14

CHAPTER FOURTEEN

Stress and Health

THE 53-YEAR-OLD PATIENT WAS SEMICOMATOSE with severe bronchial asthma when admitted to a hospital on July 13, 1960. Mr. X (fortunately, not his real name) was treated and discharged symptom free after a few days and went directly to his mother's home—where, in a matter of hours, he was wheezing so badly that he arrived back at the hospital in near-terminal condition. After two more severe attacks at his mother's house, a psychotherapist recommended that he not visit his mother again. A month later, Mr. X phoned his mother. He was found an hour later blue and gasping for breath and was pronounced dead shortly thereafter.

How did Mr. X die? The autopsy report cited heart damage from lack of oxygen as the cause of death, but interviews with his family and doctors revealed a more complicated story (Mathis, 1964). His first asthma attack had occurred shortly after he received a profitable offer for the family business and told his mother he wanted to sell. His mother was upset, but, urged on by his wife, he decided to take the offer. In an angry confrontation, his mother said, "Do this and something dire will happen to you." Two days later he had his first incident of mild wheezing. His asthma became much worse after the business was sold, and during his many hospitalizations, Mr. X came to recognize that his troubles might be due to fear of his mother's curse. On the day of his death, he expressed the belief that he was "allergic" to his mother and worried that her past predictions had been infallible. In the telephone conversation that preceded his death, he told his mother that he thought he was getting better. She replied by repeating her warning of "dire results." ■

Imagine that someone ordered an authentic voodoo doll from New Orleans, named it after you, and started sticking it with pins in your presence. Even if you didn't believe in curses at all, might this be stressful?

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Can a person literally be frightened to death? Perhaps. The case of Mr. X resembles the phenomenon of "voodoo death" examined by physiologist Walter B. Cannon (1942). Cannon reviewed reports from around the world—often from traditional cultures in which death curses are taken very seriously—and found evidence for a profound connection between mind and body. Just as physical trauma can cause reduced blood pressure, rapid shallow pulse, and the deprivation of oxygen to the body's vital organs, so great fear can evoke physiological reactions that eventually result in death. Although such deaths are rare and their causes are always open to interpretation, the case of Mr. X shows how harm to the mind may provoke illness of the body.

Now, on an average day, you probably don't get a death curse from your mom. But modern life can present a welter of frights, bothers, and looming disasters that might make a nasty call from a loved one almost a relief. A wild driver may challenge your rights as a pedestrian, a band of evil professors may impose impossible project deadlines, or a fire may leave you out on the street. Perhaps it's just the really, really awful weather. Life has its **stressors**, *specific events or chronic pressures that place demands on a person or threaten the person's well-being.* Although such stressors rarely result in sudden death, they do have both immediate and cumulative effects that can influence health.

In this chapter, we'll look at what psychologists and physicians have learned about the kinds of life events that produce **stress**, *the physical and psychological response to internal or external stressors;* typical responses to such stressors; and ways to manage stress. Because sickness and health are not merely features of the physical body, we then consider the more general topic of **health psychology**, *the subfield of psychology concerned with ways psychological factors influence the causes and treatment of physical illness and the maintenance of health.* You will see how perceptions of illness can affect its course and how health-promoting behaviors can improve the quality of people's lives.

Sources of Stress: What Gets to You

First of all, what are the sources of stress? A natural catastrophe, such as a hurricane, earthquake, or volcanic eruption, is an obvious source. But, for most of us, stressors are personal events that affect the comfortable pattern of our lives, and little annoyances that bug us day after day. Let's look at the life events that can cause stress, chronic sources of stress, and the relationship between lack of perceived control and the impact of stressors.

Stressful Events

People often seem to get sick after major life events. In pioneering work, Thomas Holmes and Richard Rahe (1967) followed up on this observation, proposing that major life changes cause stress and that increased stress causes illness. To test their idea, they asked people to rate the magnitude of readjustment required by each of many events found to be associated with the onset of illness (Rahe et al., 1964). The resulting list of life events is remarkably predictive: Simply adding up the degree of life change for a person is a significant indicator of the person's future illness (Miller, 1996). A person who is divorced and loses a job and has a friend die all in a year, for example, is more likely to get sick than one who escapes the year with only a divorce.

● Where are you on the stress scale?

A version of this list adapted for the life events of college students (and sporting the snappy acronym CUSS, for College Undergraduate Stress Scale) is shown in **TABLE 14.1** (on page 429). To assess your stressful events, check off any events that have happened to you in the past year and sum your point total. In a large sample of students in an introductory psychology class, the average was 1,247 points, ranging from 182 to 2,571 (Renner & Mackin, 1998).

Looking at the list, you may wonder why positive events are included. Stressful life events are unpleasant, right? Why would getting married be stressful? Isn't a wedding

stressors Specific events or chronic pressures that place demands on a person or threaten the person's well-being.

stress The physical and psychological response to internal or external stressors.

health psychology The subfield of psychology concerned with ways psychological factors influence the causes and treatment of physical illness and the maintenance of health.

TABLE 14.1

College Undergraduate Stress Scale

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

Source: Renner and Mackin (1998).

Note: To compute your personal life change score, sum the stress ratings for all events that have happened to you in the last year.

supposed to be fun? Research has shown that compared with negative events, positive events produce less psychological distress and fewer physical symptoms (McFarlane et al., 1980), and the happiness can sometimes even counteract the effects of negative events (Fredrickson, 2000). However, positive events often require readjustment and preparedness that many people find extremely stressful (e.g., Brown & McGill, 1989), so these events are included in computing life-change scores.

Chronic Stressors

Life would be simpler if an occasional stressful event such as a wedding or a lost job were the only pressure we faced. At least each event would be limited in scope, with a beginning, a middle, and, ideally, an end. But unfortunately, life brings with it continued exposure to **chronic stressors**, *sources of stress that occur continuously or repeatedly.* Strained relationships, long lines at the supermarket, nagging relatives, overwork, money troubles—small stressors that may be easy to ignore if they happen only occasionally can accumulate to produce distress and illness. People who report having a lot of daily hassles also report more psychological symptoms (Kanner et al., 1981) and physical symptoms (Delongis et al., 1982), and these effects often have a greater and longer-lasting impact than major life events.

● What are some examples of environmental factors that cause chronic stress?

Many chronic stressors are linked to particular environments. For example, features of city life—noise, traffic, crowding, pollution, and even the threat of violence—provide particularly insistent sources of chronic stress. Rural areas have their own chronic stressors, of course, especially isolation and lack of access to amenities such as health care. The realization that chronic stressors are linked to environments has spawned the subfield *environmental psychology,* the scientific study of environmental effects on behavior and health.

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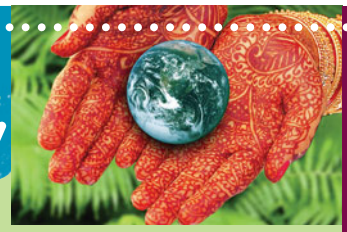
Crazy-busy? The daily hassle of more work than time can become a significant stressor. Also a fire hazard.

chronic stressor A source of stress that occurs continuously or repeatedly.

Culture & Community



Can Being the Target of Discrimination Cause Stress and Illness?

It is difficult to be a stranger in a strange land. It's even worse if the people in this land discriminate against you. In a study by Suarez-Morales and Lopez (2009), preadolescents in Miami-Dade County who had immigrated from Cuba and other Hispanic cultures were asked to report whether they had experienced discrimination in the United States (agreeing, e.g., that "Because of the group I am in, I don't get the grades I deserve"). Those who reported discrimination also reported higher levels of worrying, anxiety, and bodily symptoms of stress.

You might wonder whether the discrimination caused the stress symptoms or whether there is some other causal connection. For example, maybe people who complain about problems in one area tend to complain about other problems as well. Studies looking at which comes first—suffering discrimination or experiencing health problems—show that discrimination is indeed the culprit (Pascoe & Richman, 2009). Being a stranger in a strange land can make you sick.

TONY MENDOZA

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When the "Theme Building" was designed for Los Angeles International Airport in the early '60s to celebrate the modern age, few probably anticipated that it would someday be shown in a textbook as a reminder of the stress of airplane noise on children living nearby.

In one study of the influence of noise on children, environmental psychologists looked at the impact of attending schools under the flight path to Los Angeles International Airport. Did the noise of more than 300 jets flying overhead each day have an influence beyond making kids yell to be heard? Compared with children matched for race, economic background, and ethnicity who attended nearby schools away from the noise, children going to school in the flight path had higher blood pressure and gave up more easily when working on difficult problems and puzzles (Cohen et al., 1980). Next time you fly into LA, please try to do so more quietly for the children.

Perceived Control over Stressful Events

What do death curses, catastrophes, stressful life changes, and daily hassles have in common? Right off the bat, of course, their threat to the person or the status quo is easy to see. Stressors challenge you to *do something*—to take some action to eliminate or overcome the stressor.

Paradoxically, events are most stressful when there is *nothing to do*—no way to deal with the challenge. Expecting that you will have control over what happens to you is associated with effectiveness in dealing with stress. Researchers David Glass and Jerome Singer (1972), in classic studies of *perceived control,* looked at the aftereffects of loud noise on people who could or could not control it. Participants were asked to solve puzzles and proofread in a quiet room or in a room filled with noise as loud as that in classrooms under the LA flight path. Glass and Singer found that bursts of such noise hurt people's performance on the tasks after the noise was over. However, this dramatic decline in performance was prevented among participants who were told during the noise period that they could stop the noise just by pushing a button. They didn't actually take this option, but access to the "panic button" shielded them from the detrimental effects of the noise.

● **Why is the ability to control the source of stress so important?**

Subsequent studies have found that a lack of perceived control underlies other stressors, too. The stressful effects of crowding, for example, appear to stem from the feeling that you can't control getting away from the crowded conditions (Sherrod, 1974). Being jammed into a crowded dormitory room may be easier to handle, after all, the moment you learn of the button that drops open the trapdoor under your roommate's chair.

When the cabin attendant announces that "we have a full cabin on this flight," conditions can be stressful not so much because of the crowding, but because there is no obvious control over the crowding. Taking control, for example, by keeping busy or wearing headphones to decrease contact with others or even by talking with people and getting to know them may help decrease the stress.

MEDIACOLOR/ALAMY

fight-or-flight response An emotional and physiological reaction to an emergency that increases readiness for action.

general adaptation syndrome (GAS) A three-stage physiological response that appears regardless of the stressor that is encountered.

summary quiz [14.1]

1. According to the College Undergraduate Stress Scale, which of the following events is most stressful?
   a. concerns about your appearance
   b. getting married
   c. getting sick
   d. confrontations with professors

2. A person living in an area where there is considerable traffic, noise, crowding, and pollution is exposed to what kinds of stressors?
   a. chronic stressors
   b. intermittent stressors
   c. positive stressors
   d. controllable stressors

3. Two groups are exposed to loud noise while trying to solve puzzles. Group A is instructed they can stop the noise by pushing a button, whereas Group B is told nothing. Group A's puzzle-solving performance will
   a. be unaffected by the instruction.
   b. become slightly worse than Group B's.
   c. become much worse than Group B's.
   d. become better than Group B's.

Stress Reactions: All Shook Up

An accident at the Three Mile Island nuclear plant near Harrisburg, Pennsylvania, on March 28, 1979, created a near meltdown in the reactor and released radioactivity into the air and into the Susquehanna River. The situation was out of control for 2 days, on the brink of a major disaster that was averted only when plant operators luckily made the right decision to repressurize the coolant system. Local residents fled the area. Most eventually returned when the danger had subsided, but they suffered lasting effects of the stress associated with this potentially deadly event.

A study conducted a year and a half later compared area residents with people from unaffected areas (Fleming et al., 1985). The local group showed physical signs of stress: They had relatively high levels of *catecholamines* (biochemicals indicating the activation

JOHN S. ZEEDICK/GETTY IMAGES

A near meltdown occurred at the Three Mile Island nuclear plant near Harrisburg, Pennsylvania, on March 28, 1979.

of emotional systems), and they had fewer white blood cells available to fight infection (Schaeffer et al., 1985). The residents also suffered psychological effects, including higher levels of anxiety, depression, and alienation compared with people from elsewhere. Even on a simple proofreading task, residents performed more poorly than did people from unaffected areas. Because the radiation released was not sufficient to account for any of these effects, they were attributed to the aftermath of stress. In short, stress can produce changes in every system of the body, influencing how people feel and how they act.

