.

Some people have relieved the pain of migraine headaches by raising the temperature in a finger. This biofeedback technique, called *thermal BFT*, modifies patterns of blood flow throughout the body, including blood flow to the brain, to help control migraine headaches (Blanchard et al., 1990; Gauthier, Ivers, & Carrier, 1996). One way of providing thermal feedback is by attaching a temperature-sensing device to a finger. A console “bleeps” more slowly or rapidly as the temperature in the finger rises. The temperature rises when more blood flows to the fingers and away from the head. The client can imagine the finger growing warmer to bring about these desirable changes in the flow of blood in the body.

Cardiovascular Disease

Your cardiovascular system, the network that connects your heart and blood vessels, is your highway of life. Unfortunately, there are accidents along this highway in the form of **cardiovascular disease** (CVD, or heart and artery disease). CVD is the leading cause of death in the United States, claiming about 1 million lives annually and accounting for about 4 in 10 deaths, most often as the result of heart attacks or strokes (Hu & Willett, 2002; Nabel, 2003). *Coronary heart disease* (CHD) is the major form of cardiovascular disease, accounting for about 700,000 deaths annually, mostly from heart attacks. CVD is the leading cause of death for both men and women, claiming even more women’s lives than breast cancer.

In coronary heart disease, the flow of blood to the heart is insufficient to meet the heart’s needs. The underlying disease process in CHD is called *arteriosclerosis*, or “hardening of the arteries,” a condition in which artery walls become thicker, harder, and less elastic, which makes it more difficult for blood to flow freely. The major underlying cause of arteriosclerosis is *atherosclerosis*, a process involving the buildup of fatty deposits along artery walls that leads to the formation of artery-clogging plaque. If a blood clot should form in an artery narrowed by plaque, it may nearly or completely block the flow of blood to the heart. The result is a heart attack (also called a

myocardial infarction), a life-threatening event in which heart tissue dies due to a lack of oxygen-rich blood. When a blood clot blocks the supply of blood in an artery serving the brain, a *stroke* can occur, leading to death of brain tissue that can result in loss of function controlled by that part of the brain, coma, or even death.

The good news is that CHD is largely preventable (Nabel, 2003). How? By reducing the risk factors we can control. Some risk factors we can't control, such as age and family history. But a number of risk factors can be controlled through medical treatment or lifestyle changes—factors such as high blood cholesterol, hypertension (high blood pressure), smoking, overeating, heavy drinking, consuming a high-fat diet, and leading a sedentary lifestyle (e.g., Mendelsohn & Karas, 2005; Panagiotakos et al., 2005; Pickering, 2003). Unfortunately, many of these factors remain uncontrolled. For example, only about one in four adults with hypertension take medications to control blood pressure (Chobanian, 2001; Hyman & Pavlik, 2001).

Adopting healthier behaviors can have beneficial effects on the heart. For example, evidence shows that even seasoned couch potatoes can reduce their risk of cardiovascular disease by becoming more physically active (Blumenthal et al., 2005; Borjesson & Dahlof, 2005).

Negative Emotions Might your emotions be putting you at risk of coronary heart disease? It appears so. Frequent emotional distress in the form of anger, anxiety, and depression can have damaging effects on the cardiovascular system (Frasure-Smith & Lespérance, 2005; Geipert, 2007; Orth-Gomér et al., 2000).

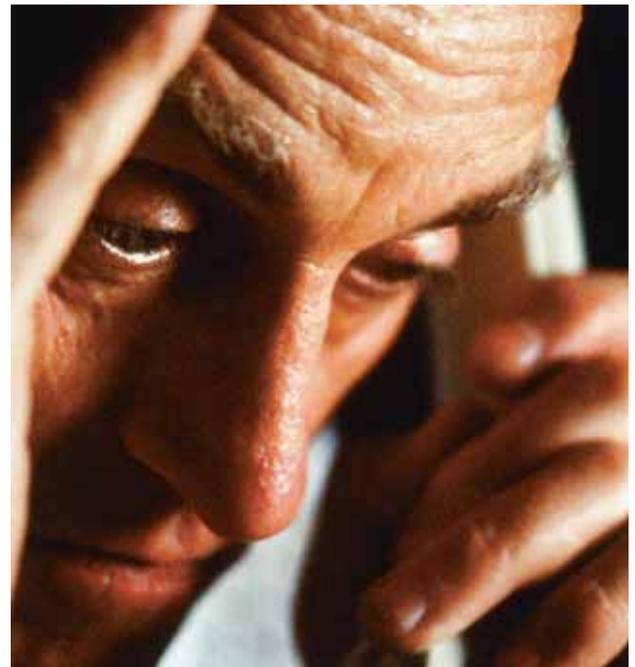
Researchers highlight the toxic effects of chronic anger on the heart. Occasional feelings of anger may not damage the heart in healthy people, but chronic anger—the type you see in people who seem angry all of the time—is linked to increased risk of CHD (Kiecolt-Glaser et al., 2002; Pressman, & Cohen, 2005; Rutledge & Hogan, 2002; Steptoe, Wardle, & Marmot, 2005).

