PART ONE

The Nature of Stress

Life is either a daring adventure or nothing at all.

– Helen Keller

CHAPTER 1

The Nature of Stress

I cannot and should not be cured of my stress, but merely taught to enjoy it.

—Hans Selye

Are you stressed? If the answer is yes, then consider yourself to be in good company. Several recent Harris and Gallup polls have noted an alarming trend in the psyche of the American public and beyond—to nearly all citizens of the global village. Across the board, without exception, people admit to having an increasing sense of anxiety, frustration, unease, and discontent in nearly every aspect of their lives. From the lingering effects of the Great Recession and subsequent job market challenges to fracking issues, genetically modified food allergies, increases in autism, overpopulation, climate change weather incidents (e.g., Hurricane Sandy and severe droughts), world banking issues, and gun violence and terrorist attacks (from Sandy Hook Elementary to the Boston Marathon), the symptoms of global **stress** can be found everywhere. Ironically, in a country where the standard of living is considered to be one of the highest anywhere in the world, the Centers for Disease Control and Prevention estimates that nearly one-quarter of the American population is reported to be on antidepressants, and current estimates suggest that one in three people suffers from a chronic disease, ranging from cancer and coronary heart disease to rheumatoid arthritis, diabetes, and lupus. Something is very wrong with this picture!

Stress: The experience of a perceived threat (real or imagined) to one's mental, physical, or spiritual well-being, resulting from a series of physiological responses and adaptations.

Furthermore, since the start of the Great Recession, a blanket of fear and anger has covered much of the country, if not the world, keeping people in a perpetual state of frustration and anxiety. Global problems only seem to intensify our personal stressors. It doesn't make a difference if you're a college student or a CEO of a multinational corporation, where you live, or how much money is in your checking account; stress is the equal opportunity destroyer! But it doesn't have to be this way. Even as personal issues collide with social and planetary problems, creating a "perfect storm" of stress, we all have choices—in both our attitude and behaviors. This text will help you connect the dots between mind, body, and spirit to create positive choices that empower you to navigate your life through the turbulent waters of the human journey in the twenty-first century.

Times of Change and Uncertainty

Today, the words *stress* and *change* have become synonymous and the winds of change are in the air. Changes in the economy, technology, communications, information

retrieval, health care, and dramatic changes in the weather are just some of the gale forces blowing in our collective faces. By and large, the average person doesn't like change because change tends to disrupt one's comfort zones. It appears that the "known," no matter how bad, feels like a safer bet than the unknown. Change, it should be noted (particularly change one cannot control), has always been part of the human landscape. However, today the rate of change has become so fast and furious, without an adequate reference point to anchor oneself, that stress holds the potential to create a perpetual sense of uneasiness in the hearts and minds of nearly everyone. Yet it doesn't have to be this way. Where there is change, there is opportunity. Where there is opportunity, there is comfort.

At one time, getting married, changing jobs, buying a house, raising children, going back to school, dealing with the death of a friend or close relative, and suffering from a chronic illness were all considered to be major life events that might shake the foundations of anyone's life. Although these major life events can and do play a significant role in personal upheaval, a new crop of social stressors has added to the critical mass of an already volatile existence, throwing things further out of balance. Consider how these factors directly influence your life: the rapid acceleration of technology (from software upgrades to Internet downloads), the use of (if not addiction to) the World Wide Web (e.g., Facebook), the proliferation of smartphones and Wi-Fi use, an accessible 24/7 society, global economic woes (e.g., unemployment, food prices), global terrorism, carbon footprints, and public health issues (e.g., the latest epidemic of bedbugs or Zika virus). Times of change and uncertainty tend to magnify our personal stress. Perhaps the biggest looming concern facing people today is the issue of personal boundaries or the lack thereof. The advances of high technology combined with a rapidly changing social structure have eroded personal boundaries. These boundaries include, but are not limited to, home and work, finances, nutritional habits, relationships, and many, many more, all of which add to the critical mass of one's personal stress. Even the ongoing war on terrorism appears to have no boundaries! Ironically, the lack of boundaries combined with factors that promote a fractured society, where people feel a lack of community and belonging, leads to a greater sense of isolation, which also intensifies our personal stress levels. Believe it or not, life wasn't always like this.

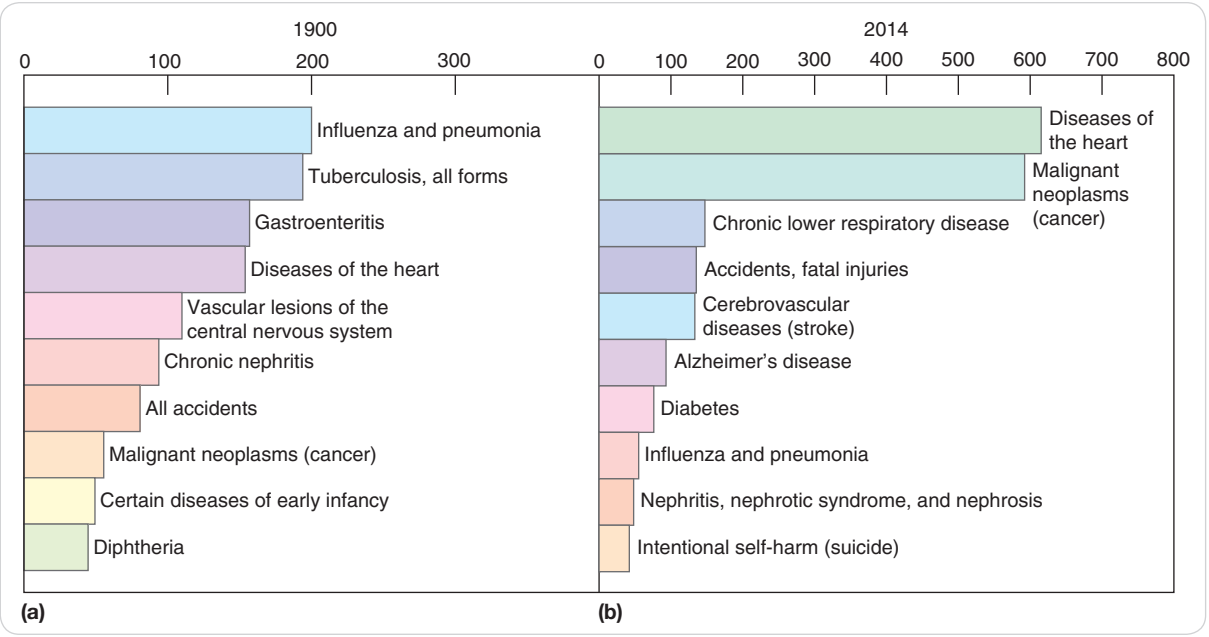
The stress phenomenon, as it is referred to today, is quite new with regard to the history of humanity. Barely a household expression when your parents were your age, use of the word *stress* is now as common as the terms *global warming* and *smartphone apps*. In fact, however, stress in terms of physical arousal can be traced back to the Stone Age as a "survival mechanism." But what was once designed as a means of survival is now associated with the development of disease and illness that claims the lives of millions of people worldwide. The American Institute of Stress (www.stress.org) cites the following statistics:

- 43 percent of all adults suffer adverse health effects due to stress.
- 80 percent of all visits to primary care physicians are for stress-related complaints or disorders.

Stress has been linked to all the leading causes of death, including heart disease, cancer, lung ailments, accidents, cirrhosis, and suicide. Some health experts now speculate that perhaps as much as 70 to 85 percent of all diseases and illnesses are stress-related.

Government figures compiled by the National Center for Health Statistics in 2010 provide a host of indicators suggesting that human stress is indeed a health factor to be reckoned with. Prior to 1955, the leading causes of death were the sudden onset of illness by infectious diseases (e.g., polio, rubella, tuberculosis, typhoid, and encephalitis) that, in most cases, have since been eradicated or brought under control by vaccines and medications. The post–World War II era ushered in the age of high technology, which considerably altered the lifestyles of nearly all peoples of every industrialized nation. The start of the twenty-first century has seen the influence of high technology dramatically alter our lifestyles. Consumer products, such as the washer, dryer, microwave oven, television, DVD player, laptop computer, and even cell phones, were cited as luxuries to add more leisure time to the workweek. But as mass production of high-technology items increased, so too did the competitive drive to increase human effort and productivity, which in turn actually decreased leisure time, and thus created a plethora of unhealthy lifestyles, most notably obesity.

Currently, the leading causes of death are dominated by what are referred to as "lifestyle diseases," those diseases whose pathology develops over a period of several years, and perhaps even decades (FIG. 1.1). Whereas infectious diseases are treatable by medication, lifestyle diseases are, for the most part, preventable or correctable by altering the habits and behaviors that contribute to their etiology. Previously, it was suggested that an association existed between stress and disease. Substantial research, however, suggests that there may, indeed, be a causal factor involved



Data from (a) National Center for Health Statistics, Washington, D.C., 2010.; (b) Kochanek, K.D., Murphy, S.L., Xu, J., and Tejada-Vera, B., Division of Vital Statistics. Deaths: Final Data for 2014, *National Vital Statistics Reports*, 65(4):1-121, 2016.

FIGURE 1.1 Death rates for the ten leading causes of death per 100,000 population in the United States in (a) 1900 and (b) 2014.

with several types of diseases, particularly autoimmune diseases (Segerstrom and Miller, 2004). Regardless, it is well understood that the influence of stress weakens the body's physiological systems, thereby rapidly advancing the disease process. The most notorious lifestyle disease, coronary heart disease (CHD), continues to be one of the leading causes of death in the United States, far exceeding all other causes. The American Heart Association states that one person dies from heart disease every minute. Although the incidence of CHD has decreased over the past decade, cancer—in all its many types—continues to climb the statistical charts as the second leading cause of death. According to 2013 statistics from the American Cancer Society (www.cancer.org), cancer claims the lives of one out of every four people in the United States. Alarming increases in suicides, child and spouse abuse, self-injury, homicides, alcoholism, and drug addiction are only additional symptoms of a nation under stress. Today, research shows that many people maintain poor coping skills in the face of the personal, social, and even global changes occurring over the course of their lives.

Originally, the word *stress* was a term used in physics, primarily to describe enough tension or force placed on an object to bend or break it. Relaxation, on the other hand, was defined as any nonwork activity done during the evenings or on Sunday afternoons when all the stores were closed. On rare occasions, if one could afford it, relaxation meant a vacation or holiday at some faraway place. Conceptually, relaxation was a value, influenced by several religions and represented as a day of rest. The word *stress* as applied to the human condition was first made popular by noted physiologist Hans Selye in his book *The Stress of Life,* in which he described his research: to understand the physiological responses to chronic stress and its relationship to disease (dis-ease). Today, the word *stress* is frequently used to describe the level of tension people feel is placed on their minds and souls by the demands of their jobs, relationships, and responsibilities in their personal lives. Oddly, for some, stress seems to be a status symbol tied to self-esteem. Relaxation, meanwhile, has been transformed from an American value into a luxury many people find they just don't have enough time for. Despite the current economic crisis, some interesting insights have been observed regarding work and leisure. The average workweek has expanded from 40 to 60 hours. The U.S. Department of Labor and Statistics reports that with more service-related jobs being created, more overtime is needed to meet the demands of the customers. Not only do more people spend more time at work, they spend more time driving to and from work (which is not considered work time). Moreover, leisure time at home is often related to work activities, resulting in less time for rest and relaxation. Downtime is also compromised. Since

FIGURE 1.2 With rapid economic, ecological, and technological changes, the global village appears to have become a more stressful place, which is all the more reason to learn and practice effective stress-management techniques to maintain a sense of balance in one's life despite these winds of change.