Physical Reactions

Before he became interested in voodoo death, Walter Cannon (1929) coined a phrase to describe the body's response to any threatening stimulus: the **fight-or-flight response**, *an emotional and physiological reaction to an emergency that increases readiness for action*. The mind asks, "Should I stay and battle this somehow, or should I run like mad?" And the body prepares to react. If you're a cat at this time, your hair stands on end. If you're a human, your hair stands on end, too, but not as visibly. Cannon recognized this common response across species and suspected that it might be the body's first mobilization to any threat. Research conducted since Cannon's discovery has revealed what is happening in the brain and body during this reaction.

● How does the body react to a flight-or-flight situation?

Brain activation in response to threat occurs in the hypothalamus, stimulating the nearby pituitary gland, which in turn releases a hormone known as ACTH (short for adrenocorticotropic hormone). ACTH travels through the bloodstream and stimulates the adrenal glands atop the kidneys (see **FIGURE 14.1**). In this cascading response of the *HPA axis* (for *h*ypothalamus, *p*ituitary, *a*drenal), the adrenal glands are then stimulated to release hormones, including the *catecholamines* mentioned earlier (epinephrine and norepinephrine), which increase sympathetic nervous system activation (and therefore increase heart rate, blood pressure, and respiration rate) and decrease parasympathetic activation (see Chapter 3). The increased respiration and blood pressure make more oxygen available to the muscles to energize attack or to initiate escape. The adrenal glands also release *cortisol*, a hormone that increases the concentration of glucose in the blood to make fuel available to the muscles. Everything is prepared for a full-tilt response to the threat.

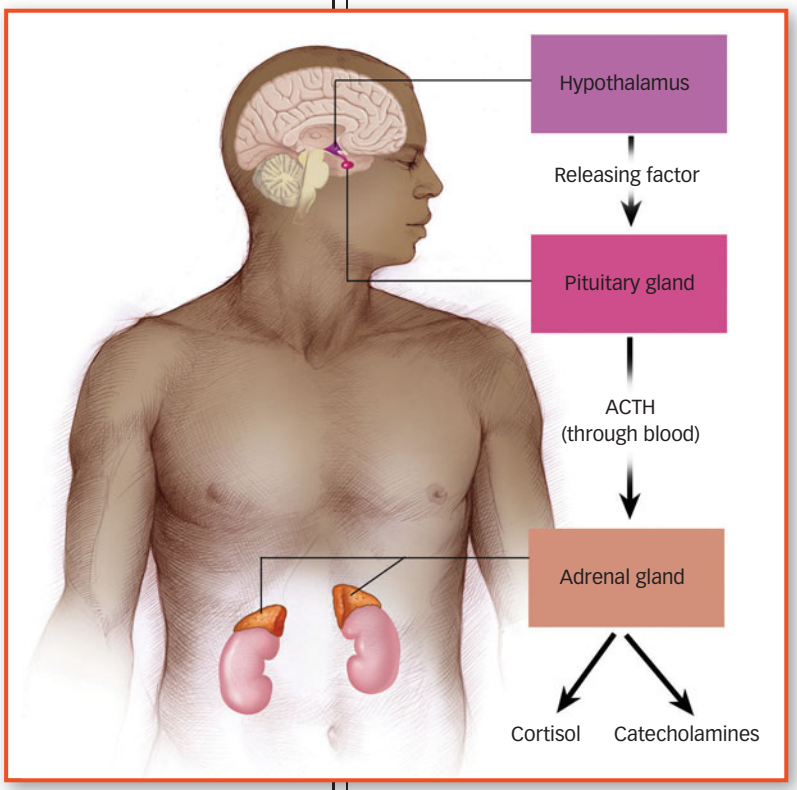


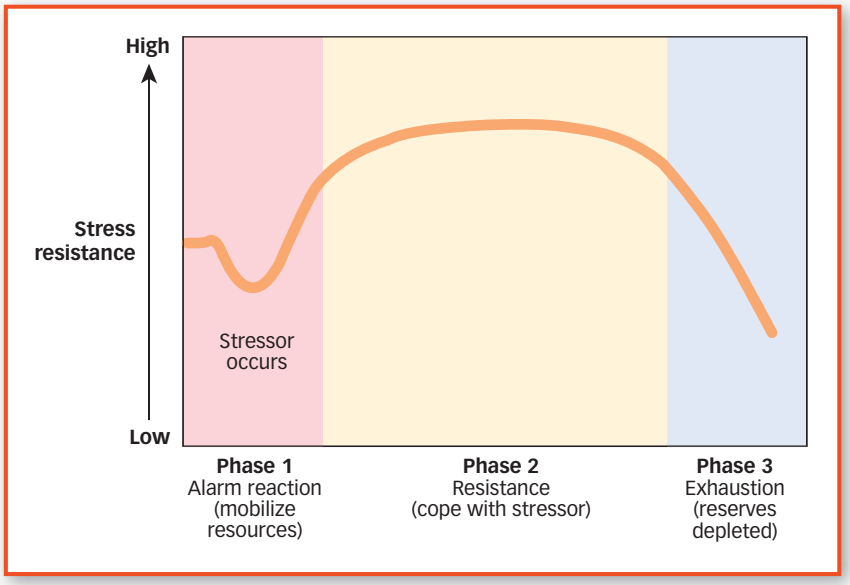
FIGURE 14.1
HPA Axis *Just a few seconds after a fearful stimulus is perceived, the hypothalamus activates the pituitary gland to release adrenocorticotropic hormone (ACTH). The ACTH then travels through the bloodstream to activate the adrenal glands to release catecholamines and cortisol, which energize the fight-or-flight response.*

General Adaptation Syndrome

What might have happened to Three Mile Island's neighbors if the sirens had wailed again and again for days or weeks at a time? Starting in the 1930s, Hans Selye, a Canadian physician, undertook a variety of experiments that looked at the physiological consequences of severe threats to well-being. He subjected rats to heat, cold, infection, trauma, hemorrhage, and other prolonged stressors, making few friends among the rats or their sympathizers but learning a lot about stress. His stressed-out rats developed physiological responses that included an enlarged adrenal cortex, shrinking of the lymph glands, and ulceration of the stomach. Noting that many different kinds of stressors caused similar patterns of physiological change, he called the reaction **general adaptation syndrome (GAS)**, which he defined as *a three-stage physiological stress response that appears regardless of the stressor that is encountered*. The GAS is *nonspecific*; that is, the response doesn't vary, no matter what the source of the repeated stress.

Hans Selye with rat. Given all the stress Selye put rats under, this one looks surprisingly calm.

FIGURE 14.2
Selye's Three Phases of Stress Response
In Selye's theory, resistance to stress builds over time but then can only last so long before exhaustion sets in.



None of this is very good news. Although Friedrich Nietzsche once said, "What does not kill me makes me stronger," Selye found that severe stress takes a toll on the body. He saw the GAS as occurring in three phases (see **FIGURE 14.2**):

● What are the three phases of GAS?

- First comes the *alarm phase*, in which the body rapidly mobilizes its resources to respond to the threat. Energy is required, and the body calls on its stored fat and muscle. The alarm phase is equivalent to Cannon's fight-or-flight response.
- Next, in the *resistance phase,* the body adapts to its high state of arousal as it tries to cope with the stressor. Continuing to draw on resources of fat and muscle, it shuts down unnecessary processes: digestion, growth, and sex drive stall; menstruation stops; production of testosterone and sperm decrease. The body is being taxed to generate resistance, and all the fun stuff is put on hold.
- If the GAS goes on for long enough, the *exhaustion phase* sets in. The body's resistance collapses. Many of the resistance-phase defenses create gradual damage as they operate, leading to costs for the body that can include susceptibility to infection, tumor growth, aging, irreversible organ damage, or death.

Stress Effects on the Immune Response

The **immune system** is *a complex response system that protects the body from bacteria, viruses, and other foreign substances*. The system includes white blood cells such as **lymphocytes** (including T cells and B cells), *cells that produce antibodies that fight infection*. The immune system is remarkably responsive to psychological influences. *Psychoneuroimmunology* is the study of how the immune system responds to psychological variables, such as the presence of stressors. Stressors can cause hormones such as glucocorticoids to flood the brain, wearing down the immune system and making it less able to fight invaders.

● How does stress affect the immune system?

For example, in one study, medical student volunteers agreed to receive small wounds to the roof of the mouth. Researchers observed that these wounds healed more slowly during exam periods than during summer vacation (Marucha, Kiecolt-Glaser, & Favagehi, 1998). In another study, a set of selfless, healthy volunteers permitted researchers to swab common cold virus in their noses (Cohen et al., 1998). You might think that a direct application of the virus would be like exposure to a massive full-facial sneeze and that all the participants would catch colds. The researchers observed, though, that some people got colds and others didn't—and stress helped account for the difference. Volunteers who had experienced

immune system A complex response system that protects the body from bacteria, viruses, and other foreign substances.

lymphocytes White blood cells that produce antibodies that fight infection.

Type A behavior pattern The tendency toward easily aroused hostility, impatience, a sense of time urgency, and competitive achievement strivings.

chronic stressors (lasting a month or longer) were especially likely to suffer colds. In particular, participants who had lost a job or who were going through extended interpersonal problems with family or friends were most susceptible to the virus. Brief stressful life events (those lasting less than a month) had no impact.

The effect of stress on immune response may help to explain why social status is related to health. Studies of British civil servants beginning in the 1960s found that mortality varied precisely with civil service grade: the higher the classification, the lower the rates of death, regardless of cause (Marmot et al., 1991). One explanation is that people in lower-status jobs more often engage in unhealthy behavior such as smoking and drinking alcohol, and there is evidence of this. But there is also evidence that the stress of living life at the bottom levels of society increases risk of infections by weakening the immune system. People who perceive themselves as low in social status are more prone to suffer from respiratory infections, for example, than those who do not bear this social burden—and the same holds true for low-status male monkeys (Cohen, 1999).

"I'd like to get your arrow count down."

Stress and Cardiovascular Health

The heart and circulatory system are also sensitive to stress. For example, for several days after Iraq's 1991 missile attack on Israel, heart attack rates went up markedly among citizens in Tel Aviv (Meisel et al., 1991). The full story of how stress affects the cardiovascular system starts earlier than the occurrence of a heart attack, however: Chronic stress creates changes in the body that increase later vulnerability to this condition.

The main cause of coronary heart disease is *atherosclerosis,* a gradual narrowing of the arteries that occurs as fatty deposits, or plaque, build up on the inner walls of the arteries. Narrowed arteries result in a reduced blood supply and, eventually, when an artery is blocked by a blood clot or by detached plaque, in a heart attack. Although smoking, a sedentary lifestyle, and a diet high in fat and cholesterol can cause coronary heart disease, chronic stress is a major contributor (Krantz & McCeney, 2002). As a result of stress-activated arousal of the sympathetic nervous system, blood pressure goes up and stays up, and this gradually damages the blood vessels. The damaged vessels accumulate plaque, and the more plaque, the greater the likelihood of coronary heart disease.

How does chronic stress increase the chance of a heart attack?

In the 1950s, cardiologists Meyer Friedman and Ray Rosenman (1974) conducted a revolutionary study that demonstrated a link between work-related stress and coronary heart disease. They interviewed and tested 3,000 healthy middle-age men and then tracked their subsequent cardiovascular health. Based on their research, Friedman and Rosenman developed the concept of the **Type A behavior pattern**, which is characterized by *a tendency toward easily aroused hostility, impatience, a sense of time urgency, and competitive achievement strivings,* and they compared Type A individuals to those with a less driven behavior pattern (sometimes called *Type B*). The Type A men were identified not only by their answers to questions in the interview (agreeing that they walk and talk fast, work late, set goals for themselves, work hard to win, and easily get frustrated and angry at others) but also by the pushy and impatient way in which they answered the questions. They watched the clock, barked back answers, and interrupted the interviewer, at some points even slapping him with a fish. Okay, the part about the fish is wrong, but you get the idea: These people were intense. The researchers found that of the 258 men who had heart attacks in the 9 years following the interview, over two thirds had been classified as Type A, and only one third had been classified as Type B.

