

## Chapter Eight

# Motivation and Emotion



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# Prologue

## Tour de Lance

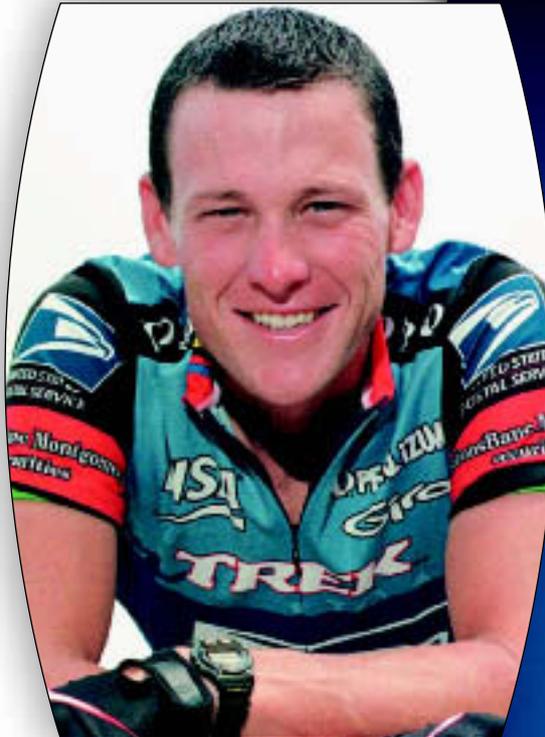
When Lance Armstrong completed the final leg of the Tour de France before a cheering crowd of a half million people, it meant more than winning the world's most prestigious cycling race. The moment represented a triumph of human motivation and spirit—with a dash of miracle.

Only 33 months earlier, no one would have thought that Armstrong would be the winner of the Tour de France. In fact, the odds were against him ever cycling again. At that time, he learned he had testicular cancer that had spread to his lungs and brain, which contained 12 tumors and two lesions. Doctors gave him a 50–50 chance of surviving.

His treatment was grueling. He suffered through surgery and four rounds of intense chemotherapy, separated by a month each. But he never gave up. Pushing himself, he would ride 20 to 50 miles a day following each of the one-week chemotherapy sessions.

Then the unexpected happened: The cancer disappeared, surprising everyone. And Armstrong picked up where he had left off, training hours each day and entering cycling competitions.

Several years later, Armstrong was crossing the finish line at the Tour de France. It was, he said, a miracle. "Fifteen or 20 years ago, I wouldn't be alive, much less riding a bike or winning the Tour de France. I think it's a miracle" (Abt, 1999, p. D4).



*Did the same motivation that drove Lance Armstrong to battle cancer help him win the Tour de France?*

# Looking Ahead

What motivation lay behind Armstrong's will to overcome his cancer? Was it the anticipation of the emotional thrill of winning the Tour de France? The potential rewards that would follow if he succeeded? The excitement of participating? The satisfaction of achieving a long-sought goal?

In this chapter, we consider the issues that can help answer such questions, as we address the topic of motivation and the related area of emotion. **Motivation** concerns the factors that direct and energize the behavior of humans and other organisms.

Psychologists who study motivation seek to discover the particular desired goals—the *motives*—that underlie behavior. Motives are exemplified in behavior as basic as drinking to satisfy thirst or as inconsequential as taking a stroll to get exercise. To the psychologist specializing in the study of motivation, underlying motives are assumed to steer one's choice of activities.

The study of motivation, then, consists of identifying why people seek to do the things they do. Psychologists studying motivation ask questions such as these: Why do people choose particular goals for which to strive? What specific motives direct behavior? What individual differences in motivation account for the variability in people's behavior? How can we motivate people to behave in particular ways, such as eating certain foods, quitting smoking, or engaging in safer sexual practices?

Whereas motivation is concerned with the forces that direct future behavior, emotion pertains to the feelings we experience throughout the course of our lives. The study of emotions focuses on our internal experiences at any given moment. Most of us have felt a variety of emotions: happiness at getting an A on a difficult exam, sadness brought about by the death of a loved one, anger at being treated unfairly. Because emotions not only motivate our behavior but can also reflect our underlying motivation, they play an important role in our lives.

We begin this chapter by focusing on the major conceptions of motivation, discussing how the different motives and needs people experience jointly affect behavior. We consider motives that are biologically based and universal in the animal kingdom, such as hunger and sex, as well as motives that are unique to humans, like the needs for achievement, affiliation, and power.

We then turn to the nature of emotional experience. We consider the roles and functions that emotions play in people's lives, discussing a number of theories meant to explain how people understand which emotion they are experiencing at a given moment. Finally, the chapter ends with a look at how emotions are communicated through nonverbal behavior.