2001, Expedia has conducted an annual survey on vacations (called the Vacation Deprivation survey). The 2012 results revealed that one out of every three Americans doesn't use all of his or her vacation time. One in five respondents cited work responsibilities/pressure as the primary reason for canceling a vacation. A new word entered the American lexicon in the summer of 2010—the "staycation," in which people simply stayed home for vacation due to financial or work constraints. Those who do head for the mountains or beaches for vacation often take their work (in the form of smartphones and laptops) with them—in essence, never really leaving their job. It's no surprise that staying plugged in doesn't give the mind a chance to unwind or the body a chance to relax. By comparison with other countries, Americans take less vacation time than other global citizens (Germans, on average, take 4 to 6 weeks per year). "The stress associated with the current economy makes the need for time away from work even more important than ever, and it's unfortunate that one-third of Americans won't use all of their vacation days this year," said Tim MacDonald, general manager of Expedia.com. The "dividend" of high technology has proven to be an illusion for many that has resulted in a stressed lifestyle, which in turn creates a significant health deficit (FIG. 1.2).

Definitions of Stress

In contemporary times, the word *stress* has many connotations and definitions based on various perspectives of the human condition. In Eastern philosophies, stress is considered to be an absence of inner peace. In Western culture, stress can be described as a loss of emotional control. Noted healer Serge Kahili King has defined stress as any change experienced by the individual. This definition may be rather general, but it is quite correct. Psychologically speaking, stress, as defined by noted researcher Richard Lazarus, is a state of anxiety produced when events and responsibilities exceed one's coping abilities. Physiologically speaking, stress is defined as the rate of wear and tear on the body. Selye added to his definition that stress is the nonspecific response of the body to any demand placed upon it to adapt, whether that demand produces pleasure or pain. Selye observed that whether a situation was perceived as good (e.g., a job promotion) or bad (e.g., the loss of a job), the physiological response or arousal was very similar. The body, according to Selye, doesn't know the difference between good and bad stress.

However, with new psychoneuroimmunological data available showing that there are indeed some physiological differences between good and bad stress (e.g., the release of different neuropeptides), specialists in the field of **holistic medicine** have expanded Lazarus's and Selye's definitions as follows: Stress is the inability to cope with a perceived (real or imagined) threat to one's mental, physical, emotional, and spiritual well-being, which results in a series of physiological responses and adaptations (Chopra, 2000; Dossey, 2004). The important word to emphasize here is *perceived* (the interpretation), for what might seem to be a threat to one person may not even merit a second thought to another individual. For example, not long ago a raffle was held, with the winning prize being an all-expenses-paid one-week trip for two to a beach resort in Bermuda. Kelly, who won the prize, was ecstatic and already had her bags packed. Her husband, John, was mortified because he hated to fly and he couldn't swim. In his mind, this would not be a fun time. In fact, he really wished they hadn't won. Each perceived the same situation in two entirely different ways. Moreover, with the wisdom of hindsight, our perceptions often change. Many episodes that at the time seemed catastrophic later appear insignificant, as humorously stated by Mark Twain when he commented, "I'm an old man and I have known

Holistic medicine: A healing approach that honors the integration, balance, and harmony of mind, body, spirit, and emotions to promote inner peace. Every technique used in stress management is considered to support the concept of holistic medicine.

a great many troubles, but most of them never happened." The holistic definition of stress points out that it is a very complex phenomenon affecting the whole person, not just the physical body, and that it involves a host of factors, some of which may not yet even be recognized by scholars and researchers. As more research is completed, it becomes increasingly evident that the responses to stress add up to more than just physical arousal; yet it is ultimately the body that remains the battlefield for the war games of the mind.

The Stress Response

In 1914, Harvard physiologist **Walter Cannon** first coined the term **fight-or-flight response** to describe the dynamics involved in the body's physiological arousal to survive a threat. In a series of animal studies, Cannon noted that the body prepares itself for one of two modes of immediate action: to attack or fight and defend oneself from the pursuing threat, or to run and escape the ensuing danger. What Cannon observed was the body's reaction to acute stress, what is now commonly called the **stress reaction**. Additional observations suggested that the fight response was triggered by anger or aggression and was usually employed to defend territorial boundaries or attack aggressors equal to or smaller in size. The fight response required physiological preparations that would recruit power and strength for a short duration, or what is now described as short but intense anaerobic work. Conversely, the flight response, he thought, was induced by fear. It was designed to fuel the body to endure prolonged movement such as running away from lions and bears. In many cases, however, it included not only fleeing, but also hiding or withdrawal. (A variation on the flight response is the **freeze response**, often noted with post-traumatic stress disorder, where a person simply freezes, like a deer staring into a car's headlights.) The human body, in all its metabolic splendor, actually prepares itself to do both (fight and flight) at the same time. In terms of evolution, it appears that this dynamic was so advantageous to survival that it developed in nearly all mammalian species, including us. (Some experts now suggest, however, that our bodies have not adapted to the stress-induced lifestyles of the twenty-first century.)

In simple terms, there are four stages of the fight-or-flight response:

Stage 1: Stimuli from one or more of the five senses are sent to the brain (e.g., a scream, the smell of fire, the taste of poison, a passing truck in *your* lane).

Stage 2: The brain deciphers the stimulus as either a threat or a nonthreat. If the stimulus is not regarded as a threat, this is the end of the response (e.g., the scream came from the television). If, however, the response is decoded as a real threat, the brain then activates the nervous and endocrine systems to quickly prepare for defense and/or escape.

Stage 3: The body stays activated, aroused, or "keyed-up" until the threat is over.

Stage 4: The body returns to **homeostasis**, a state of physiological calmness, once the threat is gone.

It is hypothesized that the fight-or-flight response developed primarily against threats of a physical nature, those that jeopardized the survival of the individual. Although clear physical threats still exist in today's culture, including possible terrorism, they are nowhere near as prevalent as those threats perceived by the mind and, more specifically, the ego. In a theory put forward by a disciple of Selye's, Simeons (1961), and repeated by Sapolsky (2009), it is suggested that, in effect, the fight-or-flight response is an antiquated mechanism that has not kept evolutionary pace with the development of the human mind. Consequently, the **stress response** becomes activated in all types of threats (mental, emotional, and spiritual), not just physical intimidations. The physiological repercussions can, and do, prove fatal. The body enters a state of physical readiness when you are about to receive your final exam grades or walk into an important meeting late, just as it does when you sense someone is following you

Walter Cannon: Twentieth-century Harvard physiologist who coined the term "fight or flight."

Fight-or-flight response: A term coined by Walter Cannon; the instinctive physiological responses preparing the body, when confronted with a threat, to either fight or flee; an evolutionary survival dynamic.

Stress reaction: The body's initial (central nervous system) reaction to a perceived threat.

Freeze response: Part of the stress response, where the individual neither fights nor flees but freezes like a deer caught in the headlights, paralyzed as if the person has forgotten to run.

Homeostasis: A physiological state of complete calmness or rest; markers include resting heart rate, blood pressure, and ventilation.

Stress response: The release of epinephrine and norepinephrine to prepare various organs and tissues for fight or flight.

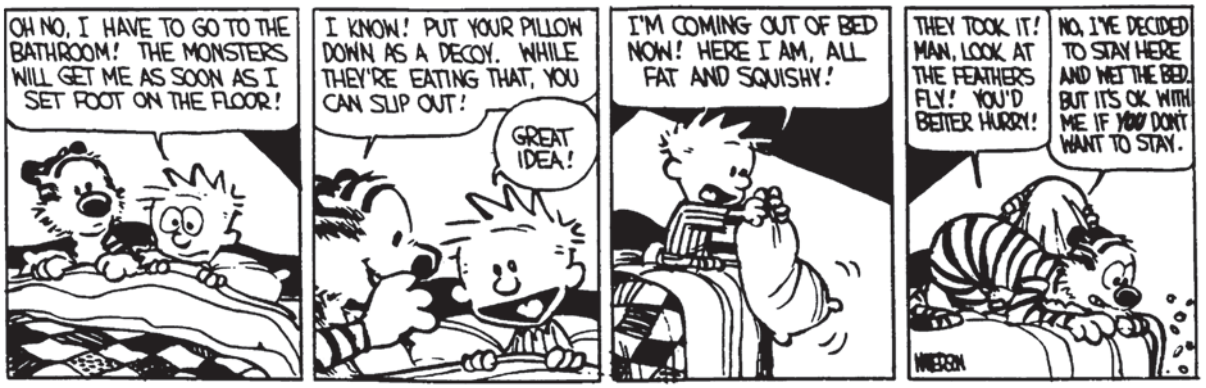


FIGURE 1.3 Some of our worst stressors are fabricated in our minds.

late at night in an unlit parking lot. Moreover, this same stress response kicks in, to the same degree and intensity, even when the threat is wholly imaginary, in reaction to everything from monsters hiding under your bed when you were 4 (FIG. 1.3), to the unsubstantiated idea that your boss doesn't like you anymore and is out to get you.

Cannon noted the activation of several physiological mechanisms in this fight-or-flight response, affecting nearly every physiological system in the body, for the preparation of movement and energy production. These are just a few of the reactions:

1. Increased heart rate to pump oxygenated blood to working muscles
2. Increased blood pressure to deliver blood to working muscles
3. Increased ventilation to supply working muscles with oxygen for energy metabolism
4. Vasodilation of arteries to the body's periphery (arms and legs) with the greatest muscle mass
5. Increased serum glucose for metabolic processes during muscle contractions
6. Increased free fatty acid mobilization as an energy source for prolonged activity (e.g., running)
7. Increased blood coagulation and decreased clotting time in the event of bleeding
8. Increased muscular strength
9. Decreased gastric movement and abdominal blood flow to allow blood to go to working muscles
10. Increased perspiration to cool body-core temperature

Unfortunately, the metabolic and physiological changes that are deemed essential for human movement in the event of attack, pursuit, or challenge are quite *ineffective* when dealing with events or situations that threaten the ego, such as receiving a parking ticket or standing in a long line at the grocery store, yet the body responds identically to all types of perceived threats.

Tend and Befriend

Do women respond differently to stress than men? The answer may seem obvious.

Generally speaking, men are prone to act more hostile while women have a proclivity to be more nurturing. Yet until recently every source on stress addressed the fight-or-flight response as if it were the only human default response. It was the work of Shelley Taylor and colleagues who filled in the missing piece with regard to the female response to stress. Curious about why only men were studied to formulate the basis for the fight-or-flight response, Taylor hypothesized that the stress response needed to be reexamined, this time including astute observations of the female gender. In 2000, Taylor and colleagues proposed a new theory for the female stress response that they termed **tend and befriend**. Although both men and women have a built-in dynamic for the survival of physical danger, women also have an inherent nurturing response for their offspring as well as a means

Tend and befriend: A theory presented by Shelley Taylor that states that women who experience stress don't necessarily run or fight, but rather turn to friends to cope with unpleasant events and circumstances.

to befriend others. This in turn creates a strong social support system, an invaluable coping technique. Taylor suggests that the female response to stress is hardwired into the DNA and revealed through a combination of brain chemistry and hormones. The biological basis for tend and befriend appears to be the hormone oxytocin, now regarded as both the "trusting hormone" and the "social affiliation" hormone. Although oxytocin is found in both women and (to a lesser degree) men, estrogen is known to enhance the effects of oxytocin in the brain. The tend-and-befriend behavior is built on connectedness—a caregiving process, possibly triggered by a release of oxytocin in conjunction with female reproductive hormones, that may actually override the flood of stress hormones so pronounced in women's male counterparts. Generational social factors may support the tend-and-befriend behavior pattern as well (FIG. 1.4).