Anger is closely associated with hostility—a personality trait characterized by quickness to anger and by tendencies to blame others and to perceive the world in negative terms. Hostility is a component of the **Type A behavior pattern (TABP)**, a style of behavior that characterizes people who are hard driving, ambitious, impatient, and highly competitive. Although earlier research had linked the Type A pattern to a higher risk of CHD, more recent research casts doubts on the relationship between this personality pattern and coronary risk (Geipert, 2007). However, we have more consistent evidence linking the trait of hostility, a component of the Type A pattern, to increased risks of heart disease and other negative health outcomes (Geipert, 2007; Mathews, 2005; Olson et al., 2006). Hostile people tend to have “short fuses” and are prone to get angry easily.

How might anger and other negative emotions contribute to heart disease? Although we can't be sure, investigators suspect that the stress hormones epinephrine and norepinephrine play significant roles (Januzzi & DeSanctis, 1999; Melani, 2001). Anxiety and anger trigger the release of these stress hormones by the adrenal glands. These hormones increase heart rate, breathing rate, and blood pressure, which results in pumping more oxygen-rich blood to the muscles to enable them to prepare for defensive action—to either fight or flee—in the face of a threatening stressor. In people who frequently experience strong negative emotions such as anger or anxiety, the body may repeatedly pump out these stress hormones, eventually damaging the heart and blood vessels.

Evidence indicates that episodes of acute anger can actually trigger heart attacks and sudden cardiac death in some people with established heart disease (Clay, 2001a). We have also learned that people who are higher in hostility tend to have more cardiovascular risk factors, such as obesity and smoking, than do less hostile people (Bunde & Suls, 2006). Anxiety and anger may also compromise the cardiovascular system by increasing blood levels of cholesterol, the fatty substance that clogs arteries and increases the risk of heart attacks (Suinn, 2001).

Type A behavior pattern (TABP) A behavior pattern characterized by a sense of time urgency, competitiveness, and hostility.



Emotions and the heart. Emotional stress in the form of persistent negative emotions, such as anxiety and anger, is a risk factor in heart-related problems.



A CLOSER LOOK

Dying of a Broken Heart

The patient's heart was failing (Sanders, 2006). She was only 45, but showed all the signs of having a heart attack. But it wasn't a heart attack. Were it a heart attack, there would have been blockage of blood flow through the arteries that service the heart. However, blood flowed freely to her heart. No, in this case, the woman's heart was failing because of the emotional shock of losing her husband in a car crash two days earlier. She had rushed to the crash site and collapsed next to his body, crying inconsolably and trying desperately but unsuccessfully to wake him. Two days later she was rushed to the hospital complaining of chest pains and difficulty breathing. The doctors realized she was a victim of "broken-heart syndrome," a potentially life-threatening condition. Under high emotional stress, the body releases large amounts of the epinephrine and norepinephrine into the blood stream.

Physicians suspect that in broken-heart syndrome, these hormones effectively "stun" the heart, preventing it from pumping normally (Wittstein et al., 2006). This woman's heart was pumping only a fraction of the expected amount of blood. Fortunately, the woman survived, as the levels of stress hormones receded and the heart returned to pumping at a nearly normal level. Later, she told a reporter, "If anyone had told me that you could die of a broken heart . . . I'd never have believed it. But I almost did" (Sanders, 2006, p. 28). Fortunately, broken-heart syndrome is a rare occurrence, but it may explain cases of people who suddenly die a few days or weeks following an emotional shock, such as the sudden death of a spouse. Patients with established coronary heart disease may be especially susceptible to coronary events in response to strong emotional stress (Strike et al., 2006).