**motivation:** The factors that direct and energize the behavior of humans and other organisms

## Prepare

How does motivation direct and energize behavior?

## Organize

### Explaining Motivation

Instinct Approaches

Drive-Reduction Approaches

Arousal Approaches

Incentive Approaches

Cognitive Approaches

Maslow's Hierarchy

Applying the Different Approaches to Motivation

## Explaining Motivation

In just a moment, John Thompson's life changed. That's all it took for him to slip against a piece of farm equipment, which instantly ripped off both his arms.

In the moments following the accident, Thompson demonstrated incredible bravery. Despite his pain and shock, he ran 400 feet to his house. After managing to open the door, he ran inside and dialed for help with a pen gripped in his teeth. When emergency crews arrived 30 minutes later, he told them where to find ice and plastic bags so that his severed arms could be packed for possible surgical reattachment. Thompson's rescuers came none too soon: By the time surgery could start, he had lost half his blood. (Nelson, 1992)

Amazingly, John Thompson's surgery to reattach his arms was a success, and he recovered from his ordeal. But how can we account for his enormous motivation to stay alive?

Like many questions involving motivation, this one has no single answer; biological, cognitive, and social factors combined to fuel his will to survive. The complexity of motivation has led to the development of a variety of conceptual approaches to its understanding. Although they vary in the degree to which they focus on biological, cognitive, and social factors, all seek to explain the energy that guides people's behavior in particular directions.

## Instinct Approaches: Born to Be Motivated

When psychologists first sought to explain motivation, they turned to **instincts**, inborn patterns of behavior that are biologically determined rather than learned. According to instinct approaches to motivation, people and animals are born with preprogrammed sets of behaviors essential to their survival. These instincts provide the energy that channels behavior in appropriate directions. Hence, sex might be explained as a response to an instinct for reproduction, and exploratory behavior might be viewed as motivated by an instinct to examine one's territory.

There are several difficulties with such a conception, however. For one thing, there is no agreement on what, or even how many, primary instincts exist. One early psychologist, William McDougall (1908), suggested that there are 18 instincts. Other theorists came up with even more—with one sociologist (Bernard, 1924) claiming that there are exactly 5,759 distinct instincts!

Furthermore, explanations based on the concept of instincts do not go very far in explaining *why* a specific pattern of behavior, and not others, has appeared in a given species. In addition, although it is clear that a significant amount of animal behavior is based on instincts, the variety and complexity of human behavior, much of which is learned, cannot be seen as instinctual.

As a result of these shortcomings, newer explanations have replaced conceptions of motivation based on instincts. However, instinct approaches still play a role in certain theories, particularly those based on the evolutionary approach we discussed in Chapter 1. Furthermore, in later chapters we will discuss Freud's work, which suggests that instinctual drives of sex and aggression motivate behavior.

## Drive-Reduction Approaches: Satisfying Our Needs

After rejecting instinct theory, psychologists first proposed simple drive-reduction theories of motivation in its place (Hull, 1943). **Drive-reduction approaches** suggest that when people lack some basic biological requirement such as water, a drive to obtain that requirement (in this case, the thirst drive) is produced.

To understand this approach, we need to begin with the concept of drive. A **drive** is motivational tension, or arousal, that energizes behavior in order to fulfill some need. Many basic kinds of drives, such as hunger, thirst, sleepiness, and sex, are related to biological needs of the body or of the species as a whole. These are called *primary drives*. Primary drives contrast with *secondary drives*, in which no obvious biological need is being fulfilled. The needs involved in secondary drives are created by prior experience and learning. As we will discuss later, some people have strong needs to achieve academically and in their careers. We can say that their achievement need is reflected in a secondary drive that motivates their behavior.

We usually try to satisfy a primary drive by reducing the need underlying it. For example, we become hungry after not eating for a few hours and might raid the refrigerator, especially if our next scheduled meal is not imminent. If the weather turns cold, we put on extra clothing or raise the setting on the thermostat to keep warm. If our body needs liquids in order to function properly, we experience thirst and seek out water.

## Homeostasis

The reason for such behavior is homeostasis, a basic motivational phenomenon underlying primary drives. **Homeostasis** is the body's tendency to maintain a steady internal state. Homeostasis operates through feedback loops that bring deviations in body functioning back to a more optimal state, similar to the way a thermostat and furnace work in a home heating system to maintain a steady temperature. Receptor cells throughout the body constantly monitor factors such as temperature and nutrient levels, and when deviations from the ideal state occur, the body adjusts in an effort to return to an optimal state. Many of our fundamental needs, including the need for food, water, stable body temperature, and sleep, operate via homeostasis.