Not only do men and women have differences in their stress physiology, but there appears to be gender-specific behaviors for discussing and solving problems as well. Whereas men tend to think their way through by looking for solutions to problems, women like to talk about problems. Women bond quickly by sharing confidences. However, although talking may be beneficial, researchers note that merely talking about stressors tends to perpetuate rather than solve one's stressors. Researchers refer to stress-based conversations as **co-rumination**. Although talking may strengthen female friendships, it is also known to increase anxiety and depression if solutions aren't introduced quickly. Experts warn against "unhealthy rumination" and the emotional contagion that results from it (Stepp, 2007).

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FIGURE 1.4 Fight or flight isn't the only response to stress. To cope with personal problems, women often feel the need to socialize and bond together in what is now known as the "tend and befriend" response.

It is fair to say that the concepts of survival are complex and perhaps not so neatly packaged by hormones or gender. Women are known to back-stab their "friends" and regrettably, on occasion, ditch their newborn babies in dumpsters and run away. Conversely, some men choose peace over violence (Gandhi and Martin Luther King, Jr., come to mind) and, when times get tough, some men are known to bond together over a beer or game of golf.

Types of Stress

To the disbelief of some, not all stress is bad for you. In fact, there are many who believe that humans need some degree of stress to stay healthy. The human body craves homeostasis, or physiological calm, yet it also requires physiological arousal to ensure the optimal functioning of several organs, including the heart and musculoskeletal system. How can stress be good? When stress serves as a positive motivation, it is considered beneficial. Beyond this optimal point, stress of any kind does more harm than good.

Actually, there are three kinds of stress: **eustress**, **neustress**, and **distress**. Eustress is good stress and arises in any situation or circumstance that a person finds motivating or inspiring. Falling in love might be an example of eustress; meeting a movie star or professional athlete may also be a type of eustress. Usually, situations that are classified as eustress are enjoyable and for this reason are not considered to be a threat. Neustress describes sensory stimuli that have no consequential effect; it is considered

Co-rumination: Stress-based conversations between women as a means of coping by finding support among friends.

Eustress: Good stress; any stressor that motivates an individual toward an optimal level of performance or health.

Neustress: Any kind of information or sensory stimulus that is perceived as unimportant or inconsequential.

Distress: The unfavorable or negative interpretation of an event (real or imagined) to be threatening that promotes continued feelings of fear or anger; more commonly known simply as stress.

neither good nor bad. News of an earthquake in a remote corner of the world might fall into this category. The third type of stress, distress, is considered bad and often is abbreviated simply as *stress*. There are two kinds of distress: **acute stress**, or that which surfaces, is quite intense, and disappears quickly; and **chronic stress**, or that which may not appear quite so intense, yet seems to linger for prolonged periods of time (e.g., hours, days, weeks, or months). An example of acute stress is the following. You are casually driving down the highway, the wind from the open sunroof is blowing through your hair, and you feel pretty good about life. With a quick glance in your rearview mirror you see flashing blue lights. Yikes! So you slow down and pull over. The police car pulls up behind you. Your heart is racing, your voice becomes scratchy, and your palms are sweating as you try to retrieve license and registration from your wallet while rolling your window down at the same time. When the officer asks you why you were speeding you can barely speak; your voice is three octaves higher than usual. After the officer runs a check on your car and license, he only gives you a warning for speeding. Whew! He gets back in his car and leaves. You give him time to get out of sight, start your engine, and signal to get back onto the highway. Within minutes your heart is calm, your palms dry, and you start singing to the song on the radio. The threat is over. The intensity of the acute stress may seem cataclysmic, but it is very short-lived.

Chronic stressors, on the other hand, are not as intense but their duration is unbearably long. Examples might include the following: being stuck for a whole semester with "the roommate from hell," a credit card bill that only seems to grow despite monthly payments, a boss who makes your job seem worse than that of a galley slave, living in a city you cannot tolerate, or maintaining a relationship with a girlfriend, boyfriend, husband, or wife that seems bad to stay in but worse to leave. For this reason, chronic stressors are thought to be the real villains. According to the American Institute of Stress (AIS), it is this type of stress that is associated with disease because the body is perpetually aroused for danger.

A concept called the **Yerkes-Dodson principle**, which is applied to athletic performance, lends itself quite nicely to explaining the relationship between eustress, distress, and health. As can be seen in FIG. 1.5, when stress increases, moving from eustress to distress, performance or health decreases and there is greater risk of disease and illness. The optimal stress level is the midpoint, *prior* to where eustress turns into distress.

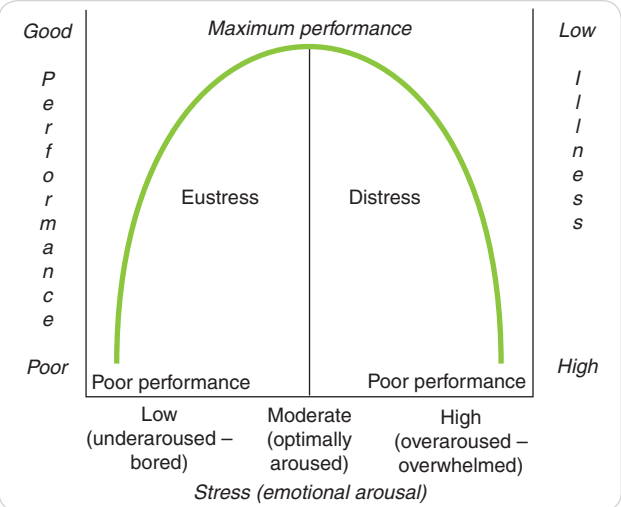


FIGURE 1.5 The Yerkes-Dodson curve illustrates that, to a point, stress or arousal can actually increase performance. Stress to the left of the midpoint is considered to be eustress. Stress beyond the midpoint, however, is believed to detract from performance and/or health status and is therefore labeled distress.

Studies indicate that stress-related hormones in optimal doses actually improve physical performance and mental-processing skills like concentration, making you more alert. Beyond that optimal level, though, all aspects of performance begin to decrease in efficiency. Physiologically speaking, your health is at serious risk. It would be simple if this optimal level was the same for all people, but it's not. Hence, the focus of any effective stress-management program is twofold: (1) to find out where this optimal level of stress is for you so that it can be used to your advantage rather than becoming a detriment to your health status, and (2) to reduce physical arousal levels using both coping

Acute stress: Stress that is intense in nature but short in duration.

Chronic stress: Stress that is not as intense as acute stress but that lingers for a prolonged period of time (e.g., financial problems).

Yerkes-Dodson principle: The theory that some stress (eustress) is necessary for health and performance but that beyond an optimal amount both will deteriorate as stress increases.

skills and relaxation techniques so that you can stay out of the danger zone created by too much stress.

Types of Stressors

A situation, circumstance, or any stimulus that is perceived to be a threat is referred to as a **stressor**, or that which causes or promotes stress. As you might imagine, the list of stressors is not only endless, but also varies considerably from person to person. Acute stress is often the result of rapid-onset stressors—those that pop up unexpectedly—like a phone call in the middle of the night or the discovery that you have lost your car keys. Usually the body begins to react before a full analysis of the situation is made, but a return to a state of calm is also imminent. Chronic stressors—those that may give some advance warning yet manage to cause physical arousal anyway, often merit more attention because their prolonged influence on the body appears to be more significant. Much research has been conducted to determine the nature of stressors, and they are currently divided into three categories: bioecological, psychointrapersonal, and social (Giradano, Everly, and Dusek, 2012).

Bioecological Influences

There are several biological and ecological factors that may trigger the stress response in varying degrees, some of which are outside our awareness. These are external influences, including sunlight, gravitational pull, solar flares, and electromagnetic fields, that affect our biological rhythms. From the field of chronobiology we learn that these factors affect three categories of biological rhythms: (1) **circadian rhythms**, fluctuations in physiological functions over the course of a 24-hour period (e.g., body temperature); (2) **ultradian rhythms**, fluctuations that occur over less than a 24-hour period (such as stomach contractions and cell divisions); and (3) **infradian rhythms**, changes that occur in periods longer than 24 hours (e.g., the menses). These biological changes are influenced by such natural phenomena as Earth's orbit and axis rotation, which give us periods of light and darkness as well as seasonal differences (FIG. 1.6). A prime example of a bioecological influence is **seasonal affective disorder (SAD)**, a condition affecting many people who live at or near the Arctic Circle. Many of these people become depressed when they are deprived of sunlight for prolonged periods of time. But technological changes are also included in this category, an example being jet lag as a result of airplane travel through several time zones. Electrical pollution, environmental toxins, solar radiation, and noise pollution are other potential bioecological influences. Genetically modified organisms (GMOs), petrochemicals, synthetic chemicals, and some types of nanotechnology are considered new bioecological threats. In addition, some synthetic food additives may trigger the release of various stress hormones throughout the body. Note that there is a growing opinion among some health practitioners that increased stress levels in the

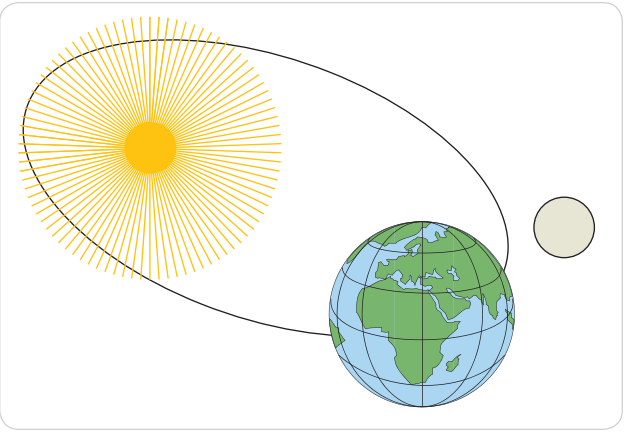


FIGURE 1.6 Because of the tilt of Earth's axis as it moves in its orbit around the sun, areas closest to the poles vary the most in the amount of daily sunlight they receive. Studies show that an inadequate amount of full-spectrum light is associated with depression, a phenomenon now known as seasonal affective disorder (SAD) or arctic winter madness.

Stressor: Any real or imagined situation, circumstance, or stimulus that is perceived to be a threat.

Circadian rhythms: Biological rhythms that occur or cycle within a 24-hour period (e.g., body temperature) that create the body's internal clock, also known as chronobiology. These can be affected by stress, causing a disruption that is even more stressful to the body.

Ultradian rhythms: Biological rhythms that occur many times in a 24-hour period (e.g., hunger pangs). These can be affected by stress.

Infradian rhythms: Biological rhythms that occur in periods longer than 24 hours (e.g., women's menstrual period). These can be affected by stress.

Seasonal affective disorder (SAD): The physiological response to lack of sunlight that results in feelings of depression.

twenty-first century may be a direct result of our being out of touch with the *natural* elements that so strongly influence our body's physiological systems. In any case, some of these bioecological factors can be positively influenced by lifestyle changes, including dietary habits, exercise, and the regular practice of relaxation techniques, which bring a sense of balance back into our lives.

Psychointrapersonal Influences

Our current understanding is that psychointrapersonal influences make up the greatest percentage of stressors. These are the perceptions of stimuli that we create through our own mental processes (perceptions and interpretations). Psychointrapersonal stressors involve those thoughts, values, beliefs, attitudes, opinions, and perceptions that we use to defend our identity or ego. When any of these is challenged, violated, or even changed, the ego is often threatened and the stress response is the outcome. Psychointrapersonal stressors reflect the unique constructs of our personality, and in the words of stress researcher Kenneth Pelletier, represent "the chasm between the perceived self and the ideal self-image." Because these influences are the most likely to cause stress, they are a major focus of this text. It is imperative to intercept the stress response in the mind before it cascades down as a rush of stress hormones into the body to cause potential damage.