Road rage starts to make sense when you believe that all the other drivers on the road are trying to kill you.

ROY MORSCH/AGE FOTOSTOCK

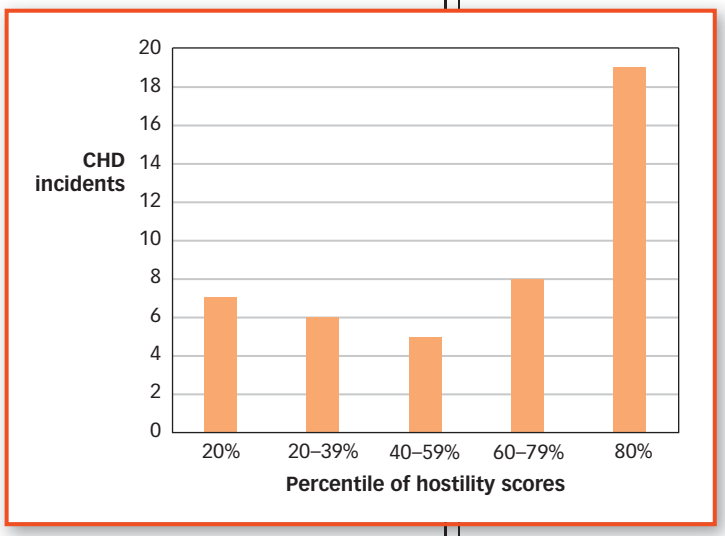


FIGURE 14.3
Hostility and Coronary Heart Disease
Of 2,280 men studied over the course of 3 years, 45 suffered coronary heart disease (CHD) incidents, such as heart attack. Many more of these incidents occurred in the group who had initially scored above the 80th percentile in hostility (Niaura et al., 2002).

A later study of stress and anger tracked medical students for up to 48 years to see how their behavior while they were young related to their later susceptibility to coronary problems (Chang et al., 2002). Students who responded to stress with anger and hostility were found to be three times more likely later to develop premature heart disease and six times more likely to have an early heart attack than were students who did not respond with anger. Hostility, particularly in men, predicts heart disease better than any other major causal factor, such as smoking, high caloric intake, or even high levels of LDL cholesterol (Niaura et al., 2002; see also **FIGURE 14.3**). Stress affects the cardiovascular system to some degree in everyone but is particularly harmful in those people who respond to stressful events with hostility.

What causal factor most predicts heart attacks?

Psychological Reactions

The body's response to stress is intertwined with responses of the mind. Perhaps the first thing the mind does is try to sort things out—to interpret whether an event is threatening or not and, if it is, whether something can be done about it.

Stress Interpretation

The interpretation of a stimulus as stressful or not is called *primary appraisal* (Lazarus & Folkman, 1984). Primary appraisal allows you to realize that a small dark spot on your shirt is a stressor ("Spider!") or that a 70-mile-per-hour drop from a great height in a small car full of screaming people is not a stressor ("Roller coaster!").

In a demonstration of the importance of interpretation, researchers used a gruesome film of a subincision—a kind of genital surgery that is part of some tribal initiation rites—to severely stress volunteer participants (Speisman et al., 1964). Self-reports and participants' autonomic arousal (heart rate and skin conductance level) were the measures of stress. Before viewing the film, one group heard an introduction that downplayed the pain and emphasized the coming-of-age aspect of the initiation. This interpretation markedly reduced the film viewers' stress compared with another group whose viewing was preceded by a lecture accentuating the pain and trauma.

What is the difference between a threat and a challenge?

The next step in interpretation is *secondary appraisal*—determining whether the stressor is something you can handle or not—that is, whether you have control over the event (Lazarus & Folkman, 1984). Interestingly, the body responds differently depending on whether the stressor is perceived as a *threat* (a stressor you believe you might *not* be able to overcome) or a *challenge* (a stressor you feel fairly confident you can control) (Blascovich & Tomaka, 1996). The same midterm exam could be a challenge if you were well prepared and a threat if you neglected to study.

Stress Disorders

Psychological reactions to stress can lead to stress disorders. For example, a person who lives through a terrifying and uncontrollable experience may develop **posttraumatic stress disorder** (PTSD), a disorder characterized by *chronic physiological arousal, recurrent unwanted thoughts or images of the trauma, and avoidance of things that call the traumatic event to mind.*

posttraumatic stress disorder (PTSD) A disorder characterized by chronic physiological arousal, recurrent unwanted thoughts or images of the trauma, and avoidance of things that call the traumatic event to mind.

Psychological scars left by traumatic events are nowhere more apparent than in war. Many soldiers returning from combat have PTSD symptoms, including flashbacks of battle, exaggerated anxiety and startle reactions, and even medical conditions that do

not arise from physical damage (e.g., paralysis or chronic fatigue). Most of these symptoms are normal, appropriate responses to horrifying events; and for most people, the symptoms subside with time. In PTSD, the symptoms can last much longer. For example, the Centers for Disease Control (1988) found that even 20 years after the Vietnam War, 15% of veterans who had seen combat continued to report lingering symptoms. This long-term psychological response is now recognized not only among the victims, witnesses, and perpetrators of war but also among ordinary people who are traumatized by any of life's terrible events. At some time over the course of their lives, about 8% of Americans are estimated to suffer from PTSD (Kessler et al., 1995).

Not everyone who is exposed to a traumatic event develops PTSD, suggesting that people differ in their degree of sensitivity to trauma. Research using magnetic resonance imaging (MRI) to examine brain structures has found one possible indication of such sensitivity. In some studies comparing people without and with PTSD, the hippocampus was found to be smaller in volume among individuals with PTSD (Stein et al., 1997). This raises an important question: Does the reduced hippocampal volume reflect a preexisting condition that makes the brain sensitive to stress, or does the traumatic stress itself somehow kill nerve cells? One study suggests that although a group of combat veterans with PTSD showed reduced hippocampal volume, so do the identical (monozygotic) twins of those men (**FIGURE 14.4**, below)—even though those twins had never had any combat exposure or developed PTSD (Gilbertson et al., 2002). This suggests that the veterans' reduced hippocampal volumes weren't caused by the combat exposure; instead, both these veterans and their twin brothers might have had a smaller hippocampus to begin with, a preexisting condition that made them susceptible to developing PTSD, when they were later exposed to trauma.

● What structure in the brain might be an indicator for susceptibility to PTSD?

MATT CARDY/GETTY IMAGES

The traumatic events of war leave many suffering symptoms of PTSD.

Burnout

Did you ever take a class from an instructor who had lost interest in the job? The syndrome is easy to spot: The teacher looks distant and blank, almost robotic, giving predictable and humdrum lessons each day—as if it doesn't matter whether anyone is listening. Now imagine *being* this instructor. You decided to teach because you wanted to shape young minds. You worked hard, and for a while things were great. But one day, you look up to see a roomful of miserable students who are bored and don't care about anything you have to say. They text-message while you talk and start shuffling papers and putting things away long before the end of class. You're happy at work only

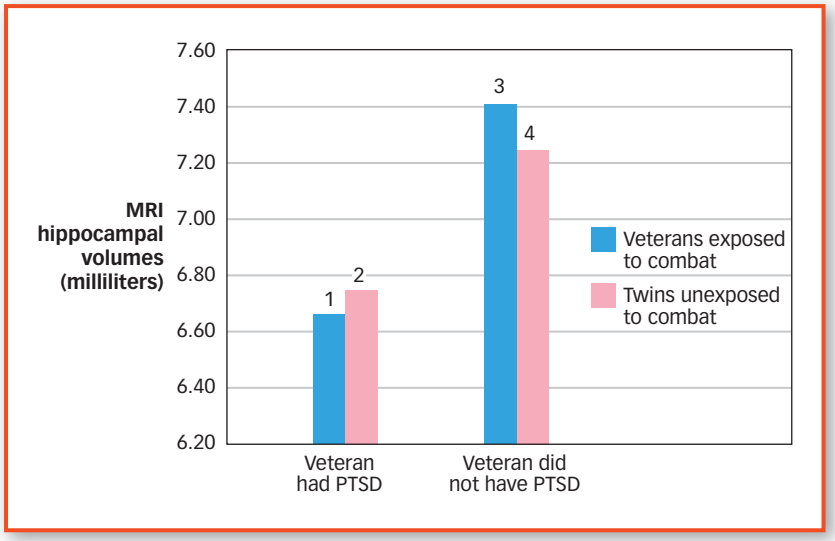
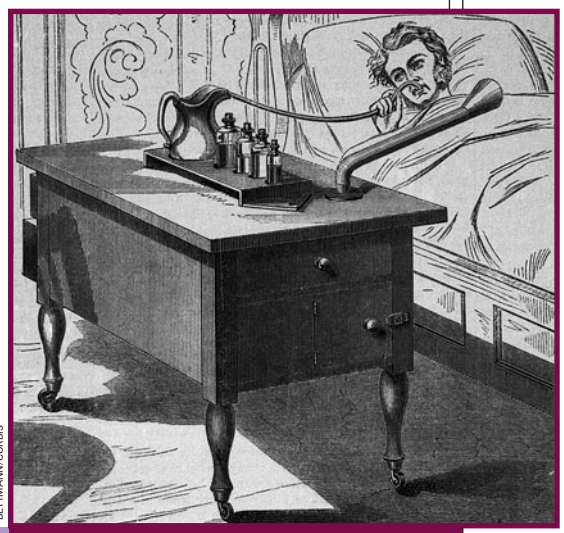


FIGURE 14.4 Hippocampal Volumes of Vietnam Veterans and Their Identical Twins *Average hippocampal volumes for four groups of participants: (1) combat-exposed veterans who developed PTSD; (2) their combat-unexposed twins with no PTSD themselves; (3) combat-exposed veterans who never developed PTSD; and (4) their unexposed twins, also with no PTSD. Smaller hippocampal volumes were found both for the combat-exposed veterans with PTSD (group 1) and their twins who had not been exposed to combat (group 2) in comparison to veterans without PTSD (group 3) and their twins (group 4). This pattern of findings suggests that an inherited smaller hippocampus may make some people sensitive to conditions that cause PTSD (Gilbertson et al., 2002).*



BETTMANN/CORBIS

An automatic nurse might be one solution to the problem of burnout among members of health professions. This "nursing table" patented in 1869 was to take care of the sick with minimal human intervention.

when you're not in class. When people feel this way, especially about their jobs or careers, they are suffering from **burnout**, *a state of physical, emotional, and mental exhaustion created by long-term involvement in an emotionally demanding situation and accompanied by lowered performance and motivation.*

Burnout is a particular problem in the helping professions (Freudenberger, 1974; Pines & Aronson, 1988). Teachers, nurses, clergy, doctors, dentists, psychologists, social workers, police officers, and others who repeatedly encounter emotional turmoil on the job may only be able to work productively for a limited time. Eventually, many succumb to symptoms of burnout: overwhelming exhaustion, a deep cynicism and detachment from the job, and a sense of ineffectiveness and lack of accomplishment (Maslach, 2003). Their unhappiness can even spread to others; people with burnout tend to become disgruntled employees who revel in their coworkers' failures and ignore their coworkers' successes (Brenninkmeijer, Vanyperen, & Buunk, 2001).

Why is burnout a problem especially in the helping professions?

What causes burnout? One theory suggests that the culprit is using your job to give meaning to your life (Pines, 1993). If you define yourself only by your career and gauge your self-worth by success at work, you risk having nothing left when work fails. For example, a teacher in danger of burnout might do well to invest time in family, hobbies, or other self-expressions. Others argue that some emotionally stressful jobs lead to burnout no matter how they are approached and active efforts to overcome the stress before burnout occurs are important. The stress management techniques discussed in the next section may be lifesavers for people in such jobs.

summary quiz [14.2]

4. When a person feels threatened, a chain of events occurs within the nervous and endocrine systems to prepare the body for action. This reaction starts in the
a. adrenal glands.
b. hypothalamus.
c. pituitary gland.
d. amygdala.

