UNDERSTANDING STRESS

Sources of Stress
Effects of Stress

APPLYING PSYCHOLOGY TO STUDENT LIFE
Why You Shouldn’t Procrastinate

STRESS AND ILLNESS

Cancer
Cardiovascular Disorders
Posttraumatic Stress Disorder (PTSD)

CASE STUDY/PERSOAL STORY
“Surviving” 9/11

RESEARCH HIGHLIGHT
Does Stress Cause Gastric Ulcers?

HEALTH PSYCHOLOGY IN ACTION

APPLYING PSYCHOLOGY TO WORK
Would You Like to Be a Health Psychologist?
Tobacco
Alcohol

GENDER & CULTURAL DIVERSITY
Binge Drinking Around The World
Chronic Pain

APPLYING PSYCHOLOGY TO WORK
Is My Job Too Stressful?

HEALTH AND STRESS MANAGEMENT

Emotion- and Problem-Focused Coping
Resources for Healthy Living

CRITICAL THINKING/ACTIVE LEARNING
Reducing Stress Through Critical Thinking

Achievement

Core Learning Outcomes
As you read Chapter 3, keep the following questions in mind and answer them in your own words:

What is stress, and what are its major sources and effects?

How is stress related to serious illness?

How is health psychology involved with tobacco, alcohol, and chronic pain?

What techniques and resources are available to help people stay healthy and cope with stress?
Chapter 3 will answer interesting questions, such as Did you know...

- graduating from college and getting married are major sources of stress?
- procrastinating on homework can be harmful to your health as well as to your grades?
- friends are one of your best health resources?
- assembly-line jobs are a prime source of stress?
- small, everyday hassles can impair your immune system functioning?
- police officers, nurses, doctors, social workers, and teachers are particularly prone to “burnout”?
- having few choices or little control can be dangerous to your health?
- having a cynical, hostile Type A personality contributes to heart disease?
- prolonged stress can lead to death?
- hardy personality types may be more resistant to stress?

What do you remember about the terrorist attacks of September 11, 2001, and the late summer of 2005 when Hurricane Katrina devastated a huge area of the southern United States? How did you feel? Have you been the victim of a robbery, rape, or wartime trauma? These are perhaps the most obvious events that come to mind when we think about being stressed. However, stress is all around us. It is an integral part of our physical and mental health. Throughout history, people have believed that emotions and thoughts affect physical health. However, in the late 1800s, the discovery of biological causes for infectious diseases, such as typhoid and syphilis, encouraged scientists to lessen their interest in psychological factors. Today, the major causes of death have shifted from contagious diseases (such as pneumonia, influenza, tuberculosis, and measles) to noncontagious diseases (such as cancer, cardiovascular disease, and chronic lung disease). And the focus has returned to psychological behaviors and lifestyles (National Center for Health Statistics, 2004).

In this chapter, we will explore how biological, psychological, and social factors (the biopsychosocial model) affect illness as well as health and well-being. We begin with “Understanding Stress,” which examines the causes and effects of stress. The next section, “Stress and Illness,” explores the role stress plays in serious illnesses, such as cancer and heart disease. “Health Psychology in Action” addresses how the field of health psychology can help with problems related to tobacco, alcohol, and chronic pain. And the chapter concludes with “Health and Stress Management,” which presents suggestions for dealing with stress and having an overall healthier life.

**UNDERSTANDING STRESS**

Hans Selye (SELL-yay), a physiologist renowned for his research and writing in the area of stress since the 1930s, defines stress as the nonspecific response of the body to any demand made on it. The trigger that prompts the stressful reaction is called a stressor. When you play two nonstop tennis matches in the middle of a heat wave, your body responds with a fast heartbeat, rapid breathing, and an outpouring of perspira-
tion. When you suddenly remember that the term paper you just started is due today rather than next Friday, your body has the same physiological stress response to a very different stressor. Stress reactions can occur to either internal, cognitive stimuli or external, environmental stimuli (Sanderson, 2004; Sarafino, 2005).

The body is nearly always in some state of stress, whether pleasant or unpleasant, mild or severe. Anything placing a demand on the body can cause stress. A total absence of stress would mean a total absence of stimulation, which would eventually lead to death. When stress is beneficial, such as moderate exercise, it is called eustress. When it is objectionable, as from chronic illness, it is called distress (Selye, 1974). Because health psychology has been chiefly concerned with the negative effects of stress, we will adhere to convention and use the word stress to refer primarily to harmful or unpleasant stress.

**Sources of Stress: Seven Major Stressors**

Although stress is pervasive in our lives, some things cause more stress than others. The seven major sources of stress are cataclysmic events, chronic stressors, life changes, hassles, occupational burnout, frustration, and conflict (Figure 3.1).

**Cataclysmic Events**

The terrorist attacks in America on September 11, 2001, the tsunami waves following the Indian Ocean earthquake on December 26, 2004, and Hurricane Katrina in August 2005 are what stress researchers call cataclysmic events. They occur suddenly and generally affect many people simultaneously. Politicians and the public often imagine that such catastrophes inevitably create huge numbers of seriously depressed and permanently scarred survivors. Relief agencies typically send large numbers of counselors to help with the psychological aftermath. Ironically, these events may not be as psychologically stressful as we think. Researchers have found that because the catastrophe is shared by so many others, there is a great deal of mutual social support from those with firsthand experience with the same disaster, which may help people cope (Collocan,
Tuma, & Fleischman, 2004; Gorman, 2005). On the other hand, these cataclysmic events are clearly devastating to all parts of the victims’ lives. And some survivors may develop a prolonged and severe stress reaction, known as posttraumatic stress disorder (PTSD), which we will discuss later in this chapter.

**Chronic Stressors**

Not all stressful situations are single events such as a terrorist attack, a death, or a birth. A bad marriage, poor working conditions, or an intolerable political climate can be a chronic stressor. Even the stress of low-frequency noise is associated with measurable hormonal and cardiac changes (Waye et al., 2002). Our social lives can also be chronically stressful, because making and maintaining friendships involve considerable thought and energy (Sias et al., 2004).

Perhaps the largest source of chronic stress is work. People often experience stress associated with keeping or changing jobs or with job performance (Moore, Grunberg, & Greenberg, 2004). However, the most stressful jobs are those that make great demands on performance and concentration but allow little creativity or opportunity for advancement (Angenendt, 2003; Lewig & Dollard, 2003). Assembly-line work ranks very high in this category.

Researchers have documented that stress at work can also cause serious stress at home. And, of course, in our private lives, divorce, child and spouse abuse, alcoholism, and money problems can place severe stress on all members of a family (DiLauro, 2004; Luecken & Lemery, 2004).

**Life Changes**

Early stress researchers Thomas Holmes and Richard Rahe (1967) believed that change of any kind that required some adjustment in behavior or lifestyle could cause stress. Moreover, they believed that exposure to numerous stressful events within a short period could have a direct, detrimental effect on health.

To investigate the relationship between change and stress, Holmes and Rahe created a Social Readjustment Rating Scale (SRRS) that asked people to check off all the life events they had experienced in the last year (Table 3.1). Each event is assigned a numerical rating expressed in life change units (LCUs). To score yourself on this scale, add up the LCUs for all life events you have experienced during the last year. Now compare your total score with the following standards:

- 0–149 = No significant problems
- 150–199 = Mild life crisis (33 percent chance of illness)
- 200–299 = Moderate life crisis (50 percent chance of illness)
- 300 and above = Major life crisis (80 percent chance of illness)

The SRRS scale is an easy and popular way to measure stress, and cross-cultural studies have shown that most people rank the magnitude of stressful events in similar

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**TABLE 3.1 MEASURING LIFE CHANGES**

<table>
<thead>
<tr>
<th>Social Readjustment Rating Scale</th>
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<tbody>
<tr>
<td><strong>Life Events</strong></td>
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<tr>
<td>Death of spouse</td>
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<td>Divorce</td>
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<tr>
<td>Marital separation</td>
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<td>Jail term</td>
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<td>Death of a close family member</td>
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<td>Personal injury or illness</td>
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<td>Marriage</td>
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<td>Fired at work</td>
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<td>Marital reconciliation</td>
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<tr>
<td>Retirement</td>
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<tr>
<td>Change in health of family member</td>
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<tr>
<td>Pregnancy</td>
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<td>Sex difficulties</td>
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<tr>
<td>Gain of a new family member</td>
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<tr>
<td>Business readjustment</td>
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<td>Change in financial state</td>
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<tr>
<td>Death of a close friend</td>
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<tr>
<td>Change to different line of work</td>
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<tr>
<td>Change in number of arguments with spouse</td>
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<tr>
<td>Mortgage or loan for major purchase</td>
</tr>
<tr>
<td>Foreclosure on mortgage or loan</td>
</tr>
<tr>
<td>Change in responsibilities at work</td>
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ways (De Coteau, Hope, & Anderson, 2003; Scully, Tosi, & Banning, 2000). However, the SRRS is not foolproof. First, it only shows a correlation between stress and illness. And as you recall from Chapter 1, correlation does not prove causation. Illnesses could be caused by stress, or they also could be caused by other (yet unknown) factors.

In addition, stress varies according to the individual. Any one event may be perceived as a stressful ordeal, a neutral occurrence, or even an exciting opportunity. It depends on your personal interpretation and appraisal (Holt & Dunn, 2004). You might find moving to another state a terrible sacrifice and a tremendous stressor. Your friend might see the same move as a wonderful opportunity and experience little or no stress. Some people have better coping skills, physical health, healthier lifestyles, or even better genetics that help them cope with change.