Social Influences

Social influences have long been the subject of research to explain the plight of individuals who are unable to cope with their given environment. Most notable is the issue of overcrowding and urban sprawl. Classic studies conducted on several species have shown that when their numbers exceed the territorial boundary of each animal, despite an abundance of food and water, several seemingly healthy animals die off (Allen, 1983). This need for personal space appears to be universal in the animal kingdom. This includes humans, who likewise begin to show signs of frustration in crowded urban areas, traffic jams, long lines at checkout stands, or whenever their personal space is "invaded." The origin of this particular social influence may be instinctual in nature. Additional social causes of stress include financial insecurity, the effects of relocation, cultural assimilation issues, some technological advances, violation of human rights, and low socioeconomic status, to name but a few. New to the list of social influences are global warming concerns and water resource issues as the global population increases, taxing our very lifestyles with regard to scarcity issues.

Social Stress in America: A Twenty-first Century Look

The social influences linked to stress have been studied for decades, most notably by Holmes and Raye with the Social Readjustment Rating Scale (SRRS) and the concept of life-change units (LCUs). It was their work over 50 years ago that first highlighted the list of top life stressors, including the death of a spouse, the loss of a job, the death of a child, divorce, and high mortgage payments (even then). Although these types of stressors persist, the pace of society has moved to warp speed. With this rapid pace of change, additional stressors have reconfigured the proverbial list of stressors, as well as confirmed the deleterious impact of stress on one's health.

Comprehensive studies conducted by the American Psychological Association (APA) and the Harvard School of Public Health in 2014 and 2015 identified a host of stress indicators, suggesting that stress is indeed a health factor to be reckoned with. For the past 10 years, the APA has conducted a yearly survey titled "Stress in America: Paying with Our Health." Based on interviews with more than 3,000 people in various demographic populations (gender, income levels, generational groups, etc.), the results have not been promising. Key findings of the 2014 study, which was published in the spring of 2015, revealed the following:

- Although reported stress levels have decreased slightly over the past few years, over half of adults between the ages of 18 to 40 reported their stress level above 5 on a scale of 1–10.
- Seniors appeared to have the least stress, millennials the most.
- The top five reasons for stress were: (1) financial issues (money), (2) career responsibilities (work), (3) family responsibilities, (4) personal health issues, and (5) family health issues.
- Overall, women reported more stress than men (and the gap has been widening), and children appeared to model their stress behaviors from their parents (who are very stressed).

Effective coping skills appear to be in short supply according to this survey. The conclusions drawn from this study underscore the relationship between stress and disease/illness and highlight the need for people to harness better stress management skills.

Based on various factors, including the Black Lives Matter movement and the political aspects of sexual discrimination, the APA's 2015 survey specifically looked at the impact of discrimination on stress levels. Results revealed that perceptions of discrimination (based on race or ethnicity, age, disability, gender, sexual orientation, and gender identity) account for significant levels of personal stress, all of which impact personal health (APA, 2016).

Similar to the APA's "Stress in America" study, National Public Radio and the Kaiser Health Foundation conducted a series of surveys in 2014 and presented their findings under the title "The Burden of Stress in America." Here are some of their findings:

- Half of those questioned, more than 2,000 people, cited a major stressful experience in the past year.
- Health-related stressful experiences were the most frequently mentioned.
- Feelings of being overwhelmed with responsibilities and financial struggles topped the list of those who experienced the greatest stress.
- Additional stressors included work problems, health problems, family issues, and being unhappy with physical appearances.

The study also looked at common daily stressors/hassles. Topping the list were juggling family schedules, disillusion with government politics, watching/reading/listening to the news, household chores, running errands, car problems, commuting to work, losing cell phones, and using social media. Whether daily hassles or bigger issues, respondents reported both sleep patterns and eating behaviors as being greatly (negatively) impacted by stress.

Not all people reported having stress, and, among those who appeared to cope well, many credited their resilient personality traits, family and friends, spending time outdoors, hobbies, physical exercise, meditation, and time with pets.

Although major life events like getting married (FIG. 1.7) or relocating for a new job may be chronic stressors to some, renowned stress researcher **Richard Lazarus** hypothesized in 1984 that the accumulation of acute stressors or **daily life hassles**, such as locking your keys in your car, playing phone tag, or driving to work every day in traffic, are just as likely to adversely affect one's health as the death of a spouse. These hassles are often based on unmet expectations that trigger an anger response of some type, whereas stressors of a chronic nature more often than not appear to have a greater association with fear and anxiety. Lazarus defined hassles as "daily interactions with the environment that were essentially negative." He also hypothesized that a balance of emotional experiences—positive emotions as well as negative ones—is necessary, and that people who have no exposure to life's "highs" or emotional uplifts (eustress) are also susceptible to disease and illness. Further research by Lazarus (1983, 1984), Ornstein and Sobel (1989), and

FIGURE 1.7 Weddings are supposed to be a joyous occasion. However, they can rank near the top of one's list of stressors when planning this event, with stress lasting well after the reception when things don't always go as expected.

Richard Lazarus: Renowned stress researcher credited with the concept of daily life hassles.

Daily life hassles: Occasional hassles, like locking your keys in your car; when combined with many other annoyances in the course of a day, these create a critical mass of stress.

others has proved that his hypothesis has significant merit regarding stress and disease. As might be expected, the issue of lifestyle habits, changes, and hassles as social influences has come under attack by those who argue that perception or cognition plays an important role in the impact of stressors. Suffice it to say that all stressors, regardless of classification, are connected to human well-being in a very profound way. Over the past decade, the impact of social stressors on personal stress has become dramatically significant.

The General Adaptation Syndrome

Following Cannon's lead early in the twentieth century, Hans Selye, a young endocrinologist who created a name for himself as a leading researcher in this field, studied the fight-or-flight response, specifically the physiological effects of chronic stress, using rats as subjects. In experiments designed to stress the rats, Selye noted that several physiological adaptations occurred as a result of repeated exposures to stress, adaptations that had pathological repercussions. Examples of these stress-induced changes included the following:

1. Enlargement of the adrenal cortex (a gland that produces stress hormones)
2. Constant release of stress hormones; corticosteroids released from the adrenal cortex
3. Atrophy or shrinkage of lymphatic glands (thymus gland, spleen, and lymph nodes)
4. Significant decrease in the white blood cell count
5. Bleeding ulcerations of the stomach and colon
6. Death of the organism

Many of these changes were very subtle and often went unnoticed until permanent damage had occurred. Selye referred to these collective changes as the **general adaptation syndrome** (GAS), a process in which the body tries to accommodate stress by adapting to it. From his research, Selye identified three stages of the general adaptation syndrome:

Stage one: Alarm reaction. The alarm reaction describes Cannon's original fight-or-flight response. In this stage, several body systems are activated, primarily the nervous system and the endocrine system, followed by the cardiovascular, pulmonary, and musculoskeletal systems. Like a smoke detector alarm going off at night, all senses are put on alert until the danger is over.

Stage two: Stage of resistance. In the resistance stage, the body tries to revert to a state of physiological calmness, or homeostasis, by resisting the alarm. Because the perception of a threat still exists, however, complete homeostasis is never reached. Instead, the body stays activated or aroused, usually at a lesser intensity than during the alarm stage but enough to cause a higher metabolic rate in some organ tissues. One or more organs may in effect be working overtime and, as a result, enter the third and final stage.

Stage three: Stage of exhaustion. Exhaustion occurs when one (or more) of the organs targeted by specific metabolic processes can no longer meet the demands placed upon it and fails to function properly. This can result in death to the organ and, depending on which organ becomes dysfunctional (e.g., the heart), possibly the death of the organism as a whole.

Selye's general adaptation syndrome outlined the parameters of the physiological dangers of stress. His research opened the doors to understanding the strong relationship between stress and disease and the mind-body-spirit equation. In addition, his work laid the foundation for the utilization of relaxation techniques that have the ability to intercept the stress response, thereby decreasing susceptibility to illness and disease. Congruent with standard medical practice of his day (and even today), initial stress-management programs were geared toward reducing or eliminating the *symptoms* of stress. Unfortunately, this approach has not always proved successful.

General adaptation syndrome: A term coined by Hans Selye; the three distinct physiological phases in reaction to chronic stress: the alarm phase, the resistance phase, and the exhaustion phase.

Alarm reaction: The first stage of Selye's general adaptation syndrome, in which a threat is perceived and the nervous system is triggered for survival.

Stage of resistance: The second stage of Selye's general adaptation syndrome, in which the body tries to recover.

Stage of exhaustion: The third and final stage of Selye's general adaptation syndrome, in which one or more target organs show signs of dysfunction.

BOX 1.1 Post-Traumatic Stress Disorder 101

There is stress and then there is STRESS! Although most people claim (even brag) to live stressful lives, the truth of the matter is that few people encounter truly horrific events of death and carnage. The repeated horrors of war, however, have notoriously ranked at the top of every list as the most unbearable of all stressors that anyone can endure psychologically—and for good reason. To quote Civil War General William T. Sherman, "War is hell." Exposure to these types of events typically include those that threaten one's life, result in serious physical injury, expose one to horrific carnage, or create intense psychological shock, all of which are so strongly influenced by the intensity and duration of the devastation either experienced or observed first hand. The result is an emotional wound embedded in the unconscious mind that is very hard to heal.

Every war seems to have its own name for this type of anxiety disorder. Somber Civil War soldiers were described as having "soldier's heart." Affected military personnel returning from World War I were described as being "shell-shocked," whereas soldiers and veterans from World War II exhibiting neurotic anxiety were described as having severe "battle fatigue" or "combat fatigue." The term *post-traumatic stress disorder*—more commonly shortened to PTSD—emerged as a result of the treatment of returning soldiers from Vietnam who seemed to lack industrial-strength coping skills to deal with the hellacious memories that haunted them both day and night. This emotional disorder was first registered in the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* in 1980 and has been the topic of intense investigation ever since. Sadly, the Iraq and Afghanistan wars have provided countless case studies for this anxiety disorder today.

Although mortal combat ranks at the top of the list of hellacious experiences, one doesn't have to survive a suicide bomber in the streets of Baghdad to suffer from PTSD. Survivors and rescue workers of the World Trade Center and Pentagon catastrophes are known to still be dealing with this trauma, as are several thousands of people still displaced from the wrath of Hurricane Sandy, and the devastation of towns in the paths of class 5 tornadoes. Violent crime victims, airplane crash survivors, sexual/physical assault victims, and occasionally first responders (e.g., police officers, fire fighters, and emergency medical technicians) are also prone to this condition. Given the nature of global warming and climate change and terrorism, it is suggested that PTSD may become a common diagnosis among world citizens with the ripple effect affecting legions of friends, colleagues, and family members alike. *Secondary PTSD* is a term given to family members, friends, and colleagues who are negatively affected by the ripples of strife from loved ones (even patients) who have had direct exposure to severe trauma.

The symptoms of PTSD include the following: chronic anxiety, nightmares, flashbacks, insomnia, loss of appetite, memory loss, hypervigilance, emotional detachment, clinical depression, helplessness, restlessness, suicidal tendencies, and substance addictions (MayoClinic.com). Typically a person suffering from PTSD has several of these symptoms at one time. Whereas the symptoms for some individuals may last months, for others PTSD becomes a lifelong ordeal, particularly if treatment is avoided, neglected, or shunned. The key to working with PTSD patients is to access the power of the unconscious mind by identifying deep-seated memories so that they may be acknowledged and released in a healthy manner rather than repressed and pushed deeper in the personal unconscious mind.

