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Stress, Health, and Human Flourishing

For many students, the transition to college (or back to college) has not been easy. College is a happy time, but it presents challenges. Debt piles up. Deadlines loom. New relationships form, and sometimes fail. Family demands continue. Big exams or class presentations make you tense. Stuck in traffic, late to class or work, your mood may turn sour. It's enough to give you a headache or disrupt your sleep. No wonder 85 percent of college students have reported occasional or frequent stress during the past three months (AP, 2009).

Stress often strikes without warning. Imagine being 21-year-old Ben Carpenter on the world's wildest and fastest wheelchair ride. As he crossed an intersection on a sunny summer afternoon in 2007, the light changed. A large truck, whose driver didn't see him, started moving into the intersection. As they bumped, Ben's wheelchair turned to face forward, and its handles got stuck in the truck's grille. Off they went, the driver unable to hear Ben's cries for help.

As they sped down the highway about an hour from my [DM's] home, passing motorists caught the bizarre sight of a truck pushing a wheelchair at 50 miles per hour and started calling 911. (The first caller: "You are not going to believe this. There is a semitruck pushing a guy in a wheelchair on Red Arrow highway!") Lucky for Ben, one passerby was an undercover police officer. Pulling a quick U-turn, he followed the truck to its destination a couple of miles from where the wild ride had started, and informed the disbelieving driver that he had a passenger hooked in his grille. "It was very scary," said Ben.

In this chapter we explore stress—what it is, how it affects us, and how we can reduce it. Then we'll take a close look at happiness—an important measure of whether we are flourishing. Let's begin with some basic terms.

Stress: Some Basic Concepts

LOQ LearningObjectiveQuestion

10-1 How does our appraisal of an event affect our stress reaction, and what are the three main types of stressors?

Stress is a slippery concept. In everyday life, we may use the word to describe threats or challenges ("Ben was under a lot of stress") or to describe our responses to those events ("Ben experienced acute stress"). Psychologists use more precise terms. The challenge or event (Ben's dangerous truck ride) is a *stressor*. Ben's physical and emotional responses are a *stress reaction*. And the process by which he interprets the threat is *stress*.

Thus, **stress** is the process of appraising an event as threatening or challenging, and responding to it (Lazarus, 1998). If you have prepared for an important math test, you may welcome it as a challenge. You will be aroused and focused, and you will probably do well (**FIGURE 10.1**). Championship athletes, successful entertainers, motivated students, and great teachers and leaders all thrive and excel when aroused by a challenge (Blascovich & Mendes, 2010; Wang et al., 2015).

Stressors that we appraise as threats, not challenges, can instead lead to strong negative reactions. If prevented from preparing for your math test, you will appraise the disruption as a threat, and your response will be distress.

Extreme or prolonged stress can harm us. Demanding jobs that mentally exhaust workers also damage their physical health (Huang et al., 2010). Pregnant women with overactive stress systems tend to have shorter pregnancies, which pose health risks for their infants (Entringer et al., 2011).

So there is an interplay between our head and our health. Before we explore that interplay, let's take a closer look at types of stressors and stress reactions.

Stressors—Things That Push Our Buttons

Stressors fall into three main types: catastrophes, significant life changes, and daily hassles. All can be toxic—they can increase our risk of disease and death.

Catastrophes

Catastrophes are unpredictable large-scale events, such as earthquakes, floods, wildfires, and storms. Even though we often give aid and comfort to one another after such events, the damage to emotional and physical health is significant. In surveys taken in the three weeks after the 9/11 terrorist attacks, for example, 58 percent of Americans said they were experiencing greater than average arousal and anxiety (Silver et al., 2002). And those who watched a lot of 9/11 television footage had worse health outcomes two to three years later (Silver et al., 2013).

Significant Life Changes

During catastrophes, misery often has company. But during significant life changes, we may experience stress alone. Even happy life changes, such as graduating from college or marrying the love of your life, can be stressful. So can other personal events—leaving home, having a loved one die, getting divorced, or taking on student debt. These life changes often happen during young adulthood. The stress of those years was clear in a recent survey that asked, "Are you trying to take on too many things at once?" Who reported the highest stress levels? Women and younger adults (APA, 2009). About half of people in their twenties, but only one-fifth of those over 65, reported experiencing stress during "a lot of the day yesterday" (Newport & Pelham, 2009).

How does stress related to life changes affect our health? Long-term studies indicate that people recently widowed, fired, or divorced are more disease-prone (Dohrenwend et al., 1982; Sbarra et al., 2015; Strully, 2009). In one study of 96,000 widowed people, their risk of death doubled in the week following their partner's death (Kaprio et al., 1987). Experiencing a cluster of crises (perhaps losing a job and an important relationship while falling behind in schoolwork) puts one even more at risk.

Daily Hassles

Events don't have to remake our lives to cause stress. Stress also comes from *daily hassles*—dead cell phones, lost keys, irritating housemates, and too many things to do (Lazarus, 1990; Pascoe & Richman, 2009; Ruffin, 1993). Some people simply shrug off

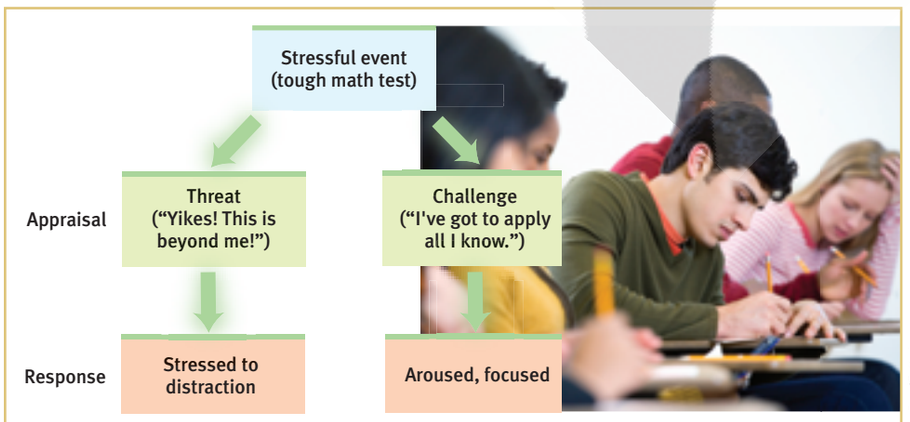

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FIGURE 10.1 Stress appraisal The events of our lives flow through a psychological filter. How we appraise an event influences how much stress we experience and how effectively we respond.

such hassles. Others find them hard to ignore. This is especially the case for the many Americans who wake up each day facing budgets that won't stretch to the next payday, housing problems, solo parenting, poor health, and discrimination. Such stressors can take a toll on physical and mental well-being (DeLongis et al., 1982, 1988; Piazza et al., 2013; Sin et al., 2015).

"It's not the large things that send a man to the madhouse . . . no, it's the continuing series of small tragedies . . . not the death of his love but the shoelace that snaps with no time left."
American author Charles Bukowski (1920–1994)

Stress Reactions—From Alarm to Exhaustion

LOQ 10-2 How does the body respond to stress?

Our response to stress is part of a unified mind-body system. Walter Cannon (1929) first realized this in the 1920s. He found that extreme cold, lack of oxygen, and emotion-arousing events all trigger an outpouring of stress hormones from the adrenal glands. When your brain sounds an alarm, your *sympathetic nervous system* (Chapter 2) responds. It increases your heart rate and respiration, diverts blood from your digestive organs to your skeletal muscles, dulls your feeling of pain, and releases sugar and fat from your body's stores. All this prepares your body for the wonderfully adaptive **fight-or-flight response** (see Figure 9.12 in Chapter 9). By fighting or fleeing, we increase our chances of survival.

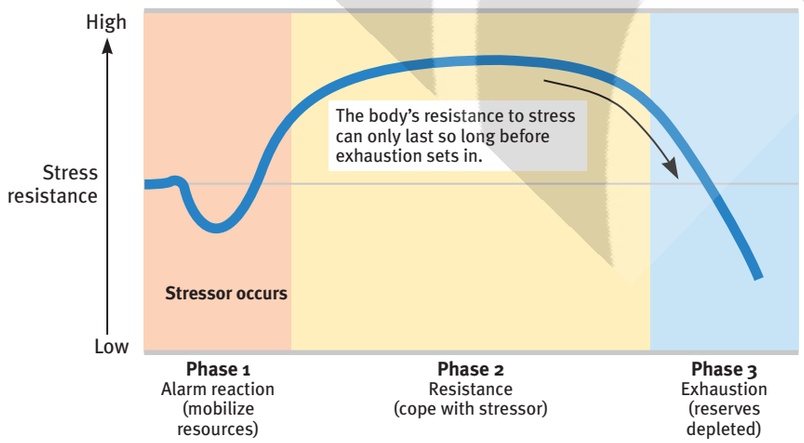
Hans Selye (1936, 1976) extended Cannon's findings. His studies of animals' reactions to various stressors, such as electric shock and surgery, helped make stress a major concept in both psychology and medicine. Selye discovered that the body's adaptive response to stress was so general that it was like a single burglar alarm that sounds, no matter what intrudes. He named this response the **general adaptation syndrome (GAS)**, and he saw it as a three-stage process (**FIGURE 10.2**). Here's how those stages, or phases, might look if you suffered a physical or emotional trauma:

- In Phase 1, you have an *alarm reaction*, as your sympathetic nervous system suddenly activates. Your heart rate soars. Blood races to your skeletal muscles. You feel the faintness of shock.
- During Phase 2, *resistance*, your temperature, blood pressure, and respiration remain high. With your resources mobilized, you are ready to resist the trauma—to fight back. Your adrenal glands pump stress hormones into your bloodstream. You are fully engaged, summoning all your resources to meet the challenge.

stress the process by which we perceive and respond to certain events, called *stressors,* that we appraise as threatening or challenging.

fight-or-flight response an emergency response, including activity of the sympathetic nervous system, that mobilizes energy and activity for attacking or escaping a threat.

general adaptation syndrome (GAS) Selye's concept of the body's adaptive response to stress in three stages—alarm, resistance, exhaustion.




Luis Hidalgo/AP Photo


Chile's Presidency/AP Photo

FIGURE 10.2 Selye's general adaptation syndrome When a gold and copper mine in Chile collapsed in 2010, family and friends rushed to the scene, fearing the worst. Many of those holding vigil outside the mine were nearly exhausted with the stress of waiting and worrying. Then—good news! After 18 days, they learned that all 33 of the miners inside were alive and well.

- In Phase 3, constant stress causes *exhaustion*. As time passes, with no relief from stress, your reserves begin to run out. Your body copes well with temporary stress, but prolonged stress can damage it. You become more vulnerable to illness or even, in extreme cases, collapse and death. In one study, former prisoners of war, who experienced constant stress and suffering, died sooner than their fellow soldiers not taken captive (Solomon et al., 2014). Rats show similar patterns. The most fearful and easily stressed rats die about 15 percent sooner than their more confident counterparts (Cavigelli & McClintock, 2003).

We respond to stress in other ways, too. One response is common after a loved one's death: Withdraw. Pull back. Conserve energy. Faced with an extreme disaster, such as a car sinking in a body of water, some people become paralyzed by fear. They stay strapped in their seatbelt instead of swimming to safety. Another option for dealing with stress is to seek out those who need support (Lim & DeSteno, 2016). Perhaps you have participated in this **tend-and-befriend response** by contributing help after a natural disaster.

Krista Kennell/AFP/Getty Images

TENDING TO TRAUMA Arizona's 2013 wildfires claimed the lives of 19 elite firefighters. Juliann Ashcroft's (left) husband, Andrew, was among those lost. Women suffering such tragedies often show a tend-and-befriend coping response by joining together and nurturing each other.

The tend-and-befriend response is found especially among women (Taylor, 2006; Taylor et al., 2000). Facing stress, men more often than women tend to socially withdraw, turn to alcohol, or become emotionally insensitive (Bodenmann et al., 2015). Women more often respond to stress by nurturing and banding together, which may be due to *oxytocin*. This stress-moderating hormone is associated with pair-bonding in animals and is released by cuddling, massage, and breast feeding in humans (Taylor, 2006). Women in distressed relationships also have higher levels of oxytocin, however, which may help them seek out and receive support from others (Taylor et al., 2010b).

It often pays to spend our physical and mental resources in fighting or fleeing an external threat. But we do so at a cost. When our stress is momentary, the cost is small. When stress persists, we may pay a much higher price, with lowered resistance to infections and other threats to mental and physical health.

Retrieve + Remember

- Stress response system: When alerted to a negative, uncontrollable event, our _____ nervous system arouses us. Heart rate and respiration _____ (increase/decrease). Blood is diverted from digestion to the skeletal _____. The body releases sugar and fat. All this prepares the body for the _____-_____-_____ response.

ANSWERS: sympathetic; increase; muscles; fight-or-flight

Stress Effects and Health

LOQ 10-3 How does stress influence our immune system?

How do you try to stay healthy? Avoid sneezers? Get extra rest? Wash your hands? You should add stress management to that list. Why? Because, as we have seen throughout this text, everything psychological is also biological. Stress is no exception. Stress contributes to high blood pressure and headaches. Stress also leaves us less able to fight off disease. To manage stress, we need to understand these connections.