5. In Hans Selye's general adaptation syndrome, the alarm phase is equivalent to
a. the Type A behavior pattern.
b. primary appraisal.
c. the fight-or-flight response.
d. posttraumatic stress disorder.

6. Development of heart disease is linked to which psychological characteristic?
a. competitive achievement strivings
b. impatience
c. a sense of time urgency
d. hostility

7. A person who is experiencing physical, emotional, and mental exhaustion and reduced performance and motivation due to long-term involvement in an emotionally demanding situation is experiencing
a. burnout.
b. posttraumatic stress disorder.
c. Type A behavior pattern.
d. the fight-or-flight response.

burnout A state of physical, emotional, and mental exhaustion created by long-term involvement in an emotionally demanding situation and accompanied by lowered performance and motivation.

repressive coping Avoiding situations or thoughts that are reminders of a stressor and maintaining an artificially positive viewpoint.

rational coping Facing a stressor and working to overcome it.

Stress Management: Dealing with It

Most college students (92%) say they occasionally feel overwhelmed by the tasks they face, and over a third say they have dropped courses or received low grades in response to severe stress (Deuenwald, 2003). No doubt you are among the lucky 8% who are entirely cool and report no stress. But just in case you're not, you may appreciate our exploration of stress management techniques—ways to counteract psychological and

physical stress reactions directly by managing your mind and body and ways to sidestep stress by managing your situation. These techniques resemble some of the forms of cognitive behavior therapy we explored in Chapter 13, but they are strategies people often exercise on their own, without the help of a therapist.

Mind Management

Stressful events are magnified in the mind. If you fear public speaking, for example, just the thought of an upcoming presentation to a group can create anxiety. And if you do break down during a presentation—going blank, for example, or blurting out something embarrassing—intrusive memories of this stressful event could echo in your mind afterward. A significant part of stress management, then, is control of the mind.

Repressive Coping

Controlling your thoughts isn't easy, but some people do seem to be able to banish unpleasant thoughts from mind. This style of dealing with stress, called **repressive coping**, is *characterized by avoiding situations or thoughts that are reminders of a stressor and maintaining an artificially positive viewpoint.* Everyone has *some* problems, of course, but repressors are good at deliberately ignoring them (Barnier, Levin, & Maher, 2004). So, for example, when repressors suffer a heart attack, they are less likely than other people to report intrusive thoughts of their heart problems in the days and weeks that follow (Ginzburg, Solomon, & Bleich, 2002).

When is it useful to avoid stressful thoughts and when is avoidance a problem?

Like Mr. X, who was persuaded to avoid his mother's home as a way of keeping her frightening threats out of mind, people often rearrange their lives in order to avoid stressful situations. Many victims of rape, for example, move away from home, and they typically avoid the place where the rape occurred (Ellis, 1983). Anticipating and attempting to avoid reminders of the traumatic experience, they become wary of strangers, especially men who resemble the assailant, and they check doors, locks, and windows more frequently than before. Although it may make sense to try to avoid stressful thoughts and situations when stress is at its peak, research indicates that longer-term use of such strategies can be harmful (Suls & Fletcher, 1985; Wegner & Pennebaker, 1993). The avoidance of thoughts and situations makes your world a bit smaller each day; a better approach is to come to grips with fears or problems. This is the basic idea of rational coping.

Rational Coping

Rational coping involves *facing the stressor and working to overcome it.* This strategy is the opposite of repressive coping and so may seem to be the most unpleasant and unnerving thing you could do when faced with stress. It requires approaching rather than avoiding a stressor in order to lessen its longer-term negative impact (Hayes, Strosahl, & Wilson, 1999). Rational coping is a three-step process: *acceptance,* coming to realize that the stressor exists and cannot be wished away; *exposure,* attending to the stressor, thinking about it, and even seeking it out; and *understanding,* working to find the meaning of the stressor in your life.

What are the three steps in rational coping?

When the trauma is particularly intense, rational coping may be difficult to undertake. In rape trauma, for example, even accepting that the rape happened takes time and effort; the initial impulse is to deny the event and try to live as though it had never occurred. Psychotherapy may help during the exposure step by helping victims to confront and think about what happened. Using a technique called

ALESSANDRA BENEDETTI/CORBIS

Actor Heath Ledger's death in 2008 was ruled an accident: An autopsy revealed he had taken a potent array of painkillers, sleeping pills, and antianxiety drugs. It is impossible to know just what happened, but some guess that he was engaged in repressive coping—using the drugs to erase anxiety from his mind.

PUNIT PARANJPE/REUTERS/CORBIS

How do you cope with a tidal wave? This survivor of the devastating 2004 Tsunami south of Madras, India, looks for her belongings in the wreckage.

"prolonged exposure," rape survivors relive the traumatic event in their imagination by recording a verbal account of the event and then listening to the recording daily. In one study, rape survivors were instructed to seek out objectively safe situations that caused them anxiety or that they had avoided. This sounds like bitter medicine indeed, but it is remarkably effective, producing significant reductions in anxiety and PTSD symptoms compared to no therapy and compared to other therapies that promote more gradual and subtle forms of exposure (Foa et al., 1999).

The third element of rational coping involves coming to an understanding of the meaning of the stressful events. A trauma victim may wonder again and again, "Why me?" or, "How did it happen?" or, "Why?" Survivors of incest frequently voice the desire to make sense of their trauma (Silver, Boon, & Stones, 1983)—a process that is difficult, even impossible, during bouts of suppression and avoidance.

Reframing

Changing the way you think is another way to cope with stressful thoughts. **Reframing** involves *finding a new or creative way to think about a stressor that reduces its threat.* If you experience anxiety at the thought of public speaking, for example, you might reframe by shifting from thinking of an audience as evaluating you to thinking of yourself as evaluating them, and this might make speech giving easier.

Reframing can be an effective way to prepare for a moderately stressful situation, but if something like public speaking is so stressful that you can't bear to think about until you absolutely must, the technique may be not be usable. **Stress inoculation training (SIT)** is *a reframing technique that helps people to cope with stressful situations by developing positive ways to think about the situation.* For example, in one study, people who had difficulty controlling their anger were trained to rehearse thoughts such as "Just roll with the punches; don't get bent out of shape." Participants who practiced these thoughts were less likely to become physiologically aroused in response to laboratory-based provocations, both imaginary and real. Subsequent research on SIT has revealed that it can be useful, too, for helping people who have suffered prior traumatic events to become more comfortable living with those events (Foa & Meadows, 1997).

How has writing about stressful events shown to be helpful?

Reframing apparently can take place spontaneously if people are given the opportunity to spend time thinking and writing about stressful events. In an important series of studies, Jamie Pennebaker (1989) found that the physical health of a group of college students improved after they spent a few hours writing about their deepest thoughts and feelings. Compared with students who had written about something else, members of the self-disclosure group were less likely in subsequent months to visit the student health center; they also used less aspirin and achieved better grades (Pennebaker & Beall, 1986; Pennebaker, Colder, & Sharp, 1990). In fact, engaging in such expressive writing was found to improve immune function (Pennebaker, Kiecolt-Glaser, & Glaser, 1988), while suppressing emotional topics weakened it (Petrie, Booth, & Pennebaker, 1998). The positive effect of self-disclosing writing may reflect its usefulness in reframing trauma and reducing stress.

ARKRELIGION.COM/ALAMY

Perhaps Ganesh, the Hindu god of wisdom, finds it therapeutic to write about his thoughts and feelings from time to time.

Body Management

Stress can express itself as tension in your neck muscles, back pain, a knot in your stomach, sweaty hands, or the harried face you glimpse in the mirror. Because stress so often manifests itself through bodily symptoms, bodily techniques such as relaxation, biofeedback, and aerobic exercise are useful in its management.

Relaxation

Imagine for a moment that you are scratching your chin. Don't actually do it; just think about it and notice that your body participates by moving ever so slightly, tensing and relaxing in the sequence of the imagined action. Our bodies respond to all the things we think about doing every day. These thoughts create muscle tension even when we think we're doing nothing at all. **Relaxation therapy** is *a technique for reducing tension by consciously relaxing muscles of the body.* A person in relaxation therapy may be asked to relax specific muscle groups one at a time or to imagine warmth flowing through the body or to think about a relaxing situation. Meditation, hypnosis, yoga, and prayer have some elements in common with relaxation therapy (see Chapter 8). These activities all draw on a **relaxation response**, *a condition of reduced muscle tension, cortical activity, heart rate, breathing rate, and blood pressure* (Benson, 1990). Basically, as soon as you get in a comfortable position, quiet down, and focus on something repetitive or soothing that holds your attention, you relax.

What do meditation, hypnosis, yoga, and prayer have in common?

Relaxing on a regular basis can reduce symptoms of stress (Carlson & Hoyle, 1993) and even reduce blood levels of cortisol, the biochemical marker of the stress response (McKinney et al., 1997). For example, in patients who are suffering from tension headache, relaxation reduces the tension that causes the headache; in people with cancer, relaxation makes it easier to cope with stressful treatments; in people with stress-related cardiovascular problems, relaxation can reduce the high blood pressure that puts the heart at risk (Mandle et al., 1996).

Biofeedback

Wouldn't it be nice if, instead of having to learn to relax, you could just flip a switch and relax as fast as possible? **Biofeedback**, *the use of an external monitoring device to obtain information about a bodily function and possibly gain control over that function,* was developed with this goal of high-tech relaxation in mind.

Biofeedback can help people control physiological functions they are not likely to become aware of in other ways. For example, you probably have no idea right now what brain-wave patterns you are producing. In the late 1950s, Joe Kamiya (1969), a psychologist using the electroencephalograph (also called the EEG and discussed in Chapter 3), initiated a brain-wave biofeedback revolution when he found that people could change their brain waves from alert beta patterns to relaxed alpha patterns and back again when they were permitted to monitor their own EEG readings.

How does biofeedback work?

Recent studies suggest that EEG biofeedback (or neurofeedback) is moderately successful in treating brain-wave abnormalities in disorders such as epilepsy (Yucha & Gilbert, 2004). Often, however, the use of biofeedback to produce relaxation in the brain turns out to be a bit of technological overkill and may not be much more effective than simply having the person stretch out in a hammock and hum a happy tune. Unfortunately, biofeedback is not a magic bullet that gives people control over stress-induced health troubles, but it has proven useful as a technique for pursuing the benefits of relaxation (Moss et al., 2002). People who find that they cannot relax successfully through relaxation therapy may find that biofeedback provides a useful alternative.

reframing Finding a new or creative way to think about a stressor that reduces its threat.

stress inoculation training (SIT) A therapy that helps people to cope with stressful situations by developing positive ways to think about the situation.

relaxation therapy A technique for reducing tension by consciously relaxing muscles of the body.

relaxation response A condition of reduced muscle tension, cortical activity, heart rate, breathing rate, and blood pressure.

biofeedback The use of an external monitoring device to obtain information about a bodily function and possibly gain control over that function.

MICHAEL NEWMAN/PHOTOEDIT

Biofeedback gives people access to visual or audio feedback showing levels of psychophysiological functions such as heart rate, breathing, or skin temperature that they would otherwise be unable to sense directly.

AP PHOTO/SARASOTA HERALD-TRIBUNE, MIKE LANG

Exercise is helpful for the reduction of stress and even better if you get to carry the Olympic torch.

Aerobic Exercise

A jogger nicely decked out in a neon running suit bounces back and forth in place at the crosswalk and then springs away when the signal changes. It is tempting to assume this jogger is the picture of psychological health—happy, unstressed, and even downright exuberant. It is also a bit tempting, if you're driving a car, to run up on the curb and mow the jogger down. As it turns out, the stereotype is true: Studies indicate that *aerobic exercise* (exercise that increases heart rate and oxygen intake for a sustained period) is associated with psychological well-being (Hassmen, Koivula, & Uutela, 2000). But does exercise *cause* psychological well-being, or does psychological well-being cause people to exercise? Perhaps general happiness is what inspires the jogger's bounce. Or could some unknown third factor (neon pants?) cause both the need to exercise and the sense of well-being? As we've mentioned many times, correlation does not always imply causation.