Helping angry people learn to remain calm in provocative situations may have beneficial effects on the heart as well as the mind. Cognitive-behavioral therapies are available to help chronically angry people better control their emotional responses to anxiety-provoking or angering situations (e.g., Deffenbacher et al., 2000). Along these lines, men with CHD who received a hostility-reduction program showed less hostility and lower blood pressures after treatment than did controls (Gidron, Davidson, & Bata, 1999).

Investigators find additional links between coronary heart disease and other forms of emotional stress, including depression (Carney, Freedland, & Jaffe, 2001; Miller & Blackwell, 2006). In one research example, people without established heart disease who suffered from major depression were nearly four times more likely than nondepressed people to die from heart-related causes over a 4-year study period (Penninx et al., 2000). All in all, taking care of our emotional health may have additional benefits for our physical health.

Social Environmental Stress *Social environmental stress* also appears to heighten the risk of CHD (Krantz et al., 1988). Such factors as overtime work, assembly-line labor, and exposure to conflicting demands are linked to increased risk of CHD (C. D. Jenkins, 1988). The stress-CHD connection is not straightforward, however. For example, the effects of demanding occupations may be moderated by factors such as psychological hardiness and whether or not people find their work meaningful (Krantz et al., 1988).

Other forms of stress are also linked to increased cardiovascular risk. Researchers in Sweden, for example, find that among women, marital stress triples the risk of recurrent cardiac events, including heart attacks and cardiac death (Foxhall, 2001; Orth-Gomér et al., 2000).

Ethnicity and CHD Coronary heart disease is not an equal opportunity destroyer. European Americans (non-Hispanic Whites) and African Americans (non-Hispanic Blacks) have the highest rates of death due to coronary heart disease (see Figure 5.2). Factors such as obesity, smoking, diabetes, and hypertension play important roles in determining relative risks of CHD and the rate of CHD-related deaths. For example, African Americans have higher rates of hypertension relative to other U.S. population groups (see Figure 5.3) as well as higher rates of obesity and diabetes. Moreover, a dual standard of care limits access to quality health care for minority group members. Black Americans with CHD who suffer heart attacks typically receive less aggressive and potentially lifesaving treatments than do Whites with CHD, which likely contributes to their higher death rates (Chen et al., 2001; Stolberg, 2001). This dual standard of care may reflect discrimination as well as cultural factors limiting utilization of services, such as African Americans' cultural mistrust toward the medical establishment.

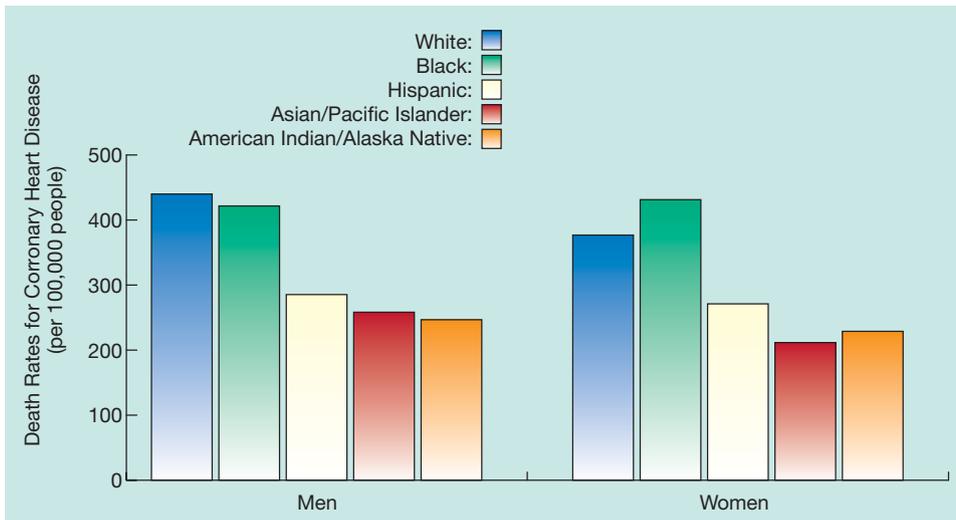


FIGURE 5.2 Coronary heart disease death rates in relation to race and ethnicity.