The field of **psychoneuroimmunology** studies our mind-body interactions (Kiecolt-Glaser, 2009). That mouthful of a word makes sense when said slowly. Your emotions *(psycho)* affect your brain *(neuro)*, which controls the endocrine hormones that influence your disease-fighting *immune* system. And this field is the study of *(ology)* those interactions. Let's start by focusing on the immune system.

Your immune system resembles a complex security system. When it functions properly, it keeps you healthy by capturing and destroying bacteria, viruses, and other invaders. Four types of cells carry out these search-and-destroy missions (**FIGURE 10.3**):

- *B lymphocytes* release antibodies that fight bacterial infections.
- *T lymphocytes* attack cancer cells, viruses, and foreign substances—even "good" ones, such as transplanted organs.
- *Macrophage* ("big eater") *cells* identify, trap, and destroy harmful invaders and worn-out cells.
- *Natural killer cells* (NK cells) attack diseased cells (such as those infected by viruses or cancer).

Your age, nutrition, genetics, body temperature, and stress all influence your immune system's activity. When your immune system doesn't function properly, it can err in two directions:

1. Responding too strongly, it may attack the body's own tissues, causing some forms of arthritis or an allergic reaction. Women have stronger immune systems than men do, making them less likely to get infections. But this very strength also puts women at higher risk for self-attacking diseases, such as lupus and multiple sclerosis (Nussinovitch & Schoenfeld, 2012; Schwartzman-Morris & Putterman, 2012).

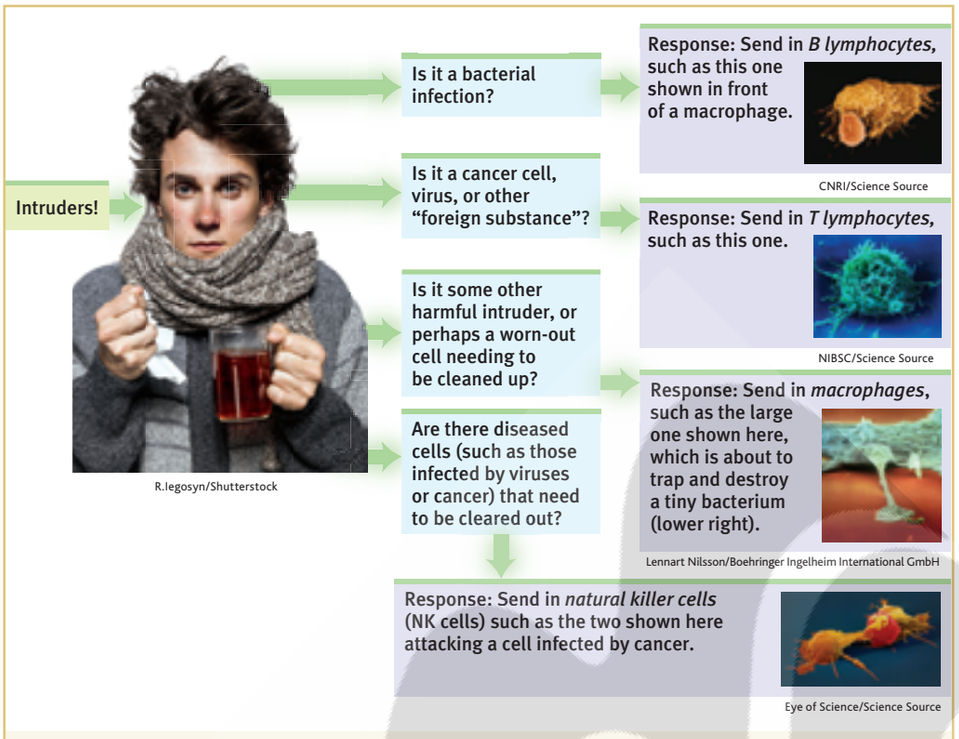


FIGURE 10.3 A simplified view of immune responses

2. Underreacting, the immune system may allow a bacterial infection to flare, a dormant herpes virus to erupt, or cancer cells to multiply. Surgeons may deliberately suppress a patient's immune system to protect transplanted organs (which the body treats as foreign invaders).

A flood of stress hormones can also suppress the immune system. In laboratories, immune suppression appears when animals are stressed by physical restraints, unavoidable electric shocks, noise, crowding, cold water, social defeat, or separation from their mothers (Maier et al., 1994). In one such study, monkeys were housed with new roommates—three or four new monkeys—each month for six months (Cohen et al., 1992). If you know the stress of adjusting to even one new roommate, you can imagine how trying it would be to repeat this experience monthly. By the experiment's end, the socially stressed monkeys' immune systems were weaker than those of other monkeys left in stable groups.

Human immune systems react similarly. Three examples:

- *Surgical wounds heal more slowly in stressed people.* In one experiment, two groups of dental students received punch wounds (small holes punched in the skin). Punch-wound healing was 40 percent slower in the group wounded three days before a major exam than in the group wounded during summer vacation (Kiecolt-Glaser et al., 1998).
- *Stressed people develop colds more readily.* Researchers dropped a cold virus in the noses of people with high and low life-stress scores (**FIGURE 10.4**). Among those living stress-filled lives, 47 percent developed colds. Among those living relatively free of stress, only 27 percent did (Cohen et al., 2003, 2006; Cohen & Pressman, 2006).
- *Vaccines are less effective with stress.* Nurses gave older adults a flu vaccine and then measured how well their bodies fought off bacteria and viruses. The vaccine was most effective among those who experienced low stress (Segerstrom et al., 2012).

FIGURE 10.4 Stress and colds People with the highest life stress scores were also most vulnerable when exposed to an experimentally delivered cold virus (Cohen et al., 1991).

tend-and-befriend response under stress, people (especially women) often provide support to others *(tend)* and bond with and seek support from others *(befriend)*.

psychoneuroimmunology the study of how psychological, neural, and endocrine processes combine to affect our immune system and health.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The stress effect on immunity makes sense. It takes energy to track down invaders, produce swelling, and maintain fevers (Maier et al., 1994). Stress hormones drain this energy away from the disease-fighting lymphocytes. When you are ill, your body demands less activity and more sleep, in part to cut back on the energy your muscles usually use. Stress does the opposite. During an aroused fight-or-flight reaction, your stress responses draw energy away from your disease-fighting immune system and send it to your muscles and brain (see Figure 9.12 in Chapter 9). This competing energy need leaves you more open to illness.

The bottom line: Stress does not make us sick. But it does reduce our immune system's ability to function, and that leaves us less able to fight infection.

Let's look now at how stress might affect AIDS, cancer, and heart disease.

Retrieve + Remember

- _____ focuses on mind-body interactions, including the effects of psychological, neural, and endocrine functioning on the immune system and overall health.

ANSWER: Psychoneuroimmunology

- What general effect does stress have on our health?

ANSWER: Stress tends to reduce our immune system's ability to function properly. So, those who regularly experience higher stress also have a higher risk of physical illness.

Stress and AIDS

We know that stress suppresses immune system functioning. What does this mean for people suffering from AIDS (acquired immune deficiency syndrome)? People with AIDS already have a damaged immune system. The name of the virus that triggers AIDS tells us that. "HIV" stands for *human immunodeficiency virus*.

Stress can't give people AIDS. But could stress and negative emotions speed the transition from HIV infection to AIDS in someone already infected? Might stress predict a faster decline in those with AIDS? An analysis of 33,252 participants from around the world suggests the answer to both questions is *Yes* (Chida & Vedhara, 2009). The greater the stress that HIV-infected people experience, the faster their disease progresses.

Could reducing stress help control AIDS? The answer again appears to be *Yes*. Although drug treatments are more effective, educational programs, grief support groups, talk therapy, relaxation training, and exercise programs that reduce distress have all had good results for HIV-positive people (Baum & Posluszny, 1999; McCain et al., 2008; Schneiderman, 1999).

Stress and Cancer

Stress does not create cancer cells. But in a healthy, functioning immune system, lymphocytes, macrophages, and NK cells search out and destroy cancer cells and cancer-damaged cells. If stress weakens the immune system, might this weaken a person's ability to fight off cancer? To find out, researchers implanted tumor cells in rodents. Next, they exposed some of the rodents to uncontrollable stress (for example, inescapable shocks). Compared with their unstressed counterparts, the stressed rodents developed cancer more often, experienced tumor growth sooner, and grew larger tumors (Sklar & Anisman, 1981).

Does this stress-cancer link apply to humans? The results are generally the same (Lutgendorf & Andersen, 2015). Some studies have found that people are at increased risk for cancer within a year after experiencing depression, helplessness, or grief. In one large study, the risk of colon cancer was 5.5 times greater among people with a history of workplace stress than among those who did not report such problems. The difference was not due to group differences in age, smoking, drinking, or physical characteristics (Courtney et al., 1993). There are exceptions, though. Other studies have found no link between stress and a risk of cancer in humans (Edelman & Kidman, 1997; Fox, 1998; Petticrew et al., 1999, 2002). Concentration camp survivors and former prisoners of war, for example, do not have elevated cancer rates. So this research story is still being written.

There is a danger in overstating the link between attitudes and cancer. Can you imagine how a woman dying of breast cancer might react to a report on the effects of stress on the speed of decline in cancer patients? She could wrongly blame herself for her illness. ("If only I had been more expressive, relaxed, and hopeful.") Her loved ones could become haunted by the notion that they caused her illness. ("If only I had been less stressful for my mom.")

> "I didn't give myself cancer."
>
> Mayor Barbara Boggs Sigmund (1939–1990), Princeton, New Jersey

It's important enough to repeat: *Stress does not create cancer cells*. At worst, stress may affect their growth by weakening the body's natural defenses against multiplying cancer cells (Lutgendorf et al., 2008; Nausheen et al., 2010; Sood et al., 2010). Although a relaxed, hopeful state may enhance these defenses, we should be aware of the thin line that divides science from wishful thinking. The powerful biological processes at work in advanced cancer or AIDS are not likely to be completely derailed by avoiding stress or maintaining a relaxed but determined spirit (Anderson, 2002; Kessler et al., 1991).

LaunchPad For a 7-minute demonstration of the links between stress, cancer, and the immune system, visit LaunchPad's ***Video: Fighting Cancer—Mobilizing the Immune System.***

Stress and Heart Disease

LOQ 10-4 How does stress increase coronary heart disease risk?

Depart from reality for a moment. In this new world, you wake up each day, eat your breakfast, and check the news.

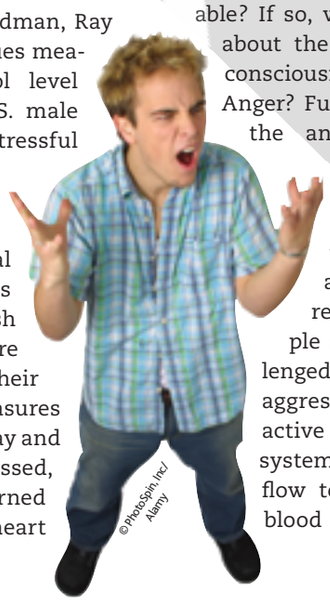
Among the headlines, you see that four 747 jumbo jet airplanes crashed again yesterday, killing another 1642 passengers. You finish your breakfast, grab your bag, and head out the door. It's just an average day.

Replace airplane crashes with **coronary heart disease,** the United States' leading cause of death, and you have re-entered reality. About 610,000 Americans die annually from heart disease (CDC, 2016a). Heart disease occurs when the blood vessels that nourish the heart muscle gradually close. High blood pressure and a family history of the disease increase the risk. So do smoking, obesity, an unhealthy diet, physical inactivity, and a high cholesterol level.

Stress and personality also play a big role in heart disease. The more psychological trauma people experience, the more their bodies generate *inflammation,* which is associated with heart and other health problems, as well as depression (Haapakoski et al., 2015; O'Donovan et al., 2012). Plucking a hair and measuring its level of *cortisol* (a stress hormone) can help indicate whether a child has experienced prolonged stress or predict whether an adult will have a future heart attack (Karlén et al., 2015; Pereg et al., 2011; Vliegenthart et al., 2016).

The Effects of Personality Type

In a classic study, Meyer Friedman, Ray Rosenman, and their colleagues measured the blood cholesterol level and clotting speed of 40 U.S. male tax accountants during unstressful and stressful times of year (Friedman & Ulmer, 1984). From January through March, the accountants showed normal results. But as the accountants began scrambling to finish their clients' tax returns before the April 15 filing deadline, their cholesterol and clotting measures rose to dangerous levels. In May and June, with the deadline passed, their health measures returned to normal. Stress predicted heart attack risk for the accountants, with rates going up during their most stressful times. Blood pressure also rises as students approach stressful exams (Conley & Lehman, 2012).



So, are some of us at high risk of stress-related coronary disease? To answer this question, the researchers who studied the tax accountants launched a classic nine-year *longitudinal study* of more than 3000 healthy men, aged 35 to 59. The researchers interviewed each man for 15 minutes, noting his work and eating habits, manner of talking, and other behavioral patterns. Some of the men were competitive, hard-driving, impatient, time-conscious, super-motivated, verbally aggressive, and easily angered. These men were labeled **Type A.** The roughly equal number who were more easygoing they called **Type B.** Which group do you suppose turned out to be the most coronary-prone?