**Hassles**
We also experience a great deal of daily stress from hassles. These little problems of daily living are not significant in themselves, but they sometimes pile up to become a major source of stress. Some hassles tend to be shared by all: time pressures (getting to work or school on time, finding a parking place, fighting traffic jams), problems with family and coworkers (equitable sharing of work, scheduling conflicts, gossip), and financial concerns (competing demands for available funds, increasing prices). But our reactions to hassles may vary. For example, compared to women, men tend to have more impairment of their immune system and an increased heart rate in response to hassles (Delahanty et al., 2000).

Some authorities believe hassles can be more significant than major life events in creating stress (Kraaij, Arensman, & Spinhoven, 2002; Lazarus, 1999). For example, divorce is extremely stressful. For many families, the biggest stressors are the increased number of hassles—change in finances, child-care arrangements, longer working hours, and so on.

**Occupation/Burnout**
Chronic exposure to high levels of stress and little personal control can lead to a state of psychosocial and physical exhaustion known as burnout (Sarafino, 2005). Although
the term has become an overused buzzword, health psychologists use it to describe a specific syndrome that develops most commonly in idealistic people who are involved in chronically stressful and emotionally draining professions (Hätinen et al., 2004; Linzer et al., 2002). People who think of their job as a “calling” enter their careers with a high sense of motivation and commitment. But over time, some become emotionally drained and disillusioned and feel a loss of personal accomplishment. They “burn out.” The result may be increased absences from work, a sharp downturn in productivity, and an increased risk of physical problems.

Police officers, nurses, doctors, social workers, and teachers are particularly vulnerable to burnout. But who else experiences stress to the point of burnout?

Type in the word “burnout” at amazon.com and over 500 book titles will be listed. Do a Google search and over 2 million links will appear! Clearly, burnout is no longer just a career “buzzword” (Skoglund, 2001).

Frustration

Frustration is a negative emotional state generally associated with a blocked goal, such as not being accepted for admission to your first-choice college. The more motivated we are, the more frustration we experience when our goals are blocked. After getting stuck in traffic and missing an important appointment, we may become very frustrated. On the other hand, if the same traffic jam causes us to be five minutes late to a painful medical appointment, we may experience little or no frustration.

Conflict

Another source of stress is conflict, which arises when one is forced to make a choice between at least two incompatible alternatives. The amount of stress produced by these forced choices depends on the complexity of the conflict itself and the difficulty involved in resolving it. There are three basic types of conflict: approach–approach, avoidance–avoidance, and approach–avoidance.

In an approach–approach conflict, a person must choose between two or more favorable alternatives. Thus, no matter what choice is made, the result will be desirable. At first, it might seem that this type of conflict should be stress free. But imagine having to choose between two great summer jobs. One job is at a resort where you will meet interesting people and have a good time. The other will provide you with valuable experience and look impressive on your résumé. No matter which job you choose, you will benefit in some way. In fact, you would like to take both jobs, but you cannot. Being forced to choose is the source of stress.

An avoidance–avoidance conflict involves a forced choice between two or more unpleasant alternatives both of which lead to negative results. In the book (and film) Sophie’s Choice, Sophie and her two children are sent to a German concentration camp. A soldier demands that she give up (apparently to be killed) either her daughter or her son. If she doesn’t choose, they both will be killed. Obviously, neither alternative is acceptable. Although this is an extreme example, avoidance–avoidance conflicts can lead to intense stress.

An approach–avoidance conflict occurs when a person must choose between alternatives that will have both desirable and undesirable results. During the evacuation before Hurricane Katrina made landfall in 2005, residents were told they could not take their pet animals with them to the shelters. For many people, this was an approach–avoidance conflict. They wanted to avoid the dangers of the hurricane, but they couldn’t leave their beloved pets in harm’s way. This conflict thus led to a great deal of ambivalence. In an approach–avoidance conflict, we experience both good and bad results from any alternative we choose.

Generally, the approach–approach conflict is the easiest to resolve and produces the least stress. The avoidance–avoidance conflict, on the other hand, is usually the most difficult because all choices lead to unpleasant results. Approach–avoidance conflicts are somewhat less stressful than avoidance–avoidance conflicts and are usually
moderately difficult to resolve. Keep in mind that in addition to the stress of a forced choice, the longer any conflict exists, or the more important the decision, the more stress a person will experience.

**Assessment**

**Sources of Stress**

Stress is the body’s arousal, both physical and mental, to situations or events that we perceive as threatening or challenging. A situation or event, either pleasant or unpleasant, that triggers arousal and causes stress is known as a stressor.

The major sources of stress are cataclysmic events, chronic stressors, life changes, hassles, occupation/burnout, frustration, and conflict. Cataclysmic events are stressors that occur suddenly and affect many people simultaneously. Chronic stressors are ongoing events such as poor working conditions. Hassles are little everyday life problems that pile up to cause major stress. Persistent hassles and a loss of initial idealism in your work situation can lead to a form of physical, mental, and emotional exhaustion known as burnout. Frustration results from blocked goals. Conflict involves two or more competing goals. Conflicts can be classified as approach–approach, avoidance–avoidance, or approach–avoidance.

**Questions**

1. John was planning to ask Susan to marry him. When he saw Susan kissing another man at a party, he was quite upset. In this situation, John’s seeing Susan kissing another man is ______, and it illustrates ______. (a) a stressor, distress; (b) eustress, a stressor; (c) distress, a stressor; (d) a stressor, eustress

2. The Social Readjustment Rating Scale constructed by Holmes and Rahe measures the stress situation in a person’s life based on ______. (a) life changes; (b) stress tolerance; (c) daily hassles; (d) the balance between eustress and distress

3. Frustration is a negative emotional state that is generally associated with ______, whereas ______ is a negative emotional state caused by difficulty in choosing between two or more incompatible goals or impulses.

4. Give an example for each of the three types of conflict: approach–approach, approach–avoidance, and avoidance–avoidance.

Check your answers in Appendix B.

**Effects of Stress: How the Body Responds**

When stressed either mentally or physically, your body undergoes several major and minor physiological changes. The sympathetic nervous system and the HPA axis control most of these bodily changes (Figure 3.2).

**Stress and the Sympathetic Nervous System**

As you recall from Chapter 2, under low-stress conditions, the parasympathetic branch of the autonomic nervous system tends to reduce heart rate and blood pressure, while increasing muscle movement in the stomach and intestines. This allows the body to conserve energy, absorb nutrients, and maintain normal functioning. Under stressful conditions, however, the sympathetic part of the autonomic nervous system is dominant. It increases heart rate, blood pressure, respiration, and muscle tension; decreases the movement of stomach muscles; constricts blood vessels; and so on.

Stress also has an interesting domino effect. As one domino falls, it topples the next. As you can see on the left side of Figure 3.2, stress first activates the hypothalamus. The hypothalamus then signals the sympathetic nervous system, which then activates the central part of the adrenal glands (the adrenal medulla) to release large amounts of norepinephrine and epinephrine. The net result is increased energy to help us “fight or flee” from a threat.

**Stress and the HPA Axis**

The sympathetic nervous system obviously prepares us for immediate action. We see a shark and we quickly swim to shore. Once we’re safe, our parasympathetic nervous
system calms us and restores normal functioning. But what happens to our bodies when we face chronic stressors, like bad jobs or bad marriages?

To deal with chronic stress, we have another stress response team that reacts a little more slowly and stays on the job. It is called the **HPA axis**—the *Hypothalamus*, *Pituitary gland*, and *Adrenal cortex* system. Look again at Figure 3.2, but this time look at the right hand side. Note how stimulation of the hypothalamus activates the pituitary gland, which in turn activates the covering of the adrenal glands (the adrenal cortex). The adrenal glands then release the hormone known as *cortisol*. Once again, the net effect is increased energy.

It is important to understand the HPA axis because cortisol plays a critical role in the long-term effects of stress. Researchers call it a “stress hormone,” and the level of circulating cortisol is the most commonly employed physiological measure of stress. During the initial crisis, cortisol increases blood sugar and metabolism, which helps us cope. However, with long-term stressors, the HPA axis remains in service and cortisol stays in the bloodstream. Prolonged elevation of cortisol has been linked to increased levels of depression, posttraumatic stress disorder (PTSD), memory problems, unemployment, drug and alcohol abuse, and even low birth weight for newborns (Bremner et al., 2004; Cowen, 2002; Sinha et al., 2003; Wüst et al., 2005). Perhaps most important, increased cortisol is directly related to impairment of immune system functioning.

**Stress and the Immune System**

The discovery of the relationship between stress and the immune system is very important. This system is our major defense against aging and many diseases, including bursitis, colitis, Alzheimer’s disease, rheumatoid arthritis, periodontal disease, and even the common cold (Cohen et al., 2002; Hawkley & Cacioppo, 2004; Segerstrom & Miller, 2004; Theoharides & Cochrane, 2004).

The connection between stress and the immune system also has had a great impact on the field of psychology. Knowledge that psychological factors have considerable control over infectious diseases has upset long-held assumptions in biology and medicine that these diseases are “strictly physical.” The clinical and theoretical implications are so important that a new field of biopsychology has emerged. That field is **psychoneuroimmunology**, and it studies the interactions of psychological factors (“psycho”), the nervous and endocrine systems (“neuro”), and the immune system (“immunology”).