Deaths due to CHD in our society fall disproportionately on White men and on Black (non-Hispanic) men and women.

Source: *Morbidity and Mortality Weekly Report*, Centers for Disease Control, February 16, 2001, 50(006), 90–93.

We finish this section with encouraging news. Americans have begun to take better care of their cardiovascular health. The incidence of CHD and deaths from heart disease have been declining steadily during the past 50 years, thanks largely to reductions in smoking, to improved treatment for coronary heart disease, and perhaps to other lifestyle changes, such as reduced intake of dietary fat. Better-educated people are also more likely to modify unhealthful behavior patterns and reap the benefits of change. Is there a message here for you?

Asthma

Asthma is a respiratory disorder in which the main tubes of the windpipe—the bronchi—constrict and become inflamed, and large amounts of mucus are secreted. During asthma attacks, people wheeze, cough, and struggle to breathe in enough air. They may feel as though they are suffocating.

According to the Centers for Disease Control (CDC), an estimated 14 million adults and 5 million children in the United States are affected by asthma (CDC, 2001b, 2004a). Rates of asthma are on the rise, having more than doubled over the past thirty years. Attacks can last from just a few minutes to several hours and vary notably in intensity. Series of attacks can harm the bronchial system, causing mucus to collect and muscles to lose their elasticity. Sometimes the bronchial system is weakened to the point where a subsequent attack is lethal.

Theoretical Perspectives Many causal factors are implicated in asthma, including allergic reactions; exposure to environmental pollutants, including cigarette smoke and smog; and genetic and immunological factors (Giembycz & O'Connor, 2000; Van Eerdewegh et al., 2002). Asthmatic reactions in susceptible people can be triggered by exposure to allergens such as pollen, mold spores, and animal dander; by cold, dry air; and by emotional responses such as anger or even laughing too hard. Psychological factors such as stress, anxiety, and depression can increase susceptibility to asthmatic attacks (Greengrass, 2002; Lehrer et al., 2002). Asthma, moreover, has psychological consequences. Some sufferers avoid strenuous activity, including exercise, for fear of increasing their demand for oxygen and tripping attacks.

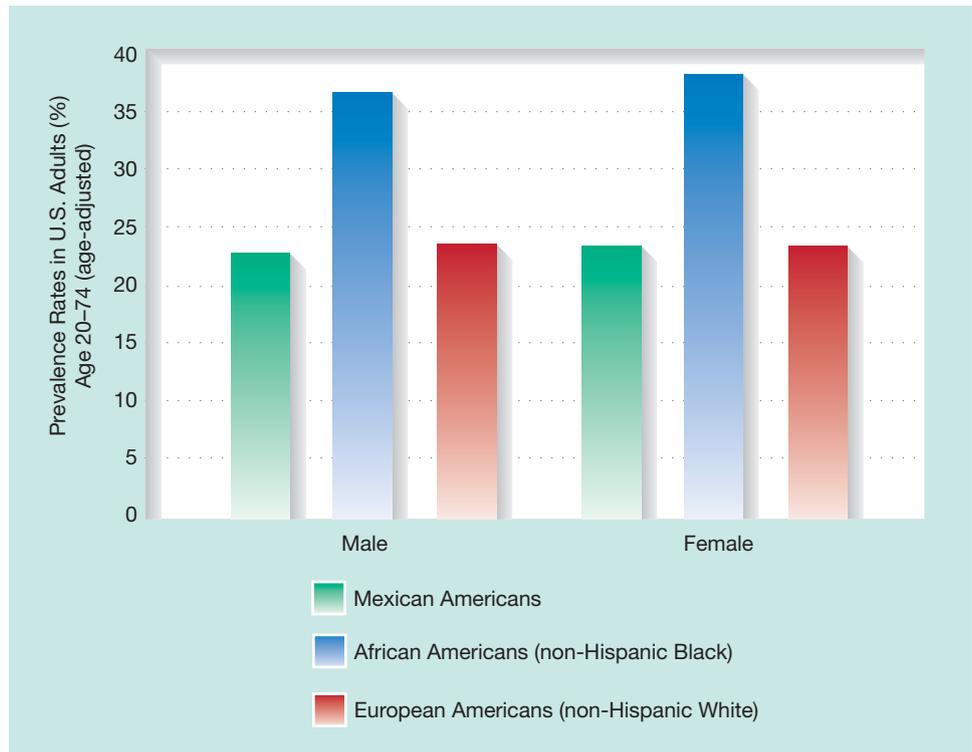


FIGURE 5.3 Ethnicity and Hypertension.