**instincts:** Inborn patterns of behavior that are biologically determined rather than learned

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## **drive-reduction approaches to**

**motivation:** A theory suggesting that when people lack some basic biological requirement such as water, a drive to obtain that requirement (in this case, the thirst drive) is produced

**drive:** Motivational tension, or arousal, that energizes behavior in order to fulfill some need

**homeostasis:** The body's tendency to maintain a steady internal state

Although drive-reduction theories provide a good explanation of how primary drives motivate behavior, they are inadequate when it comes to explaining behaviors in which the goal is not to reduce a drive, but rather to maintain or even to increase a particular level of excitement or arousal. For instance, some behaviors seem to be motivated by nothing more than curiosity, such as rushing to check e-mail messages. Similarly, many people seek thrills through such activities as riding a roller coaster and steering a raft down the rapids of a river. Such behaviors certainly don't suggest that people seek to reduce drives, as drive-reduction approaches would indicate (Mineka & Hendersen, 1985; Loewenstein, 1994).

Both curiosity and thrill-seeking behavior, then, shed doubt on drive-reduction approaches as a complete explanation for motivation. In both cases, rather than seeking to reduce an underlying drive, people and animals appear to be motivated to *increase* their overall level of stimulation and activity. To explain this phenomenon, psychologists have devised an alternative: arousal approaches to motivation.

### Arousal Approaches: Beyond Drive Reduction

Arousal approaches seek to explain behavior in which the goal is to maintain or increase excitement (Berlyne, 1967; Brehm & Self, 1989). According to **arousal approaches to motivation**, each of us tries to maintain a certain level of stimulation and activity. As with the drive-reduction model, if our stimulation and activity levels become too high, we try to reduce them. But in contrast to the drive-reduction model, the arousal model also suggests that if the levels of stimulation and activity are too low, we will try to *increase* them by seeking stimulation.

People vary widely in the optimal level of arousal that they seek out, with some people seeking out especially high levels of arousal. For example, psychologists have hypothesized that individuals such as comic John Belushi, daredevil Evel Knievel, and bank robbers Bonnie and Clyde exhibited a particularly high need for arousal. You can get a sense of your own preferred level of stimulation by completing the questionnaire in Table 8-1 (Zuckerman, 1991, 1994; Farley, 1986).

### Incentive Approaches: Motivation's Pull

When a luscious dessert is brought to the table after a filling meal, its appeal has little or nothing to do with internal drives or with the maintenance of arousal. Rather, if we choose to eat the dessert, such behavior is motivated by the external stimulus of the dessert itself, which acts as an anticipated reward. This reward, in motivational terms, is an *incentive*.

**Incentive approaches to motivation** suggest that motivation stems from the desire to obtain valued external goals, or incentives. In this view, the desirable properties of external stimuli—be they grades, money, affection, food, or sex—account for a person's motivation.

Although the theory explains why we might succumb to an incentive (like a mouth-watering dessert) even though internal cues (like hunger) are lacking, it does not provide a complete explanation of motivation, since organisms seek to fulfill needs even when incentives are not apparent. Consequently, many psychologists believe that the internal drives proposed by drive-reduction theory work in tandem with the external incentives of incentive theory to “push” and “pull” behavior, respectively. Thus, at the same time as we seek to satisfy our underlying hunger needs (the push of drive-reduction theory), we are drawn to food that appears particularly appetizing (the pull of incentive theory). Rather than contradicting each other, then, drives and incentives can work together in motivating behavior (Petri, 1996).

### Cognitive Approaches: The Thoughts Behind Motivation

**Cognitive approaches to motivation** suggest that motivation is a product of people's thoughts, expectations, and goals—their cognitions. For instance, the degree to which people are motivated to study for a test is based on their expectation of how well studying will pay off in terms of a good grade (Wigfield & Eccles, 2000).

**arousal approaches to motivation:** The belief that we try to maintain a certain level of stimulation and activity, increasing or reducing them as necessary

**incentive approaches to motivation:** The theory suggesting that motivation stems from the desire to obtain valued external goals, or incentives

**cognitive approaches to motivation:** The theory suggesting that motivation is a product of people's thoughts and expectations—their cognitions

### Table 8-1 Do You Seek Out Sensation?

How much stimulation do you crave in your everyday life? You will have an idea after you complete the following questionnaire, which lists some items from a scale designed to assess your sensation-seeking tendencies. Circle either *A* or *B* in each pair of statements.