To try to tease apart causal factors, researchers have randomly assigned people to aerobic exercise activities and no-exercise comparison groups and have found that exercise actually does promote stress relief and happiness. In one experiment, mildly depressed college women were randomly placed in a 10-week program of aerobic exercise (1 hour, twice each week), a program of relaxation, or no treatment. The exercise group became less depressed over the course of the program, improving more than the relaxation group and the control group (McCann & Holmes, 1984). Subsequent studies have found that as little as 10 minutes of exercise at a time can yield a positive mood boost (Hanson, Stevens, & Coast, 2001).

The reasons for this positive effect are unclear. Researchers have suggested that the effect results from increases in the body's production of neurotransmitters such as serotonin, which can have a positive effect on mood (as discussed in Chapter 3) or to increases in the production of endorphins—the endogenous opioids discussed in Chapters 3 and 8 (Jacobs, 1994).

What are the benefits of exercise?

Beyond boosting positive mood, exercise also stands to keep you healthy into the future. Current U.S. government recommendations suggest that 30 minutes of moderately vigorous exercise per day will reduce the risk of chronic illness (Dietary Guidelines Advisory Committee, 2005). Perhaps the simplest thing you can do to improve your happiness and health, then, is to regularly participate in an aerobic activity. Pick something you find fun: Sign up for a dance class, get into a regular basketball game, or start paddling a canoe—anything that will keep you coming back for more. If all else fails, park the car, get out a big foam rubber bat, and chase down the next bouncy jogger you see.

Situation Management

After you have tried to manage stress by managing your mind and managing your body, what's left to manage? Look around and you'll notice a whole world out there. Perhaps that could be managed as well. Situation management involves changing your life situation as a way of reducing the impact of stress on your mind and body. Ways to manage your situation can include seeking out social support and finding a place for humor in your life.

Social Support

The wisdom of the National Safety Council's first rule—"Always swim with a buddy"—is obvious when you're in water over your head, but people often don't realize that the same principle applies whenever danger threatens. Other people can offer help in times of stress. **Social support** is *aid gained through interacting with others.* One of the more self-defeating things you can do in life is to fail to connect to people in this way. Just failing to get married, for example, is bad for your health. Unmarried individuals have an elevated risk of mortality from cardiovascular disease, cancer, pneumonia and influenza, chronic obstructive pulmonary disease, and liver disease and cirrhosis

social support The aid gained through interacting with others.

(Johnson et al., 2000). More generally, good ongoing relationships with friends and family and participation in social activities and religious groups can be as healthy for you as exercising and avoiding smoking (House, Landis, & Umberson, 1988).

Social support is helpful on many levels:

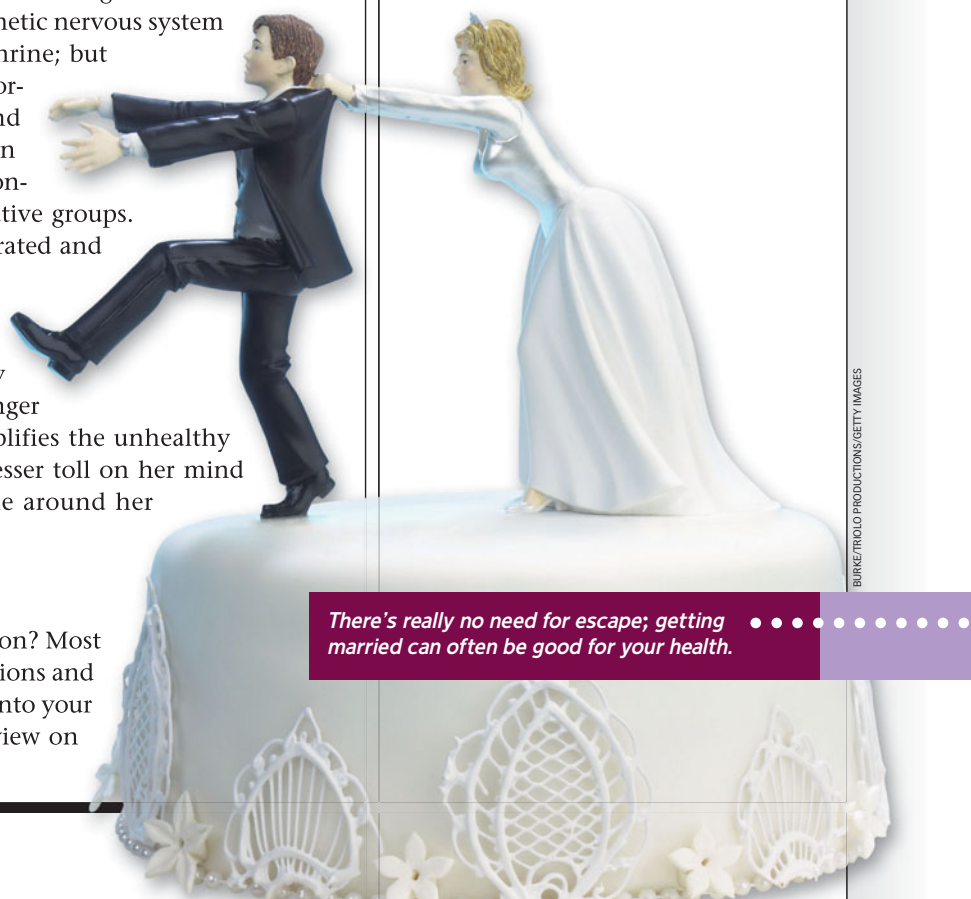
- An intimate partner can help you remember to get your exercise and follow your doctor's orders, and together you'll probably follow a more healthy diet than you would all alone with your snacks.
- Talking about problems with friends and family can offer many of the benefits of professional psychotherapy, usually without the hourly fees.
- Sharing tasks and helping each other when times get tough can reduce the amount of work and worry in each other's lives.

The helpfulness of strong social bonds, though, transcends mere convenience. Lonely people are more likely than others to be stressed and depressed (Baumeister & Leary, 1995), and they can be more susceptible to illness because of lower-than-normal levels of immune functioning (Kiecolt-Glaser et al., 1984).

Many first-year college students experience something of a crisis of social support. No matter how outgoing and popular they were in high school, newcomers typically find the task of developing satisfying new social relationships quite daunting. New friendships can seem shallow, connections with teachers may be perfunctory and even threatening, and social groups that are encountered can seem like islands of lost souls ("Hey, we're forming a club to investigate the lack of clubs on campus—want to join?"). Not surprisingly, research shows that students reporting the greatest feelings of isolation also show reduced immune responses to flu vaccinations (Pressman et al., 2005). Time spent getting to know people in new social situations can be an investment in your own health.

Why is the hormone oxytocin a health advantage for women?

The value of social support in protecting against stress may be very different for women and men: Whereas women seek support under stress, men do not. The fight-or-flight response to stress may be largely a male reaction, according to research on sex differences by Shelley Taylor (2002). Taylor suggests that the female response to stress is to *tend-and-befriend* by taking care of people and bringing them together. Like males, human females respond to stressors with sympathetic nervous system arousal and the release of epinephrine and norepinephrine; but unlike males, they also release the hormone *oxytocin,* a hormone secreted by the pituitary gland in pregnant and nursing mothers. In the presence of estrogen, oxytocin triggers social responses—a tendency to seek out social contacts, nurture others, and create and maintain cooperative groups. After a hard day at work, a man may come home frustrated and worried about his job and end up drinking a beer and fuming alone. A woman under the same type of stress may instead play with her kids or talk to friends on the phone. The tend-and-befriend response to stress may help to explain why women are healthier and have a longer life span than do men. The typical male response amplifies the unhealthy effects of stress, whereas the female response takes a lesser toll on her mind and body—and provides social support for the people around her as well.



BURKE/TRIOLO PRODUCTIONS/GETTY IMAGES

There's really no need for escape; getting married can often be good for your health.

Humor

Wouldn't it be nice to laugh at your troubles and move on? Most of us recognize that humor can diffuse unpleasant situations and bad feelings, and it makes sense that bringing some fun into your life could help to reduce stress. The extreme point of view on

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"I don't think it's anything serious."

this topic is staked out in self-help books with titles such as *Health, Healing, and the Amuse System* and *How Serious Is This? Seeing Humor in Daily Stress*. Is laughter truly the best medicine? Should we close down the hospitals and send in the clowns?

There is a kernel of truth to the theory that humor can help us cope with stress. For example, humor can reduce sensitivity to pain and distress, as researchers found when they subjected volunteers to an overinflated blood pressure cuff. Participants were more tolerant of the pain during a laughter-inducing comedy audiotape than during a neutral tape or instructed relaxation (Cogan et al., 1987).

How does humor mitigate stress?

Humor can also reduce the time needed to calm down after a stressful event. For example, men viewing a highly stressful film about three industrial accidents were asked to narrate the film aloud either by describing the events seriously or by making their commentary as funny as possible. Although men in both groups reported feeling tense while watching the film and showed increased levels of sympathetic nervous arousal (increased heart rate and skin conductance, decreased skin temperature), those looking for humor in the experience bounced back to normal arousal levels more quickly than did those in the serious-story group (Newman & Stone, 1996).

summary quiz [14.3]

8. Avoiding situations or thoughts that are reminders of a stressor, and maintaining an artificially positive viewpoint, is called
- a. rational coping.
- b. repressive coping.
- c. reframing.
- d. situation management.

9. If you experience anxiety at the thought of public speaking, a recommended technique is to picture the audience sitting there with no clothes on. This is an example of
- a. rational coping.
- b. repressive coping.
- c. reframing.
- d. situation management.

10. According to the research of Shelley Taylor, a woman is *least* likely to respond to stress by doing which of the following?
- a. taking a long drive by herself
- b. playing with her child
- c. talking to a friend on the phone
- d. visiting an elderly relative

11. A hormone that appears to be involved in the tend-and-befriend response to stress is
- a. serotonin.
- b. dopamine.
- c. epinephrine.
- d. oxytocin.

The Psychology of Illness: When It's in Your Head

One of the mind's main influences on the body's health and illness is the mind's sensitivity to bodily symptoms. No doubt Mr. X, the poor victim of "voodoo death" discussed at the beginning of this chapter, had his attention radically reoriented toward his body by his mother's repeated warning that something bad would happen. This sensitivity may have then amplified his fear of dying and so aggravated his asthma. Noticing what is wrong with the body can be helpful when it motivates a search for treatment, but sensitivity can also lead to further problems when it snowballs into a preoccupation with illness that itself can cause harm.

Recognizing Illness and Seeking Treatment

You probably weren't thinking about your breathing a minute ago, but now that you're reading this sentence, you notice it. Sometimes we are very attentive to our bodies. At other times, the body seems to be on "automatic," running along unnoticed until specific symptoms announce themselves or are pointed out by an annoying textbook writer.

Directing attention toward the body or away from it can influence the symptoms we perceive. When people are bored, for example, they have more attention available to direct toward their bodies and so focus more on physical symptoms. Pennebaker (1980) audiotaped classrooms and found that people are more likely to cough when someone else has just coughed—but that such psychological contagion is much more likely at boring points in a lecture. Interestingly, coughing is not something people do on purpose (as Pennebaker found when he recorded clusters of coughs among sleeping firefighters). Thus, awareness and occurrence of physical symptoms can be influenced by psychological factors beyond our control.

NATIONAL LIBRARY OF MEDICINE, NATIONAL INSTITUTE OF HEALTH

Headache, as envisioned by caricaturist George Cruikshank (1792–1878).

People differ substantially in the degree to which they attend to and report bodily symptoms. People who report many physical symptoms tend to be negative in other ways as well—describing themselves as anxious, depressed, and under stress (Watson & Pennebaker, 1989). Do people with many symptom complaints truly have a lot of problems or are they just high-volume complainers? To answer this question, researchers used fMRI brain scans to compare severity of reported symptoms with degree of activation in brain areas usually associated with pain experience. Volunteers underwent several applications of a thermal stimulus (of 110° to 120° F) to the leg, and, as you might expect, some of the participants found it more painful than did others. Scans during the painful events revealed that the anterior cingulate cortex, somatosensory cortex, and prefrontal cortex (areas known to respond to painful body stimulation) were particularly active in those participants who reported higher levels of pain experience. Because other brain areas sensitive to pain such as the thalamus were not particularly active (see **FIGURE 14.5**), the researchers concluded that more reporting of pain is suggestive of greater activation but only of some of the brain areas linked with pain (Coghill, McHaffie, & Yen, 2003; see the Hot Science box on page 447).