African Americans have higher rates of hypertension, one of the key risk factors for heart attacks and strokes.

Source: Adapted from *Heart Disease and Stroke Statistics—2005 Update*. American Heart Association, 2005.

Treatment Although asthma cannot be cured, it can be controlled by reducing exposure to allergens, by desensitization therapy (“allergy shots”) to help the body acquire more resistance to allergens, by use of inhalers, and by drugs that open bronchial passages during asthma attacks (called *bronchodilators*) and others (called *anti-inflammatories*) that reduce future attacks by helping to keep bronchial tubes open (Sears et al., 2003; Sin et al., 2004). Psychological treatment may also help asthma sufferers apply the skills of muscle relaxation to improve their breathing (Lehrer et al., 1994), and for asthmatic children, family therapy that helps reduce family conflict (Lehrer et al., 1992). Family conflict is linked to increased rates of hospitalization for asthmatic children (Chen et al., 2003).

Cancer

The word *cancer* is arguably the most feared word in the English language, and rightly so: One of every four deaths in the United States is caused by cancer. Cancer claims about half a million lives in the United States annually, one every 90 seconds or so. Men have a one in two chance of developing cancer at some point in their lives; for women the odds are one in three. Yet there is good news to report: The cancer death rate has been inching downward in recent years, in large part due to better screening and treatment (Jemal et al., 2007).

Cancer involves the development of aberrant, or mutant, cells that form growths (tumors) that spread to healthy tissue. Cancerous cells can take root anywhere—the blood, the bones, lungs, digestive tract, and reproductive organs. When it is not contained early, cancer may *metastasize*, or establish colonies throughout the body, leading to death.

There are many causes of cancer, including genetic factors, exposure to cancer-causing chemicals, and even exposure to some viruses (Godtfredsen, Prescott, & Osler, 2005; Samuels et al., 2004; Walsh et al., 2006). Unhealthy behavior patterns also contribute to the development of cancer, including dietary practices (high fat intake), heavy alcohol consumption, smoking, and excessive sun exposure (ultraviolet light causes skin cancer). On the other hand, daily intake of fruits and vegetables may lower the risk of some forms of cancer. Death rates from cancer are lower in Japan than in the United States, where people ingest more fat, especially animal fat. The difference is not genetic or racial, however, because Japanese Americans whose fat intake approximates that of other Americans show similar death rates from cancer.

Stress and Cancer A weakened or compromised immune system may increase susceptibility to cancer. We've seen that psychological factors, such as exposure to stress, may affect the immune system. So it stands to reason that exposure to stress might increase a person's risk of developing cancer. However, evidence linking stress to cancer is inconclusive and requires further study (Delahanty & Baum, 2001; Dougall & Baum, 2001).

On the other hand, we have learned that psychological interventions that focus on helping cancer patients cope with the disease, such as group support programs, can improve their psychological adjustment and well-being (Helgeson, 2005; Taylor et al., 2003). It remains to be seen whether psychological interventions actually increase the length of survival of patients suffering from cancer.

Cancer patients may benefit from training programs that focus on developing coping skills, such as relaxation, stress management, and coping thoughts, to help relieve the stress and pain of coping with cancer. Coping-skills training may also help cancer patients deal with the unpleasant side effects of chemotherapy. Cues associated with chemotherapy, such as the hospital environment itself, may become conditioned stimuli that elicit nausea and vomiting even before the drugs are administered. Pairing relaxation, pleasant imagery, and attentional distraction with these cues can help reduce nausea and vomiting associated with chemotherapy (Redd & Jacobsen, 2001).

Acquired Immunodeficiency Syndrome (AIDS)

Acquired immunodeficiency syndrome (AIDS) is a disease caused by the *human immunodeficiency virus* (HIV). HIV attacks the immune system, leaving it helpless to fend off diseases it normally would hold in check. HIV/AIDS is one of history's worst epidemics. Worldwide, more than 40 million people are infected with HIV (Hammer et al., 2006). HIV/AIDS has claimed more than 430,000 lives in the United States and some 25 million lives worldwide.