1. *A* I would like a job that requires a lot of travelling.  
*B* I would prefer a job in one location.
2. *A* I am invigorated by a brisk, cold day.  
*B* I can't wait to get indoors on a cold day.
3. *A* I get bored seeing the same old faces.  
*B* I like the comfortable familiarity of everyday friends.
4. *A* I would prefer living in an ideal society in which everyone was safe, secure, and happy.  
*B* I would have preferred living in the unsettled days of our history.
5. *A* I sometimes like to do things that are a little frightening.  
*B* A sensible person avoids activities that are dangerous.
6. *A* I would not like to be hypnotized.  
*B* I would like to have the experience of being hypnotized.
7. *A* The most important goal of life is to live it to the fullest and to experience as much as possible.  
*B* The most important goal of life is to find peace and happiness.
8. *A* I would like to try parachute jumping.  
*B* I would never want to try jumping out of a plane, with or without a parachute.
9. *A* I enter cold water gradually, giving myself time to get used to it.  
*B* I like to dive or jump right into the ocean or a cold pool.
10. *A* When I go on a vacation, I prefer the comfort of a good room and bed.  
*B* When I go on a vacation, I prefer the change of camping out.
11. *A* I prefer people who are emotionally expressive, even if they are a bit unstable.  
*B* I prefer people who are calm and even-tempered.
12. *A* A good painting should shock or jolt the senses.  
*B* A good painting should give one a feeling of peace and security.
13. *A* People who ride motorcycles must have some kind of unconscious need to hurt themselves.  
*B* I would like to drive or ride a motorcycle.

**Scoring** Give yourself one point for each of the following responses: 1A, 2A, 3A, 4B, 5A, 6B, 7A, 8A, 9B, 10B, 11A, 12A, 13B. Find your total score by adding up the number of points and then use the following scoring key:

0–3 very low sensation seeking

4–5 low

6–9 average

10–11 high

12–13 very high

Keep in mind, of course, that this short questionnaire, for which the scoring is based on the results of college students who have taken it, provides only a rough estimate of your sensation-seeking tendencies. Moreover, as people get older, their sensation-seeking scores tend to decrease. Still, the questionnaire will at least give you an indication of how your sensation-seeking tendencies compare with those of others.

(Source: Zuckerman, 1978, 1994)

Cognitive theories of motivation draw a key distinction between intrinsic and extrinsic motivation. *Intrinsic motivation* causes us to participate in an activity for our own enjoyment, rather than for any concrete, tangible reward that it will bring us. In contrast, *extrinsic motivation* causes us to do something for money, a grade, or some other concrete, tangible reward. For example, when a physician works long hours because she loves medicine, intrinsic motivation is prompting her; if she works hard in order to make a lot of money, extrinsic motivation underlies her efforts (Rawsthorne & Elliot, 1999; Ryan & Deci, 2000).

We are more apt to persevere, work harder, and produce work of higher quality when motivation for a task is intrinsic rather than extrinsic. In fact, providing rewards for desirable behavior might cause intrinsic motivation to decline and extrinsic motivation to increase, although this view is controversial (Deci, Koestner, & Ryan, 1999; Eisenberger, Pierce, & Cameron, 1999; Sansone & Harackiewicz, 2000).

In a dramatic demonstration of the differing effects of rewards on motivation, researchers promised a group of nursery school students a reward for drawing with magic markers (an activity for which they had previously shown high motivation). The reward reduced their enthusiasm for the task, for they later showed considerably less zeal for drawing (Lepper & Greene, 1978). It was as if the promise of reward undermined their intrinsic interest in drawing, turning what had been play into work.

Such research suggests the importance of promoting intrinsic motivation and indicates that providing extrinsic rewards (or even just calling attention to them) can undermine the effort and quality of performance. Parents might think twice, then, about offering their children monetary rewards for getting good report cards. Instead, research on intrinsic motivation suggests that better results would come from reminding them of the pleasures that can come from learning and mastering a body of knowledge (Deci, Koestner, & Ryan, 1999; Lepper, Henderlong, & Gingras, 1999).

### Maslow's Hierarchy: Ordering Motivational Needs

What do Eleanor Roosevelt, Abraham Lincoln, and Albert Einstein have in common? The common thread, according to a model of motivation devised by psychologist Abraham Maslow, is that each of them fulfilled the highest levels of motivational needs underlying human behavior.

Maslow's model considers different motivational needs to be ordered in a hierarchy, and it suggests that before more sophisticated, higher-order needs can be met, certain primary needs must be satisfied (Maslow, 1970, 1987). The model can be conceptualized as a pyramid (see Figure 8-1) in which the more basic needs are at the bottom and the higher-level needs are at the top. For a particular need to be activated and thereby guide a person's behavior, the more basic needs in the hierarchy must be met first.