Nine years later, 257 men in the study had suffered heart attacks, and 69 percent of them were Type A. Moreover, not one of the "pure" Type Bs—the most mellow and laid-back of their group—had suffered a heart attack.

As often happens in science, this exciting discovery provoked enormous public interest. But after that initial honeymoon period, researchers wanted to know more. Was the finding reliable? If so, what exactly is so toxic about the Type A profile: Time-consciousness? Competitiveness? Anger? Further research revealed the answer. Type A's toxic core is negative emotions—especially anger (Smith, 2006; Williams, 1993). Type A individuals are more often "combat ready." When these people are threatened or challenged by a stressor, they react aggressively. As their often active sympathetic nervous system redistributes bloodflow to the muscles, it pulls blood away from internal organs. One of these internal organs, the liver, which normally removes cholesterol and fat from the blood, can't do its job. Excess cholesterol and fat continue to circulate in the blood and are deposited around the heart. Further stress—sometimes conflicts brought on by their own traits—may trigger altered heart rhythms. In people with weakened hearts, this altered pattern can cause sudden death (Kamarck & Jennings, 1991). Our heart and mind interact.

> "The fire you kindle for your enemy often burns you more than him."
>
> Chinese proverb

Hundreds of other studies of young and middle-aged men and women have confirmed that people who react with anger over little things are the most coronary-prone (Chida & Hamer, 2008; Chida & Steptoe, 2009). As researchers have noted, rage "seems to lash back and strike us in the heart muscle" (Spielberger & London, 1982).

In recent years, another personality type has interested stress and heart disease researchers. Type A individuals direct their negative emotion toward dominating others. People with another personality type—*Type D*—suppress their negative emotion to avoid social disapproval. The negative emotion these Type D individuals experience during social interactions is mainly *distress* (Denollet, 2005; Denollet et al., 1996). In one analysis of 12 studies, having a Type D personality significantly increased risk for mortality and nonfatal heart attack (Grande et al., 2012).

coronary heart disease the clogging of the vessels that nourish the heart muscle; the leading cause of death in the United States and many other countries.

Type A Friedman and Rosenman's term for competitive, hard-driving, impatient, verbally aggressive, and anger-prone people.

Type B Friedman and Rosenman's term for easygoing, relaxed people.

The Effects of Pessimism and Depression

Pessimism, the tendency to judge a glass as half empty instead of half full, increases the risk for heart attack. One U.S. longitudinal study of 1306 men (ages 40 to 90) measured pessimism levels. Those who reported higher levels of pessimism were twice as likely to experience a fatal or nonfatal heart attack ten years later (Kubzansky et al., 2001) **(FIGURE 10.5)**.

Depression, too, can be lethal, as the evidence from many studies has shown (Wulsin et al., 1999). Three examples:

- Nearly 4000 English adults (ages 52 to 79) provided mood reports from a single day. Compared with those in a good mood on that day, those in a blue mood were twice as likely to be dead five years later (Steptoe & Wardle, 2011).
- In a U.S. survey of 164,102 adults, those who had experienced a heart attack were twice as likely to report also having been depressed at some point in their lives (Witters & Wood, 2015).
- People with high scores for depression in the years following a heart attack were four times more likely than their low-scoring counterparts to develop further heart problems (Frasure-Smith & Lesperance, 2005).

It is still unclear why depression poses such a serious risk for heart disease, but this much seems clear: Depression is disheartening.

LaunchPad To consider how researchers have studied these issues, visit LaunchPad's *IMMERSIVE LEARNING: How Would You Know If Stress Increases Risk of Disease?*

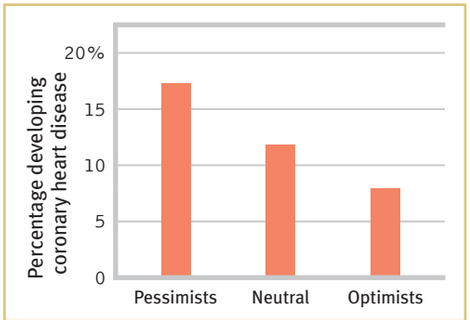


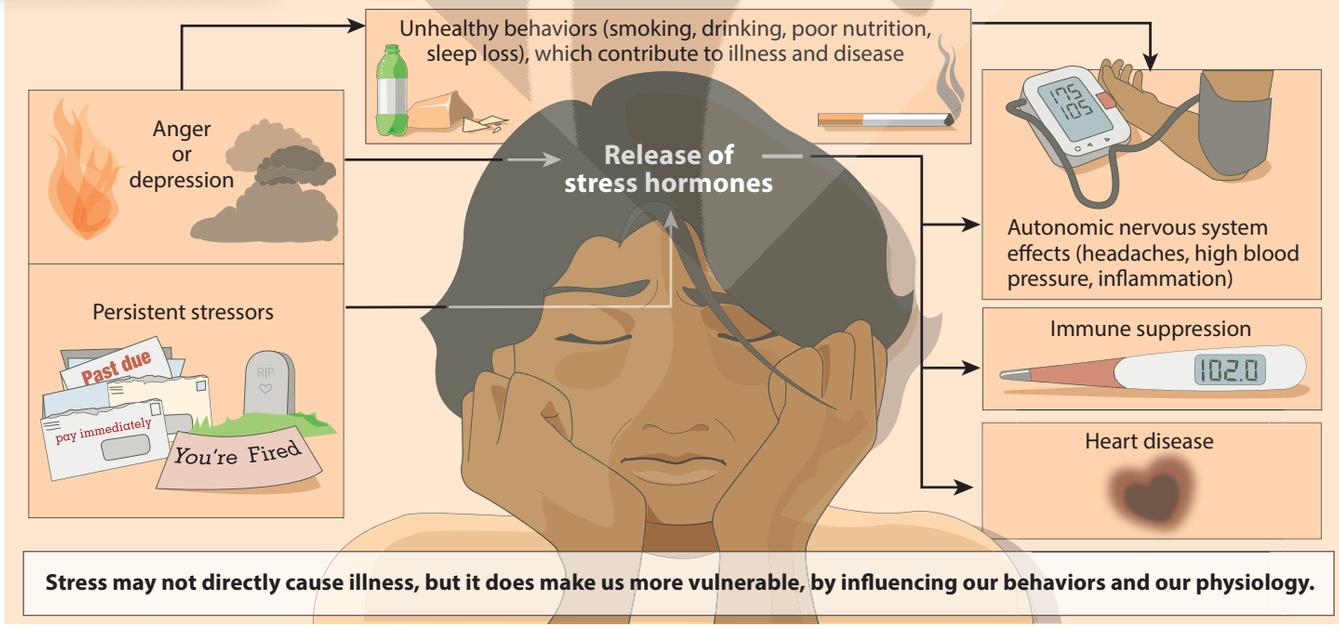
FIGURE 10.5 Pessimism and heart disease (Data from Kubzansky et al., 2001.)

* * *

In many ways stress can affect our health. (See Thinking Critically About: Stress and Health.) Our stress-related susceptibility to disease is a price we pay for the benefits of stress. Stress enriches our lives. It arouses and motivates us. An unstressed life would not be challenging or productive.

LOQ 10-5 So, does stress *cause* illness?

Thinking Critically About: Stress and Health



Stress may not directly cause illness, but it does make us more vulnerable, by influencing our behaviors and our physiology.

Coping With Stress

LOQ 10-6 What are two basic ways that people cope with stress?

Stressors are unavoidable. That's the reality we live with. One way we can develop our strengths and protect our health is to learn better ways to **cope** with our stress.

We need to find new ways to feel, think, and act when we are dealing with stressors. We address some stressors directly, with **problem-focused coping.** For example, if our impatience leads to a family fight, we may go directly to that family member to work things out. We tend to use problem-focused strategies when we feel a sense of control over a situation and think we can change the circumstances, or at least change ourselves to deal with the circumstances more capably.

We turn to **emotion-focused coping** when we cannot—or *believe* we cannot—change a situation. If, despite our best efforts, we cannot get along with a family member, we may relieve stress by confiding in friends and reaching out for support and comfort.

Emotion-focused strategies can benefit our long-term health, as when we attempt to gain emotional distance from a damaging relationship or keep busy with hobbies to avoid thinking about an old addiction. Emotion-focused strategies can also be maladaptive, however, as when students worried about not keeping up with the reading in class go out to party or play video games to get it off their mind. Sometimes a problem-focused strategy (catching up with the reading) will reduce stress more effectively and promote long-term health and satisfaction.

Our success in coping depends on several factors. Let's look at four of them: personal control, an optimistic outlook, social support, and finding meaning in life's ups and downs.

Retrieve + Remember

- To cope with stress, we tend to use _____-focused (emotion/problem) strategies when we feel in control of our world. When we believe we cannot change a situation, we may try to relieve stress with _____-focused (emotion/problem) strategies.

ANSWERS: problem; emotion

coping reducing stress using emotional, cognitive, or behavioral methods.

problem-focused coping attempting to reduce stress directly—by changing the stressor or the way we interact with that stressor.

emotion-focused coping attempting to reduce stress by avoiding or ignoring a stressor and attending to emotional needs related to our stress reaction.

personal control our sense of controlling our environment rather than feeling helpless.

learned helplessness the hopelessness and passive resignation an animal or person learns when unable to avoid repeated aversive events.

Personal Control, Health, and Well-Being

LOQ 10-7 How does our sense of control influence stress and health?

Personal control refers to how much we perceive having control over our environment. Psychologists study the effect of personal control (or any personality factor) in two ways:

1. They *correlate* people's feelings of control with their behaviors and achievements.
2. They *experiment,* by raising or lowering people's sense of control and noting the effects.

At times, we all feel helpless, hopeless, and depressed after experiencing a series of bad events beyond our control. For some animals and people, a series of uncontrollable events creates a state of **learned helplessness,** with feelings of passive resignation (**FIGURE 10.6**). In one series of experiments, dogs were strapped in a harness and given repeated shocks, with no opportunity to avoid them (Seligman & Maier, 1967). When later placed in another situation where they *could* escape the punishment by simply leaping a hurdle, the dogs cowered as if without hope. Other dogs that had been able to escape the first shocks reacted differently. They had learned they were in control, and in the new situation they easily escaped the shocks (Seligman & Maier, 1967). In other experiments, people have shown similar patterns of learned helplessness (Abramson et al., 1978, 1989; Seligman, 1975).

Learned helplessness is a dramatic form of loss of control. But we've all felt a loss of control at times. Our health can suffer as our level of stress hormones (such as *cortisol*) rise, our blood pressure increases, and our immune responses weaken (Rodin, 1986; Sapolsky, 2005). One study found these effects among nurses, who reported their workload and their level of personal control on the job. The greater their workload, the higher their cortisol level and blood pressure—but *only* among nurses who reported little control over their environment (Fox et al., 1993). Stress effects have also been observed among captive animals. Those in captivity are more prone to disease than their wild counterparts,

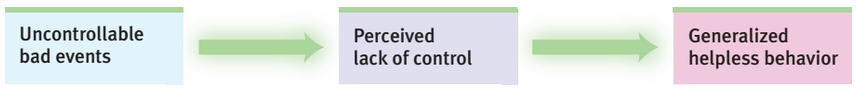


FIGURE 10.6 Learned helplessness When animals and people experience no control over repeated bad events, they often learn helplessness.

which have more control over their lives (Roberts, 1988). Similar effects are found when humans are crowded together in high-density neighborhoods, prisons, and even college dorms (Fleming et al., 1987; Fuller et al., 1993; Ostfeld et al., 1987). Feelings of control drop, and stress hormone levels and blood pressure rise.

Proposals to improve health and morale by increasing control have included (Humphrey et al., 2007; Ruback et al., 1986; Warburton et al., 2006):

- Allowing prisoners to move chairs and control room lights and the TV.
- Having workers participate in decision making. Simply allowing people to personalize their workspace has been linked with higher (55 percent) engagement with their work (Krueger & Killham, 2006).
- Offering nursing home patients choices about their environment. In one famous study, 93 percent of nursing home patients who were encouraged to exert more control became more alert, active, and happy (Rodin, 1986).

"Perceived control is basic to human functioning," concluded researcher Ellen Langer (1983, p. 291). "For the young and old alike," she suggested, environments should enhance people's sense of control over their world. No wonder mobile devices and online streaming, which enhance our control of the content and timing of our entertainment, are so popular.

Google has incorporated these principles effectively. Each week, Google employees can spend 20 percent of their working time on projects they find personally interesting. This Innovation Time Off program has increased employees' personal control over their work environment. It has also paid off: Gmail was developed this way.

The power of personal control also appears at the national level. People thrive when they live in conditions of personal freedom and empowerment. For example, citizens of stable democracies report higher levels of happiness (Inglehart et al., 2008).