Specialists who treat patients with PTSD recommend that treatment begin as soon as possible to prevent a worsening effect. Initial treatment (intervention) is referred to as critical incidence stress management (CISM). The purpose of CISM is to (1) significantly reduce the traumatic effects of the incident and (2) prevent further deep-seated PTSD occurrences. Specific treatment modalities include eye movement desensitization and reprocessing (EMDR), counseling, and group therapy as a means to promote emotional catharsis. The Trauma Recovery Institute also cites art therapy, journal writing, and hypnosis as complementary coping skills for emotional catharsis. Many patients are also prescribed medications. Although medications may help reduce anxiety, it should be noted, they do not heal emotional wounds. Whereas the nature of this book is not specifically directed toward those who suffer from PTSD, the breadth and depth of content are found in all types of counseling and therapeutic modalities.

Stress in a Changing World

All you need do is read the latest Twitter feeds, Facebook updates, or the headlines on the homepage of your Internet browser to see what you already know: These are stressful times. Our world is changing rapidly, and with this change comes potential stressors that affect nearly everyone on the planet (FIG. 1.8). Today, stress has permeated the lives of nearly every person in every corner of the planet, permeating the borders of every country, province, and locale. And because people have to work for a living to put food on the table and a roof over one's head, job stress seems to be at the top of the list of common stressors across the globe. After investigating workplace absence due to stress, *The Daily Mail*, one of England's top-selling newspapers, quoted economic experts stating that stress is the Black Death plague of the twenty-first century (Barrow, 2011). According to the Chartered Institute of Personnel and Development, stress, as a public health issue, has eclipsed heart disease, strokes, cancer, and lower back problems. Daniel L. Kirsch, President of the American Institute of Stress, also refers to stress as America's New Black Death, explaining that stress is what's killing us most right now (Perman, 2013).

Stress, it seems, knows no age, race, gender, religion, nationality, or socioeconomic class. For this reason, it is called "the equal opportunity destroyer," for when left unresolved, stress can undermine all aspects of your life. Although it may seem that stress becomes a critical mass in your life once you leave home and go to college, the truth is that the episodes and behaviors associated with stress start much earlier than the college years. Pressures in high school, even grade school, as evidenced by school shootings, cases of self-injury, Facebook issues, and insomnia, are well documented. Combined with the stress of high technology, the effects are exponential.

FIGURE 1.8 Although most Americans admit to being very stressed, in comparison to half the planetary citizens who earn less than $2 per day and struggle to survive with substandard living conditions, we have it pretty darn good!

Which demographic group carries the most stress in the United States these days? If you said the Millennium Generation (people between the ages of 18 and 33), you would be right. Millennials are considered to be far more stressed than the baby boomer generation or even members of Generation X (ages 34–47). The backstory on this answer is a bit more complex than the daily statistics of unemployment figures and unpaid college loan debt. Experts often cite overprotective parenting styles (helicopter parents) of the millennials as a primary reason. Unlike baby boomers, typically, both parents of millennials have jobs/careers. The end result is less time with their children. Guilt kicks in, and parents overcompensate with poor boundaries. Campus counseling centers across the country see a theme among millennials walking in the door. "There is a generation of kids, now adults, who were given everything on a silver platter as they were growing up. Everything has been given to them, fostering a false sense of entitlement. These kids don't know how to fail successfully" (Neu, 2013). Millennials not only have poor coping skills when faced with adversity, but also feel that professional counseling would provide no lasting help (Ferri, 2013). In a cover story for *Time* magazine, reporter Joel Stein described the rampant impatient, narcisstic micro-celebrity status (i.e., 15 minutes of fame) as the gateway to entitlement (Stein, 2013).

Stress and Insomnia

Muscle tension may be the number one symptom of stress, but in our ever-present, demanding 24/7 society, insomnia runs a close second. **Insomnia** is best defined as poor-quality sleep, abnormal wakefulness, or the inability to sleep, and it can affect anyone. Overall, Americans get 20 percent less sleep than their nineteenth-century counterparts. According to a recent survey by the National Sleep Foundation, more than 60 percent of Americans suffer

Insomnia: Poor-quality sleep, abnormal wakefulness, or the inability to sleep.

from poor sleep quality, resulting in everything from falling asleep on the job and marital problems to car accidents and lost work productivity. Does your stress level affect your sleep quality? Even if you sleep well, it is hard these days not to notice the proliferation of advertisements for sleep prescriptions, suggesting a serious public health concern.

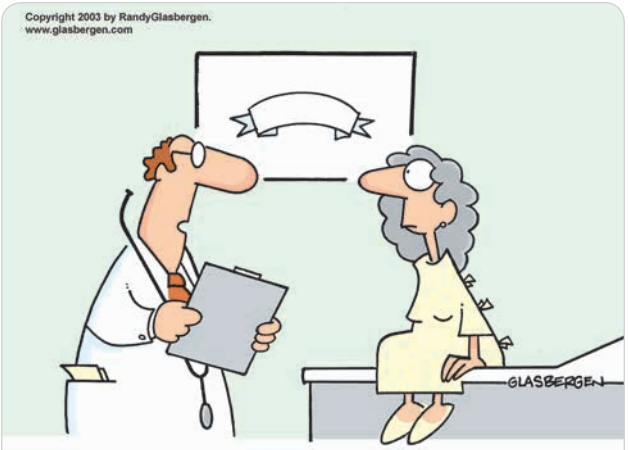
Numerous studies have concluded that a regular good night's sleep is essential for optimal health, whereas chronic insomnia is often associated with several kinds of psychiatric problems (Maas, 2001). Emotional stress (the preoccupation with daily stressors) is thought to be a primary cause of insomnia. The result: an anxious state of mind where thoughts race around, ricocheting from brain cell to brain cell, never allowing a pause in the thought processes, let alone allowing the person to nod off.

Many other factors (sleep stealers) detract from one's **sleep hygiene**, which can affect the quality of sleep, including hormonal changes (e.g., premenstrual syndrome, menopause), excessive caffeine intake, little or no exercise, frequent urination, circadian rhythm disturbances (e.g., jet lag), shift work, medication side effects, and a host of lifestyle behaviors (e.g., social media, Internet use, binge-watching, video games, alcohol consumption, constant cell phone use) that infringe on a good night's sleep.

How much sleep is enough to feel recharged? Generally speaking, 8 hours of sleep is the norm, although some people can get as few as 6 hours of sleep and feel fully rested. Others may need as many as 10 hours. New findings suggest that adolescents, including all people up to age 22, need more than 8 hours of sleep (Dawson, 2005).

Not only can stress (mental, emotional, physical, or spiritual) affect quality and quantity of sleep, but the rebound effect of poor sleep can, in turn, affect stress levels, making the poor sleeper become more irritable, apathetic, or cynical. Left unresolved, it can become an unbroken cycle (negative feedback loop). Although many people seek medical help for insomnia and are often given a prescription, drugs should be considered as a last resort. Many (if not all) techniques for stress management have proven to be effective in promoting a good night's sleep, ranging from cardiovascular exercise to meditation.

The field of sleep research began in earnest more than 60 years ago. Yet, despite numerous studies, the reason why we spend approximately one-third of our lives in slumber still baffles scientists. From all appearances, sleep promotes physical restoration. However, when researchers observe sleep-deprived subjects, it's the mind—not the body—that is most affected, with symptoms of poor concentration, poor retention, and poor problem-solving skills.



"If you have trouble falling asleep, lick your feet for a few minutes. It works for my cat!"

Insomnia is categorized in three ways: transient (short term with one or two weeks affected), intermittent (occurs on and off over a prolonged period), and chronic (the inability to achieve a restful night of sleep over many, many months). Although each of these categories is problematic, chronic insomnia is considered the worst.

All-nighters, exam crams, late-night parties, and midnight movies are common in the lives of college undergraduates, but the cost of these behaviors often proves unproductive. Unfortunately, the population of people who seem to need the most sleep, but often gets the least amount, are adolescents younger than age 20.

Although sleep may be relaxing, it is important to remember that sleeping is not a relaxation technique. Studies show that heart rate, blood pressure, and muscle tension can rise significantly during the dream state of sleep. What we do know is that effective coping and relaxation techniques greatly enhance one's quality of sleep.

Given the high rate of insomnia among Americans (including college students), here are a few suggestions to improve your sleep quality:

1. Avoid drinking any beverages with caffeine after 6:00 p.m., as the effects of caffeine on the nervous system promote a stress response rather than a relaxation effect.

Sleep hygiene: Factors that affect one's quality of sleep, from hormonal changes and shift work to excessive caffeine intake.

2. Daily physical exertion (cardiovascular exercise) is a great way to ensure a good night's sleep.
3. Keep a regular sleep cycle. Make a habit of going to bed at the same time every night (within 15 minutes) and waking up about the same time each morning (even on weekends).
4. Enhance your sleep hygiene. Create a sleep-friendly environment where bright light and noise are minimized or completely eliminated and sheets, pillows, and comforters easily lull you to slumberland.
5. Avoid screentime right before you go to bed. Instead, try reading.
6. Honor a media curfew by not using your screen devices after 8:00 p.m. to allow your pineal gland to make the sleep hormone melatonin.
7. Make your bedroom a tech-free zone. Avoid using your smartphone and/or tablet in the bedroom, even as an alarm clock, and turn off your Wi-Fi router before you crawl under the covers.

College Stress

What makes the college experience a significant departure from the first 18 years of life is the realization that with the freedom of lifestyle choices comes the responsibility that goes with it. Unless you live at home while attending school, the college experience is one in which you transition from a period of dependence (on your parents) to independence. As you move from the known into the unknown, the list of stressors a college student experiences is rather startling. Here is a sample of some of the more common stressors that college students encounter.

- ***Roommate dynamics:*** Finding someone who is compatible is not always easy, especially if you had your own room in your parents' house. As we all know or will quickly learn, best friends do not make the best roommates, yet roommates can become good friends over time. Through it all, roommate dynamics involve the skills of compromise and diplomacy under the best and worst conditions. And should you find yourself in an untenable situation, remember, campus housing does its best to accommodate students and resolve problems. However, their time schedule and yours may not always be the same. For those college students who don't leave home, living as an adult in a home in which your parents and siblings are now roommates can become its own form of stress.
- ***Professional pursuits:*** What major should I choose? Perhaps one of the most common soul-searching questions to be asked in the college years is, "What do I want to do the rest of my life?" It is a well-known fact that college students can change majors several times in their college careers and many do. The problem is compounded when there is parental pressure to move toward a specific career path (e.g., law or medicine) or the desire to please your parents by picking a major that they like but you don't.
- ***Academic deadlines (exams, papers, and projects):*** Academics means taking midterms and finals, writing research papers, and completing projects. This is, after all, the hallmark of measuring what you have learned. With a typical semester load of fifteen to twenty credits, many course deadlines can fall on the same day, and there is the ever-present danger that not meeting expectations can result in poor grades or academic probation.
- ***Financial aid and school loans:*** If you have ever stood in the financial aid office during the first week of school, you could write a book on the topic of stress. The cost of a college education is skyrocketing, and the pressure to pay off school loans after graduation can make you feel like an indentured servant. Assuming you qualify for financial aid, you should know that receiving the money in time to pay your bills can be challenging. Problems are compounded when your course schedule gets expunged from computer records because your financial aid check was two weeks late. These are just some of the problems associated with financial aid.
- ***Budgeting your money:*** It's one thing to ask your parents to buy you some new clothes or have them pick up the check at a restaurant. It's quite another when you start paying all your own bills. Learning to budget your money is a skill that takes practice. And learning not to overextend yourself is not only a skill, but also an art. At some time or other, everyone bounces a check. The trick to avoid doing it is not to spend money you do not have and to live within your means.
- ***Lifestyle behaviors:*** The freedom to stay up until 2 a.m. on a weekday, skip a class, eat nothing but junk food, or take an impromptu road trip carries with it the responsibilities of these actions. Independence from parental control means balancing

Stress with a Human Face

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Joseph Ramos has just started his first year at the University of Colorado-Boulder. Like nearly every other freshman, a million thoughts filter through his mind daily regarding this stage of his life: the right college major, new friends, finding a girlfriend, grades, a tendency to procrastinate, roommate dynamics, budgeting his money, volunteer work, and time to do all the things that he loves when not studying. With a physique and body composition that most college men would envy, Joseph is already worried about packing on the "freshman 15" (undesired weight gain) and he is determined not to let that happen. In high school, Joseph played football, track, and cross-country. He also was involved in student government and was a member of the National Honor Society. He is well aware that being voted senior prom king probably won't carry much weight in college. For better or worse, the college years are a time to prove, if not reinvent, yourself all over again. Joseph welcomes this challenge. Currently, Joseph's strategy to cope with his stress levels includes running and lifting weights. He also has a passion for the martial arts. These activities have helped him get through high school and a few family crises, but he realizes that he will need a few more stress-management strategies to support his study habits in college if he is to achieve the desired grades to get into medical school so that he can achieve his lifelong dream of becoming a physician.

freedom with responsibility. Stress enters your life with a vengeance when freedom and responsibility are not balanced.