**Selye’s General Adaptation Syndrome (GAS)**

Stress clearly causes physiological changes that can be detrimental to health. Hans Selye (1936), who was mentioned earlier in our de-
inition of stress, described a generalized physiological reaction to severe stressors that he called the **general adaptation syndrome (GAS)**. Figure 3.3 shows the three phases of this reaction. In the initial phase, called the *alarm reaction*, the body reacts to the stressor by activating the sympathetic nervous system (with increases in heart rate, blood pressure, secretion of hormones, and so on). The body has abundant energy and is alert and ready to deal with the stressor.

If the stressor remains, the body enters the *resistance phase*. Physiological arousal declines somewhat but remains higher than normal as the body tries to adapt to the stressor. According to Selye, one outcome of this stage is that some people develop what he called *diseases of adaptation*, including asthma, ulcers, and high blood pressure. This adaptation and resistance phase is very taxing, and long-term exposure to the stressor may eventually lead to the *exhaustion phase* if the resistance is not successful. During this final stage, all adaptation energy becomes depleted and our susceptibility to illness increases. In severe cases, long-term exposure to stressors can be life threatening because we become vulnerable to serious illnesses such as heart attack, stroke, and cancer.

**Application**

**APPLYING PSYCHOLOGY TO STUDENT LIFE**

**Why You Shouldn’t Procrastinate**

If your professor assigned a term paper for this class, have you already started working on it? Or are you putting it off until the last minute? Have you ever wondered if working continuously on a term paper from the first day of class until the paper is due might ultimately be more stressful than putting off the paper until the last minute?

To answer this question, Dianne Tice and Roy Baumeister (1997) at Case Western Reserve University assigned a term paper in their health psychology class at the beginning of the semester. Throughout the semester, they carefully monitored the stress, health, and procrastination levels of 44 student volunteers from the class. After the term papers were submitted at the end of the course, Tice and Baumeister found that procrastinators suffered significantly more stress and developed more health problems than nonprocrastinators. They were also more likely to turn in their papers late and earn lower grades on those papers.
In the “Tools for Student Success” section in Chapter 1, you learned that research shows that spacing out your studying rather than cramming the night before produces higher scores on exams. Now you have additional research showing that distributed work also produces better grades on term papers—as well as less stress. The bottom line is this: Do not procrastinate. It can be hazardous to your health as well as to your grades (Burka & Yuen, 2004).

As we have just seen, stress has dramatic effects on our bodies. In this section, we will explore how stress is related to four serious illnesses—cancer, coronary heart disease, post-traumatic stress disorder (PTSD), and gastric ulcers.

**Cancer: A Variety of Causes—Even Stress**

The word cancer is frightening to nearly everyone, and for good reason. Cancer is among the leading causes of death for adults in the United States. It occurs when a particular type of primitive body cell begins rapidly dividing and then forms a tumor that invades healthy tissue. Unless destroyed or removed, the tumor eventually damages organs and causes death. To date, over 100 types of cancer have been identified. They appear to be caused by an interaction between environmental factors and inherited predispositions.

To understand how the environment contributes to cancer, it helps to know what normally happens to cancerous cells. Whenever cancer cells start to multiply, the immune system checks the uncontrolled growth by attacking the abnormal cells (see the photo at the top of page 107). This goes on constantly, with abnormal cells arising and, in a healthy person, the immune system keeping cancer cells in check.

Something different happens when the body is stressed. As you read earlier, the stress response involves the release of adrenal hormones that suppress immune system functioning. The compromised immune system is less able to resist infection and cancer development. An experiment with nonhuman animals found that stress...
inhibited immune system defenses against cancer—thereby increasing tumor growth (Wu et al., 2000). Other research with humans suggests that stress can also suppress lymphocytes, the main immune system cells that control cancer (Goebel & Mills, 2000; Shi et al., 2003).

The good news is that we can substantially reduce our risk of cancer by making changes that reduce our stress level and enhance our immune system. For example, when researchers interrupted the sleep of 23 men and then measured their natural killer cells (a type of immune system cell), they found the number of killer cells was 28 percent below average (Irwin et al., 1994). Can you see how staying up late studying for an exam (or partying) can decrease the effectiveness of your immune system? Fortunately, these researchers also found that a normal night’s sleep after the deprivation returned the killer cells to their normal levels.

### Cardiovascular Disorders: The Leading Cause of Death in the United States

Cardiovascular disorders cause over half of all deaths in the United States (American Heart Association, 2004). Understandably, health psychologists are concerned because stress is a major contributor to these deaths. Heart disease is a general term for all disorders that eventually affect the heart muscle and lead to heart failure. Coronary heart disease results from arteriosclerosis, a thickening of the walls of the coronary arteries that reduces or blocks the blood supply to the heart. Arteriosclerosis causes angina (chest pain due to insufficient blood supply to the heart) or heart attack (death of heart muscle tissue). Controllable factors that contribute to heart disease include stress, smoking, certain personality characteristics, obesity, a high-fat diet, and lack of exercise (Brummett et al., 2004; David et al., 2004; Hirao-Try, 2003).

**How does stress contribute to heart disease?** Recall that one of the major autonomic nervous system “fight-or-flight” reactions is the release of epinephrine and cortisol into the bloodstream. These hormones increase heart rate and release fat and glucose from the body’s stores to give muscles a quickly available source of energy.

If no physical action is taken (as often happens in our modern lives), the fat released into the bloodstream is not burned as fuel and may become fatty deposits on the walls of blood vessels (Figure 3.4). These deposits are a major cause of blood supply blockage that causes heart attacks.

### Personality Types

The effects of stress on heart disease may be amplified if an individual tends to be hard-driving, competitive, ambitious, impatient, and hostile. People with such Type A personalities are chronically on edge, feel intense time urgency, and are preoccupied with responsibilities. The antithesis of the Type A personality is the Type B personality, having a laid-back, calm, relaxed attitude toward life.
Two cardiologists, Meyer Friedman and Ray Rosenman (1959), were the first to identify and describe the Type A personality. The story goes that in the mid-1950s, an upholsterer who was recovering the waiting room chairs in Friedman's office noticed an odd wear pattern. He mentioned to Friedman that the chairs looked like new except for the front edges, which were badly worn, as if all the patients sat only on the edges of the chairs. Initially, this did not seem too important to Friedman. However, he later came to believe that this chronic sense of time urgency, being literally "on the edge of your seat," was a possible contributing factor to heart disease and the hallmark of the Type A personality.

Initial research into Type A behavior suggested that Friedman and Rosenman were right. But when later researchers examined the relationship between characteristics of the Type A behavior pattern and heart disease, they found that the critical component and strongest predictor of heart disease was hostility—not Type A personality (Krantz & McCeney, 2002; Mittag & Maurischat, 2004).

Actually, cynical hostility appears to be the most important factor in the Type A relationship to heart disease. Cynical people always expect problems and are constantly alert and "on watch," trying to foresee problems and possibly avert them. This attitude produces a nearly constant state of stress, which translates physiologically into higher blood pressure and heart rate, and production of stress-related hormones. Because of their hostile, suspicious, argumentative, and competitive style, these people also tend to have more frequent interpersonal conflicts. Such conflicts can lead to a loss of social support and heightened autonomic activation, which can then lead to increased risk of cardiovascular disease (Boyle et al., 2004; Bruck & Allen, 2003; Vanderwerker & Prigerson, 2004).

Can people with a Type A personality change their behavior? Health psychologists have developed two types of behavior modification to help people with Type A personality—the shotgun approach and the target behavior approach. The shotgun approach aims to change all the behaviors that relate to the Type A personality. Friedman and his colleagues (1986) use the shotgun approach in their Recurrent Coronary Prevention Program. The program provides individual counseling, dietary advice, exercise, drugs, and group therapy to eliminate or modify Type A behaviors. Type As are specifically encouraged to slow down and perform tasks incompatible with their personalities. For example, they might try to listen to other people without interrupting or they could deliberately choose the longest supermarket line. The major criticism of the shotgun approach is that it may decrease desirable Type A traits, such as ambition, as well as undesirable traits, like cynicism and hostility.

The alternative therapy, the target behavior approach, focuses on only those Type A behaviors that are likely to cause heart disease—namely, cynical hostility. This approach is based on the belief that by modifying specific behaviors, the person will likely reduce his or her risk of heart disease.

Hardiness

In addition to Type A and Type B personalities, other personality patterns may affect the way we respond to stress? Have you ever wondered how some people survive in the face of great tragedy and stress? Suzanne Kobasa was among the first to study this question (Kobasa, 1979; Maddi, 2004; Turnipseed, 2003). Examining male executives with high levels of stress, she found that some people are more resistant to stress than others because of a personality factor called hardiness, a resilient type of optimism that comes from three distinctive attitudes:

**Hardiness** Resilient personality that includes a strong commitment to personal goals, control over life, and viewing change as a challenge rather than a threat.
1. **Commitment.** Hardy people feel a strong sense of commitment to both their work and their personal life. They also make intentional commitments to purposeful activity and problem solving.

2. **Control.** Hardy people see themselves as being in control of their lives rather than as victims of their circumstances.