So, some freedom and control are better than none. But does ever-increasing choice breed ever-happier lives? Some researchers have suggested that today's Western cultures offer an "excess of freedom"—too many choices. The result can be decreased life satisfaction, increased depression, or even behavior paralysis (Schwartz, 2000, 2004). In one study, people offered a choice of one of 30 brands of jam or chocolate were less satisfied with their decision than were others who had chosen from only 6 options (Iyengar & Lepper, 2000). This *tyranny of choice* brings information overload and a greater likelihood that we will feel regret over some of the things we left behind. (Do you, too, ever waste time agonizing over too many choices?)

Who Controls Your Life?

Do you believe that your life is out of control? That the world is run by a few powerful people? That getting a good job depends mainly on being in the right place at the right time? Or do you more strongly believe that you control your own fate? That each of us can influence our government's decisions? That being a success is a matter of hard work?

Hundreds of studies have compared people who differ in their perceptions of control:

- Those who have an **external locus of control** believe that chance or outside forces control their fate.
- Those who have an **internal locus of control** believe they control their own destiny.

PRNewsFoto/Home Interiors & Gifts: Habitat for Humanity Women Build/AP Photo

HAPPY TO HAVE CONTROL This family is finally experiencing the joy of having their own new home, after working on the building—alongside Habitat for Humanity volunteers—for several months.

Marty Lederhandler/AP Photo

LatitudeStock/Brian Fairbrother/Getty Images

EXTREME SELF-CONTROL Our ability to exert self-control increases with practice, and some of us have practiced more than others! Magician David Blaine (top) endured standing in a block of ice (in which a small space had been carved out for him) for nearly 62 hours for a stunt in New York's Times Square. A number of performing artists make their living as very convincing human statues, as does this actress (bottom) performing on The Royal Mile in Edinburgh, Scotland.

Does it matter which view we hold? In study after study comparing people with these two viewpoints, the "internals" have achieved more in school and work, acted more independently, enjoyed better health, and felt less depressed (Lefcourt, 1982; Ng et al., 2006). In one long-term study of more than 7500 people, those who had expressed a more internal locus of control at age 10 exhibited less obesity, lower blood pressure, and less distress at age 30 (Gale et al., 2008).

Another way to say that we believe we are in control of our own life is to say we have *free will,* or that we can control our own willpower. Studies show that people who believe in their freedom learn better, enjoy making decisions, perform better at work, and behave more helpfully (Clark et al., 2014; Feldman et al., 2014a; Stillman et al., 2010).

So we differ in our perceptions of whether we have control over our world. Compared with their parents' generation, more young Americans now express an external locus of control (Twenge et al., 2004). This shift may help explain an associated increase in rates of depression and other psychological disorders (Twenge et al., 2010).

Coping With Stress by Boosting Self-Control

Google trusted its belief in the power of personal control, and the company and its employees reaped the benefits. Could we reap similar benefits by actively managing our own behavior? One place to start might be increasing our **self-control**—the ability to control impulses and delay immediate gratification. Strengthening our self-control may not pay off with a Gmail invention, but self-control has been linked to health and well-being (Moffitt et al., 2011; Tangney et al., 2004). People with more self-control earn higher income, get better grades, and enjoy good health (Kuhnle et al., 2012; Moffitt et al., 2011). In one study that followed eighth-graders over a school year, better self-control was more than twice as important as intelligence score in predicting academic success (Duckworth & Seligman, 2005).

Self-control constantly changes—from day to day, hour to hour, and even minute to minute. We can compare self-control to a muscle: It weakens after use, recovers after rest, and grows stronger with exercise (Baumeister & Tierney, 2012; Hagger et al., 2010; Vohs & Baumeister, 2011).

When you use your self-control, you have less of it available to use when you need it later (Grillon et al., 2015; Vohs et al., 2012). In one experiment, hungry people who had resisted eating tempting chocolate chip cookies abandoned a frustrating task sooner than people who had not resisted the cookies (Baumeister et al., 1998b). When people feel provoked, those who have used up their self-control energy have acted more aggressively toward strangers and intimate partners (DeWall et al., 2007). In one experiment, frustrated participants with low self-control energy stuck more pins into a doll that represented their romantic partner. Participants whose self-control energy was left intact used fewer pins (Finkel et al., 2012a).

Exercising self-control uses up the brain energy needed for mental focus (Wagner et al., 2013). Might sugar provide a solution to self-control fatigue? Sugar not only tastes good, it also improves mental control (Chambers et al., 2009). In several studies, giving sugar (in naturally rather than artificially sweetened lemonade) had a sweet effect: It reduced people's aggression and impulsive decision making (Pfundmair et al., 2015; Wang & Dvorak, 2010). Even dogs experiencing self-control energy loss seemed to bounce back after this sweet treatment (Miller et al., 2010). But researchers do not encourage candy bar diets to improve self-control. Just rinsing your mouth with a sugary liquid can activate the brain's self-control centers (Hagger & Chatzisarantis, 2013; Sanders et al., 2012). You will get the boost in self-control without the bulge in your waistline.

Weakened mental energy after exercising self-control is a short-term effect. The long-term effect of exercising self-control is *strengthened* self-control, much as a hard physical workout leaves you temporarily tired out but stronger in the long term. Strengthened self-control improves people's performance on laboratory tasks as well as their self-management of eating, drinking, smoking, and household chores (Oaten & Cheng, 2006a,b).

The point to remember: Develop self-discipline in one area of your life, and your strengthened self-control may spill over into other areas as well, making for a healthier, happier, and more successful life (Tuk et al., 2015).

Is the Glass Half Full or Half Empty?

LOQ 10-8 How do optimists and pessimists differ, and why does our outlook on life matter?

Another part of coping with stress is our outlook—how we perceive the world. **Optimists** agree with statements such as, "In uncertain times, I usually expect the best" (Scheier & Carver, 1992). Optimists expect to have control, to cope well with stressful events, and to enjoy good health (Aspinwall & Tedeschi, 2010; Boehm & Kubzansky, 2012; Hernandez et al., 2015). **Pessimists**, as noted earlier, don't share these expectations. They expect things to go badly (Aspinwall & Tedeschi, 2010; Carver et al., 2010; Rasmussen et al., 2009). And when

external locus of control the perception that chance or outside forces beyond our personal control determine our fate.

internal locus of control the perception that we control our own fate.

self-control the ability to control impulses and delay short-term gratification for greater long-term rewards.

optimism the anticipation of positive outcomes. Optimists are people who expect the best and expect their efforts to lead to good things.

pessimism the anticipation of negative outcomes. Pessimists are people who expect the worst and doubt that their goals will be achieved.

bad things happen, pessimists believe they knew it all along. They lacked the necessary skills ("I can't do this"). The situation prevented them from doing well ("There is nothing I can do about it"). They expected the worst and their expectations were fulfilled.

Optimism, like a feeling of personal control, pays off. Optimists respond to stress with smaller increases in blood pressure, and they recover more quickly from heart bypass surgery. And during the stressful first few weeks of classes, U.S. law school students who were optimistic ("It's unlikely that I will fail") enjoyed better moods and stronger immune systems (Segerstrom et al., 1998). When American dating couples wrestle with conflicts, optimists and their partners see each other as engaging constructively. They tend to feel more supported and satisfied with the resolution and with their relationship (Srivastava et al., 2006). Optimism also predicts well-being and success elsewhere, including China and Japan (Qin & Piao, 2011).

Is an optimistic outlook related to living a longer life? Possibly. One research team followed 941 Dutch people, aged 65 to 85, for nearly a decade (Giltay et al., 2004, 2007). They split the sample into four groups according to their optimism scores. Only 30 percent of those with the highest optimism died during the study,

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compared with 57 percent of those with the lowest optimism.

The optimism–long-life correlation also appeared in a famous study of 180 American Catholic nuns. At about 22 years of age, each of these women had written a brief autobiography. In the decades that followed, they lived similar lifestyles. Those who had expressed happiness, love, and other positive feelings in their autobiographies lived an average of seven years longer than did the more negative nuns (Danner et al., 2001). By age 80, only 24 percent of the most positive-spirited had died, compared with 54 percent of those expressing few positive emotions.

Optimism runs in families, so some people truly are born with a sunny, hopeful outlook. If one identical twin is optimistic, the other often will be as well (Bates, 2015; Mosing et al., 2009). One genetic marker of optimism is a gene that enhances the social-bonding hormone oxytocin (Saphire-Bernstein et al., 2011).

Positive thinking pays dividends, but so does a dash of realism (Schneider, 2001). Realistic anxiety over possible *future* failures—worrying about being able to pay a bill on time, or fearing you will do badly on an exam—can cause you to try extra hard to avoid failure (Goodhart, 1986; Norem, 2001; Showers, 1992). Students concerned about failing an upcoming exam may study more, and therefore outperform equally able but more confident peers. This may help explain the impressive academic achievements of some Asian-American students. Compared with European-Americans, these students express somewhat greater pessimism (Chang, 2001). Success requires enough optimism to provide hope and enough pessimism to keep you on your toes.

Excessive optimism can blind us to real risks (Weinstein, 1980, 1982, 1996). Most college students display an *unrealistic optimism*. They view themselves as less likely than their average classmate to develop drinking problems, drop out of school, or have a heart attack. Many credit-card users choose cards with low fees and high interest, causing them to pay more because they are unrealistically optimistic that they will always pay off the monthly balance (Yang et al., 2006). Blinded by optimism, people young

Positive expectations often motivate eventual success.

The New Yorker Collection, 1995. From cartoonbank.com

"We just haven't been flapping them hard enough."

Mark Andersen/Rubberball/Getty Images

LAUGHTER AMONG FRIENDS IS GOOD MEDICINE
Laughter arouses us, massages muscles, and then leaves us feeling relaxed (Robinson, 1983). Humor (though not hostile sarcasm) may defuse stress, ease pain, and strengthen immune activity (Ayan, 2009; Berk et al., 2001; Dunbar et al., 2011; Kimata, 2001). People who laugh a lot have also tended to have lower rates of heart disease (Clark et al., 2001).

and old echo the statement famed basketball player Magic Johnson made (1992) after contracting HIV: "I didn't think it could happen to me."

> "God grant us the serenity to accept the things we cannot change, courage to change the things we can, and wisdom to know the difference."
>
> Alcoholics Anonymous Serenity Prayer (attributed to Reinhold Niebuhr)

Social Support

LOQ 10-9 How do social support and finding meaning in life influence health?

Which of these factors has the strongest association with poor health: smoking 15 cigarettes daily, being obese, being inactive, or lacking strong social connections? This is a trick question, because each factor has a roughly similar impact (Cacioppo & Patrick, 2008). That's right! *Social support*—feeling liked and encouraged by intimate friends and family—promotes both happiness and health. It helps you cope with stress. Not having this support can affect your health as much as smoking nearly a pack per day.

Seven massive international investigations that followed thousands of people over several years reached similar conclusions. Although *individualist* (individual-focused) and *collectivist* (group-focused) cultures vary in how much value they place on social support, it is universally related to greater happiness (Brannan et al., 2013; Chu et al., 2010; Gable et al., 2012). People supported by close relationships are also less likely to die early (Shor et al., 2013). These relationships may be with friends, family, fellow students or workers, members of our faith community, or some other support group. Even pets can help us cope with stress.

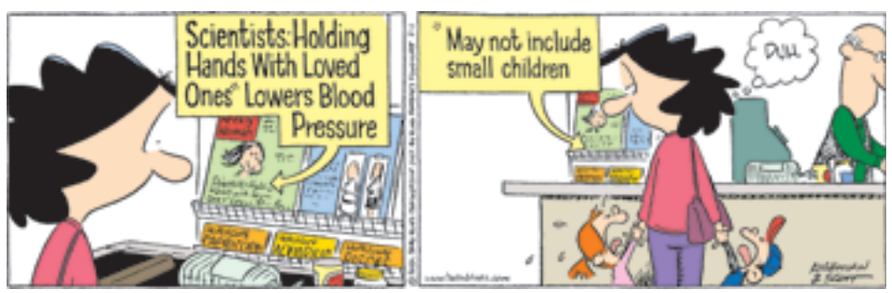
Happy marriages bathe us in social support. One seven-decade-long study found that at age 50, healthy aging is better predicted by a good marriage than by a low cholesterol level (Vaillant, 2002). On the flip side, divorce is a predictor of poor health. In one analysis of 32 studies involving more than 6.5 million people, divorced people were 23 percent more likely to die early (Sbarra et al., 2011). But it's less marital status than marital *quality* that predicts health—to about the same extent as a healthy diet and physical activity do (Robles, 2015; Robles et al., 2014).

Photos.com/Getty Images

PETS ARE FRIENDS, TOO Pets can provide social support. Having a pet may increase the odds of survival after a heart attack, relieve depression among people with AIDS, and lower blood pressure and other coronary risk factors (Allen, 2003; McConnell et al., 2011; Wells, 2009). To lower blood pressure, pets are no substitute for effective drugs and exercise. But for people who enjoy animals, and especially for those who live alone, pets are a healthy pleasure (Allen, 2003).