- ***Peer groups and peer pressure (drugs and alcohol):*** There is a great need to feel accepted by new acquaintances in college, and this need often leads to succumbing to peer pressure—and in new environments with new acquaintances, peer pressure can be very strong. Stress arises when the actions of the group are incongruent with your own philosophies and values. The desire to conform to the group is often stronger than your willpower to hold your own ground.
- ***Exploring sexuality:*** While high school is the time when some people explore their sexuality, this behavior occurs with greater frequency during the college years, when you are away from the confines of parental control and more assertive with your self-expression. With the issue of sexual exploration come questions of values, contraception, pregnancy, sexual orientation, AIDS/STDs, abortion, acceptance, and impotence, all of which can be very stressful.
- ***Friendships:*** The friendships made in college take on a special quality. As you grow, mature, and redefine your values, your friends, like you, will change, and so will the quality of each friendship. Cultivating a quality relationship takes time, meaning you cannot be good friends with everyone you like. In addition, tensions can quickly mount as the dynamics between you and those in your close circle of friends come under pressure from all the other college stressors.
- ***Intimate relationships:*** Spending time with one special person with whom you can grow in love is special indeed. But the demands of an intimate relationship are strong, and in the presence of a college environment, intimate relationships are under a lot of pressure. If and when the relationship ends, the aftershock can be traumatic for one or both parties, leaving little desire for one's academic pursuits.
- ***Starting a professional career path:*** It's a myth that you can start a job making the same salary that your parents make, but many college students believe this to be true. With this myth comes the pressure to equal the lifestyle of one's parents the day after graduation. (This may explain why so many college graduates return home to live after graduation.) The perceived pressures of the real world can become so overwhelming that seniors procrastinate on drafting a resume or initiating the job search until the week of graduation.

For the nontraditional college student, the problem can be summarized in one word: *balance*! Trying to balance a job, family, and schoolwork becomes a juggling act extraordinaire. In attempting to satisfy the needs of your supervisor, colleagues, friends, spouse, children, and

parents (and perhaps even pets), what usually is squeezed out is time for yourself. In the end, everything seems to suffer. Often schoolwork is given a lower priority when addressing survival needs, and typically this leads to feelings of frustration over the inadequacy of time and effort available for assignments or exams. Of course, there are other stressors that cross the boundaries between work, home, and school, all of which tend to throw things off balance as well.

A Holistic Approach to Stress Management

When the stress response was first recognized, much attention was given to the physical aspects of the dynamics involved with fight-or-flight, specifically the symptoms of stress. As this field of study expanded to explore the relationship between stress and disease, it began to overlap, and to some extent even merge, with the fields of psychology, sociology, theology, anthropology, physics, health, and clinical medicine. What was once thought to be a physical response, and then referred to as a mind-body phenomenon, is now suggested to be a complex, multifaceted, or holistic phenomenon involving the mental, physical, emotional, and spiritual components of well-being. Looking at stress from these four different perspectives may explain why there are so many definitions of it. Ironically, this new insight continues to produce some tension within the community of health care professionals.

Medical science is slowly experiencing a **paradigm shift**. A paradigm is a conceptual model used to understand a common reality. A shift is a change in the perception of that reality. For the past 375 years or so, Western culture has adopted a mechanistic model of reality, influenced in large part by the philosophy of **René Descartes** that the mind and body are separate, and by the laws of physics created by **Isaac Newton**, some of which are believed to have been inspired by Descartes. The mechanistic paradigm compares the universe and all its components to a large mechanical clock, where everything operates in a sequential and predictable form. When it was first developed, the **mechanistic model**, also called the reductionist model, seemed to logically explain nearly every phenomenon.

The field of medicine, strongly influenced by Newtonian physics, applied the mechanistic model to the human organism, comparing the body to a clock as well. This applied paradigm, during what Dr. Larry Dossey called Era I medicine, focused on symptoms of dysfunction, and like a watch repairman, physicians were trained to fix or repair any parts that were broken. Drugs and surgery became the two primary tools forged in the discipline of clinical medicine. Prime examples of the fix-or-replace method include the prescription of penicillin and organ transplants, respectively. To no one's surprise, the application of this mechanistic model in medicine virtually stripped the responsibility of healing from the patient and placed it completely into the hands of the attending physician(s). There is no denying that many advances in clinical medicine have been nothing less than astonishing. Take, for example, heart and liver transplants and total hip replacements. Yet along with these magnificent achievements are significant limitations and hazardous side effects. Today, medicine is aptly referred to as an art as well as a science, but in the mechanistic model of reality, anything that cannot be measured or quantified is still virtually ignored. Moreover, anything that cannot be scientifically explained by cause and effect is dismissed as superstition and regarded as invalid. What this medical paradigm failed to include was the dimension of the human spirit, an unmeasurable source of energy with a potential healing power all its own. The human spirit is now considered so important by the World Health Organization (WHO) that it issued a statement saying, "The existing definition of health should include the spiritual aspect, and that health care should be in the hands of those who are fully aware of and sympathetic to the spiritual dimension."

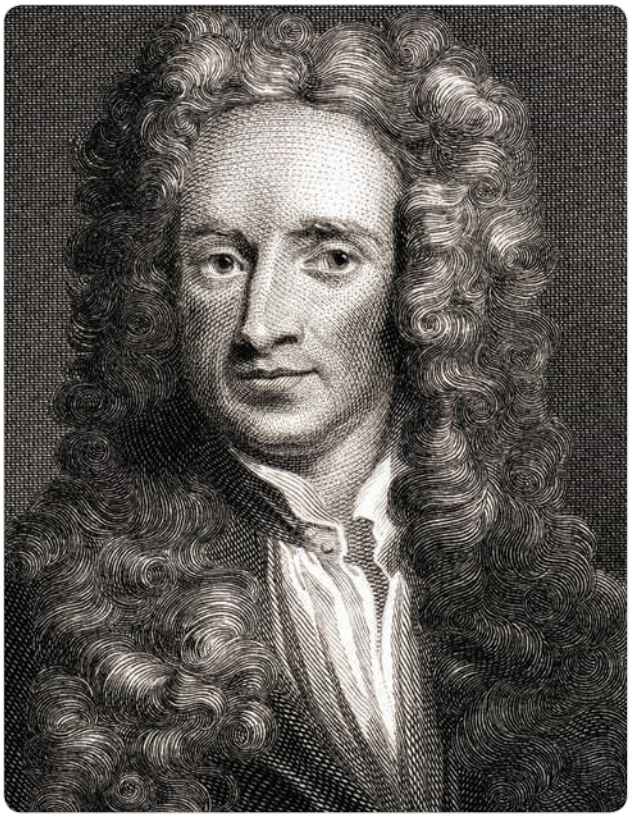
However, the Newtonian paradigm was viewed as the ultimate truth until the turn of the twentieth century,

Paradigm shift: Moving from one perspective of reality to another.

René Descartes: A seventeenth-century scientist and philosopher credited with the reductionistic method of Western science (also known as the Cartesian principle). He is equally renowned for his influential philosophy of the separation of mind and body as well as the statement, "I think, therefore I am."

Isaac Newton: An eighteenth-century physicist who advocated the mechanistic paradigm of the universe, which was then adapted to the human body.

Mechanistic model: A health model based on the concept that the body is a machine with parts that can be repaired or replaced.



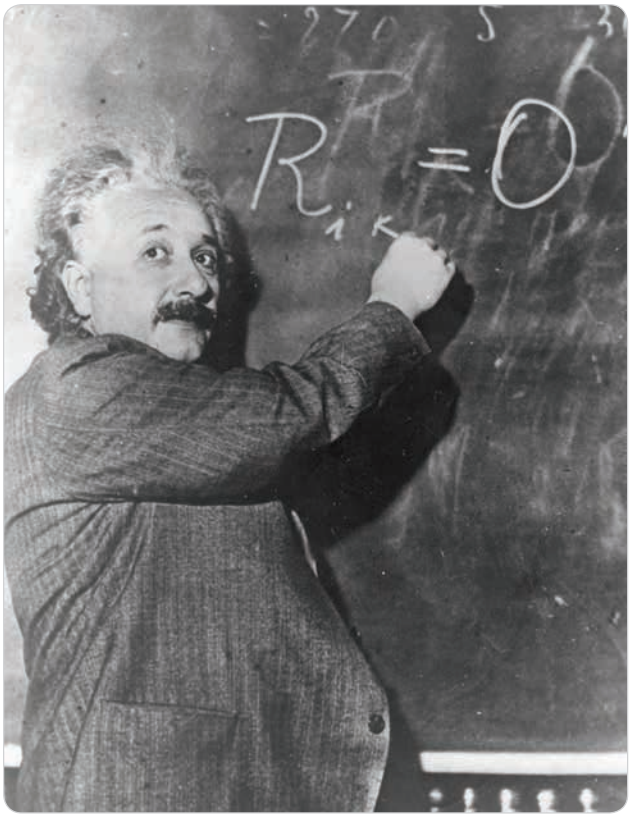


FIGURE 1.9 Sir Isaac Newton (along with René Descartes) is credited with what is now referred to as the mechanistic approach to scientific thinking, which is based on the idea that the universe operates like a large mechanical clock. Albert Einstein supported a different theory, called unified field theory, suggesting that the universe is a living web and validating the ancient whole systems theory in which everything is connected together and the whole is greater than the sum of the parts.

when a young physicist named **Albert Einstein** introduced his theory of relativity in 1905 (FIG. 1.9). In simple terms, Einstein said that all matter is energy, and furthermore, all matter is connected at the subatomic level. No single entity can be affected without all connecting parts similarly being affected. From Einstein's view, the universe isn't a giant clock but a living web. New ideas are often laughed at, and old ideas die hard. But as new truths unfold, they gather curious followers who test and elaborate on the original idea. Initially mocked, the complexities of Einstein's theory have gained appreciation among physicists today, leading to the frontiers of the new field of quantum physics and a whole new understanding of our universe in what is now called the *whole systems theory*. In his attempt to understand the big picture, one of Einstein's more colorful quotes states, "Gravity is not responsible for people falling in love."