3. **Challenge.** Finally, hardy people look at change as an opportunity for growth and improvement—not as a threat. They welcome challenges.

   The important lesson from this research is that hardiness is a learned behavior—not something based on luck or genetics. If you are not one of the hardy souls, you can develop the trait. The next time you face a bad stressor, such as four exams in one week, try using the 3 C's: “I am fully committed to my college education.” “I can control the number of tests by taking one or two of them earlier than scheduled, or I can rearrange my work schedule.” “I welcome this challenge as a final motivation to enroll in those reading improvement and college success courses I've always planned to take.”

   Before we go on, it is also important to note that Type A personality and lack of hardiness are not the only controllable risk factors associated with heart disease. Smoking, obesity, diet, and lack of exercise are very important factors. Smoking restricts blood circulation, and obesity stresses the heart by causing it to pump more blood to the excess body tissue. A high-fat diet, especially one high in cholesterol, contributes to the fatty deposits that clog blood vessels. Lack of exercise contributes to weight gain. It also prevents the body from obtaining important exercise benefits, including strengthened heart muscle, increased heart efficiency, and the release of neurotransmitters such as serotonin that alleviate stress and promote well-being.

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### Posttraumatic Stress Disorder (PTSD): A Disease of Modern Times?

Perhaps the most powerful example of the effects of severe stress is posttraumatic stress disorder (PTSD). Children, as well as adults, can experience PTSD. Symptoms of PTSD include feelings of terror and helplessness during the trauma and recurrent flashbacks, nightmares, impaired concentration, and/or emotional numbing afterward. These symptoms may continue for months or years after the event itself. To reduce the stress, some victims of PTSD turn to alcohol and other drugs, which often compound the problem (Schnurr & Green, 2004).

We have an interesting history with the diagnosis of PTSD. During the Industrial Revolution, workers who survived horrific railroad accidents sometimes developed a condition very similar to PTSD. But they called it “railway spine” because they believed the problems resulted from a twisting or concussion of the spine. In later times, PTSD was primarily associated with military combat. Doctors called it “shell shock” because they believed it was a response to the physical concussion caused by exploding artillery. Today, we know that PTSD is caused by any exposure to extraordinary stress.

The essential feature of PTSD is severe anxiety (a state of constant or recurring alarm and fearfulness). The anxiety develops after experiencing a traumatic event (such as rape, natural disaster, or war), learning about a violent or unexpected death of a family member, or even being a witness or bystander to violence (American Psychiatric Association, 2002).

According to the Facts for Health website (http://www.factsforhealth.org), approximately 10 percent of Americans have had or will have PTSD at some point in their lives. The primary symptoms of PTSD are summarized in Table 3.2. The table also includes five important tips for coping with traumatic events.
On the morning of September 11, 2001, the woman in this photograph, Marcy Borders, was standing at a copying machine on the 81st floor of Tower One at the World Trade Center. She was busily daydreaming about her new job and thinking, “Here I am, in New York, doing something with my life.” In the next moment, everything changed. The terrorists’ plane hit and the building started “swaying like it was going to break off.” Marcy frantically ran down the 81 flights of stairs and escaped to a world of panic and chaos.

Outside, rescue workers screamed to her, “Run! Don’t look back! Run!” But Marcy couldn’t move. She was paralyzed by the horror that surrounded her—huge walls of smoke barreling down the street, people hanging out of windows, and then jumping to their death. The smoke soon became so thick she could no longer see. Marcy stood alone in the dark screaming, “Help me, I don’t want to die!”

Four months after the terrorist attack, Marcy was still having trouble adjusting. She was so depressed and terrified that she seldom left her apartment. Haunted by fears and memories of the attack, she could not work and lived “off Lipton’s chicken noodle soup.” Officials from the Red Cross and other organizations tried to help but found that she seemed reluctant to reach out. “I don’t want to seem like I am taking away from the people who lost loved ones.”

Alone at night, Marcy drank alcohol to try to fall asleep. Unfortunately, when she succeeded she had nightmares of missiles flying overhead or visions of her mother making her funeral arrangements. “Everything I’ve built up seems gone.... My mother is so disappointed in me. She thinks I should bounce back. But she wasn’t there on the 81st floor.”

---

TABLE 3.2 IDENTIFYING PTSD AND COPING WITH CRISIS

<table>
<thead>
<tr>
<th>Primary Symptoms of Posttraumatic Stress Disorder (PTSD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Re-experiencing the event through vivid memories or flashbacks</td>
</tr>
<tr>
<td>- Feeling “emotionally numb”</td>
</tr>
<tr>
<td>- Feeling overwhelmed by what would normally be considered everyday situations</td>
</tr>
<tr>
<td>- Diminished interest in performing normal tasks or pursuing usual interests</td>
</tr>
<tr>
<td>- Crying uncontrollably</td>
</tr>
<tr>
<td>- Isolating oneself from family and friends and avoiding social situations</td>
</tr>
<tr>
<td>- Relying increasingly on alcohol or drugs to get through the day</td>
</tr>
<tr>
<td>- Feeling extremely moody, irritable, angry, suspicious, or frightened</td>
</tr>
<tr>
<td>- Having difficulty falling or staying asleep, sleeping too much, and experiencing nightmares</td>
</tr>
<tr>
<td>- Feeling guilty about surviving the event or being unable to solve the problem, change the event, or prevent the disaster</td>
</tr>
<tr>
<td>- Feeling fear and sense of doom about the future</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Five Important Tips for Coping with Crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Recognize your feelings about the situation and talk to others about your fears. Know that these feelings are a normal response to an abnormal situation.</td>
</tr>
<tr>
<td>2. Be willing to listen to family and friends who have been affected and encourage them to seek counseling if necessary.</td>
</tr>
<tr>
<td>3. Be patient with people. Tempers are short in times of crisis, and others may be feeling as much stress as you.</td>
</tr>
<tr>
<td>4. Recognize normal crisis reactions, such as sleep disturbances and nightmares, withdrawal, reverting to childhood behaviors, and trouble focusing on work or school.</td>
</tr>
<tr>
<td>5. Take time with your children, spouse, life partner, friends, and coworkers to do something you enjoy.</td>
</tr>
</tbody>
</table>

Source: American Counseling Association and adapted from Pomponio, 2001.
RESERCHE HIGHLIGHT

Does Stress Cause Gastric Ulcers?

Do you have gastric ulcers or know someone who does? If so, you know that these lesions to the lining of the stomach (and duodenum—the upper section of the small intestine) can be quite painful. In extreme cases, they may even be life threatening. Have you been told ulcers are caused by bacteria and not by stress, as previously thought? Would you like to know what modern science believes?

Beginning in the 1950s, psychologists reported strong evidence that stress can lead to ulcers. Correlational studies have found that people who live in stressful situations develop a higher incidence of ulcers. And numerous experiments with laboratory animals have shown that stressors, such as shock or confinement to a very small space for a few hours, can produce ulcers in some laboratory animals (Andrade & Graeff, 2001; Bhattacharya & Murugarandam, 2003; Gabry et al., 2002; Landeira-Fernandez, 2004).

The relationship between stress and ulcers seemed well established until researchers reported a bacterium (Helicobacter pylori or H. pylori) that appears to be associated with ulcers. Because many people prefer medical explanations, like bacteria or viruses, to psychological ones, the idea of stress as a cause of ulcers has been largely abandoned by many people.

Is this warranted? Let's take a closer look at the research. First, most ulcer patients do have the H. pylori bacterium in their stomachs, and it clearly damages the stomach wall. In addition, antibiotic treatment does help many patients. However, approximately 75 percent of normal control subjects' stomachs also have the bacterium. This suggests that the bacterium may cause the ulcer, but only in people who are compromised by stress. Furthermore, behavior modification and other psychological treatments, used alongside antibiotics, can help ease ulcers. Finally, studies of the amygdala (a part of the brain involved in emotional response) show that it plays an important role in gastric ulcer formation (Henke, 1992; Tanaka, Yoshida, Yokoo, Tomita, & Tanaka, 1998).

Apparently, stressful situations and direct stimulation of the amygdala cause an increase in stress hormones and hydrochloric acid, as well as a decrease in blood flow in the stomach walls. This combination leaves the stomach more vulnerable to attack by the H. pylori bacteria.

In sum, it appears that H. pylori, increased hydrochloric acid, stress hormones, and decreased blood flow all lead to the formation of gastric ulcers. Once again, we see how biological, psychological, and social forces interact with one another (the biopsychosocial model) and, for now, the psychosomatic explanation for ulcers is back in business (Overmier & Murison, 2000).

CHECK & REVIEW

Stress and Illness

Cancer appears to result from an interaction of heredity, environmental insults (such as smoking), and immune system deficiency. Stress may be an important cause of decreased immunity. During times of stress, the body may be less able to check cancer cell multiplication because the immune system is suppressed.

The leading cause of death in the United States is heart disease. Risk factors include smoking, stress, obesity, a high-fat diet, lack of exercise, and Type A personality (if it includes cynical hostility). The two main approaches to modifying Type A behavior are the shotgun approach and the target behavior approach.

People with psychological hardiness are less vulnerable to stress because of three distinctive personality characteristics—commitment, control, and challenge. Exposure to extraordinary stress (like war or rape) may lead to posttraumatic stress disorder (PTSD). Current opinion suggests gastric ulcers are caused by the H. pylori bacterium. However, psychological research shows that stress also plays a contributing role.