What is the relationship between pain and activity in the brain?

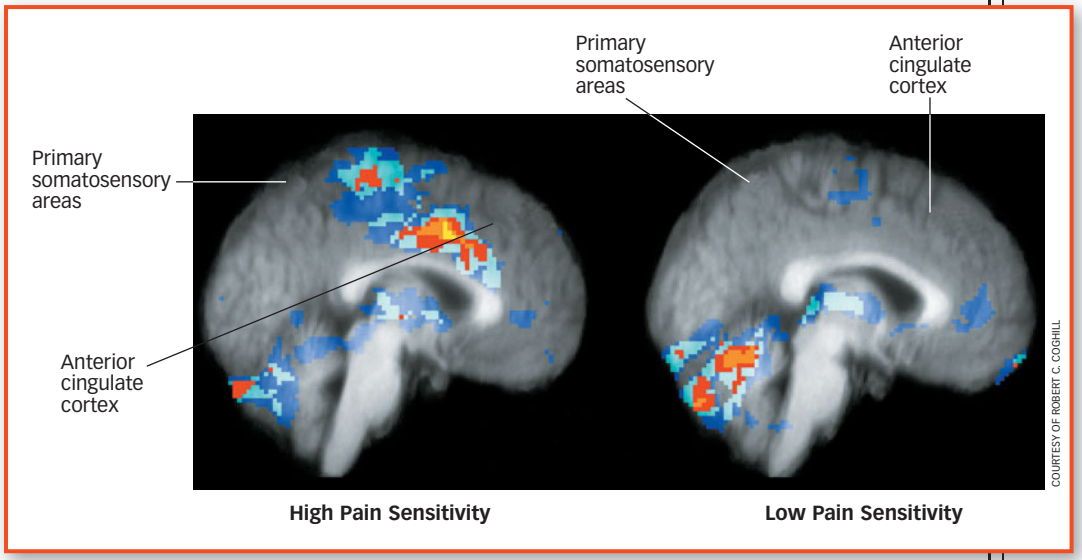


FIGURE 14.5 **The Brain in Pain** *fMRI scans of brain activation in high- (left) and low-pain-sensitive (right) individuals during painful stimulation. The anterior cingulate cortex and primary somatosensory areas show greater activation in high-pain-sensitive individuals. Levels of activation are highest in yellow and red, then light blue and dark blue (Coghill, McHaffie, & Yen, 2003).*

"Instead of an expensive, invasive procedure, we've decided to beat it out of you."

In contrast to complainers are those who underreport symptoms and pain or ignore or deny the possibility that they are sick. Insensitivity to symptoms comes with costs: It can delay the search for treatment, sometimes with serious repercussions. Of 2,404 patients in one study who had been treated for a heart attack, 40% had delayed going to the hospital for over 6 hours from the time they first noticed suspicious symptoms (Gurwitz et al., 1997). Severe chest pain or a history of prior heart surgery did send people to the hospital in a hurry. Those with more subtle symptoms often waited around for hours, however, not calling an ambulance or their doctor, just hoping the problem would go away—which was not a good idea because many of the treatments that can reduce the damage of a heart attack are most useful when provided early. When it comes to your own health, protecting your mind from distress through the denial of illness is a mindbug that can result in exposing your body to great danger.

Somatoform Disorders

The flip side of denial is excessive sensitivity to illness, and it turns out that sensitivity also has its perils. Indeed, hypersensitivity to symptoms or to the possibility of illness is a mindbug that underlies a variety of psychological problems and can also undermine physical health. Psychologists studying **psychosomatic illness**, *an interaction between mind and body that can produce illness,* explore ways in which mind (psyche) can influence body (soma) and vice versa. The study of mind-body interactions focuses on psychological disorders called **somatoform disorders**, in which *the patient displays physical symptoms not fully explained by a general medical condition.*

How can hypersensitivity to symptoms undermine health?

The best-known somatoform disorder is **hypochondriasis**, *a psychological disorder in which a person is preoccupied with minor symptoms and develops an exaggerated belief that the symptoms signify a life-threatening illness.* You may know people who constantly worry about their health, and these poor souls can mentally turn every cough into tuberculosis and every headache into a brain tumor. It is said that fairy-tale author Hans Christian Andersen (1805–1875) was a hypochondriac, talking about his ailments and their possible meaning with anyone who would listen. It is also said that he had a morbid fear of being buried alive and placed a note by his bed each night as he slept explaining, "I only *appear* to be dead." For a hypochondriac, the tendency to catastrophize symptoms by imagining their worst-possible interpretation can become a chronic source of anxiety.

Somatoform disorders fascinated Sigmund Freud and other physicians early in the history of psychology because they demonstrated that the mind could produce physical illnesses without any physiological cause. Current theories focus on the idea that such symptoms occur as a result of breakdowns in the psychological processes underlying voluntary movement and attention (Hallett et al., 2005).

Is sickness a role we play? Michael Jackson's life was tragic, a story of amazing talent, personal eccentricity, and untimely death played out in the public eye. In the midst of a trial for child molestation, of which he was acquitted, he complained of severe back pain. Although the facts are still unclear, his use of illness to procure benefits—including painkilling drugs—may have played a role in his demise.

On Being a Patient

Getting sick is more than a change in physical state; it can involve a transformation of identity. This change can be particularly profound with a serious illness: A kind of cloud settles over you, a feeling that you are now different, and this transformation can influence everything you feel and do in this new world of illness. You even take on a new role in life: a **sick role**—*a socially recognized set of rights and obligations linked with illness.* The sick person is absolved of responsibility for many everyday obligations and enjoys exemption from normal activities. For example, in addition to skipping school and homework and staying on the couch all day, a sick child can watch TV and avoid eating

[HOT SCIENCE]

Why Sickness Feels Bad: Psychological Effects of Immune Response

Why does it feel so bad to be sick? You notice scratchiness in your throat or the start of sniffles, and you think you might be coming down with something. And in just a few short hours, you're achy all over, energy gone, no appetite, feverish, feeling dull and listless. You're sick. The question is, why does it have to be like this? Why couldn't it feel good? As long as you're going to have to stay at home and miss out on things anyway, couldn't sickness be less of a pain?

Sickness makes you miserable for good reason. Misery is part of the *sickness response*, a coordinated, adaptive set of reactions to illness organized by the brain (Hart, 1988; Maier & Watkins, 1998; Watkins & Maier, 2005). Feeling sick keeps you home, where you'll spread germs to fewer people. More importantly, the sickness response makes you withdraw from activity and lie still, conserving the energy for fighting illness that you'd normally expend on other behavior. Appetite loss is similarly helpful: The energy spent on digestion is conserved. Thus, the behavioral changes that accompany illness are not random side effects; they help the body fight disease.

How does the brain know it should do this? The immune response to an infection begins with one of the components of the immune response, the activation of white blood cells that "eat" microbes, and also release *cytokines*, proteins that circulate through the body and communicate among the other white blood cells—and also communicate the sickness response to the brain (Maier & Watkins, 1998). Administration of cytokines to an animal can artificially create the sickness response, and administration of drugs that oppose the action of cytokines can block the sickness response even during an ongoing infection. Cytokines do not enter the brain, but they activate the vagus nerve that runs from the intestines, stomach, and chest to the brain and induce the "I am infected" message (Goehler et al., 2000). Perhaps this is why we often feel sickness in the "gut," a gnawing discomfort in the very center of the body.

Interestingly, the sickness response can be prompted without any infection at all—merely by the introduction of stress. The stressful presence of a predator's odor, for instance, can produce the sickness response of lethargy in an animal—along with symptoms of infection such as fever and increased white blood cell count (Maier & Watkins, 2000). In humans, the connection between sickness response, immune reaction, and stress is illustrated in depression, a condition in which all the sickness machinery runs at full speed. So in addition to fatigue and malaise, depressed people show signs characteristic of infection, including high levels of cytokines circulating in the blood (Maes, 1995). Just as illness can make you feel a bit depressed, severe depression seems to recruit the brain's sickness response and make you feel ill (Watkins & Maier, 2005).

SICK GIRL BY CHRISTIAN KROHG/NASJONALGALLERIET, OSLO, NORWAY/THE BRIDGEMAN ART LIBRARY

Sickness not only feels bad but it also shows. The pain of being ill has an emotional wallop like mild depression.

anything unpleasant at dinner. At the extreme, the sick person can get away with being rude, lazy, demanding, and picky. In return for these exemptions, the sick role also incurs obligations. The properly "sick" individual cannot appear to enjoy the illness or reveal signs of wanting to be sick and must also take care to pursue treatment to end this "undesirable" condition.

What benefits might come from being ill?

Some people feign medical or psychological symptoms to achieve something they want, a type of behavior called *malingering*. Because many symptoms of illness cannot be faked—even facial expressions of pain are difficult to simulate (Williams, 2002)—malingering is possible only with a restricted number of illnesses. Faking illness is suspected when the secondary gains of illness—such as the ability to rest, to be freed from performing unpleasant tasks, or to be helped by others—outweigh the costs. Such gains can be very subtle, as when a child

psychosomatic illness An interaction between mind and body that can produce illness.

somatoform disorders The set of psychological disorders in which the person displays physical symptoms not fully explained by a general medical condition.

hypochondriasis A psychological disorder in which a person is preoccupied with minor symptoms and develops an exaggerated belief that the symptoms signify a life-threatening illness.

sick role A socially recognized set of rights and obligations linked with illness.

DAN ATKIN/ALAMY

Doctor and patient have two modes of interaction, the technical and the interpersonal. Medical training with robot patients may help doctors learn the technical side of health care, but it is likely to do little to improve the interpersonal side.

stays in bed because of the comfort provided by an otherwise distant parent, or they can be obvious, as when insurance benefits turn out to be a cash award for Best Actor. Some behaviors that may lead to illness may not be under the patient's control; for example, self-starvation may be part of an uncontrollable eating disorder. For this reason, malingering can be difficult to diagnose and treat (Feldman, 2004).

Patient-Practitioner Interaction

Medical care usually occurs through a strange interaction. On one side is a patient, often miserable, who expects to be questioned and examined and possibly prodded, pained, or given bad news. On the other side is a health care provider, who hopes to obtain useful information from the patient, help in some way, cope with the emotional part of the interaction, and achieve all of this as efficiently as possible because more patients are waiting. Seems less like a time for healing than an occasion for major awkwardness.

One of the keys to an effective medical care interaction is physician empathy (Spiro et al., 1994). To offer successful treatment, the physician must simultaneously understand the patient's physical state and psychological state. Physicians often err on the side of failing to acknowledge patients' emotions, focusing instead on technical issues of the case (Suchman et al., 1997). This is particularly unfortunate because a substantial percentage of patients who seek medical care do so for treatment of psychological and emotional problems (Taylor, 1986). As the Greek physician Hippocrates wrote in the fourth century BCE, "Some patients, though conscious that their condition is perilous, recover their health simply through their contentment with the goodness of the physician." The best physician treats the patient's mind as well as the patient's body.

Why is it important that a physician be empathic?

Another important part of the medical care interaction is motivating the patient to follow the prescribed regimen of care (Cohen, 1979). When researchers check compliance by counting the pills remaining in a patient's bottle after a prescription has been under way, they find that patients often do an astonishingly poor job of following doctors' orders (see **FIGURE 14.6**). Compliance deteriorates when the treatment must be *frequent,* as when eyedrops for glaucoma are required every few hours, or *inconvenient* or *painful,* such as drawing blood or performing injections in managing diabetes. Finally, compliance decreases *as the number of treatments increases*. This is a worrisome problem especially for older patients, who may have difficulty remembering when to take which pill. Failures in medical care may stem from the failure of health care providers to recognize mindbugs in the psychological processes that are involved in self-care. Helping people to follow doctors' orders involves psychology, not medicine, and is an essential part of promoting health.