The most basic needs are primary drives: needs for water, food, sleep, sex, and the like. To move up the hierarchy, a person must have these basic physiological needs met. Safety needs come next in the hierarchy; Maslow suggests that people need a safe, secure environment in order to function effectively. Physiological and safety needs compose the lower-order needs.

Only when the basic lower-order needs are met can a person consider fulfilling higher-order needs, such as the need for love and a sense of belonging, esteem, and self-actualization. Love and belongingness needs include the need to obtain and give affection and to be a contributing member of some group or society. After these needs are fulfilled, the person strives for esteem. In Maslow's thinking, esteem relates to the need to develop a sense of self-worth by knowing that others are aware of one's competence and value.

Once these four sets of needs are fulfilled—no easy task—the person is able to strive for the highest-level need, self-actualization. **Self-actualization** is a state of fulfillment in which people realize their highest potential in their own unique way. Although at first Maslow suggested that self-actualization occurred in only a few, famous individuals, he later expanded the concept to encompass everyday people. For example, a parent with excellent nurturing skills who raises a family, a teacher who year after year creates an environment that maximizes students' opportunities for success, and an artist who realizes her creative potential might all be self-actualized. The important thing is that people feel at ease with themselves and satisfied that they are using their talents to the fullest. In a sense, achieving self-actualization produces a decline in the striving and yearning for greater fulfillment that marks most people's lives and instead provides a sense of satisfaction with the current state of affairs (Jones & Crandall, 1991).

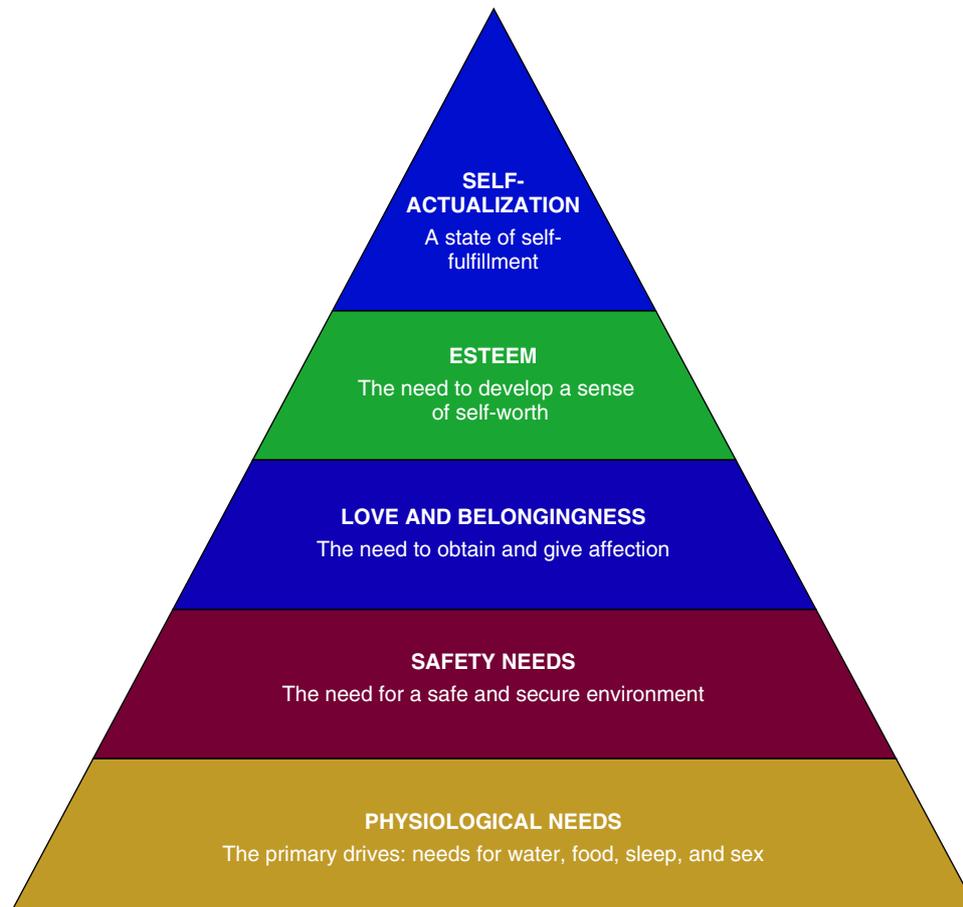
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**self-actualization:** A state of self-fulfillment in which people realize their highest potential in their own unique way



Although research has been unable to validate the specific ordering of Maslow's stages, and it is difficult to measure self-actualization objectively, Maslow's model is important for two reasons: It highlights the complexity of human needs, and it emphasizes that until more basic biological needs are met, people will be relatively unconcerned with higher-order needs. For example, if people are hungry, their first interest will be in obtaining food; they will not be concerned with such needs as love and self-esteem (Weiss, 1991; Neher, 1991).