Social support helps us fight illness in at least two ways. First, it calms our cardiovascular system, which lowers blood pressure and stress hormone levels (Baron et al., 2016; Uchino et al., 1996, 1999). To see if social support might calm people's response to threats, one research team subjected happily married women, while lying in an fMRI machine, to the threat of electric shock to an ankle (Coan et al., 2006). During the experiment, some women held their husband's hand. Others held a stranger's hand or no hand at all. While awaiting the occasional shocks, the women's brains reacted differently. Those who held their husband's hand had less activity in threat-responsive areas. This soothing benefit was greatest for women reporting the highest-quality marriages. A follow-up experiment suggested that simply viewing a supportive romantic partner's picture was enough to reduce painful discomfort (Master et al., 2009). One study of women with ovarian cancer suggests that social support may slow the progression of cancer. Researchers found that women with the highest levels of social support had the lowest levels of a stress hormone linked to cancer progression.

Social support helps us cope with stress in a second way. It helps us fight illness by fostering stronger *immune functioning*. We have seen that stress puts us at risk for disease by stealing disease-fighting energy from our immune system. Social support seems to reboot our immune system. In one series of studies, research participants with strong support systems showed greater resistance to cold viruses (Cohen, 2004; Cohen et al., 1997). After inhaling nose drops loaded with a cold virus, two groups of healthy volunteers were isolated and observed for five days. (The volunteers each received $800 to endure this experience.) The researchers then took a cold hard look at the results. After controlling for age, race, sex, smoking, and other health habits, they found that people



with close social ties in their everyday lives were least likely to catch a cold. If they did catch one, they produced less mucus. People whose daily life included frequent hugs likewise experienced fewer cold symptoms and less symptom severity (Cohen et al., 2015). The effect of social ties is nothing to sneeze at!

When we are trying to cope with stressors, social ties can tug us toward or away from our goal. Are you trying to exercise more, drink less, quit smoking, or eat better? If so, think about whether your social network can help or hinder you. That social net covers not only the people you know but friends of your friends, and friends of their friends. That's three degrees of separation between you and the most remote people. This means that people you have never met can influence your thoughts, feelings, and actions without your awareness (Christakis & Fowler, 2009; Kim et al., 2015).

Finding Meaning

Catastrophes and significant life changes can leave us confused and distressed as we try to make sense of what happened. At such times, an important part of coping with stress is finding meaning in life—some redeeming purpose in our suffering (Guo et al., 2013; Taylor, 1983). Unemployment is very threatening, but it may free up time to spend with children. The loss of a loved one may force us to expand our social network. A heart attack may trigger a shift toward healthy, active living. Some have argued that the search for meaning is fundamental. We constantly seek to maintain meaning when our expectations are not met (Heine el al., 2006). As psychiatrist Viktor Frankl (1962), who survived a Nazi concentration camp, observed, "Life is never made unbearable by circumstances, but only by lack of meaning and purpose."

Close relationships offer an opportunity for "open heart therapy"—a chance to confide painful feelings and sort things out (Frattaroli, 2006). Talking about things that push our buttons may arouse us in the short term. But in the long term, it calms us by reducing our physical stress responses (Lieberman et al., 2007; Mendolia & Kleck, 1993; Niles et al., 2015). After we gain distance from a stressful event, talking or writing about the experience helps us make sense of it and find meaning in it (Esterling et al., 1999). In one study, 33 Holocaust survivors spent two hours recalling their experiences, many in intimate detail never before disclosed (Pennebaker et al., 1989). In the weeks following, most watched a video of their recollections and showed it to family and friends. Those who were most self-disclosing had the most improved health 14 months later. Confiding is good for the body and the soul. Another study surveyed surviving spouses of people who had committed suicide or died in car accidents. Those who bore their grief alone had more health problems than those who could share it with others (Pennebaker & O'Heeron, 1984).


Kathryn Brownson


Alice DeWall

THE MOOD BOOST When energy or spirits are sagging, few things reboot the day better than exercising, as I [DM] can confirm from my noontime basketball, and as I [ND] can confirm from my running.

Managing Stress Effects

Having a sense of control, nurturing an optimistic outlook, building our social support, and finding meaning can help us *experience* less stress and thus improve our health. What do we do when we cannot avoid stress? At such times, we need to *manage* our stress. Aerobic exercise, relaxation, meditation, and active spiritual engagement may help us gather inner strength and lessen stress effects.

Aerobic Exercise

LOQ 10-10 How well does aerobic exercise help us manage stress and improve well-being?

It's hard to find a medicine that works for most people most of the time. But **aerobic exercise**—sustained activity that increases heart and lung fitness—is one of these rare near-perfect "medicines." Estimates vary, but moderate exercise adds to your quantity of life—two additional years, on average—as well as to your quality of life, with more energy, better mood, and stronger relationships (Flueckiger et al., 2016; Hogan et al., 2015; Seligman, 1994; Wang et al., 2011).

Throughout this book, we have revisited one of psychology's basic themes: Heredity and environment interact. Physical activity can weaken the influence of genetic risk factors for obesity. In one analysis of 45 studies, that risk fell by 27 percent (Kilpeläinen et al., 2012). Exercise also helps fight heart disease. It strengthens your heart, increases bloodflow, keeps blood vessels open, lowers overall blood pressure, and reduces the hormone and blood pressure reaction to stress (Ford, 2002; Manson, 2002). Compared with inactive adults, people who exercise suffer half as many heart attacks (Powell et al., 1987; Visich & Fletcher, 2009). Exercise makes the muscles hungry for the fats that, if not used by the muscles, contribute to clogged arteries (Barinaga, 1997).

Many studies suggest that aerobic exercise reduces stress, depression, and anxiety. People who exercise at least

30 minutes, three times a week manage stressful situations better, have more self-confidence and energy, and feel less depressed and anxious than their inactive peers (Rebar et al., 2015; Smits et al., 2011). In one study of over 650,000 American adults, walking 150 minutes per week predicted living seven more years (Moore et al., 2012). Going from active exerciser to couch potato can increase risk for depression—by 51 percent in two years for the women in one study (Wang et al., 2011). But we could state these observations another way: Stressed and depressed people exercise less. It's that old correlation problem again—cause and effect are not clear.

To sort out cause and effect, researchers experiment. They randomly assign people either to an aerobic exercise group or to a control group. Next, they measure whether aerobic exercise (compared with a control activity that doesn't involve exercise) produces a change in stress, depression, anxiety, or some other health-related outcome. In one such experiment (McCann & Holmes, 1984), researchers randomly assigned mildly depressed female college students to one of three groups:

- Group 1 completed an aerobic exercise program.
- Group 2 completed a relaxation program.
- Group 3 functioned as a pure control group and did not complete any special activity.

As **FIGURE 10.7** shows, 10 weeks later the women in the aerobic exercise program reported the greatest decrease in depression. Many of them had, quite literally, run away from their troubles.

Another experiment randomly assigned depressed people to an exercise group, an antidepressant group, or a placebo pill group. Again, exercise diminished depression levels. And it did so as effectively as antidepressants, with longer-lasting effects (Hoffman et al., 2011). Aerobic exercise counteracts depression in two ways. First, it increases arousal. Second, it does naturally what some prescription drugs do chemically: It increases the brain's serotonin activity.

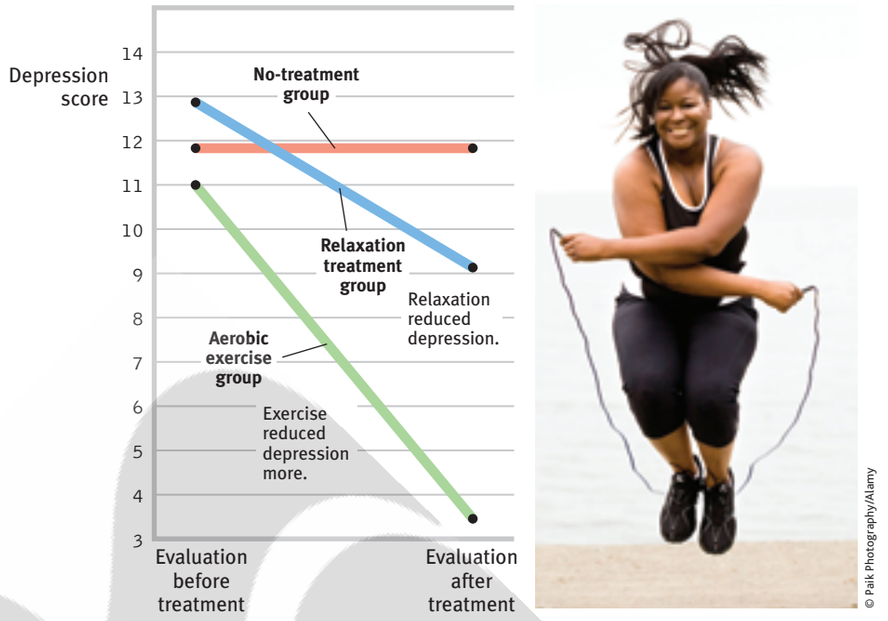


FIGURE 10.7 Aerobic exercise and depression (Data from McCann & Holmes, 1984.)

More than 150 other studies have confirmed that exercise reduces depression and anxiety. What is more, toned muscles filter out depression-causing toxins (Agudelo et al., 2014). Aerobic exercise has therefore taken a place, along with antidepressant drugs and psychotherapy, on the list of effective treatments for depression and anxiety (Arent et al., 2000; Berger & Motl, 2000; Dunn et al., 2005).

LaunchPad See LaunchPad's *Video: Random Assignment* for a helpful tutorial animation about this important part of effective research design.

Relaxation and Meditation

LOQ 10-11 In what ways might relaxation and meditation influence stress and health?

Sit with your back straight, getting as comfortable as you can. Breathe a deep, single breath of air through your nose. Now exhale that air through your mouth as slowly as you can. As you exhale, repeat a focus word, phrase, or prayer—something from your own belief system. Do this five times. Do you feel more relaxed?

Why Relaxation Is Good

Like aerobic exercise, relaxation can improve our well-being. Did you notice in Figure 10.7 that women in the relaxation treatment group also experienced reduced depression? More than 60 studies have found that relaxation procedures can also provide relief from headaches, high blood pressure, anxiety, and insomnia (Nestoriuc et al., 2008; Stetter & Kupper, 2002).

Researchers have even used relaxation to help Type A heart attack survivors reduce their risk of future attacks (Friedman & Ulmer, 1984). They randomly assigned hundreds of these middle-aged men to one of two groups. The first group received standard advice from cardiologists about medications, diet,

aerobic exercise sustained activity that increases heart and lung fitness; may also reduce depression and anxiety.

and exercise habits. The second group received similar advice, but they also were taught ways of modifying their lifestyle. They learned to slow down and relax by walking, talking, and eating more slowly. They learned to smile at others and laugh at themselves. They learned to admit their mistakes, to take time to enjoy life, and to renew their religious faith. The training paid off spectacularly (**FIGURE 10.8**). During the next three years, the lifestyle modification group had half as many repeat heart attacks as did the first group. A British study supported this finding. Lifestyle modification cut the risk of heart attack in half over 13 years for heart-attack-prone people (Eysenck & Grossarth-Maticek, 1991).

Time may heal all wounds, but relaxation can help speed that process. In one study, surgery patients were randomly assigned to two groups. Both groups received standard treatment, but the second group also experienced a 45-minute relaxation exercise and received relaxation recordings to use before and after surgery. A week after surgery, patients in the second group reported lower stress and showed better wound healing (Broadbent el al., 2012).

Learning to Reflect and Accept

Meditation is a modern practice with a long history in a variety of world religions. Meditation was originally used to reduce suffering and improve awareness, insight, and compassion. Numerous studies have confirmed the psychological benefits of meditation (Goyal et al., 2014; Rosenberg et al., 2015; Sedlmeier et al., 2012), including **mindfulness meditation**, which has today found a new home in stress management programs. If you were taught this practice, you would relax and silently attend to your inner state, without judging it (Kabat-Zinn, 2001). You would sit down, close your eyes, and mentally scan your body from head to toe. Zooming in on certain body parts and responses, you would remain aware and accepting. You would also pay attention to your breathing, attending to each breath as if it were a material object.

Practicing mindfulness may improve many health measures. In one study of 1140 people, some received mindfulness-based therapy for several weeks. Others did not. Levels of anxiety and depression were lower among those who received the therapy (Hofmann et al., 2010). In another study, mindfulness training

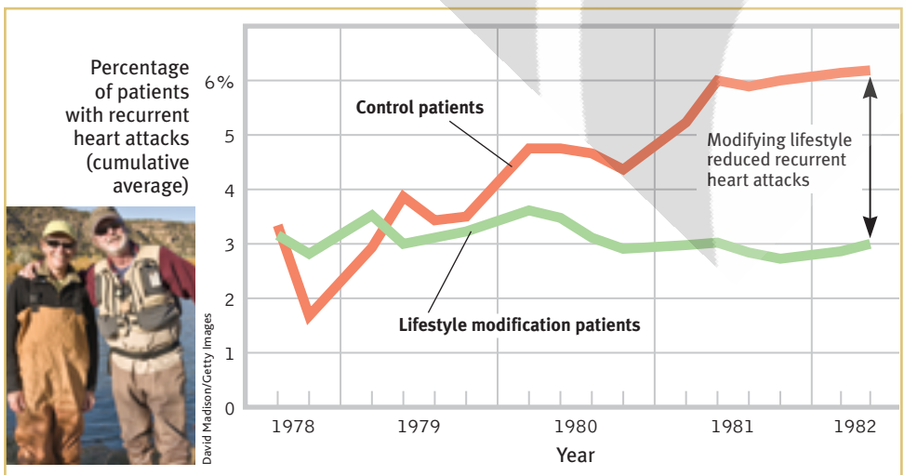


FIGURE 10.8 Recurrent heart attacks and lifestyle modification The San Francisco Recurrent Coronary Prevention Project offered counseling from a cardiologist to survivors of heart attacks. Those who were also guided in modifying their Type A lifestyle suffered fewer repeat heart attacks. (Data from Friedman & Ulmer, 1984.)