There are two primary reasons for including HIV/AIDS in our discussion of psychological factors in physical illness. First, people living with HIV/AIDS often develop significant psychological problems in adjusting to living with the disease. Second, behavioral patterns such as unsafe sexual and injection practices play the dominant role in determining the risk of contracting and transmitting the virus.

HIV can be transmitted by sexual contact (vaginal and anal intercourse; oral-genital contact); direct infusion of contaminated blood, as from transfusions of contaminated blood, accidental pricks from needles used previously on an infected person, or needle sharing among injecting drug users; and from an infected mother to a child during pregnancy or childbirth or through breast-feeding. AIDS is not contracted by donating blood; by airborne germs; by insects; or by casual contact, such as using public toilets, holding or hugging infected people, sharing eating utensils with them, or living or going to school with them. Routine screening of the blood supply for HIV has reduced the risk of infection from blood transfusions to virtually nil. The majority of cases of HIV transmission worldwide involve heterosexual intercourse; in the United States, heterosexual intercourse accounts for 35% of new cases of HIV infections (CDC, 2004b).

TRUTH or FICTION

Compelling evidence now exists that psychotherapy can increase survival rates in cancer patients.

FALSE. Evidence has not demonstrated—not yet at least—that psychological treatments increase survival rates of cancer patients. However, evidence does show that psychological treatment in the form of group therapy improves the emotional well-being of cancer patients.



The case of Julia

"You're born into society to groups or classes that are marginalized."

There is no cure or vaccine for HIV infection, but the introduction of highly effective antiretroviral drugs has revolutionized treatment of the disease, raising hopes that it can become a chronic but manageable disease. However, hopes are tempered by the fact that many patients fail to benefit fully from antiviral drug combinations and by the emergence of some drug-resistant strains of the virus. The lack of a cure or effective vaccine means that prevention programs focusing on reducing or eliminating risky sexual and injection practices represent our best hope for controlling the epidemic.

Adjustment of People with HIV and AIDS Given the nature of the disease and the stigma suffered by people with HIV and AIDS, it is not surprising that many people with HIV, although certainly not all, develop psychological problems, most commonly anxiety and depression (Heckman et al., 2004; Morrison et al., 2002).

Psychologists and other mental health professionals are involved in providing treatment services to people affected by HIV/AIDS. Coping-skills training and cognitive-behavioral therapy can help improve psychological functioning, ability to handle stress, and quality of life among patients with HIV/AIDS and reduce their feelings of depression and anxiety (Lechner et al., 2003; Lutgendorf et al., 1997). Treatment may incorporate training in stress-management techniques, such as self-relaxation and positive mental imagery, and cognitive strategies to control intrusive negative thoughts and preoccupations. The importance of stress management skills is highlighted by findings that stressful life events and passive coping (use of denial) were associated with faster progression to AIDS in HIV-infected men (Leserman et al., 2000).

Antidepressant medication may also help patients with HIV/AIDS cope with a frequent emotional consequence of living with the disease—depression. Whether treatment of depression or stress management training can improve immunological functioning or prolong life in people with HIV and AIDS remains an open question.

Psychological Interventions to Reduce Risky Behaviors Providing information about risk reduction alone is not sufficient to induce widespread changes in sexual behavior. Despite awareness of the dangers, many people continue to practice unsafe sexual and injection behaviors. Fortunately, psychological interventions are effective in helping people alter these risky behaviors (e.g., Albarracín, Durantini, & Ear, 2006; Carey et al., 2004). These programs raise people's awareness about risky behaviors and help them develop more adaptive behaviors, such as learning how to refuse invitations



AIDS support group. AIDS support groups offer emotional support and assistance to people with HIV/AIDS, their families, and their friends.

to engage in unsafe sex and how to communicate effectively with one's partner(s) about safer sex. The likelihood of engaging in safer sex practices is also linked to the avoidance of alcohol and drugs before sex and to the perception that safer sex practices represent the social norm (expected behavior) within one's peer group.