Although current medical technology is incredibly sophisticated, physicians for the most part still view the human body as a clock with fixable or replaceable parts. In other words, the basic approach to modern medicine in the Western world has not changed in more than 375 years. Furthermore, the mind and body, so completely separate in the theory of Descartes, are still treated separately, not as one living system. The idea of a mind-body connection (which in rare cases appears powerful enough to make cancers go into spontaneous remission) is still as foreign a concept to many physicians today as the idea of a smartphone would have been to the founders of the United States more than 230 years ago. But new discoveries in the field of medicine have not fit so nicely into the concept of mechanical clock

Albert Einstein: A world-renowned theoretical physicist who revolutionized perceptions of reality with the equation $E = mc^2$, suggesting that everything is energy. His later years focused on a spiritual philosophy including pacifism.

or reductionist theory. Instead, they mirror Einstein's concept of an intricate network of connecting systems. As a result, standard concepts regarding health and disease are slowly beginning to give way to a more inclusive reality or paradigm. As an example, recently, medical researchers have learned that emotions can suppress the immune system, an idea thought to be inconceivable and ludicrous not long ago. The body-as-machine mentality no longer seems to answer all the questions posed about the human organism; and thus some issues, like subtle energy systems and the placebo effect, are being completely reexamined.

But old paradigms are not abandoned until new conceptual models are created and established. Ironically, some new paradigms are actually old concepts that have been dusted off and resurrected. Such is the case with a very old but newly rediscovered health paradigm strongly paralleling Einstein's theory and called the holistic **wellness paradigm**. This model suggests that total wellness is the balance, integration, and harmony of the physical, intellectual, emotional, and spiritual aspects of the human condition. These four components of total well-being are so closely connected and interwoven that it is virtually impossible to divide them. Although for the purposes of academic study these areas are best understood separately, in reality they all act as one interconnected living system, just as Einstein hypothesized about the universe.

The word *health* is derived from the Anglo word *hal*, meaning "to heal, to be made whole, or to be holy"; throughout the ages, wholeness has been symbolized by a circle. The wellness philosophy states that the whole is always greater than the sum of the parts and all parts must be looked at as one system (FIG. 1.10). When applied to clinical medicine, this philosophy indicates that all aspects of the individual must be treated *equally* and each considered part of the whole. Although advances have been made to integrate a host of mind-body-spirit healing modalities into Western health care, by and large, conventional medical practice still treats the physical component—the symptoms of stress—with drugs and surgery, often disregarding how the physical body connects with the mental, emotional, and spiritual aspects of well-being. Although the paradigm is slowly shifting, some physicians (because of their medical training) still refuse to fully acknowledge the link between stress and disease. Nontraditional approaches (of which stress management is a part), specifically biofeedback, meditation, massage therapy, and mental imagery, are commonly referred to as **alternative medicine** by the American Medical Association. Because the word *alternative* has a negative connotation to many practitioners in the field of holistic wellness, the words *complementary* and *integrative medicine* also are used to refer to additional healing modalities. Every technique for stress management falls within the domain of complementary medicine.

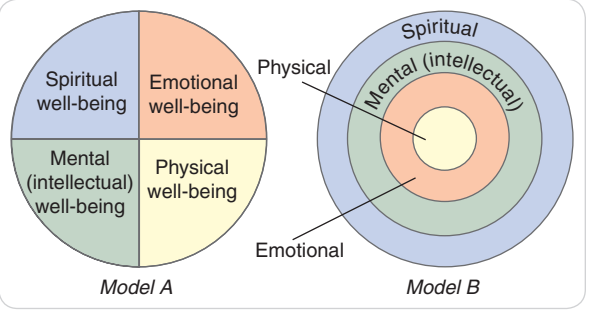


FIGURE 1.10 Two different approaches to the wellness paradigm. In Model A, expounded by Elisabeth Kübler-Ross, all components are present in the human organism, but each holds specific dominance at different phases of the individual's growth cycle. The emotional aspect is the first to develop; the spiritual aspect is the last. In Model B, each component is superimposed on the others in a holographic form, yet it is the spiritual component in which they are all contained.

Please note that healing and curing are two different concepts. Typically, the word *curing* means that the symptoms of a disease or illness are eradicated. Although in some cases healing techniques may cure a person of disease or illness, the concept of healing really means bringing a sense of inner peace to someone's life, even in the face of death. From this vantage point you can see that a person can be healed and yet still be ill. In the age of high technology and instant gratification, expectations are often placed on the curing aspects—eradicating the symptomatic problems—rather than the essence of true healing. This in itself has caused tension in the allied health fields because

Wellness paradigm: The integration, balance, and harmony of mental, physical, emotional, and spiritual well-being through taking responsibility for one's own health; posits that the whole is greater than the sum of the parts.

Alternative medicine: Modalities of healing (homeostasis) that include nearly all forms of stress-management techniques. Also known as complementary or integrative medicine.

many healthcare professionals trained in the mechanistic paradigm use both terms interchangeably. But the tension doesn't stop there. In 1993, a landmark study by David Eisenberg and colleagues published in the *New England Journal of Medicine* announced that more than one-third of the American population seeks methods of healing outside those accepted by traditional medicine because they are unsatisfied with the Western approach to health care. What makes this matter even more astounding is that most healing methods are not covered by medical insurance, meaning that people are paying for these services out of their own pockets. In the highly acclaimed PBS television series entitled *Healing and the Mind*, creator and host Bill Moyers distilled the trend in this way: "There is a deep yearning for a human (whole) approach to medicine." Stress-management techniques, which attempt to deal with the causes as well as the symptoms of stress, support and contribute to this holistic approach.

Statistics released by the National Center for Alternative and Complementary Medicine in 2008 indicate that as many as 50 percent (adults and children) of the U.S. population use various forms of integrative medicine. Many of these people pay out-of-pocket expenses (totaling in the billions of dollars) as only a few holistic modalities, such as acupuncture and some forms of bodywork, are reimbursable by insurance companies. Today, alternative healing practices have gone mainstream with acupuncture, hatha yoga, T'ai Chi ch'uan, aromatherapy, and many other modalities as common healthcare practices (Comarow, 2008).

Let us take a closer look at the components of the wellness paradigm and the effects that stress has on them. **Mental** (intellectual) **well-being** is regarded as the ability to gather, process, recall, and exchange (communicate) information. Exposure to stress tends to overload the cognitive "circuits," decreasing the processing and recall abilities needed to make sound decisions as well as the ability to communicate them. **Physical well-being** is described as the optimal functioning of the body's major physiological systems (e.g., cardiovascular, digestive, reproductive). From the observations documented in Selye's research, as explained in his book *The Stress of Life*, the inability to return to homeostasis can prove fatal to various organ tissues and eventually to the host organism. **Emotional well-being** is defined as the ability to feel and express the full range of human emotions and to control them rather than be controlled by them. Anger and fear act as "umbrella" emotions that can collectively overload emotional circuits, resulting in mental paralysis and often leading to states of depression. **Spiritual well-being** is described as the maturation of higher consciousness through strong nurturing relationships with both the self and others; the development of a strong personal value system; and a meaningful purpose in life. Stress can create a series of obstacles on the road to spiritual development, making the path to one's higher self difficult, if not entirely inaccessible. Over the past few decades, scholars (including Bill Hetler and John Travis) have included social well-being and environmental well-being as additional components of the wellness paradigm. Actually, what they have done is tease these aspects out of the mental, emotional, physical, or spiritual factors involved. If you take a closer look at the original four components, you will see that social well-being is a large factor of spiritual well-being. And environmental well-being demonstrates how interwoven these four components really are, integrating aspects of physical and spiritual well-being. Although the major focus of this book is self-reliance—working from within to achieve inner peace—remember that our ability to harmonize with people within our collective environments is paramount to total well-being. Thus, from a holistic perspective, to effectively deal with stress, all areas of the wellness paradigm must be addressed and nurtured equally; the whole is always greater than the sum of the parts.

Not long ago (and in some cases today), many stress-management programs were based on the mechanistic model and focused solely on physical well-being. Upon initial recognition of the association between stress and disease, courses designed to intervene in this process emphasized techniques to decrease the physical symptoms of stress. These classes consisted primarily of teaching one or two relaxation techniques to help decrease the most obvious stress symptom: muscle tension. These techniques, addressing merely the symptoms (the physical component), did nothing to relieve the causes of stress

Mental well-being: The ability to gather, process, recall, and communicate information.

Physical well-being: The optimal functioning of the body's eight physiological systems (e.g., respiratory, skeletal).

Emotional well-being: The ability to feel and express the full range of human emotions and to control these feelings, not be controlled by them.

Spiritual well-being: The state of mature higher consciousness deriving from insightful relationships with oneself and others, a strong value system, and a meaningful purpose in life.

FIGURE 1.11

(the mental, emotional, or spiritual components). As a result, people often experienced a rebound effect; their symptoms recurred. On a different front, coping skills (e.g., cognitive restructuring, time management, and journal writing) were taught by psychologists in private therapy sessions, and these coping strategies soon made their way into public awareness as well (FIG. 1.11).

Through the efforts of advocates of the wellness paradigm, attempts have been made to unite the practice of both relaxation skills and coping skills for a unique holistic approach to stress management. This implies viewing each person as more than just a physical body and dealing with the causes of stress as well as the physical symptoms. The primary focuses in the application of the wellness model are on the prevention of disease and illness and the enhancement of health. Furthermore, the underlying current of this empowering philosophy is to place the responsibility of healing back in the hands of the individual. Successful stress-management therapy programs have now begun to adopt the wellness philosophy and holistic approach, supporting the concept that the whole is indeed greater than the sum of the parts. A sound stress-management program does not attempt to merely reduce (fix or repair) stress, but rather to manage it efficiently. This management process attempts to focus on all aspects of one's well-being. This philosophy is implemented by attempting to both resolve the causes *and* reduce or eliminate the symptoms of stress. It is imperative to remember that, as an intervention modality, the wellness paradigm does not preclude the use of medications or surgery. Rather, it strongly suggests that there be a collaborative integration of several therapeutic techniques to produce the most effective healing process (e.g., chemotherapy and visualization). Equally important as preventive measures, coping skills and relaxation techniques are also advocated to *maintain* inner peace.

Stated simply, effective holistic stress management includes the following:

1. Sound knowledge of the body's reaction to perceived stress
2. Sound knowledge of mental, physical, emotional, and spiritual factors associated with stress
3. Utilization of several effective coping techniques to work toward a resolution of the causes of stress
4. Regular practice of relaxation techniques to maintain homeostatic balance of the body
5. Periodic evaluation of the effectiveness of coping skills and relaxation techniques

SUMMARY

- The advancement of technology, which promised more leisure time, has actually increased the pace of life so that many people feel stressed to keep up with this pace.
- Lifestyles based on new technological conveniences are now thought to be associated with several diseases, including coronary heart disease and cancer.
- *Stress* is a term from the field of physics, meaning physical force or tension placed on an object. It was adopted after World War II to signify psychological tension.
- There are many definitions of stress from both Eastern and Western philosophies as well as several academic disciplines, including psychology and physiology. The mind-body separation is now giving way to a holistic philosophy involving the mental, physical, emotional, and spiritual components of well-being.
- Cannon coined the term *fight-or-flight response* to describe the immediate effects of physical stress. This response is now considered by many to be inappropriate for nonphysical stressors.
- There are three types of stress: eustress (good), neustress (neutral), and distress (bad). There are two types of distress: acute (short-term) and chronic (long-term), the latter of which is thought to be the more detrimental because the body does not return to a state of complete homeostasis.
- Stressors have been categorized into three groups: (1) bioecological influences, (2) psychointrapersonal influences, and (3) social influences.
- Holmes and Rahe created the Social Readjustment Rating Scale to identify major life stressors. They found that the incidence of stressors correlated with health status.
- Selye coined the term *general adaptation syndrome* to explain the body's ability to adapt negatively to chronic stress.
- Females are not only wired for fight-or-flight, but also have a survival dynamic called "tend and befriend," a specific nurturing aspect that promotes social support in stressful times.
- Stress can appear at any time in our lives, but the college years offer their own types of stressors because it is at this time that one assumes more (if not complete) responsibility for one's lifestyle behaviors.
- The association between stress and insomnia is undeniable. The United States is said to be a sleep-deprived society, but techniques for stress management are proven effective to help promote a good night's sleep, including physical exercise, biofeedback, yoga, and diaphragmatic breathing.
- Previous approaches to stress management have been based on the mechanistic model, which divided the mind and body into two separate entities. The paradigm on which this model was based is now shifting toward a holistic paradigm, in which the whole is greater than the sum of the parts, and the whole person must be treated by working on the causes as well as the symptoms of stress.
- Effective stress-management programming must address issues related to mental (intellectual), physical, emotional, and spiritual well-being.