Djomas/Shutterstock

improved immune system functioning and coping in a group of women newly diagnosed with early-stage breast cancer (Witek-Janusek et al., 2008). Mindfulness practices have also been linked with reductions in sleep problems, cigarette use, binge eating, and alcohol and other substance abuse (Bowen et al., 2006; Brewer et al., 2011; Cincotta et al., 2011; de Dios et al., 2012; Kristeller et al., 2006).

So, what's going on in the brain as we practice mindfulness? Correlational and experimental studies offer three explanations for how mindfulness helps us make positive changes:

- *It strengthens connections among regions in our brain.* The affected regions are those associated with focusing our attention, processing what we see and hear, and being reflective and aware (Berkovich-Ohana et al., 2014; Ives-Deliperi et al., 2011; Kilpatrick et al., 2011).
- *It activates brain regions associated with more reflective awareness* (Davidson et al., 2003; Way et al., 2010). When labeling emotions, mindful people show less activation in the amygdala, a brain region associated with fear, and more activation in the prefrontal cortex, which aids emotion regulation (Creswell et al., 2007).
- *It calms brain activation in emotional situations.* This lower activation was clear in one study in which participants watched two movies—one sad, one neutral. Those in the control group, who were not trained in mindfulness, showed strong

differences in brain activation when watching the two movies. Those who had received mindfulness training showed little change in brain response to the two movies (Farb et al., 2010). Emotionally unpleasant images also trigger weaker electrical brain responses in mindful people than in their less mindful counterparts (Brown et al., 2013). A mindful brain is strong, reflective, and calm.

Exercise and meditation are not the only routes to healthy relaxation. Massage helps relax both premature infants (Chapter 3) and those suffering pain (Chapter 5), and it also helps reduce depression (Hou et al., 2010).

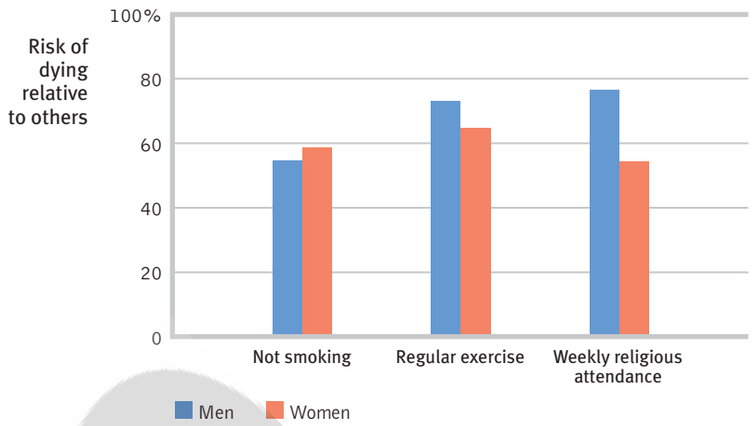


FIGURE 10.9 Predictors of longer life: Not smoking, frequent exercise, and regular religious attendance One 28-year study followed more than 5200 adults (Oman et al., 2002; Strawbridge, 1999; Strawbridge et al., 1997). After adjusting for age and education, the researchers found that not smoking, regular exercise, and religious attendance all predicted a lowered risk of death in any given year. Women attending weekly religious services, for example, were only 54 percent as likely to die in a typical study year as were nonattenders.

Faith Communities and Health

LOQ 10-12 Does religious involvement relate to health?

A wealth of studies has revealed another curious correlation, called the *faith factor* (Koenig et al., 2012). Religiously active people tend to live longer than those who are not religiously active. In one 16-year study, researchers tracked 3900 Israelis living in one of two groups of communities (Kark et al., 1996). The first group contained 11 religiously orthodox collective settlements. The second group contained 11 matched, nonreligious collective settlements. The researchers found that "belonging to a religious collective was associated with a strong protective effect" not explained by age or economic differences. In every age group, religious community members were about half as likely to have died as were those in the nonreligious community.

How should we interpret such findings? Remember that correlation does not mean causation. What other factors might explain these protective effects? Here's one possibility: Women are more religiously active than men, and women outlive men. Does religious involvement reflect this gender-longevity link? *No.* Although the spirituality-longevity correlation is stronger among women, it also appears among men (McCullough et al., 2000; McCullough & Laurenceau, 2005). In study after study—some lasting 28 years, and some studying more than 20,000 people—the faith factor holds (Chida et al., 2009; Hummer et al., 1999; Schnall et al., 2010). And it holds after researchers control for age, sex, race, ethnicity, education, and region. In one study, this effect translated into a life expectancy of 83 years for those who regularly attended religious services, and only 75 years for nonattenders (**FIGURE 10.9**).

Does this mean that nonattenders who start attending services and change nothing else will live longer? Again, the answer is *No.* But we can say that religious involvement *predicts* health and longevity, just as nonsmoking and exercise do.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mindfulness meditation a reflective practice in which people attend to current experiences in a nonjudgmental and accepting manner.

Religiously active people have demonstrated healthier immune functioning, fewer hospital admissions, and, for people with AIDS, fewer stress hormones and longer survival (Ironson et al., 2002; Koenig & Larson, 1998; Lutgendorf et al., 2004).

Can you imagine why religiously active people might be healthier and live longer than others? Here are three factors that help explain the correlation:

- *Healthy lifestyles* Religiously active people have healthier lifestyles. For example, they smoke and drink less (Islam & Johnson, 2003; Koenig & Vaillant, 2009; Koopmans et al., 1999). In one Gallup survey of 550,000 Americans, 15 percent of the very religious were smokers, compared with 28 percent of nonreligious people (Newport et al., 2010). But healthy lifestyles are not the complete answer. In studies that have controlled for unhealthy behaviors, such as inactivity and smoking, about 75 percent of the life-span difference remained (Musick et al., 1999).
- *Social support* Those who belong to a faith community have access to a support network. When misfortune strikes, religiously active people can turn to each other. Moreover, religions encourage marriage, another predictor of health and longevity. In the Israeli religious settlements, for example, divorce has been almost nonexistent. But even after controlling for social support, gender, unhealthy behaviors, and preexisting health problems, much of the original religious engagement correlation remains (Chida et al., 2009; George et al., 2000; Kim-Yeary et al., 2012; Powell et al., 2003).
- *Positive emotions* Researchers speculate that a third set of influences helps protect religiously active people from stress and enhance their well-being (**FIGURE 10.10**). Religiously active people have a stable worldview, a sense of hope for the long-term future, and feelings of ultimate acceptance. They may also benefit from the relaxed meditation of prayer or other religious observances. Taken together, these positive emotions, expectations, and practices may have a protective effect on well-being.

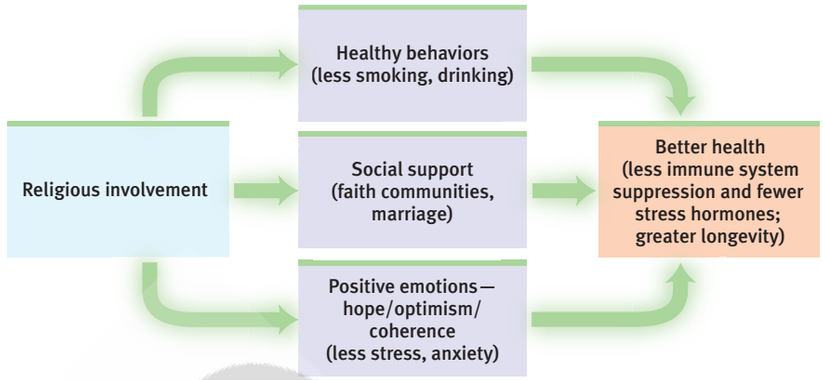

FIGURE 10.10 Possible explanations for the correlation between religious involvement and health/longevity

* * *

Let's summarize what we've learned so far: Sustained emotional reactions to stressful events can be damaging. However, some qualities and influences can help us cope with life's challenges by making us emotionally and physically stronger. These include a sense of control, an optimistic outlook, relaxation, healthy habits, social support, a sense of meaning, and spirituality (**FIGURE 10.11**).

In the remainder of this chapter, we'll take a closer look at our pursuit of happiness and how it relates to our human flourishing.

Retrieve + Remember

- What are some of the tactics that help people manage the stress they cannot avoid?

ANSWER: aerobic exercise, relaxation procedures, mindfulness meditation, and religious engagement

Happiness

LOQ 10-13 What are the causes and consequences of happiness?

In *The How of Happiness*, psychologist Sonja Lyubomirsky (2008) tells the true story of Randy. By any measure, Randy lived a hard life. His dad and best friend both died by suicide. Growing up, his mother's boyfriend treated him poorly. Randy's first wife was unfaithful, and they divorced. Despite these setbacks, Randy is a happy person whose endless optimism can light up a room. He remarried and enjoys being a stepfather to three boys. His work life is rewarding. Randy says he survived his life stressors by seeing the "silver lining in the cloud."

Overcoming serious challenges, as Randy did, people may feel a stronger sense of self-esteem and a deeper sense of purpose. Tough challenges, especially early in life, can foster personal growth and emotional **resilience** (Landauer & Whiting, 1979).

Are you a person who makes everyone around you smile and laugh? Have you, like Randy, bounced back from serious challenges and become stronger because of it? Our state of happiness or unhappiness colors our thoughts and our

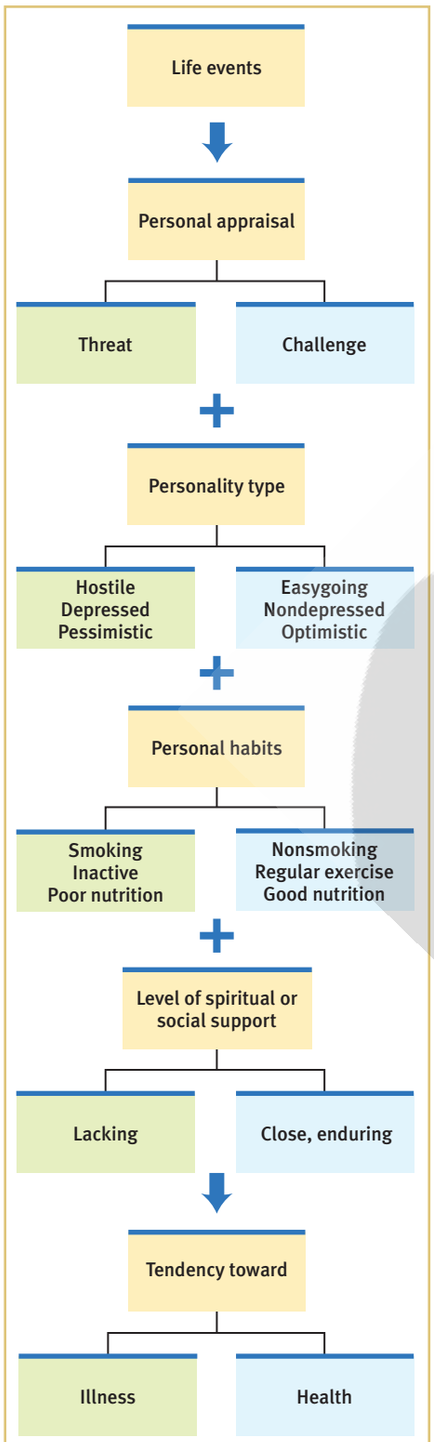

FIGURE 10.11 How to flourish

actions. Happy people perceive the world as a safer place. Their eyes are drawn toward emotionally positive information (Raila et al., 2015). They are more decisive and cooperate more easily. They live healthier and more energized and satisfied lives (Boehm et al., 2015; De Neve et al., 2013; Mauss et al., 2011; Stellar et al., 2015). We all get gloomy sometimes. When that happens, life as a whole may seem depressing and meaningless. Let your mood brighten, and your thinking broadens and becomes more playful and creative (Baas et al., 2008; Forgas, 2008; Fredrickson, 2013). Your relationships, your self-image, and your hopes for the future seem more promising.

This helps explain why college students' happiness helps predict their life course. In one study, which surveyed thousands of U.S. college students in 1976 and restudied them at age 37, happy students had gone on to earn significantly more money than their less-happy-than-average peers (Diener et al., 2002). In another, the happiest 20-year-olds were not only more likely to marry, but also less likely to divorce (Stutzer & Frey, 2006).

Moreover—and this is one of psychology's most consistent findings—when we feel happy we become more helpful. Psychologists call it the **feel-good, do-good phenomenon** (Salovey, 1990). Happiness doesn't just feel good, it does good. In study after study, a mood-boosting experience (finding money, succeeding on a challenging task, recalling a happy event) has made people more likely to give money, pick up someone's dropped papers, volunteer time, and do other good deeds.