Preventing AIDS For the first time, a generation of young people has come of age at a time when the threat of HIV/AIDS hangs over every sexual encounter. People may decrease the risk of being infected by HIV and other sexually transmitted diseases (STDs) by taking the following measures. Only the first two are sure paths to avoiding the sexual transmission of HIV. The others reduce the risk of infection, but cannot be certified as perfectly safe. For those who are going to be sexually active without knowing (not guessing) whether their partner(s) are infected with HIV or some other STD, we can speak only of safe(r) sex—not of perfectly safe sex.

1. *Maintaining lifelong celibacy.*
2. *Remaining in a lifelong monogamous relationship with an uninfected person who is doing the same thing.* Although these first two sexual career paths guarantee safety, they are not followed by the majority of students or other Americans.
3. *Being discerning in one's choice of sex partners.* Get to know another person before engaging in sexual activity. Still, getting to know a person is no guarantee the person is uninfected with HIV. Avoid contact with multiple partners or with people who are likely to have multiple partners.
4. *Being assertive with sex partners.* It is important to communicate concerns about AIDS clearly and assertively with sex partners.
5. *Inspecting one's partner's sex organs.* There are no obvious signs of HIV infection, but people who are infected with HIV are often infected by other sexually transmitted diseases as well. It may be feasible to visually inspect your partner's sex organs for rashes, chancres, blisters, discharges, warts, and lice during foreplay. Consider any disagreeable odor a warning sign.
6. *Using latex condoms.* Condoms protect men from infected vaginal fluids and stop infected semen from entering women. All condoms (including so-called natural condoms made of animal intestines or "skins") act as barriers to sperm, but only latex condoms can prevent transmission of HIV.
7. *Using spermicides.* Spermicides containing the ingredient nonoxonyl-9 kill HIV as well as sperm. Spermicides should be used along with latex condoms, not as a substitute for condoms.
8. *Consulting a physician following suspected exposure to a sexually transmitted disease (STD).* Antibiotics following unprotected sex may guard against bacterial STDs, but they are of no use against viral STDs, such as genital herpes and HIV/AIDS. Consult with a physician before using any medications, including medications you may have stored away in your medicine cabinet.
9. *Seeking regular medical checkups.* Checkups and appropriate laboratory tests enable you to learn about and treat disorders that might have gone unnoticed.
10. *Avoiding sexual activity if there are doubts about safety.* None of the safer sex practices listed guarantees protection. Why not avoid sexual activity when doubts of safety exist?

In this chapter we focused on relationships between stress and health and on the psychological factors involved in health. Psychology has much to offer in the understanding and treatment of physical disorders. Psychological approaches may help in the treatment of such physical disorders as headaches and coronary heart disease. Psychologists also help people reduce the risks of contracting health problems such as cardiovascular disorders, cancer, and AIDS. Emerging fields such as psychoneuroimmunology promise to further enhance our knowledge of the intricate relationships between mind and body.

SUMMING UP

Adjustment Disorders

What are adjustment disorders? Adjustment disorders are maladaptive reactions to identified stressors.

What are their features? Adjustment disorders are characterized by emotional reactions that are greater than normally expected given the circumstances or by evidence of significant impairment in functioning. Impairment usually takes the form of problems at work or school, or in social relationships or activities.

Stress and Illness

How is stress linked to physical illness? Evidence links exposure to stress to weakened immune system functioning, which in turn can increase vulnerability to physical illness. However, because this evidence is correlational, questions of cause and effect remain.

What is the general adaptation syndrome? This is the name given by Hans Selye to the generalized pattern of response of the body to persistent or enduring stress, as characterized by three stages: the alarm reaction, the resistance stage, and the exhaustion stage.

How are life changes related to physical health problems? Again, links are correlational, but evidence shows that people who experience more life stress in the form of life changes and daily hassles are at an increased risk of developing physical health problems.

What psychological factors buffer the effects of stress? These factors include coping styles, self-efficacy expectancies, psychological hardiness, optimism, and social support.

Psychological Factors and Physical Disorders

What roles do psychological factors play in the onset of headaches and their treatment? The most common headache is the muscle-tension headache, which is often stress related. Behavioral methods of relaxation training and biofeedback are of help in treating various types of headaches.

What behavioral or lifestyle factors increase the risk of coronary heart disease? Psychological factors that increase the risk of coronary heart disease include patterns of consumption, leading a sedentary lifestyle, and persistent negative emotions.