### Applying the Different Approaches to Motivation

The various theories of motivation provide us with several different perspectives on motivation. Which provides the fullest account of motivation? The answer is that many of the approaches are complementary, rather than contradictory. In fact, it often is useful to employ more than one approach in order to understand motivation in a particular instance.

Consider, for example, John Thompson's brave determination after his farm accident (described earlier in the chapter). From the perspective of instinct theory, John could be seen to have an overwhelming instinct to preserve his life at all costs. From the drive-reduction perspective, he was motivated to get medical help in order to end the pain that followed his accident. And from a cognitive perspective, his expectation that surgeons could reattach his arms led him to take action that would maximize the chances of recovery.

In short, applying multiple approaches to motivation to a given situation provides a broader understanding than we might obtain by employing only a single approach. We'll see this fact again as we proceed to consider specific motives—such as the needs for food, achievement, affiliation, and power—where we will draw upon several of the theories to provide us with the fullest account of what motivates our behavior.

**Figure 8-1** Maslow's hierarchy shows how our motivation progresses up the pyramid from a basis in the broadest, most fundamental biological needs to higher-order ones (After Maslow, 1970). Do you agree that lower-order needs must be satisfied before higher-order needs? Do hermits and monks who attempt to achieve spiritual needs while denying basic physical needs contradict Maslow's hierarchy?

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## Evaluate

- \_\_\_\_\_ are forces that guide a person's behavior in a certain direction.
- Biologically determined, inborn patterns of behavior are known as \_\_\_\_\_.
- Your psychology professor tells you, "Explaining behavior is easy! When we lack something we are motivated to get it." Which approach to motivation does your professor subscribe to?
- By drinking water after running a marathon, a runner tries to keep his or her body at an optimal level of functioning. This process is called \_\_\_\_\_.
- I help an elderly person across the street because doing a good deed makes me feel good. What type of motivation is at work here? What type of motivation would be at work if I were to help an elderly man across the street because he paid me \$20?
- According to Maslow, a person with no job, no home, and no friends can become self-actualized. True or false?

### Answers to Evaluate Questions

1. Motives 2. instincts 3. Drive reduction 4. homeostasis 5. Intrinsic; Extrinsic; 6. False; lower-order needs must be fulfilled before self-actualization can occur.

## Rethink

- Which approaches to motivation are most commonly used in the workplace? How might each approach be used to design employment policies that can sustain or increase motivation?
- A writer who works all day composing copy for an advertising firm has a hard time keeping her mind on her work and continually watches the clock. After work she turns to a collection of stories she is creating and writes long into the night, completely forgetful of the clock. What ideas from your reading on motivation help to explain this phenomenon?

## Prepare

- What biological and social factors underlie hunger?
- What are the varieties of sexual behavior?
- How are needs relating to achievement, affiliation, and power motivation exhibited?

## Organize

### Human Needs and Motivation

- The Motivation Behind Hunger and Eating
- Sexual Motivation
- The Need for Achievement
- The Need for Affiliation
- The Need for Power

## Human Needs and Motivation: Eat, Drink, and Be Daring

As a sophomore at the University of California, Santa Cruz, Lisa Arndt followed a menu of her own making: For breakfast she ate cereal or fruit, with 10 diet pills and 50 chocolate-flavored laxatives. Lunch was a salad or sandwich; dinner: chicken and rice. But it was the feast that followed that Arndt relished most. Almost every night at about 9 P.M., she would retreat to her room and eat an entire small pizza and a whole batch of cookies. Then she'd wait for the day's laxatives to take effect. "It was extremely painful," says Arndt of those days in 1992. "But I was that desperate to make up for my bingeing. I was terrified of fat the way other people are afraid of lions or guns." (Hubbard, O'Neill, & Cheakalos, 1999, p. 59)

Lisa was one of the 5 to 10 million females (and 1 million males) who suffer from an eating disorder. These disorders, which usually appear during adolescence, can bring about extraordinary declines in weight and other physical deterioration. They are extremely dangerous, sometimes resulting in death.

Why are Lisa and others like her subject to such disordered eating, revolving around the motivation to avoid weight gain at all costs? And why do so many other people engage in overeating, leading to obesity?

To answer these questions, we must consider some of the specific kinds of needs that underlie behavior. In this section, we will examine several of the most important human needs. We'll begin with hunger and sex, the primary drives that have received the most attention from researchers, and then turn to secondary drives—those uniquely human strivings, based on learned needs and past experience, that help explain why people strive to achieve, to affiliate with others, and to seek power over others.