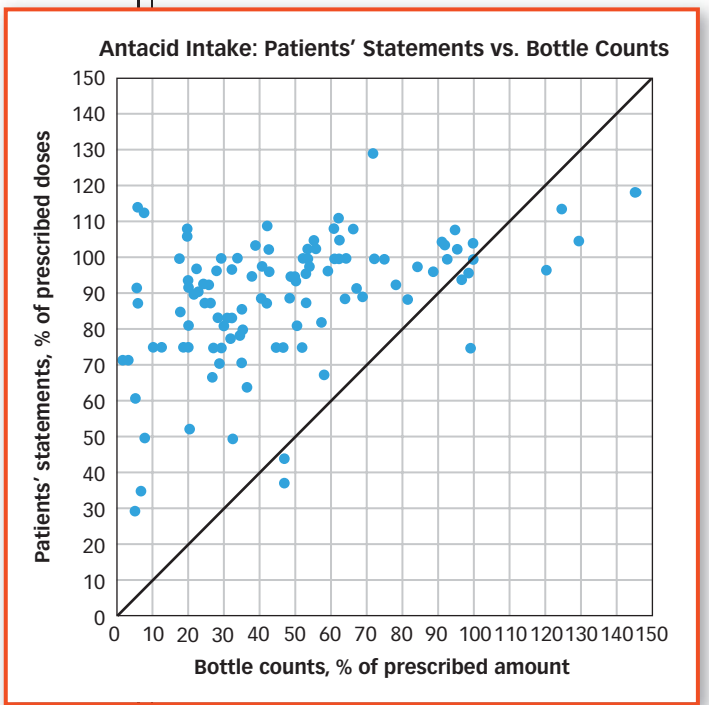


FIGURE 14.6
Antacid Intake *A scatter plot of antacid intake measured by bottle count plotted against patient's stated intake for 116 patients. When the actual and stated intakes are the same, the point lies on the diagonal line; when stated intake is greater than actual, the point lies above the line. Most patients exaggerated their intake (Roth & Caron, 1978).*

summary quiz [14.4]

12. A person who is preoccupied with minor symptoms and believes they signify a life-threatening illness is likely to be diagnosed with
a. somatization disorder.
b. hypochondriasis.
c. posttraumatic stress disorder.
d. repressive coping.

13. Some people pretend they are sick to achieve something they want. This behavior is called
a. the sick role.
b. Type B behavior.
c. malingering.
d. somatoform disorder.

14. The successful health care provider
a. is empathic.
b. must understand the patient's physical state and psychological state.
c. must be time efficient because other patients are usually waiting.
d. all of the above.

The Psychology of Health: Feeling Good

Two types of psychological factors influence personal health: health-relevant personality traits and health behavior. Personality can influence health through relatively enduring traits that make some people particularly susceptible to health problems or stress while sparing or protecting others. The Type A behavior pattern is an example. Because personality is not typically something we choose ("I'd like a bit of that sense of humor and extroversion over there, please, but hold the whininess"), this source of health can be outside personal control. In contrast, engaging in positive health behaviors is something anyone can do, at least in principle.

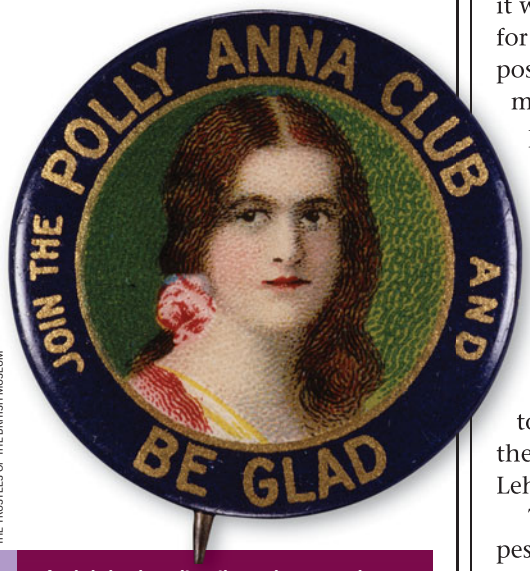
Personality and Health

Different health problems seem to plague different social groups. For example, men are more susceptible to heart disease than are women, and African Americans are more susceptible to asthma than are Asian or European Americans. Beyond these general social categories, personality turns out to be a factor in wellness, with individual differences in optimism and hardiness important influences.

Optimism

Pollyanna is one of literature's most famous optimists. Eleanor H. Porter's 1913 novel portrayed Pollyanna as a girl who greeted life with boundless good cheer even when she was orphaned and sent to live with her cruel aunt. Her response to a sunny day was to remark on the good weather, of course—but her response to a gloomy day was to point out how lucky it is that not every day is gloomy! Her crotchety Aunt Polly had exactly the opposite attitude, somehow managing to turn every happy moment into an opportunity for strict correction. A person's level of optimism or pessimism tends to be fairly stable over time, and research comparing the personalities of twins reared together versus those reared apart suggests that this stability arises because these traits are moderately heritable (Plomin et al., 1992). Perhaps Pollyanna and Aunt Polly were each "born that way."

An optimist who believes that "in uncertain times, I usually expect the best" is likely to be healthier than a pessimist who believes that "if something can go wrong for me,



THE TRUSTEES OF THE BRITISH MUSEUM

A club badge distributed to members of the Polly Anna Club in the United Kingdom, circa 1913.

it will." In a study of 309 patients who had undergone coronary artery bypass surgery, for example, researchers found that initial levels of optimism were related to patients' postoperative health (Scheier et al., 1999). Patients with higher levels of overall optimism (not merely optimism about the particular surgery) were less likely than other patients after their surgery to need rehospitalization for complications such as infection, heart attacks, or further surgery.

Optimism seems to aid in the maintenance of psychological health in the face of physical health problems. When sick, optimists are more likely than pessimists to maintain positive emotions, avoid negative emotions such as anxiety and depression, stick to medical regimens their caregivers have prescribed, and keep up their relationships with others. Among women who have surgery for breast cancer, for example, optimists are less likely to experience distress and fatigue after treatment than are pessimists, largely because they keep up social contacts and recreational activities during their treatment (Carver, Lehman, & Antoni, 2003).

● **Who's healthier, the optimist or the pessimist? Why?**

The benefits of optimism raise an important question: If the traits of optimism and pessimism are stable over time—even resistant to change—can pessimists ever hope to gain any of the advantages of optimism (Heatherton & Weinberger, 1994)? Research has shown that even die-hard pessimists can be trained to become significantly more optimistic and that this training can improve their psychosocial health outcomes. For example, pessimistic breast cancer patients who received 10 weeks of training in stress management techniques became more optimistic and were less likely than those who received only relaxation exercises to suffer distress and fatigue during their cancer treatments (Antoni et al., 2001).

Hardiness

Some people seem to be thick-skinned, somehow able to take stress or abuse that could be devastating to others. Are there personality traits that contribute to such resilience and offer protection from stress-induced illness? To identify such traits, Suzanne Kobasa (1979) studied a group of stress-resistant business executives. These individuals reported high levels of stressful life events but had histories of relatively few illnesses compared with a similar group who succumbed to stress by getting sick. The stress-resistant group (Kobasa called them *hardy*) shared several traits, all conveniently beginning with the letter *C*. They showed a sense of *commitment,* an ability to become involved in life's tasks and encounters rather than just dabbling. They exhibited a belief in *control,* the expectation that their actions and words have a causal influence over their lives and environment. And they were willing to accept *challenge,* undertaking change and accepting opportunities for growth.

● **What traits define *hardiness?***

Can just anyone develop hardiness? Researchers have attempted to teach hardiness with some success. In one such attempt, participants attended 10 weekly "hardiness training" sessions, in which they were encouraged to examine their stresses, develop action plans for dealing with them, explore their bodily reactions to stress, and find ways to compensate for unchangeable situations without falling into self-pity. Compared with control groups (who engaged in relaxation and meditation training or in group discussions about stress), the hardiness-training group reported greater reductions in their perceived personal stress as well as fewer symptoms of illness (Maddi, Kahn, & Maddi, 1998). The long-term effect of such training is not clear, but the possibility that some of the traits may be within anyone's reach is encouraging.

Health-Promoting Behaviors and Self-regulation

Even without changing our personalities at all, we can do certain things to be healthy. The importance of healthy eating, safe sex, and giving up smoking are common knowledge. But we don't seem to be acting on the basis of this knowledge. At the turn of the

21st century, 21% of Americans are obese (Mokdad et al., 2003). The prevalence of unsafe sex is difficult to estimate, but 65 million Americans currently suffer from an incurable sexually transmitted disease (STD), while 15 million contract one or more new STDs each year (Centers for Disease Control, 2000b)—and another million live with human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), which is usually contracted through unprotected sex with an infected partner (Centers for Disease Control, 2006). And despite endless warnings, 29.5% of Americans use tobacco on a regular basis (National Household Survey on Drug National Household Survey on Drug Abuse, 2001). What's going on?

Self-regulation

Doing what is good for you is not necessarily easy. Mark Twain once remarked, "The only way to keep your health is to eat what you don't want, drink what you don't like, and do what you'd druther not." Engaging in health-promoting behaviors involves **self-regulation**, *the exercise of voluntary control over the self to bring the self into line with preferred standards*. When you decide on a salad rather than a cheeseburger, for instance, you control your impulse and behave in a way that will help to make you the kind of person you would prefer to be—a healthy one. Self-regulation often involves putting off immediate gratification for longer-term gains, one of those life tasks that is so difficult it qualifies as a mindbug (see Chapter 8).

Self-regulation requires a kind of inner strength or willpower. One theory suggests that self-control is a kind of strength that can be fatigued (Schmeichel & Baumeister, 2004). In other words, trying to exercise control in one area may exhaust self-control, leaving behavior in other areas unregulated. To test this theory, researchers seated hungry volunteers near a batch of fresh, hot, chocolate chip cookies. They asked some participants to leave the cookies alone but help themselves to a healthy snack of radishes, whereas others were allowed to indulge. When later challenged with an impossibly difficult figure-tracing task, the self-control group was more likely than the self-indulgent group to abandon the difficult task—behavior interpreted as evidence that they had depleted their pool of self-control (Baumeister et al., 1998). The take-home message from this experiment is that to control behavior successfully, we need to choose our battles, exercising self-control mainly on the personal weaknesses that are most harmful to health.

● **Why is it difficult to achieve and maintain self-control?**

Sometimes, though, self-regulation is less a matter of brute force than of strategy. Martial artists claim that anyone can easily overcome a large attacker with the use of the right moves, and overcoming our own unhealthy impulses may also be a matter of finesse. Let's look carefully at healthy approaches to some key challenges for self-regulation—eating, safe sex, and smoking—to learn what "smart moves" can aid us in our struggles.

JEAN SANDLER/FEATUREPICS

Nobody ever said self-control was easy. Probably the only reason you're able to keep yourself from eating this cookie is that it's just a picture of a cookie. Really. Don't eat it.

Eating Wisely

In many Western cultures, the weight of the average citizen is increasing alarmingly. One explanation is based on our evolutionary history: In order to ensure their survival, our ancestors found it useful to eat well in times of plenty to store calories for leaner times. In postindustrial societies in the 21st century, however, there are no leaner times, and people can't burn all of the calories they consume (Pinel, Assanand, & Lehman, 2000). But why, then, isn't obesity endemic throughout the Western world? Why are people in France leaner on average than Americans even though their foods are high in fat? One reason has to do with average portion, which is far smaller in France than in the United States. Activity level in France is also greater. Research by Paul Rozin and his colleagues finds that the time people spend eating differs between cultures as well. At a McDonald's in France, meals take an average of 22 minutes, whereas in the United States, they take under 15 minutes (Rozin et al., 2003). Right now Americans seem to be involved in some kind of national eating contest.

Short of moving to France, what can you do? Studies indicate that dieting doesn't always work because the process of conscious self-regulation can be easily undermined by

self-regulation The exercise of voluntary control over the self to bring the self into line with preferred standards.

AP PHOTO/CRAIG RUTTLE

Is eating a contest? Joey Chestnut, of San Jose, California, is on the way to eating 68 hot dogs to win his third consecutive world record on July 4, 2009. North American culture makes excessive eating almost a competition, but it's hard to find winners.

stress, leading people who are trying to control themselves to lose control by overindulging in the very behavior they had been trying to overcome. This may remind you of a general principle discussed in Chapter 8: Trying hard not to do something can often directly produce the unwanted behavior (Wegner, 1994a, 1994b).