The reverse is also true: Doing good promotes feeling good. One survey of more than 200,000 people in 136 countries found that, pretty much everywhere, people report feeling happier after spending money on others rather than themselves (Aknin et al., 2013; Dunn et al., 2014). Why does doing good feel so good? It strengthens our social relationships (Aknin et al., 2015; Yamaguchi et al., 2015). Some happiness coaches and instructors harness this force by asking their clients to perform a daily "random act of kindness" and to record how it made them feel.

William James was writing about the importance of happiness ("the secret motive for all [we] do") as early as 1902. With the rise of *positive psychology* in the twenty-first century (Chapter 1), the study of happiness has become a main area of research. It is a key part of one of our big ideas in this text: Psychology explores human strengths as well as challenges. Part of happiness research is the study of **subjective well-being**—our feelings of happiness (sometimes defined as a high ratio of positive to negative feelings) or sense of satisfaction with life. This information, combined with objective measures of well-being, such as a person's physical and economic condition, helps us make more informed quality-of-life judgments.

The Short Life of Emotional Ups and Downs

Are some days of the week happier than others? In what may be psychology's biggest-ever data sample, one social psychologist (Kramer, 2010—at my [DM's] request and in cooperation with Facebook) did a naturalistic observation of emotion words in "billions" of status updates. After eliminating exceptional days, such as holidays, he tracked the frequency of positive and negative emotion words by day of the week. The days

resilience the personal strength that helps most people cope with stress and recover from adversity and even trauma.

feel-good, do-good phenomenon our tendency to be helpful when already in a good mood.

subjective well-being self-perceived happiness or satisfaction with life. Used along with measures of objective well-being (for example, physical and economic indicators) to judge our quality of life.

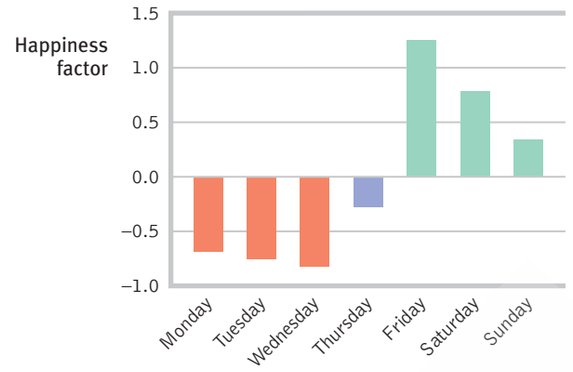

FIGURE 10.12 Using web science to track happy days Adam Kramer (2010) tracked positive and negative emotion words in many "billions" (the exact number is proprietary information) of status updates of U.S. Facebook users between September 7, 2007, and November 17, 2010.

with the most positive moods? Friday and Saturday (**FIGURE 10.12**). Similar analyses of questionnaire responses and 59 million Twitter messages found Friday to Sunday the week's happiest days (Golder & Macy, 2011; Helliwell & Wang, 2015, Young & Lim, 2014). For you, too?

LaunchPad See LaunchPad's *Video: Naturalistic Observation* for a helpful tutorial animation about this type of research design.

Over the long run, our emotional ups and downs tend to balance out. This is true even over the course of the day. Positive emotion rises over the early to middle part of most days and then drops off (Kahneman et al., 2004; Watson, 2000). So, too, with day-to-day moods. A stressful event—an argument, a sick child, a car problem—triggers a bad mood. No surprise there. But by the next day, the gloom nearly always lifts (Affleck et al., 1994; Bolger et al., 1989; Stone & Neale, 1984). If anything, people tend to bounce back from a bad day to a *better*-than-usual good mood the following day. Even when negative events drag us down for longer periods, our bad mood usually ends. We may feel that our heart has broken during a romantic breakup, but eventually the wound heals.

iStock/Getty Images

TAKE HEART! TOMORROW WILL BE A NEW DAY Car trouble can happen at the worst possible times. But this man's bad mood will almost certainly clear by tomorrow, when he may even experience a better-than-normal good mood.

Grief over the loss of a loved one or anxiety after a severe trauma can linger. But usually, even tragedy is not permanently depressing. People who have become blind or paralyzed may not completely recover their previous well-being, but those with an agreeable personality have usually recovered near-normal levels of day-to-day happiness (Boyce & Wood, 2011). So have those forced to go on kidney dialysis or to have permanent colostomies (Gerhart et al., 1994; Riis et al., 2005; Smith et al., 2009a). Even if you become paralyzed,

Courtesy of Anna Putt

HUMAN RESILIENCE Seven weeks after her 1994 wedding, Anna Putt of South Midlands, England, shown here with her husband, Des, suffered a brainstem stroke that left her "locked in." For months afterward, she recalled, "I was paralyzed from the neck down and was unable to communicate. These were VERY frightening times. But with encouragement from family, friends, faith, and medical staff, I tried to keep positive." In the three years that followed, she learned to "talk" (by nodding at letters), to steer an electric wheelchair with her head, and to use a computer (by nodding while wearing spectacles that guide a cursor). Despite her paralysis, she has reported, "I enjoy going out in the fresh air. My motto is 'Don't look back, move forward.' God would not want me to stop trying and I have no intention of doing so. Life is what you make of it!"

explained psychologist Daniel Kahneman (2005), "you will gradually start thinking of other things, and the more time you spend thinking of other things, the less miserable you are going to be." Contrary to what many people believe, even most patients "locked in" a motionless body do not indicate they want to die (Nizzi et al., 2012; Smith & Delargy, 2005). The surprising reality: *We overestimate the duration of our emotions and underestimate our resilience—our ability to bounce back.*

Wealth and Well-Being

Would you be happier if you made more money? In a 2006 Gallup poll, 73 percent of Americans thought they would be. How important is "Being very well off financially"? "Very important" or "essential," say 82 percent of entering U.S. college students (Eagen et al., 2016).

Money does buy happiness, up to a point. Having enough money to buy your way out of hunger and to enable a sense of control over your life predicts greater happiness (Fischer & Boer, 2011). Money's power to buy happiness also depends on your current income. A $1000 annual wage increase would do a lot more for the average person in a very poor country than for the average person in a very rich one. But once one has enough money for comfort and security, piling up more and more matters less and less.

Consider: During the last four decades, the average U.S. citizen's buying power almost tripled—enabling larger homes and twice as many cars per person, not to mention iPads and smart phones. Did it also buy more happiness? As **FIGURE 10.13** shows, Americans have become no happier. In 1957, some 35 percent said they were "very happy," as did slightly fewer—33 percent—in 2014. Ditto China, where living standards have risen but happiness has not (Davey & Rato, 2012; Easterlin et al., 2012). These findings lob a bombshell at modern materialism: *Economic growth in wealthy countries has provided no apparent boost to morale or social well-being.*

Harley Schwadron/www.cartoonstock.com

"But on the positive side, money can't buy happiness—so who cares?"

The New Yorker Collection, 2001, Pat Byrnes from cartoonbank.com

"Researchers say I'm not happier for being richer, but do you know how much researchers make?"

Why Can't Money Buy More Happiness?

Why is it that, for those who are not poor, more and more money does not buy more and more happiness? More

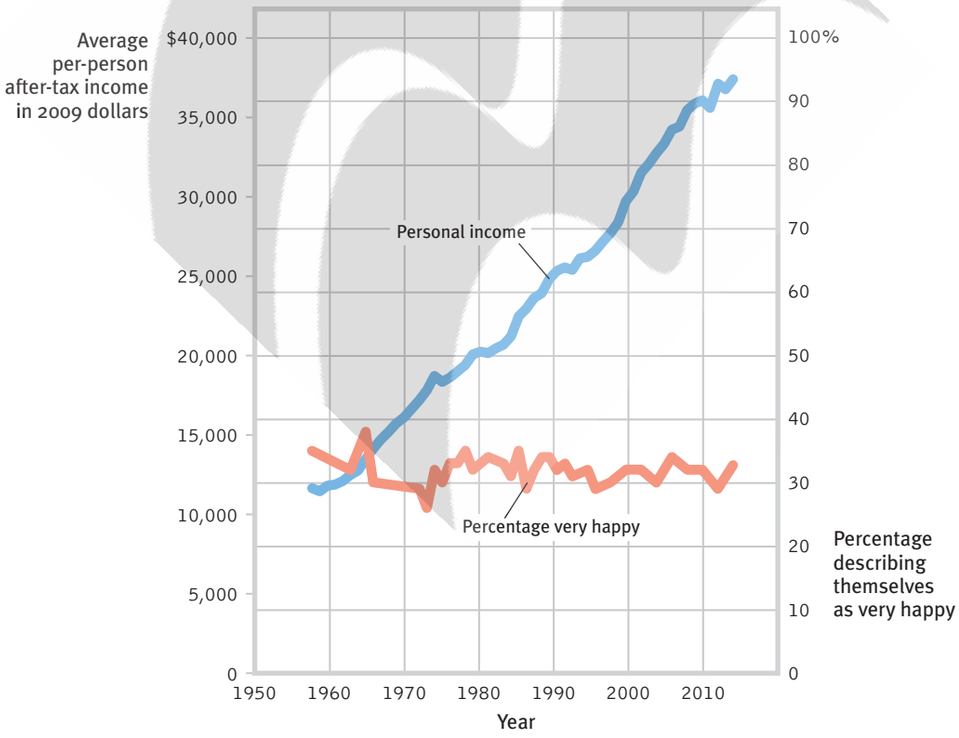

FIGURE 10.13 Does money buy happiness? It surely helps us to avoid certain types of pain. Yet, though average buying power has almost tripled since the 1950s, Americans' reported happiness has remained almost unchanged. (Happiness data from National Opinion Research Center surveys; income data from *Historical Statistics of the United States and Economic Indicators.*)

generally, why do our emotions seem to be attached to elastic bands that pull us back from highs or lows? Psychology has proposed two answers. Each suggests that happiness is relative.

My Happiness Is Relative to My Own Experience

We tend to judge new events by comparing them with our past experiences. Psychologists call this the **adaptation-level phenomenon.** Our past experiences act as *neutral* levels—sounds that seem neither loud nor soft, temperatures that seem neither hot nor cold, events that seem neither pleasant nor unpleasant. We then notice and react to variations up or down from these levels.

So, could we ever create a permanent social paradise? Probably not (Campbell, 1975; Di Tella et al., 2010). People who have experienced a recent windfall—from the lottery, an inheritance, or a surging economy—typically feel joy and satisfaction (Diener & Oishi, 2000; Gardner & Oswald, 2007). You would, too, if you woke up tomorrow with all your wishes granted. Wouldn't you love to live in a world with no bills, no ills, and perfect grades? But after a time, you would gradually adapt to this new normal. Before long, you would again sometimes feel joy and satisfaction (when events exceed your expectations), sometimes feel let down (when they fall below), and sometimes feel neutral.

The point to remember: Feelings of satisfaction and dissatisfaction, success and failure are judgments we make about ourselves, based partly on our prior experience (Rutledge et al., 2014).

My Happiness Is Relative to Your Success

We are always comparing ourselves with others. And whether we feel good or bad depends on our perception of just how successful those others are (Lyubomirsky, 2001). We are slow-witted or clumsy only when others are smarter or more graceful. When we sense that we are worse off than others with whom we compare ourselves, we experience **relative deprivation.**

When expectations soar above achievements, we feel disappointed. Thus, the middle- and upper-income people in a given country, who can compare themselves with the relatively poor, tend to have greater life satisfaction than their less-fortunate fellow citizens. Nevertheless, once people reach a moderate income level, further increases buy smaller increases in happiness. Why? Because as people climb the ladder of success, they mostly compare themselves with local peers who are at or above their current level (Gruder, 1977; Suls & Tesch, 1978; Zell & Alicke, 2010).

Just as comparing ourselves with those who are better off creates envy, so counting our blessings as we compare ourselves with those worse off boosts our contentment. In one study, university women considered others' suffering (Dermer et al., 1979). They viewed vivid images of how grim city life could be in 1900. They imagined and then wrote about various personal tragedies, such as being burned and disfigured. Later, the women expressed greater satisfaction with their own lives. Similarly, when mildly depressed people have read about someone who was even more depressed, they felt somewhat better (Gibbons, 1986). "I cried because I had no shoes," states a Persian saying, "until I met a man who had no feet."

"Money won't make you happy, Waldron. So instead of a raise, I'm giving you a Prozac."

LaunchPad For a 6.5-minute examination of historical and modern views of happiness, visit LaunchPad's ***Video: The Search for Happiness.***

Predictors of Happiness

Happy people share many characteristics (**TABLE 10.1**). But what makes one person so filled with joy, day after day, and others so gloomy? Here, as in so many other areas, the answer is found in the interplay between nature and nurture.

Genes matter. Studies of hundreds of identical and fraternal twins indicate that heredity accounts for about 50 percent of the difference among people's happiness ratings (Gigantesco et al., 2011; Lykken & Tellegen, 1996). Identical twins raised apart are often similarly happy.