What role do psychological factors play in asthma? Psychological factors such as stress, anxiety, and depression may trigger asthma attacks in susceptible individuals.

What role do psychological factors play in the development of cancer and its treatment? Although relationships between stress and risk of cancer remain under study, behavioral risk factors for cancer include dietary practices (espe-

cially high fat intake), heavy alcohol use, smoking, and excessive sun exposure. Psychological interventions help cancer patients cope better with the symptoms of the disease and its treatment.

What roles do psychologists play in the prevention of HIV/AIDS and treatment of people with HIV? Our behavior patterns influence our risk for contracting HIV. Psychologists have become involved in the prevention and treatment of AIDS because AIDS, like cancer, can have devastating psychological effects on victims, their families and friends, and society at large, and because AIDS can be prevented through reducing risky behavior.

Scoring Key for The College Life Stress Inventory. Although we have no national norms by which to compare your score, the test developers obtained an average (mean) score of 1,247 based on a sample of 257 introductory psychology students. About two of three students obtained scores in the range of 806 to 1,688.

Computing your total score helps you gauge how you compare to the students in the original study sample in terms of your overall stress level. Bear in mind, however, that the same level of stress may affect different people differently. Your ability to cope with stress depends on many factors, including your coping skills and the level of social support you have available. If you are experiencing a high level of stress, you may wish to examine the sources of stress in your life. Perhaps you can reduce the level of stress you experience or learn more effective ways of handling the sources of stress you can't avoid.

Scoring Key for The Life Orientation Test. To arrive at your total score for the test, first *reverse* your score on items 3, 8, 9, and 12. That is,

- 4 is changed to 0
- 3 is changed to 1
- 2 remains the same
- 1 is changed to 3
- 0 is changed to 4

Now add the numbers of items 1, 3, 4, 5, 8, 9, 11, and 12. (Items 2, 6, 7, and 10 are “fillers”; that is, your responses are not scored as part of the test.) Your total score can vary from 0 to 32.

Scheier and Carver (1985) provide the following norms for the test, based on administration to 357 undergraduate men and 267 undergraduate women. The average (mean) score for men was 21.03 (standard deviation = 4.56), and the mean score for women was 21.41 (standard deviation = 5.22). All in all, approximately 2 out of 3 undergraduates obtained scores between 16 and 26. Scores above 26 may be considered quite optimistic, and scores below 16 quite pessimistic. Scores between 16 and 26 are within a broad average range, and higher scores within this range are relatively more optimistic.

KEY TERMS

health psychologist (p. 141)	alarm reaction (p. 147)	positive psychology (p. 156)
stress (p. 142)	fight-or-flight reaction (p. 147)	psychosomatic (p. 159)
stressor (p. 142)	resistance stage (p. 148)	biofeedback training (BFT) (p. 160)
adjustment disorder (p. 142)	exhaustion stage (p. 149)	cardiovascular disease (p. 160)
endocrine system (p. 144)	acculturative stress (p. 150)	Type A behavior pattern (TABP) (p. 161)
hormones (p. 144)	emotion-focused coping (p. 154)	
immune system (p. 145)	problem-focused coping (p. 154)	
general adaptation syndrome (GAS) (p. 147)	self-efficacy expectancies (p. 154)	
	psychological hardiness (p. 155)	

MEDIA TOOLS

A variety of digital and online learning tools are available to enrich your learning experience and help you succeed in the course. These resources include:

- **MyPsychLab**, an online learning system for your course in abnormal psychology that allows you to test your mastery of concepts in the book by using chapter-by-chapter diagnostic tests. Results from the diagnostic tests help you build a customized study plan. To access **MyPsychLab**, visit www.prenhall.com/mypsychlab and follow the instructions on the site.
- **“Speaking Out” Patient Interviews**, a set of video case examples of actual patients you can access on the companion CD-ROM included with the text. Icons in the margins of the chapter highlight the video case examples included on the CD-ROM.
- **Companion Web site**, an online study center that offers computer-scored quizzes you can use to test your knowledge, along with other study tools and links to related sites to enhance your learning of abnormal psychology. To access the companion web site, visit www.prenhall.com/nevid and use the various tabs and links on the site to access these learning resources.