Questions

1. Stress can contribute to heart disease by releasing the hormones ______ and ______, which increase the level of fat in the blood.

2. Which of the following is not among the characteristics associated with Type A personality? (a) time urgency; (b) patience; (c) competition; (d) hostility

3. Explain how the three characteristics of the hardy personality help reduce stress.

4. What is the essential feature of PTSD?

Check your answers in Appendix B.
HEALTH PSYCHOLOGY IN ACTION

Health psychology, the study of how biological, psychological, and social factors affect health and illness, is a growing field in psychology. In this section, we will consider the psychological components of two major health risks—tobacco and alcohol. We will also explore the psychological factors that increase and decrease chronic pain. But first, we must learn a little about the field of health psychology and what health psychologists have learned about promoting healthy behaviors.

Health psychology Studies how biological, psychological, and social factors affect health and illness

Would You Like to Be a Health Psychologist?

Health psychologists study how people’s lifestyles and activities, emotional reactions, ways of interpreting events, and personality characteristics influence their physical health and well-being. They work primarily in research or directly with physicians and other health professionals to implement research findings.

As researchers, health psychologists are particularly interested in the relationship between stress and the immune system. As we discovered earlier, a normally functioning immune system helps detect and defend against disease. And a suppressed immune system leaves the body susceptible to a number of diseases.

As practitioners, health psychologists can work as independent clinicians or as consultants alongside physicians, physical and occupational therapists, and other health care workers. Their goal is to reduce psychological distress or unhealthy behaviors. They also help patients and families make critical decisions and prepare psychologically for surgery or other treatment. Health psychologists have become so involved with health and illness that medical centers are one of their major employers (Careers in Health Psychology, 2004).

In addition to their work as researchers and practitioners, health psychologists also educate the public about health maintenance. They provide information about the effects of stress, smoking, alcohol, lack of exercise, and other health issues. In addition, health psychologists help people cope with chronic problems, such as pain, diabetes, and high blood pressure, as well as unhealthful behaviors, such as anger expression and lack of assertiveness. Due to space limitations, only a brief overview of the wide variety of work activities and interests of health psychologists can be provided here. If you are seriously interested in pursuing a career in this field, you may want to check with the counseling or career center on your campus. Also try exploring the career website included at the end of this chapter.

Tobacco: Hazardous to Your Health

A custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the black, stinking fume thereof, nearest resembling the horrible Stygian smoke of the pit that is bottomless.

King James I (1604)

This is what King James I wrote about smoking in 1604, shortly after Sir Walter Raleigh introduced tobacco to England from the Americas. Today, more than 400 years later, many people would agree with the king’s tirade against the practice. According to the latest U.S. Public Health Service report, tobacco is the single most preventable cause of death and disease in the United States and the second major cause of death in the world (World Health Organization, 2004). Smoking is a major
risk factor for coronary heart disease and lung cancer. It also contributes to cancers of the mouth, larynx, throat, esophagus, bladder, and pancreas (Centers for Disease Control, 2003, 2004). In addition, smoking contributes to chronic bronchitis, emphysema, and ulcers. Moreover, smoking shortens life (Figure 3.5). This is true for both the smoker and those who breathe secondhand smoke.

What about all the new antismoking laws? Do they help? Ironically, the antismoking laws passed in the 1990s may have made quitting smoking even more difficult for some. Why? Smokers have to leave smoke-free environments and group together outdoors on the hottest summer days and the coldest winter days. This forced isolation creates a strong social bond. Cigarette companies knowingly play to this group loyalty (and the individual’s “independence” and “perseverance”) by showing smokers sitting high up on the ledges of office buildings and on the wings of airplanes in flight “going to any lengths” to have a cigarette. Also, when people cannot smoke in offices, on airplanes, in restaurants, or other public places, the interval between nicotine doses increases, which increases the severity of the withdrawal symptoms (Palfai, Monti, Ostaffin, & Hutchinson, 2000).

Smoking Prevention
The first puff on a cigarette is rarely pleasant. Most people also know that smoking is bad for their health and that the more they smoke, the more at risk they are. Why, then, do people ever start smoking? The answer is complex.

First, smoking usually starts when people are young. The European School Survey Project on Alcohol and Other Drugs (ESPAD) (2001) reported that tobacco smoking was well established by the mid-teens in most European countries. It also showed few signs of diminishing since the previous ESPAD survey in 1995. A similar survey of U.S. middle schools, grades 6 to 8, found that one in eight students were experimenting with some form of tobacco, such as cigarettes, cigars, and chewing tobacco (Kaufman, 2000). There are many reasons people begin to smoke at such a young age, but peer pressure and imitation of role models (such as celebrities) are particularly strong factors. Young smokers want to look mature and be accepted by their social peers.

Second, regardless of the age at which a person begins smoking, once he or she begins to smoke, there is a biological need to continue. Evidence suggests that nicotine addiction is very similar to heroin, cocaine, or alcohol addiction (Brody et al., 2004). When we inhale tobacco smoke, it takes only seconds for the nicotine to reach the brain. Once inside the brain, nicotine increases the release of the neurotransmitters acetylcholine and norepinephrine, which increase alertness, concentration, memory, and feelings of pleasure. Nicotine also stimulates the release of dopamine, the neurotransmitter most closely related to reward centers in the brain (Brody et al., 2004; Noble, 2000).

Finally, social pressures and physical addiction combine to create additional benefits (Brandon et al., 2004). Smoking is often paired with pleasant things, such as good food, friends, sex, and the nicotine high. In contrast, smokers who are deprived of cigarettes go through extremely unpleasant physical withdrawal. Unfortunately, when
they get their next puff, the nicotine immediately relieves the symptoms. Smoking is rewarded and not smoking is punished. Can you see why many health psychologists and other scientists believe the best way to reduce the number of smokers may be to stop people from ever taking that first puff?

If most people begin smoking during adolescence, shouldn’t prevention be aimed at this group? Prevention programs for teens face a tough uphill battle. For adolescents, the long-term health disadvantages of heart disease and cancer seem irrelevant. In contrast, smoking provides immediate short-term rewards from peers and the addictive, reinforcing properties of nicotine. Many smoking prevention programs therefore focus on immediate short-term problems with smoking, such as bad breath and interference with athletic performance.

Through films and discussion groups, teens also are educated about peer pressure and the media’s influence on smoking. In addition, teens are given opportunities to role-play refusal skills, taught general social and personal skills needed in decision making, and given strategies for coping with the stresses of adolescence and daily life. Unfortunately, research shows that the effect of these psychosocial prevention programs is small (Tait & Hulse, 2003; Unger et al., 2004). To have even a modest effect, these programs must begin early and continue for many years.

To reduce the health risk and help fight peer pressure among college students, many universities now ban smoking in college buildings and provide more smoke-free dormitories. Another possible deterrent to college smoking may come from the increasing cost of cigarettes. Expensive legal battles and settlements by the tobacco industry create expenses that are passed on to consumers. This increase, added to state and local taxes, brings the cost to over $4 per pack in most states. For a student who smokes a pack of cigarettes a day, the annual cost is nearly $1500—more than twice the cost of textbooks for an entire academic year.

Stopping Smoking

To cease smoking is the easiest thing I ever did; I ought to know, for I have done it a thousand times.

MARK TWAIN

Unfortunately, Mark Twain was never able to quit for very long, and many ex-smokers say that stopping smoking was the most difficult thing they ever did. Although some people find the easiest way for them to cope with the physical withdrawal from nicotine is to suddenly and completely stop, the success rate for this “cold turkey” approach is extremely low. Even with medical aids, such as patches, gum, or pills, it is still difficult to quit.

Any program designed to help smokers break their habit must combat the social rewards of smoking as well as the physical addiction to nicotine (Koop, Richmond, & Steinfeld, 2004). Sometimes the best approach is a combination of cognitive and behavioral techniques and nicotine replacement therapy.

Cognitively, smokers can learn to identify stimuli or situations that make them feel like smoking. They can then change or avoid them (Brandon, Collins, Juliano, & Lazev, 2000). They can also refocus their attention on something other than smoking or remind themselves of the benefits of not smoking (Taylor, Harris, Singleton, Moolchan, & Heishman, 2000). Behaviorally, they might cope with the urge to smoke by chewing gum, exercising, or chewing on a toothpick after a meal instead of lighting a cigarette. No program to quit smoking will work without strong personal motivation. However, the payoffs of a healthier and longer life are worth it.
Alcohol: Both a Personal and Social Health Problem

In the United States, considerable attention is given to the problem of illegal drugs such as marijuana and cocaine. But did you know that that the American Medical Association considers alcohol to be the most dangerous and physically damaging of all drugs (American Medical Association, 2003)? After tobacco, it is the leading cause of premature death in the United States and most European countries (Cohen et al., 2004; Grilly, 2006; Joh & Hanke, 2003).

In addition, alcohol may cause serious damage to your brain (Crews et al., 2004). The fact that alcohol seems to increase aggression also helps explain why it is a major factor in most murders, suicides, spousal assaults, child abuse, and accidental deaths (Pappas et al., 2004; Sebre et al., 2004; Sher, Grekin, & Williams, 2005).

Thanks to heavy advertising, most people are now aware of the major risks of alcohol and driving—heavy fines, loss of driver’s license, serious injuries, possible jail time, and even death. But did you know that simply drinking alcohol itself can be fatal? Because alcohol depresses neural activity throughout the brain, if blood levels of alcohol rise to a certain point, the brain’s respiratory center stops functioning and the person dies.