But our personal history and our culture matter, too. On the personal level, as we saw earlier, our emotions tend to balance around a level defined by our experiences. On the cultural level, groups vary in the traits they value. Self-

HI & LOIS

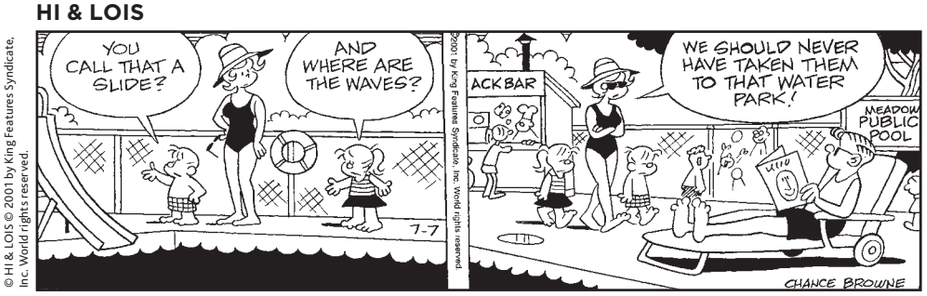

TABLE 10.1 Happiness Is . . .

Researchers Have Found That Happy People Tend to	However, Happiness Seems Not Much Related to Other Factors, Such as
Have high self-esteem (in individualist countries).	Age.
Be optimistic, outgoing, and agreeable.	Gender (women are more often depressed, but also more often joyful).
Have close, positive, and lasting relationships.	Physical attractiveness.
Have work and leisure that engage their skills.	
Have an active religious faith (especially in more religious cultures).	
Sleep well and exercise.	

Sources: DeNeve & Cooper, 1998; Diener et al., 2003, 2011; Headey et al., 2010; Lucas et al., 2004; Myers, 1993, 2000; Myers & Diener, 1995, 1996; Steel et al., 2008. Veenhoven (2014) offers a database of 13,000+ correlates of happiness at WorldDatabaseofHappiness.eur.nl.

The New Yorker Collection, 1996. From cartoonbank.com

"I could cry when I think of the years I wasted accumulating money, only to learn that my cheerful disposition is genetic."

esteem matters more to Westerners, who value individualism. Social acceptance and harmony matter more in cultures that stress family and community, such as in Japan (Diener et al., 2003; Fulmer et al., 2010; Uchida & Kitayama, 2009).

Depending on our genes, our outlook, and our recent experiences, our happiness seems to vary around our "happiness set point." Some of us seem to be ever upbeat; others, more negative. Even so, our satisfaction with life can change (Lucas & Donnellan, 2007). As researchers studying human strengths will tell you, happiness rises and falls, and we can control some of the factors that make us more or less happy (Sin & Lyubomirsky, 2009).

If we can enhance our happiness on an *individual* level, could we use happiness research to refocus our *national* priorities? Many psychologists believe we could. Many political leaders agree: 43 nations have begun measuring their citizens' well-being (Diener et al., 2015). Happy societies are not only prosperous but are also places where people trust one another, feel free, and enjoy close relationships (Helliwell et al., 2013; Oishi & Schimmack, 2010; Sachs, 2012). Thus, when debating such issues as economic inequality, tax rates, divorce laws, and health care, people's psychological well-being should be a prime consideration. Such measures may help guide nations toward policies that decrease stress, foster human flourishing, and promote "the pursuit of happiness."

Scientifically Proven Ways to Have a Happier Life[1]

Your happiness, like your cholesterol level, is genetically influenced. Yet as cholesterol is also influenced by diet and exercise, so happiness is to some extent under your personal control (Nes, 2010; Sin & Lyubomirsky, 2009). Here are 10 research-based suggestions for building your personal strengths to increase your satisfaction with life.

1. ***Take control of your time.*** Happy people feel in control of their lives. To master your use of time, set goals and divide them into daily aims. This may be frustrating at first, because we all tend to overestimate how much we will accomplish in any given day. The good news is that we generally underestimate how much we can accomplish in a year, given just a little progress every day.
2. ***Act happy.*** As you saw in Chapter 9, people who have been manipulated into a smiling expression felt better. So put on a happy face. Talk as if you feel positive self-esteem, are optimistic, and are outgoing. We can often act our way into a happier state of mind.
3. ***Seek work and leisure that engage your skills.*** Happy people often are in a zone called *flow*—absorbed in tasks that challenge but don't overwhelm them. Passive forms of leisure (watching TV) often provide less flow experience than exercising, socializing, or expressing your musical interests. And frequent small positive experiences make for more lasting happiness than big but rare positive events.

1. Digested from David G. Myers, *The Pursuit of Happiness* (Harper).

adaptation-level phenomenon our tendency to form judgments (of sounds, of lights, of income) relative to a neutral level defined by our past experiences.

relative deprivation the perception that we are worse off relative to those with whom we compare ourselves.

RubberBall Selects/Alamy

4. ***Buy shared experiences rather than things.*** Compared with money spent on stuff, money buys more happiness when spent on experiences that you look forward to, enjoy, remember, and talk about (Carter & Gilovich, 2010; Kumar & Gilovich, 2013). This is especially so for socially shared experiences (Caprariello & Reis, 2013). The shared experience of a family vacation may cost a lot, but, as pundit Art Buchwald said, "The best things in life aren't things."
5. ***Join the "movement" movement.*** Aerobic exercise can relieve mild depression and anxiety as it promotes health and energy. Sound minds reside in sound bodies.
6. ***Give your body the sleep it wants.*** Happy people live active lives yet save time for renewing sleep. Many people—high school and college students, especially—suffer from sleep debt. The result is fatigue, diminished alertness, and gloomy moods. If you sleep now, you'll smile later.
7. ***Give priority to close relationships.*** Confiding is good for soul and body. Those who care deeply about you can help you weather difficult times. Compared with unhappy people, happy people engage in less small talk and more meaningful conversations (Mehl et al., 2010). You can nurture your closest relationships by not taking your loved ones for granted. This means being as kind to them as you are to others, affirming them, playing together, and sharing together.
8. ***Focus beyond self.*** Reach out to those in need. Happiness increases helpfulness (those who feel good do good). But doing good also makes us feel good.
9. ***Count your blessings and record your gratitude.*** Keeping a gratitude journal heightens well-being (Davis et al., 2016). Each day, savor the good moments and positive events and record why they occurred. Express your gratitude to others.
10. ***Nurture your spiritual self.*** For many people, faith provides a support community, a reason to focus beyond self, and a sense of purpose and hope. That helps explain why people active in faith communities report greater-than-average happiness and often cope well with crises.

Retrieve + Remember

- Which of the following factors does NOT predict self-reported happiness?
  a. Age
  b. Personality traits
  c. Sleep and exercise
  d. Active religious faith

ANSWER: a. Age does NOT effectively predict happiness levels. Better predictors are personality traits, sleep and exercise, and religious faith.

CHAPTER REVIEW

Stress, Health, and Human Flourishing

Test yourself by taking a moment to answer each of these Learning Objective Questions (repeated here from within the chapter). Then turn to Appendix D, Complete Chapter Reviews, to check your answers. Research suggests that trying to answer these questions on your own will improve your long-term memory of the concepts (McDaniel et al., 2009).

Stress: Some Basic Concepts

10-1: How does our appraisal of an event affect our stress reaction, and what are the three main types of stressors?

10-2: How does the body respond to stress?

Stress Effects and Health

10-3: How does stress influence our immune system?

10-4: How does stress increase coronary heart disease risk?

10-5: So, does stress *cause* illness?

Coping With Stress

10-6: What are two basic ways that people cope with stress?

10-7: How does our sense of control influence stress and health?

10-8: How do optimists and pessimists differ, and why does our outlook on life matter?

10-9: How do social support and finding meaning in life influence health?

Managing Stress Effects

10-10: How well does aerobic exercise help us manage stress and improve well-being?

10-11: In what ways might relaxation and meditation influence stress and health?

10-12: Does religious involvement relate to health?

Happiness

10-13: What are the causes and consequences of happiness?

TERMS AND CONCEPTS TO REMEMBER

Test yourself on these terms by trying to write down the definition in your own words before flipping back to the referenced page to check your answer.

stress, p. 287
fight-or-flight response, p. 287
general adaptation syndrome (GAS), p. 287
tend-and-befriend response, p. 289
psychoneuroimmunology, p. 289
coronary heart disease, p. 291
Type A, p. 291
Type B, p. 291
coping, p. 293
problem-focused coping, p. 293
emotion-focused coping, p. 293
personal control, p. 293
learned helplessness, p. 293
external locus of control, p. 295
internal locus of control, p. 295
self-control, p. 295
optimism, p. 295
pessimism, p. 295
aerobic exercise, p. 299
mindfulness meditation, p. 301
resilience, p. 303
feel-good, do-good phenomenon, p. 303
subjective well-being, p. 303
adaptation-level phenomenon, p. 307
relative deprivation, p. 307

CHAPTER TEST

Test yourself repeatedly throughout your studies. This will not only help you figure out what you know and don't know; the testing itself will help you learn and remember the information more effectively thanks to the *testing effect*.

1. Selye's general adaptation syndrome (GAS) consists of an alarm reaction followed by _____, then _____.
2. When faced with stress, women are more likely than men to exhibit the _____-and- _____ response.
3. The number of short-term illnesses and stress-related psychological disorders was higher than usual in the months following an earthquake. Such findings suggest that
   - **a.** daily hassles have adverse health consequences.
   - **b.** experiencing a very stressful event increases a person's vulnerability to illness.
   - **c.** the amount of stress a person feels is directly related to the number of stressors experienced.
   - **d.** daily hassles don't influence our physical or psychological health, but catastrophes can be toxic.
4. Which of the following is NOT one of the three main types of stressors?
   - **a.** Catastrophes
   - **b.** Significant life changes
   - **c.** Daily hassles
   - **d.** Loss of personal control
5. Stress can suppress the immune system by prompting a decrease in the release of _____, the immune cells that ordinarily attack bacteria, viruses, cancer cells, and other foreign substances.
6. Research has shown that people are at increased risk for cancer a year or so after experiencing depression, helplessness, or bereavement. In describing this link, researchers are quick to point out that
   - **a.** accumulated stress causes cancer.
   - **b.** anger is the negative emotion most closely linked to cancer.
   - **c.** stress does not create cancer cells, but it weakens the body's natural defenses against them.
   - **d.** feeling optimistic about chances of survival increases the likelihood of a cancer patient's recovery.
7. A Chinese proverb warns, "The fire you kindle for your enemy often burns you more than him." How is this true of Type A individuals?
8. The components of the Type A personality that have been linked most closely to coronary heart disease are anger and other _____ feelings.
9. When faced with a situation over which you feel you have little control, it is most effective to use _____ (emotion/problem)-focused coping.
10. Research has shown that a dog will respond with learned helplessness if it has received repeated shocks and has had
    - **a.** the opportunity to escape.
    - **b.** no control over the shocks.
    - **c.** pain or discomfort.
    - **d.** no food or water prior to the shocks.
11. When elderly patients take an active part in managing their own care and surroundings, their morale and health tend to improve. Such findings indicate that people do better when they experience an _____ (internal/external) locus of control.
12. People who have close relationships are less likely to die prematurely than those who do not, supporting the idea that
    - **a.** social ties can be a source of stress.
    - **b.** gender influences longevity.
    - **c.** Type A behavior is responsible for many premature deaths.
    - **d.** social support has a beneficial effect on health.
13. Because it triggers the release of mood-boosting neurotransmitters such as serotonin, _____ exercise raises energy levels and helps alleviate depression and anxiety.
14. Research on the faith factor has found that
    - **a.** pessimists tend to be healthier than optimists.
    - **b.** our expectations influence our feelings of stress.
    - **c.** religiously active people tend to outlive those who are not religiously active.
    - **d.** religious engagement promotes social isolation and repression.
15. One of the most consistent findings of psychological research is that happy people are also
    - **a.** more likely to express anger.
    - **b.** generally luckier than others.
    - **c.** concentrated in the wealthier nations.
    - **d.** more likely to help others.

16. After moving to a new apartment, you find the street noise irritatingly loud, but after a while, it no longer bothers you. This reaction illustrates the

a. relative deprivation principle.

b. adaptation-level phenomenon.

c. feel-good, do-good phenomenon.

d. importance of mindfulness meditation.

17. A philosopher observed that we cannot escape envy, because there will always be someone more successful, more accomplished, or richer with whom to compare ourselves. In psychology, this observation is embodied in the _____ _____ principle.

Find answers to these questions in Appendix E, in the back of the book.

IN YOUR EVERYDAY LIFE

Answering these questions will help you make these concepts more personally meaningful, and therefore more memorable.

1. In what ways have you experienced the stress adaptation phases of alarm, resistance, and exhaustion in your life as a student?
2. Do you think you are Type A, Type B, or somewhere in between? In what ways has this been helpful to you, and in what ways has this been a challenge?
3. Can you remember a time when you felt better after discussing a problem with a loved one, or even after playing with your pet? How did it help you to cope?
4. What strategies have you used to cope with stress in your own life? How well are they working? What other strategies could you try?
5. How much control do you feel you have over your life? What changes could you make to increase your sense of control?
6. Were you surprised by any of the findings related to happiness? What things might you change in your life to increase your own happiness?

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