### The Motivation Behind Hunger and Eating

More than half the people in the United States are overweight, and more than a fifth are so heavy that they have **obesity**, body weight that is more than 20 percent above the average weight for a person of their height. And the rest of the world is not far behind: the prevalence

**obesity:** The state of being more than 20 percent above the average weight for a person of one's height

of obesity around the globe is so great that the World Health Organization has said it has reached epidemic proportions (National Center for Health Statistics, 1994; Taubes, 1998).

Perceptions of ideal weight and body shape vary significantly across different cultures and, within Western cultures, from one time period to another. For instance, many contemporary Western cultures stress the importance of slimness in women—a view that is actually relatively recent. In nineteenth-century Hawaii, women who were considered the most attractive were those who were the most overweight.

Furthermore, for most of the twentieth century—except for a period in the 1920s and the most recent decades—the ideal female figure was relatively full. Even today, weight standards differ among different cultural groups. For instance, African Americans generally judge heavier women more positively than whites do (Silverstein et al., 1986; Hebl & Heatherton, 1998; Rosenthal, 1999).

Regardless of societal standards relating to appearance and weight, there is no question that being overweight is a major health risk. However, controlling weight is complicated, because eating behavior involves a variety of mechanisms. In our discussion of what motivates people to eat, we'll start with the biological aspects of eating.

### *Biological Factors in the Regulation of Hunger*

In contrast to human beings, nonhuman species are unlikely to become obese. Internal mechanisms regulate not only the quantity of their food intake, but also the kind of food they desire. For example, rats that have been deprived of particular foods seek out alternatives that contain the specific nutrients their diet is lacking, and animals given the choice of a wide variety of foods choose a well-balanced diet (Rozin, 1977; Bouchard & Bray, 1996; Woods et al., 2000).

The mechanisms by which organisms know whether they require food or should stop eating are complex. It's not just a matter of an empty stomach causing hunger pangs and a full one alleviating hunger. (Even people whose stomachs have been removed still experience the sensation of hunger.) One important factor is changes in the chemical composition of the blood. In particular, changes in levels of glucose, a kind of sugar, regulate feelings of hunger (Inglefinger, 1944; Rodin, 1985; Campfield et al., 1996).

Glucose levels are monitored by the brain's *hypothalamus*, a tiny brain structure we first discussed in Chapter 2. Increasing evidence suggests that the hypothalamus is the organ primarily responsible for monitoring food intake. Injury to the hypothalamus has radical consequences for eating behavior, depending upon the site of the injury. For example, rats whose *lateral hypothalamus* is damaged might literally starve to death. They refuse food when offered and, unless they are force-fed, eventually die. Rats with an injury to the *ventromedial hypothalamus* display the opposite problem: extreme overeating. Rats with this injury can increase in weight by as much as 400 percent. Similar phenomena occur in humans who have tumors of the hypothalamus (Rolls, 1994; Woods et al., 1998).

Although the hypothalamus clearly plays an important role in regulating food intake, exactly how it operates is still unclear. One hypothesis is that injury to the hypothalamus affects the weight set point by which food intake is regulated. According to this hypothesis, the **weight set point** is the particular level of weight that the body strives to maintain. Acting as a kind of internal weight thermostat, the hypothalamus calls for either greater or less food intake (Nisbett, 1972; Capaldi, 1996; Woods et al., 2000).

In most cases, the hypothalamus does a good job. People who are not monitoring their weight show only minor weight fluctuations, in spite of substantial day-to-day variations in how much they eat and exercise. However, injury to the hypothalamus drastically raises or lowers the weight set point, and the organism then strives to meet its internal goal by increasing or decreasing its food consumption.

The weight set point is determined at least partly by genetic factors. People seem destined through heredity to have a particular **metabolism**, the rate at which food is converted to energy and expended by the body. People with a high metabolic rate are able to eat virtually as much as they want without gaining weight, whereas people with a low metabolic rate might eat literally half as much and yet gain weight readily (Woods et al., 1998).

**weight set point:** The particular level of weight that the body strives to maintain

**metabolism:** The rate at which food is converted to energy and expended by the body

Cultural influences on eating habits vary tremendously. Grasshoppers, red agave worms, and excamola may be considered a delicacy in Mexico, but most people in the United States would feel differently. Have you ever overcome your culture-based dislike of a food after exposure to another culture's eating habits?



### *Social Factors in Eating*

You've just finished a full meal and are completely stuffed. Suddenly, your host announces with great fanfare that he will be serving his "house specialty" dessert, bananas flambé, and that he has spent the better part of the afternoon preparing it. Even though you are full and don't even like bananas, you accept a serving of his dessert and eat it all.