This is why binge drinking is so dangerous. Binge drinking is defined as having more than four (for women) or five (for men) drinks at a time on at least three occasions during a two-week period. Do you remember news reports of two freshmen at the Massachusetts Institute of Technology who died from alcohol poisoning after binge drinking at fraternity parties? One of the students had a blood alcohol level of .5888 percent. This is the equivalent of more than 20 beers in one hour. It is also over seven times the legal driving limit in most states. A national survey of college students found that between 1993 and 2001, approximately 44 percent of college students were binge drinkers (Wechsler et al., 2002). This survey also found that white students are more likely to drink heavily (50.2 percent) than are students of other ethnicities, such as Hispanic (34.4 percent), Native American Indian/Other (33.6 percent), Asian/Pacific Islander (26.2 percent), and black/African American (21.7 percent).

Alcohol is a serious health problem for all college-age students. For those who drink, research shows that because of alcohol use every year:

- 1400 college students die from alcohol-related causes.
- 500,000 students suffer nonfatal injuries.
- 1.2–1.5 percent of students attempt suicide because of alcohol or other drug use.
- 400,000 students have unprotected sex, and more than 100,000 are too intoxicated to know whether they consented to sexual intercourse (Task Force of the National Advisory, 2002).

Alcohol also has an effect on students who abstain or are only moderate drinkers. For example, for those who live on campus or in sorority or fraternity houses:

- 60 percent had their study or sleep interrupted by an alcohol user.
- 47.6 percent had to take care of a drunken student.
- 19.5 percent of female respondents experienced an unwanted sexual advance.
- 8.7 percent had been pushed, hit, or assaulted (Wechsler et al., 2002).

Unfortunately, many college students believe that heavy drinking is harmless fun and a natural part of “college life.” College administrators, however, are increasingly aware of the problems of binge drinking and other types of alcohol abuse. They are developing and implementing policies and programs that go beyond traditional educational programs to include the physical, social, legal, and economic environment on college campuses and the surrounding communities (Kapner, 2004).
Binge Drinking Around the World

After reading the previous section on binge drinking, you may think it is a problem unique to college students in the United States. Unfortunately, binge drinking is a worldwide problem.

• The European School Survey Project (2001) found an overall increase in binge drinking since 1995, especially in Britain, Denmark, Ireland, and Poland. More than 30 percent of schoolchildren in those countries reported binge drinking three or more times in the last month.

• In Mexico, a study of drinking patterns at 16 religious fiestas and 13 nonreligious fiestas in the community of Santa María Atzompa found that nearly all the men qualified as binge drinkers at every fiesta. Furthermore, the binge drinking contributed to several outbreaks of violence at the fiestas (Perez, 2000).

• A study in Spain and South America found that young men who reported binge drinking were more likely than others to behave aggressively toward people outside their family (Orpinas, 1999).

• Scientists in Denmark compared the drinking patterns of 56,970 men and women with respect to their preferred drink, beer, wine, or spirits (Gronbaek, Tjonneland, Johansen, Stripp, & Overvad, 2000). Results showed that beer drinkers were the least likely of the different types of drinkers to binge, whereas wine drinkers were the most likely to binge.
Research on alcohol consumption in Russia shows that 44 percent of men are binge drinkers (Bobak, McKee, Rose, & Marmot, 1999).

**Chronic Pain: An Ongoing Threat to Health**

Imagine having all your pain receptors removed so that you could race cars, downhill ski, skateboard, and go to the dentist without ever worrying about pain. Does this sound too good to be true? Think again. Pain is essential to the survival and well-being of humans and all other animals. It alerts us to dangerous or harmful situations and forces us to rest and recover from injury (Watkins & Maier, 2000). In contrast, *chronic pain*, the type that comes with a chronic disease or continues long past the healing of a wound, does not serve a useful function.

To treat chronic pain, health psychologists often focus their efforts on psychologically oriented treatments, such as behavior modification, biofeedback, and relaxation. Although psychological factors may not be the source of the chronic pain, they frequently encourage and intensify it and increase the related anguish and disability (Currie & Wang, 2004; Eriksen et al., 2003; Keefe, Abernathy, & Campbell, 2005).

**Behavior Modification**

Chronic pain is a serious problem with no simple solution. For example, exercise is known to produce an increase in *endorphins*, naturally produced chemicals that attach themselves to nerve cells in the brain and block the perception of pain (Chapter 2). However, chronic pain patients tend to decrease their activity and exercise. In addition, well-meaning family members often ask chronic pain sufferers, “How are you feeling?” “Is the pain any better today?” Unfortunately, talking about pain focuses attention on it and increases its intensity (Sansone, Levengood, & Sellbom, 2004). Furthermore, as the pain increases, anxiety increases. The anxiety itself then increases the pain, which further increases the anxiety, which further increases the pain!

To counteract these hidden personal and family problems and negative cycles, health psychologists may begin a behavior modification program for both the patient with chronic pain and his or her family. The effectiveness of such programs for treating chronic pain was first shown in the late 1970s (Cairns & Pasino, 1977). Researchers established individualized pain management programs and monitored each patient’s adherence to their pain treatment programs (daily exercise, use of relaxation techniques, and so on). Compared with a control group, patients who used these techniques experienced substantially reduced pain. Today, many pain control programs incorporate similar techniques for rewarding “well behaviors.”

**Biofeedback**

In *biofeedback*, information about physiological functions, such as heart rate or blood pressure, is monitored, and the feedback helps the individual learn to control these functions. Such feedback helps reduce some types of chronic pain. Most biofeedback with chronic pain patients is done with the *electromyograph (EMG)*. This device measures muscle tension by recording electrical activity in the skin. The EMG is most helpful when the pain involves extreme muscle tension, such as tension headache and lower back pain. Electrodes are attached to the site of the pain, and the patient is instructed to relax. When sufficient relaxation is achieved, the machine signals with a tone or a light. The signal serves as feedback, enabling the patient to learn how to relax.

Research shows that biofeedback is helpful and sometimes as effective as more expensive and lengthier forms of treatment (Engel, Jensen, & Schwartz, 2004; Hammond, 2005; Hawkins & Hart, 2003). Apparently, it is successful because it teaches patients to recognize patterns of emotional arousal and conflict that affect their physiological responses. This self-awareness, in turn, enables them to learn self-regulation skills that help control their pain.
Relaxation Techniques

Because the pain always seems to be there, chronic pain sufferers tend to talk and think about their pain whenever they are not thoroughly engrossed in an activity. Watching TV shows or films, attending parties, or performing any activity that diverts attention from the pain seems to reduce discomfort. Attention might also be diverted with special relaxation techniques like those that are taught in some prepared childbirth classes. These techniques focus the birthing mother’s attention on breathing and relaxing the muscles, which helps distract her attention from the fear and pain of the birthing process. Similar techniques also can be helpful to chronic pain sufferers (Astin, 2004). Remember, however, that these techniques do not eliminate the pain. They merely allow the person to ignore it for a time.

Is My Job Too Stressful?

Health psychologists (and industrial/organizational psychologists) have studied numerous factors in job-related stress. Their findings suggest that one way to prevent these stresses is to gather lots of information before making a career decision.

If you would like to apply this thinking to your own career plans, start by identifying what you like and do not like about your current (and past) jobs. With this information in hand, you will then be prepared to research jobs that will better suit your interests, needs, and abilities and avoid the stress caused by jobs failing to meet these criteria. To start your analysis, answer yes or no to these questions:

1. Is there a sufficient amount of laughter and sociability in my workplace?
2. Does my boss notice and appreciate my work?
3. Is my boss understanding and friendly?
4. Am I embarrassed by the physical conditions of my workplace?
5. Do I feel safe and comfortable in my place of work?
6. Do I like the location of my job?
7. If I won the lottery and were guaranteed a lifetime income, would I feel truly sad if I also had to quit my job?
8. Do I watch the clock, daydream, take long lunches, and leave work as soon as possible?
9. Do I frequently feel stressed and overwhelmed by the demands of my job?
10. Compared to others with my qualifications, am I being paid what I am worth?
11. Are promotions made in a fair and just manner where I work?
12. Given the demands of my job, am I fairly compensated for my work?


The questions you just answered are based on four factors that research shows are conducive to increased job satisfaction and reduced stress: supportive colleagues, supportive working conditions, mentally challenging work, and equitable rewards (Robbins, 1996). Your total score reveals your overall level of dissatisfaction. A look at specific questions can help identify which of these four factors is most important to your job satisfaction—and most lacking in your current job.
Supportive colleagues (items 1, 2, 3): For most people, work fills important social needs. Therefore, having friendly and supportive colleagues and superiors leads to increased satisfaction.

Supportive working conditions (items 4, 5, 6): Not surprisingly, most employees prefer working in safe, clean, and relatively modern facilities. They also prefer jobs close to home.

Mentally challenging work (items 7, 8, 9): Jobs with too little challenge create boredom and apathy, whereas too much challenge creates frustration and feelings of failure.

Equitable rewards (items 10, 11, 12): Employees want pay and promotions based on job demands, individual skill levels, and community pay standards.
will first discuss emotion-focused forms of coping that deal with our interpretation of problems. Then we will discuss problem-focused strategies that deal directly with our reactions. We close with a look at ways to determine whether your job is stressful and a review of helpful resources for stress management.