The restraint problem may be inherent in the very act of self-control (Polivy & Herman, 1992). Rather than dieting, then, heading toward normal weight should involve a new emphasis on exercise and nutrition (Prochaska & Sallis, 2004). In emphasizing what is good to eat, the person can freely think about food rather than trying to suppress thoughts about it. A focus on increasing activity rather than reducing food intake, in turn, gives people another positive and active goal to pursue. Self-regulation is more effective when it focuses on what to do rather than on what not to do (Wegner & Wenzlaff, 1996).

Why is exercise a more effective weight loss choice than dieting?

Avoiding Sexual Risks

People put themselves at risk when they have unprotected vaginal, oral, or anal intercourse with many sexual partners or with partners who themselves have many sexual partners, exhibit symptoms of STDs, are HIV positive, or are intravenous drug users. Sexually active adolescents and adults are usually aware of such risks, not to mention the risk of unwanted pregnancy, and yet many behave in risky ways nonetheless.

Why doesn't awareness translate into avoidance? Risk takers harbor an *illusion of unique invulnerability,* a systematic bias toward believing that they are less likely to fall victim to the problem than are others (Perloff & Fetzer, 1986). For example, a study of sexually active female college students found that respondents judged their own likelihood of getting pregnant in the next year as under 10% but estimated the average for other females at the university to be 27% (Burger & Burns, 1988). Paradoxically, this illusion was *even stronger* among women in the sample who reported using inadequate or no contraceptive techniques. The tendency to think, *It won't happen to me,* may be most pronounced when it probably will.

Risky sex is often the impulsive result of last-minute emotions. When thought is further blurred by alcohol or recreational drugs, people often fail to use the latex condoms that can reduce their exposure to the risks of pregnancy, HIV, and many other STDs. Like other forms of self-regulation, the avoidance of sexual risk requires the kind of planning that can be easily undone by circumstances that hamper the ability to think ahead. One approach to reducing sexual risk taking, then, is simply finding ways to help people plan ahead. Sex education programs offer adolescents just such a chance by encouraging them at a time when they have not had much sex experience to think about what they might do when they will need to make decisions. Although sex education is sometimes criticized as increasing adolescents' awareness of and interest in sex, the research evidence is clear: Sex education reduces the likelihood that adolescents will engage in unprotected sexual activity and benefits their health (American Psychological Association, 2005). The same holds true for adults.

Why does planning ahead reduce sexual risk taking?

Not Smoking

One in two smokers dies prematurely from smoking-related diseases such as lung cancer, heart disease, emphysema, and cancer of the mouth and throat. Lung cancer itself kills more people than any other form of cancer, and smoking causes 80% of lung cancers. Although the overall rate of smoking in the United States is declining, new smokers abound, and many can't seem to stop. College students are puffing away along

with everyone else, with 28.5% of students currently smoking (Wechsler et al., 1998). In the face of all the devastating health consequences, why don't people quit?

Nicotine, the active ingredient in cigarettes, is addictive, and so smoking is difficult to stop once the habit is established (discussed in Chapter 8). As in other forms of self-regulation, the resolve to quit smoking is fragile and seems to break down under stress. In the months following 9/11, for example, cigarette sales jumped 13% in Massachusetts (Phillips, 2002). And for some time after quitting, ex-smokers remain sensitive to cues in the environment: Eating or drinking, a bad mood, anxiety, or just seeing someone else smoking is enough to make them want a cigarette (Shiffman et al., 1996). The good news is that the urge decreases and people become less likely to relapse the longer they've been away from nicotine.

Psychological programs and techniques to help people kick the habit include nicotine replacement systems such as gum and skin patches, counseling programs, and hypnosis—but these programs are not always successful. Trying again and again in different ways is apparently the best approach (Schachter, 1982). After all, to quit smoking forever, you only need to quit one more time than you start up. But like the self-regulation of eating and sexuality, the self-regulation of smoking can require effort and thought. The ancient Greeks blamed self-control problems on *akrasia,* or "weakness of will." Modern psychology focuses less on blaming a person's character for poor self-regulation and points instead toward the difficulty of the task. Keeping healthy by behaving in healthy ways is one of the great challenges of life.

● **To quit smoking forever, how many times do you need to quit?**

IMAGESHOP/ALAMY

Some people like to smoke because it enhances their overall "look."

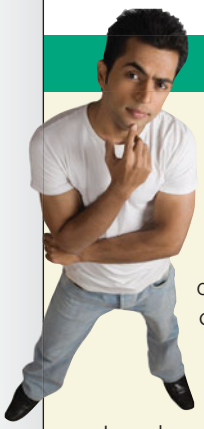
summary quiz [14.5]

15. When sick, optimists are more likely than pessimists to
- a. avoid people.
- b. not follow the medical regimens prescribed by caregivers.
- c. avoid negative emotions.
- d. experience stress and fatigue after treatment.

16. Which of the following traits are found in hardy individuals?
- a. tendency to avoid taking on challenging tasks
- b. spending considerable time in outdoor activities
- c. exhibiting a belief in their control over their lives and environments
- d. dealing with stress through rational coping

17. People are leaner in France than in the United States. One reason seems to be that
- a. French foods are much lower in fat.
- b. the French typically eat one very large meal per day, but very little else.
- c. the French eat much more quickly than Americans.
- d. the activity level in France is greater than in the United States.

18. Which is true of smoking and health?
- a. The overall rate of smoking in the United States is increasing.
- b. Lung cancer, which is strongly influenced by smoking, kills more people than any other form of cancer.
- c. One out of 10 smokers dies prematurely from smoking-related diseases.
- d. The percent of college students who currently smoke has dropped sharply, to about 10%.

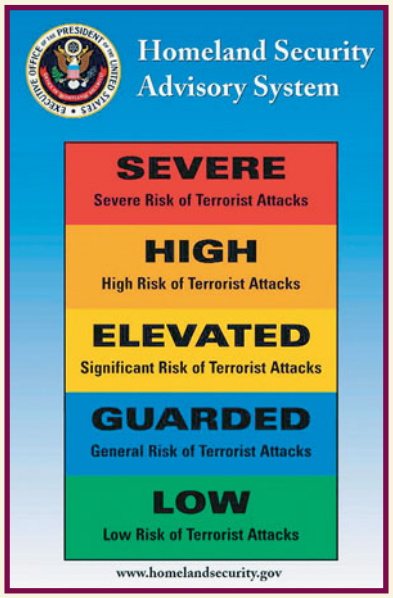


WhereDoYouStand?

Consider Yourself Warned

Just 6 months after the terrorist attack of September 11, 2001, President George W. Bush created the Homeland Security Advisory System. This official gauge of the danger of a new attack provides color codes for "threat conditions" from low (green) through guarded (blue), elevated (yellow), high (orange), and severe (red). The Presidential Directive creating the system described it as a "comprehensive and effective means to disseminate information regarding the risk of terrorist acts to Federal, State, and local authorities and to the American people" (Office of the Press Secretary, 2002).

Since that time, the warning level has never been below yellow. Although it has been raised to red only once (and just for flights from the United Kingdom to the United States), it has been orange eight times. The higher threat conditions prompt warnings for citizens "to be vigilant, take notice of their surroundings, and report suspicious items or activities to local authorities immediately." These are probably good ideas no matter what the threat conditions, so it is unclear whether this warning system is a useful response to terrorist threat. Certainly, if the level is raised to red, people could respond by avoiding travel or through other emergency actions that could protect them. But as long as the warning gauge merely wavers between yellow and orange, psychologist Philip Zimbardo argues, the system does nothing more than put citizens under constant stress (Zhang, 2004).



U.S. DEPT OF HOMELAND SECURITY

The Homeland Security Advisory System communicates U.S. government estimates of terrorist "threat conditions" on a color-coded scale.

We are surrounded every day with silly warnings—the steam iron label that warns "Do not use while wearing clothing" or the matchbook that says "Warning: Contents may catch fire." Are there times when we warn ourselves needlessly? Should we limit warnings such as the Homeland Security Advisory System to a more specific function, only telling us when there is a known threat rather than triggering stress about vague possibilities? Or is ongoing warning about terrorism a good idea, something that keeps all of us on our toes? Should we always know how worried we should be? Where do you stand?

CHAPTER REVIEW

Summary

Sources of Stress: What Gets to You

- Stressors are events and threats that place specific demands on a person or threaten well-being.
- Sources of stress include major life events (even the happy ones), catastrophic events, and chronic hassles—some of which can be traced to an environment.
- Events are most stressful when we perceive that there is no way to control or deal with the challenge.

Stress Reactions: All Shook Up

- The body responds to stress with an initial fight-or-flight reaction, which activates the hypothalamus-pituitary-adrenal (HPA) axis and prepares the body to face the threat or run away from it. Chronic stress can overtax the body, causing susceptibility to infection, aging, tumors and organ damage, and death.
- The psychological response to stress can, if prolonged, lead to anxiety disorders such as PTSD or to burnout.

Stress Management: Dealing with It

- The management of stress involves strategies for influencing the mind, the body, and the situation.
- People try to manage their minds by trying to suppress stressful thoughts or avoid the situations that produce them, by rationally coping with the stressor, and by reframing.
- Body management strategies involve attempting to reduce stress symptoms through relaxation, biofeedback, and aerobic exercise.
- Overcoming stress by managing your situation can involve seeking out social support or attempting to find humor in stressful events.

The Psychology of Illness: When It's in Your Head

- The psychology of illness concerns how sensitivity to the body leads people to recognize illness and seek treatment.
- Somatoform disorders, such as hypochondriasis, can stem from too much sensitivity.

- The sick role is a set of rights and obligations linked with illness; some people fake illness in order to accrue those rights.
- Successful health care providers interact with their patients to understand both the physical state and the psychological state.

The Psychology of Health: Feeling Good

- The connection between mind and body can be revealed through the influences of personality and self-regulation of behavior on health.
- The personality traits of optimism and hardiness are associated with reduced risk for illnesses, perhaps because people with these traits can fend off stress.
- The self-regulation of behaviors such as eating, sexuality, and smoking is difficult for many people because self-regulation is easily disrupted by stress; strategies for maintaining self-control can pay off with significant improvements in health and quality of life.

Key Terms

stressors (p. 428)
stress (p. 428)
health psychology (p. 428)
chronic stressor (p. 430)
fight-or-flight response (p. 433)
general adaptation syndrome (GAS) (p. 433)
immune system (p. 434)
lymphocytes (p. 434)
Type A behavior pattern (p. 435)
posttraumatic stress disorder (PTSD) (p. 436)
burnout (p. 438)
repressive coping (p. 439)
rational coping (p. 439)
reframing (p. 440)
stress inoculation training (SIT) (p. 440)
relaxation therapy (p. 441)
relaxation response (p. 441)
biofeedback (p. 441)
social support (p. 442)
psychosomatic illness (p. 446)
somatoform disorders (p. 446)
hypochondriasis (p. 446)
sick role (p. 446)
self-regulation (p. 451)

Critical Thinking Questions

1. Review the events in the stress scale (**TABLE 14.1** on page 429), and evaluate which of them are something a person has control over and which are not. How does the potential for control of an event relate to the stress rating?
2. Have you ever experienced burnout? If so, what coping techniques worked for you? What are some of the characteristics of burnout that make it something that must be handled on a individual basis?
3. Have you ever ridden on public transportation sitting next to a person with a hacking cough? We are bombarded by advertisements for medicines designed to suppress symptoms of illness, so we can keep going. Is staying home with a cold socially acceptable or considered malingering? How does this jibe with the concept of the "sick role," *a socially recognized set of rights and obligations linked with illness*?
4. One of the reasons given in the text for the fact that people in France are leaner than people in the United States is that the average fast-food meal in France is 22 minutes, while in the U.S. it's 15 minutes. How could the length of the average meal influence an individual's body weight?

Answers to Summary Quizzes

Summary Quiz 14.1
1. b; 2. a; 3. d

Summary Quiz 14.2
4. b; 5. c; 6. d; 7. a

Summary Quiz 14.3
8. b; 9. c; 10. a; 11. d

Summary Quiz 14.4
12. b; 13. c; 14. d

Summary Quiz 14.5
15. c; 16. c; 17. d; 18. b