STUDY GUIDE QUESTIONS

1. How could you best define stress?
2. How does acute stress differ from chronic stress?
3. What is the general adaptation syndrome? List the stages.
4. Do men and women respond to stress in the same way? If not, how do their responses differ?
5. How does stress affect sleep? List as many ways as possible.
6. What is post-traumatic stress disorder (PTSD) and what is secondary post-traumatic stress disorder?
7. What is holistic stress management?

REFERENCES AND RESOURCES

Allen, R. *Human Stress: Its Nature and Control*. Burgess Press, Minneapolis, MN, 1983.

Alter, A. *Irresistible: The Rise of Addictive Technology and the Business of Keeping Us Hooked*. Penguin Press, New York, 2017.

American Cancer Society. *Cancer Facts & Figures 2007*. www.cancer.org/downloads/STT/CAFF2007PWSecured.pdf.

American Institute of Stress (AIS). *Homepage*. www.stress.org.

American Psychological Association. Stress in America: Paying with Our Health. February 4, 2015. http://www.apa.org/news/press/releases/stress/2014/stress-report.pdf.

American Psychological Association. Stress in America: The Impact of Discrimination. March 10, 2016. http://www.apa.org/news/press/releases/stress/2015/impact-of-discrimination.pdf.

Anxiety Disorders Association of America (ADAA). *2007 Stress & Anxiety Disorders Study*. www.adaa.org/stressOutWeek/study.asp.

Austin, J. Why Patients Use Alternative Medicine, *JAMA* 279:1548–1553, 1998.

Barrow, B. Stress Is Top Cause of Workplace Sickness and So Widespread It's Dubbed the Black Death of the 21st Century. Mail Online. October 5, 2011. www.dailymail.co.uk/health/article-2045309/Stress-Top-cause-workplace-sickness-dubbed-Black-Death-21st-century.html.

Becker, D. *One Nation Under Stress*. Oxford University Press, New York, 2013.

Beckford, M. Working Nine to Five Is Becoming a Thing of the Past, *Daily Telegraph*, May 4, 2007.

Cannon, W. *The Wisdom of the Body*. W. W. Norton, New York, 1963.

Carpi, J. Stress . . . It's Worse Than You Think, *Psychology Today* 29(1):34–41, 74–76, 1996.

Chopra, D. Personal conversation, June 22, 2000.

Comarow, A. Embracing Alternative Care, *U.S. News & World Report,* 31–40, January 2008.

Condon, G. Futurists Say World Is at Turning Point. *Chicago Tribune* (Section 5), April 9, 2003.

Cryer, B., McCraty, R., and Childre, D. Pulling the Plug on Stress. *Harvard Business Review* 81(7):102–107, 2003.

Damasio, A. *Descartes' Error*. HarperCollins, New York, 2006.

Dawson, P. *Sleep and Adolescents*. 2005. www.nasponline.org/resources/principals/Sleep%20Disorders%20WEB.pdf.

Dossey, L. Personal conversation, July 30, 2004.

Dossey, L. *Reinventing Medicine*. Harper, New York, 1999.

Dossey, L. *Space, Time, and Medicine*. Bantam New Age Books, New York, 1982.

Eisenberg, D., et al. Unconventional Medicine in the United States, *New England Journal of Medicine* 328:246–252, 1993.

Eisenberg, D., et al. Trends in Alternative Medicine Use in the United States, 1990–1997: Results of a Follow-up National Survey, *JAMA*, 280:1569–1575, 1998.

Expedia.com. *2012 International Vacation Deprivation Survey Results*. 2012. http://www.expedia.com/p/info-other/vacation_deprivation.htm.

Ferri, J. Millennials: The Most Stressed-Out Generation in America. Yahoo! February 8, 2013. http://shine.yahoo.com/work-money/millennials-are-the-most-stressed-out-americans-184318812.html.

Gerber, R. *Vibrational Medicine*, 3rd ed. Bear and Company, Inner Traditions, 2001.

Giradano, D., Everly, G., and Dusek, D. *Controlling Stress and Tension*, *A Holistic Approach*, 9th ed. Addison-Wesley, Boston, 2012.

Greenberg, J. *Comprehensive Stress Management*, 13th ed. McGraw-Hill Humanities, New York, 2012.

Hettler, W. *The Six Dimensional Wellness Model*. The National Wellness Institute. www.nationalwellness.org/index.php?id=391&id_tier=381.

Holmes, T. H., and Rahe, R. The Social Readjustment Rating Scale, *Journal of Psychosomatic Research* 11:213–218, 1967.

Huffington, A. *The Sleep Revolution*. Harmony Books. New York, 2016.

Kanner, A., et al. Comparison of Two Modes of Stress Management: Daily Hassles and Uplifts versus Major Life Events, *Journal of Behavioral Medicine* 4(1):1–37, 1981.

Kaplan, A., ed. *Health Promotion and Chronic Illness*. World Health Organization, Geneva, 1992.

King, S. K. Removing Distress to Reveal Health. In R. Carlson and B. Shield (eds.), *Healers on Healing*, Jeremy Tarcher Inc., Los Angeles, 1989.

Krugman, M. *The Insomnia Solution*. Grand Central Publishing, New York, 2005.

Kübler-Ross, E. Keynote Address, American Holistic Health Association Annual Conference, Lacrosse, WI, 1981.

Kuhn, T. *The Structure of Scientific Revolutions*. University of Chicago Press, Chicago, 2012.

Lazarus, R. Puzzles in the Study of Daily Hassles, *Journal of Behavioral Medicine* 7:375–389, 1984.

Lazarus, R., and DeLongis, A. Psychological Stress, and Coping in Aging, *American Psychologist* 38:245–254, 1983.

Levine, P. A. *Waking the Tiger: Healing Trauma*. North Atlantic Books, Berkeley, CA, 1997.

Levy, S. Facebook Grows Up, *Newsweek*, August 20, 2007: 41–46.

Lippmann, S., Mazour, I., and Shahab, H. Insomnia: Therapeutic Approach, *Southern Medical Journal* 94:866–873, 2001.

Luskin, F., and Pelletier, K. *Stress Free for Good: 10 Scientifically Proven Life Skills for Health and Happiness*. HarperOne, New York, 2005.

Maas, J. *Power Sleep*. Quill Books, New York, 2001.

Manning, G., Curtis, K., and McMillian, S. *Stress: Living and Working in a Changing World*. Whole Persons Associates, Duluth, MN, 2011.

Markes, J. Time Out, *U.S. News and World Report* 119 (23): 84–96, 1995.

Mayo Clinic. *Post-traumatic Stress Disorder*. www.mayoclinic.com/health/post-traumatic-stress-disorder/DS00246.

McGonigal, K. *The Upside of Stress: Why Stress Is Good for You, and How to Get Good at It*. Penguin Random House, New York, 2013.

Meyer, A. *The Common Sense Psychiatry of Dr. Adolf Meyer: Fifty-Two Selected Papers*. Ayer, Salem, NH, 1948.

Mitchum Report on Stress in the '90s. Research and Forecast Inc., New York, 1990.

Moyers, B. *Healing and the Mind*. Doubleday, New York, 1993.

Moyers, B. *Healing and the Mind*. Public Broadcasting System, 1993.

National Public Radio. Stressed-Out. 2014. http://www.npr.org/series/327816692/stressed-out.

Neu, S. Warderburg Health Center. University of Colorado, Boulder, CO. Personal conversation, March 2, 2013.

Ornstein, R., and Sobel, D. *Healthy Pleasures*. Addison-Wesley, Reading, MA, 1990.

Pelletier, K. *Mind as Healer, Mind as Slayer*, 2nd ed. Dell, New York, 2011.

Perman, C. Argggh! American Workers are at a breaking point. April 9, 2013. Business on NBCnews.com. http://www.cnbc.com/id/100624671.

Rahe, R., et al. Simplified Scaling for Life Events, *Journal of Human Stress* 6:22–27, 1980.

Rothschild, B. *The Body Remembers: The Psychophysiology of Trauma and Trauma Treatment*. W. W. Norton, New York, 2000.

Sapolsky, R. *Why Zebras Don't Get Ulcers*, 4th ed. W. H. Freeman & Company, New York, 2009.

Sateia, M. J., and Nowell, P. D. Insomnia, *Lancet* 364:1959–1973, 2004. www.sleepfoundation.org.

Seaward, B. L. *National Safety Council's Stress Management*. Jones & Bartlett, Boston, MA, 1994.

Seaward, B. L. *A Good Night's Sleep: Stress Insomnia and Digital Toxicity*. WELCOA, Omaha, NE, 2015.

Segerstreom, S. C., and Miller, G. E. Psychological Stress and the Human Immune System: A Meta-analytic Study of 30 Years of Inquiry, *Psychological Bulletin* 130(4):601–630, 2004.

Selye, H. *The Stress of Life*. McGraw-Hill, New York, 1976.

Selye, H. *Stress without Distress*. Lippincott, New York, 1974.

Shapiro, D. *Your Body Speaks Your Mind*. Sounds True Books, Boulder, CO, 2006.

Simeons, A. T.W. *Man's Presumptuous Brain: An Evolutionary Interpretation of Psychosomatic Diseases*. E. P. Dutton, New York, 1961.

Stein, J. The New Greatest Generation, *Time*, 28–34, May 20, 2013.

Stein, J. Tyranny of the Mob (Why We Are Losing the Internet to the Culture of Hate). *Time*. August 29, 2016.

Stepp, L. S. Enough Talk Already, *Washington Post*, August 21, 2007. www.washingtonpost.com/wpdyn/content/article/2007/08/17/AR2007081702267.html.

Taylor, S. *Health Psychology*, 9th ed. McGraw-Hill, New York, 2014.

Taylor, S. *The Tending Instinct*. Owl Books, New York, 2003.

Taylor, S., et al. Biobehavioral Responses to Stress in Females: Tend and Befriend, Not Fight or Flight, *Psychological Review* 107(3):411–429, 2000.

Travis, J., and Ryan, R. *Wellness Workbook*, 3rd ed. Celestial Arts, Berkeley, CA, 2004.

Wong, M. Vacationing Americans Have Given New Meaning to the Advertising Slogan, Don't Leave Home Without It, *Associated Press*, Sept. 1, 2000.

Zarski, J. J. Hassles and Health: A Replication, *Health Psychology* 3:243–251, 1984.