**Emotion- and Problem-Focused Coping: Two Different Approaches**

As you can see in Figure 3.6, our level of stress generally depends on both our interpretation of and reaction to the stressors (Gaab, Rohleder, Nater, & Ehlert, 2005; Lazarus, 1999). Emotion-focused forms of coping are emotional or cognitive strategies that change how we view a stressful situation. Suppose you are refused a highly desirable job or rejected by a desired lover. You might reappraise the situation and decide that the job or lover might not have been the right match for you. You could also decide that you were not really qualified or ready for that specific job or relationship.

In addition to these conscious forms of emotion-focused coping, we often resort to defense mechanisms. The use of unconscious defense mechanisms reduces anxiety and often helps us cope with unavoidable stress. For instance, fantasizing about what you will do once you graduate from college or during the summer break can relax you when you’re feeling stressed over final exams. On the other hand, defense mechanisms can sometimes be destructive. You might decide you did not get the job or the lover because you did not have the right “connections” or “the perfect body.” This is known as rationalization, fabricating excuses when frustrated in attaining particular goals. Not seeing the situation more clearly and realistically might prevent you from developing skills or qualities that could get you a desirable job or lover in the future.

Emotion-focused forms of coping that are accurate reappraisals of stressful situations, and do not distort reality, may alleviate stress in some situations (Giacobbi, Foore, & Weinberg, 2004; Patterson et al., 2004). Many times, however, it is necessary and more effective to use problem-focused forms of coping. This approach deals directly with the situation or the stressor to eventually decrease or eliminate it (Bond & Bunce, 2000). Problem-focused coping includes identifying the stressful problem, generating possible solutions, selecting the appropriate solution, and applying the solution to the problem—thus eliminating the stress.

To illustrate the difference between emotion- and problem-focused styles of coping, imagine you are flying to Denver to be in your best friend’s wedding. You have an important exam that lets out at 10:00 and your plane leaves at noon. Although the wedding is at 4:00, you decide that you can make it. Unfortunately, on the way to the airport, the taxi has a flat tire. You can cognitively evaluate the situation and remind yourself that because this is your best friend, he’ll understand that you did everything you could to be there. It wasn’t your fault that the taxi had a flat (emotion-focused approach). Or you could ask the driver to immediately call for another taxi to come and take you to the airport (problem-focused approach).

*Can people use both forms of coping strategies at once?* Yes, most stressful situations are complex. People often combine problem-focused and emotion-focused coping strategies. Furthermore, as you know from your own life, stressful situations change. The type of strategy we use depends not only on the stressor but also on the changing nature of the stressor. In some situations, we may first need to use an emotion-focused strategy, which allows a step back from an especially overwhelming problem. Then, later on, when we have regained our emotional strength, we can reappraise the situation and use the problem-focused approach to look for solutions.
We also may use one coping strategy to prepare us to use the other. Imagine that you are anxiously awaiting your first exam in a difficult course. To calm yourself, start with an emotion-focused approach. Say to yourself, “Relax and take a deep breath. It can’t be as bad as I’m imagining.” With reduced anxiety, you can then use problem-focused coping techniques and fully concentrate on the test.

**Resources for Healthy Living: From Good Health to Money**

A person’s ability to cope effectively depends on the stressor itself—it’s complexity, intensity, and duration—and on the type of coping strategy used (emotion- or problem-focused). It also depends on available resources. Researchers have identified seven important resources for healthy living and stress management.

1. **Health and exercise.** All stressors cause physiological changes. Therefore, an individual’s health significantly affects his or her ability to cope. Look again at Figure 3.3 on the *general adaptation syndrome*. The resistance stage is the coping stage. The stronger and healthier you are, the better you can cope with stress. Also, if you exercise and keep yourself physically fit, you will experience less anxiety and depression. Interestingly, researchers have found that people engaging in *strenuous exercise* experience greater reductions in anxiety than do those in *moderate programs* (Broman-Fulks et al., 2004; Hong, 2000).

   Exercise reduces the negative effects of stress in several ways. First, it reduces the stress hormones secreted into the bloodstream, which helps speed up the immune system’s return to normal functioning. Second, exercise can help reduce muscular tension. Third, exercise increases strength, flexibility, and stamina for encountering future stressors. Most important, it increases the efficiency of the cardiovascular system. The best exercise for all these purposes is *aerobic exercise*—brisk walking, jogging, bicycling, swimming, and dancing.

2. **Positive beliefs.** A positive self-image and a positive attitude are also significant coping resources. Research shows that even temporarily raising self-esteem reduces the amount of anxiety caused by stressful events (Greenberg et al., 1993). Also, hope can sustain a person in the face of severe odds. This is often documented in news reports of people who have triumphed over seemingly unbeatable circumstances. According to Lazarus and Folkman (1984), hope can come from a belief in oneself, which can enable us to devise our own coping strategies. It also comes from a belief in others, such as medical doctors whom we feel can effect positive outcomes, or a belief in a higher spiritual power.

3. **Social skills.** Social situations—meetings, discussion groups, dates, parties, and so on—are often a source of pleasure. But they can also be a source of stress. Merely meeting someone new and trying to find something to talk about can be very stressful for some people. Therefore, people who acquire social skills (know appropriate behaviors for certain situations, have conversation-starters “up their sleeves,” and express themselves well) suffer less anxiety than people who do not. In fact, people lacking social skills are more at risk for developing illness (Cohen & Williamson, 1991).

   Social skills help us not only interact with others but also communicate our needs and desires. In addition, social skills help us enlist help when we need it, and decrease hostility in tense situations. If you have weak social skills, observe others and ask people with good social skills for advice. Then practice your new skills by role-playing before applying them in real life.

4. **Social support.** Having the support of others helps offset the stressful effects of divorce, loss of a loved one, chronic illness, pregnancy, physical abuse, job loss, and work overload (Greeff & Van Der Merwe, 2004; Shen, McCrea, & Myers, 2004; Southwick, Vythinilagm, & Charney, 2005). When we are faced with stressful
circumstances, our friends and family often help us take care of our health, listen and “hold our hand,” make us feel important, and provide stability to offset the changes in our lives. Professional support groups, like those for alcoholics and families of alcoholics, help people cope not only because they provide other people to lean on but also because people can learn techniques for coping from others with similar problems (see Chapter 15).

5. Material resources. We have all heard the saying “Money isn’t everything.” But when it comes to coping with stress, money, and the things money can buy, can be very important resources. Money increases the number of options available to eliminate sources of stress or reduce the effects of stress. When faced with the minor hassles of everyday living, chronic stressors, or major catastrophes, people with money (and the skills to effectively use that money) generally fare better and experience less stress than people without money (Chi & Chou, 1999; Ennis, Hobb-foll, & Schroeder, 2000).

6. Control. Do you believe that what happens to you is primarily the result of luck and chance or your own actions? People with an external locus of control are more likely to believe in bad luck or fate. They feel powerless to change their circumstances and are less likely to make healthy changes, follow treatment programs, or positively cope with a situation.

Conversely, people with an internal locus of control believe they are in charge of their own destiny. And they tend to use positive coping strategies. For example, “internals” who believe their heart attacks happened because of their unhealthy choices, such as smoking or having a stressful job, are more likely to change their unhealthy behaviors and recover more quickly (Ewart & Fitzgerald, 1994). Studies in China, Taiwan, and the United Kingdom found that those who had a higher internal locus of control experienced less psychological stress than did those with a higher external locus of control (Hamid & Chan, 1998; Lu, Kao, Cooper, & Spector, 2000).

7. Relaxation. One of the most effective ways to reduce stress is to make a conscious decision to relax during the stressful situation. A variety of relaxation techniques is available. As we discovered in an earlier section, biofeedback is often used in the treatment of chronic pain. It also helps people relax and manage their stress (Ham-

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**External Locus of Control** Believing that chance or outside forces beyond one’s control determine one’s fate

**Internal Locus of Control** Believing that one controls one’s own fate

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**Coping with stress.** Exercise and friends are important resources for effective stress reduction. As the song says, “I get by with a little help from my friends.” John Lennon and Paul McCartney, Sgt. Pepper’s Lonely Hearts Club Band, 1967.

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**TRY THIS**

**YOURSELF**

**Progressive Relaxation**

You can use progressive relaxation techniques anytime and anywhere you feel stressed, such as before or during an exam. Here’s how:

1. Sit in a comfortable position, with your head supported.
2. Start breathing slowly and deeply.
3. Let your entire body relax. Release all tension. Try to visualize your body getting progressively more relaxed with each breath.
4. Systematically tense and release each part of your body. Beginning with your toes, curl them tightly while counting to 10. Now, release them. Note the difference between the tense and relaxed state. Next, tense your feet to the count of 10. Then relax them and feel the difference. Continue upward with your calves, thighs, buttocks, abdomen, back muscles, shoulders, upper arms, forearms, hands and fingers, neck, jaw, facial muscles, and forehead.

Try practicing progressive relaxation twice a day for about 15 minutes. You will be surprised at how quickly you can learn to relax—even in the most stressful situations.
123HEALTH AND STRESS MANAGEMENT

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Reducing Stress Through Critical Thinking
(Contributed by Thomas Frangicetto)

According to cognitive therapist Albert Ellis, “If people look at what they are telling themselves, look at their thinking, at their irrational beliefs and self-defeating attitudes . . . they can then experience healthy stressful reactions” (Palmer & Ellis, 1995). Of all the useful coping resources described in this chapter, examining our thinking (also known as critical thinking) is undoubtedly one of the most important. This exercise will help you:

• Understand the link between how we cognitively interpret a stressor and the amount and type of stress we actually experience (Lazarus, 1999).
• Review important text content your professor may include on exams.
• Practice applying numerous critical thinking components.

Part II. Fill in the letter from the list of key terms and concepts that best applies to each of the 10 stressful situations. (Tip: Italicized words reflect verbatim content from Chapter 3.)

Text Key Terms and Concepts
a. Approach-Avoidance Conflict
b. Avoidance-Avoidance Conflict
c. Binge Drinking
d. Burnout
e. Defense Mechanisms
f. External Locus of Control
g. Frustration
h. Posttraumatic Stress Disorder
i. Procrastination
j. Type A Personality

Stressful Situation
___1. Wendy is forced to choose between the undesirable alternative of studying boring subjects AND the undesirable alternative of poor grades.
___2. John, fabricates excuses for his failures, which helps protect his ego from the anxiety and guilt that might result from taking personal responsibility.
___3. Marci was fortunate to escape the terrorist attack on September 11, 2001. But ever since that life-threatening day, her functioning has been impaired by flashbacks, nightmares, and an overwhelming sense of anxiety, helplessness, and emotional numbing.
___4. Jason is a college freshman who is pledging a fraternity. During the “hazing”: “They made me do as many beers as I could until I threw up. They had buckets nearby ready for it. I did about 10 jello shots in an hour or so. They said this was a normal part of the Greek life. I just wanted to fit in, that’s all I ever wanted.”
___5. Rodney is a high-powered executive whose intense ambition and competitiveness seem to have paid off. However, his wife complains about his exaggerated sense of time urgency and his persistent cynicism and hostility.
___6. Juanita is trapped in a traffic jam on her way to an important exam. She feels tension and anxiety building because she is being blocked from achieving her goal.
___7. Jennifer’s job is emotionally demanding and she feels physically, emotionally, and mentally exhausted.
___8. Derek has been putting off working on a paper assigned three months ago. With one week to go, he is experiencing tremendous stress and has developed a lingering cold.
___9. Selena believes that all of the bad things that happen to her are the result of bad luck or fate, and she feels powerless to change her situation.
___10. James is a high achieving college student, but he recently met a wonderful person and his grades are falling. He feels forced to choose between dating and high grades.

Part III. On a separate sheet of paper, choose FIVE of the situations above, and then identify ONE critical thinking component (CTC) from the Prologue of this text (pp. 000) and describe how it could be used to help each individual “cope more effectively.” Try to use a different CTC for each situation.

Application

Critical Thinking

Active Learning

In addition to bio feedback, progressive relaxation helps reduce or relieve the muscular tension commonly associated with stress (Khandai, 2004; Vocks et al., 2004). Using this technique, patients first tense and then relax specific muscles, such as in the neck, shoulders, and arms. Progressive relaxation helps people recognize the difference between tense and relaxed muscles.
CHAPTER 3 STRESS AND HEALTH PSYCHOLOGY

CHECK & REVIEW

Health and Stress Management

The two major forms of coping with stress are emotion-focused and problem-focused. Emotion-focused coping strategies change how we view stressful situations, and one of the most common forms is the use of defense mechanisms. Problem-focused coping deals directly with the situation or the factor causing the stress to decrease or eliminate it. The ability to cope with a stressor also depends on the resources available to a person, including health and exercise, positive beliefs, social skills, social support, material resources, control, and relaxation.

Questions

1. Imagine that you forgot your best friend’s birthday. Now, identify the form of coping you would be using in each of the following reactions. (a) “I can’t be expected to remember everyone’s birthday”; (b) “I’d better put Cindy’s birthday on my calendar so this won’t happen again.”

2. What is the payoff of defense mechanisms, and why should people avoid overusing them?

3. People with a(n) _____ locus of control are better able to cope with stress.

4. What are the seven major resources for healthy living and stress management? Which resource is most helpful for you? Least helpful?

Check your answers in Appendix B.

Assessment

KEY TERMS

To assess your understanding of the Key Terms in Chapter 3, write a definition for each (in your own words), and then compare your definitions with those in the text.

Understanding Stress

approach–approach conflict (p. 102) 
approach–avoidance conflict (p. 102) 
avoidance–avoidance conflict (p. 102) 
burnout (p. 101) 
conflict (p. 102) 
distress (p. 99) 
eustress (p. 99) 
frustration (p. 102) 
general adaptation syndrome (GAS) (p. 105) 
hassles (p. 101) 
HPA axis (p. 104) 
psychoneuroimmunology (p. 104) 
stress (p. 98) 

Stress and Illness

hardiness (p. 111) 
posttraumatic stress disorder (PTSD) (p. 111) 
Type A personality (p. 107) 
Type B personality (p. 107) 

Health Psychology in Action

binge drinking (p. 115) 
chronic pain (p. 117) 
health psychology (p. 112) 

Health and Stress Management

defense mechanisms (p. 120) 
emotion-focused forms of coping (p. 120) 
external locus of control (p. 122) 
internal locus of control (p. 122) 
problem-focused forms of coping (p. 120)
Huffman Book Companion Site
http://www.wiley.com/college/huffman
This site is loaded with free Interactive Self-Tests, Internet Exercises, Glossary and Flashcards for key terms, web links, Handbook for Non-Native Speakers, and other activities designed to improve your mastery of the material in this chapter.

Stanford University health information library
http://healthlibrary.stanford.edu/
A general source of scientifically based medical information to help you make informed decisions about your health and health care.

Stress and its management
http://stress.about.com/?once=true&
An excellent site with useful information and tips for handling stress, such as time management, financial problems, and night eating.

Free health risk assessment
http://www.youfirst.com/
Contains a free personal health assessment useful for identifying your greatest risk factors and links to related information.

Focus on stress
http://helping.apa.org/work/index.html
Provides a series of interesting articles about stress.

Burnout test
http://www.prohealth.com/articles/burnout.htm
Offers a short self-test on job burnout.

Interested in a career in health psychology?
http://www.healthpsych.com/
This website was listed as an “APA Website of the Month” due to its practical and informative links and articles related specifically to a career in health psychology.
CHAPTER 3

Visual Summary

Understanding Stress

Sources of Stress
- Life changes: Holmes and Rahe Scale measures stress caused by important life events.
- Chronic stressors: Ongoing, long-term stress related to political world, family, work, etc.
- Hassles: Small, everyday problems that accumulate.
- Occupation/Burnout: Exhaustion resulting from emotionally demanding situations.
- Frustration: Negative emotional state from blocked goals.
- Conflict: Negative emotional state from 2 or more incompatible goals.

There are 3 types of conflict:

- Approach-approach conflict: Forced choice between two or more desirable alternatives
- Avoidance-avoidance conflict: Forced choice between two or more undesirable alternatives
- Approach-avoidance conflict: Forced choice between two or more alternatives with both desirable and undesirable outcomes

Effects of Stress
- Sympathetic nervous system activation increases heart rate, blood pressure, respiration, and muscle tension, and releases stress hormones.
- HPA axis increases the stress hormone cortisol, which decreases immune system functioning.
- Suppressed immune system leaves body vulnerable to disease.

Stress and Illness

Cancer
Caused by hereditary dispositions and environmental factors that lead to changes in body chemistry and the immune system.

Cardiovascular Disorders
Contributing factors:
- Behaviors such as smoking, obesity, lack of exercise
- Stress hormones
- Type A personality
- Lack of hardiness

Posttraumatic Stress Disorder (PTSD) and Gastric Ulcers
Exposure to extraordinary stress may lead to PTSD, and chronic stress may increase vulnerability to the *H. pylori* bacterium, which causes gastric ulcers.
Health and Stress Management

Emotion-Focused Coping
Emotional and cognitive strategies that change how one appraises a stressful situation. Defense mechanisms are unconscious strategies that protect the ego and avoid anxiety by distorting reality.

Problem-Focused Coping
Strategies that deal directly with the stressful situation by applying problem-solving techniques to decrease or eliminate it.

Resources for Healthy Living
- Health and exercise
- Positive beliefs
- Social skills
- Social support
- Material resources
- Control (e.g., internal locus of control)
- Relaxation

Tobacco
- Why do people smoke?
  Peer pressure; imitation of role models; addiction (nicotine increases release of neurotransmitters that increase alertness, memory, and well-being, and decrease anxiety, tension, and pain); learned associations with positive results.
- Prevention? Educate about short- and long-term consequences, make smoking less socially acceptable, and help nonsmokers resist social pressures.
- Stopping? Use cognitive and behavioral techniques to deal with withdrawal; supplement with nicotine replacement therapy (patches, gum, and pills).

Alcohol
Alcohol is one of our most serious health problems. Binge drinking: When a man consumes 5 or more drinks in a row, or a woman consumes 4 or more at least three times in a two-week period.

Chronic Pain
Chronic pain: Pain lasting over 6 months. How to reduce?
- Increase activity and exercise.
- Use behavior modification strategies to reinforce changes.
- Employ biofeedback with electromyograph (EMG) to reduce muscle tension.
- Use relaxation techniques.

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