Clearly, internal biological factors do not provide the full explanation for our eating behavior. External social factors, based on societal rules and conventions and on what we have learned about appropriate eating behavior, also play an important role. Take, for example, the simple fact that people customarily eat breakfast, lunch, and dinner at approximately the same times every day. Because we are accustomed to eating on schedule every day, we tend to feel hungry as the usual hour approaches, sometimes quite independently of what our internal cues are telling us.

Similarly, we tend to put roughly the same amount of food on our plates every day, even though the amount of exercise we may have had, and consequently our need for energy replenishment, varies from day to day. We also tend to prefer particular foods over others. Rats and dogs might be a delicacy in certain Asian cultures, but few people in Western cultures find them appealing, despite their potentially high nutritional value. In sum, cultural influences and our own individual habits play an important role in determining when, what, and how much we eat (Boaks, Popplewell, & Burton, 1987; Rozin, 1990; Booth, 1994; Capaldi, 1996).

Other social factors are related to our eating behavior as well. Some of us head toward the refrigerator after a difficult day, seeking solace in a pint of Heath Bar Crunch ice cream. Why? Perhaps when we were children, our parents gave us food when we were upset. Eventually, we might have learned, through the basic mechanisms of classical and operant conditioning, to associate food with comfort and consolation. Similarly, we might learn that eating, by focusing our attention on immediate pleasures, provides an escape from unpleasant thoughts. As a consequence, we might eat when we experience distress (Heatherton, Herman, & Polivy, 1992; McManus & Waller, 1995; Hill & Peters, 1998).

### *The Roots of Obesity*

Given that eating behavior is influenced by both biological and social factors, determining the causes of obesity has proved to be a challenging task. Researchers have followed several paths.



*"Gee, I had no idea you were married to a supermodel."*

Some psychologists suggest that obesity is produced by oversensitivity to external eating cues based on social factors, coupled with insensitivity to internal hunger cues. Others argue that overweight people have higher set points than people of normal weight. Because their set points are unusually high, their attempts to lose weight by eating less can make them especially sensitive to external, food-related cues and therefore more apt to eat, perpetuating their obesity (Nisbett, 1968; Schachter, 1971; Hill & Peters, 1998).

But why would some people's weight set points be higher than others? One possible explanation relates to the size and number of fat cells in the body, which increase as a function of weight increase. Because the set-point level appears to reflect the number of fat cells a person has, any increase in weight—which produces a rise in fat cells—might raise the set point. Furthermore, any loss of weight after the age of 2 does not decrease the number of fat cells in the body, although it can make them shrink in size. In short, according to the weight-set-point hypothesis, having too many fat cells can make the set point become “stuck” at a higher level than is desirable. Under such circumstances, losing weight is difficult, because one is constantly at odds with one's own internal set point when dieting (Leibel, Rosenbaum & Hirsch, 1995; Freedman, 1995).

Not everyone agrees with the set point explanation for obesity. Pointing to the rapid rise in obesity over the last several decades in the United States, some researchers suggest that there is no fixed set-point weight that the body attempts to maintain. Instead, they suggest, there is a *settling point*, determined by a combination of our genetic heritage and the nature of the environment in which we live. If high-fat foods are prevalent in our environment, and we are genetically predisposed to obesity, then we settle into an equilibrium that maintains relatively high weight. On the other hand, if our environment is nutritionally healthier, genetic predispositions to obesity will not be triggered, and we will settle into an equilibrium in which our weight is lower (Gibbs, 1996; Comuzzie & Allison, 1998).

### Eating Disorders

One of the most devastating weight-related disorders is anorexia nervosa. **Anorexia nervosa** is a severe eating disorder in which people refuse to eat, while denying that their behavior and appearance—which can become skeletonlike—are unusual. Some 10 percent of anorexics literally starve themselves to death.

Anorexia nervosa afflicts mainly females between the ages of 12 and 40, although both men and women of any age can develop it. People with the disorder typically come from stable homes, and they are often successful, attractive, and relatively affluent. The disorder often occurs following serious dieting, which somehow gets out of control. Life begins to revolve around food: Although people with the disorder eat little themselves, they might cook for others, go shopping for food frequently, or collect cookbooks (Lask & Bryant-Waugh, 1999; Rosen, 1999).

A related problem, **bulimia**, from which Lisa Arndt (described earlier) suffered, is a disorder in which people binge on large quantities of food. They might consume an entire gallon of ice cream and a whole pie in a single sitting. Following such a binge, sufferers feel guilt and depression and often induce vomiting or take laxatives to rid themselves of the food—behavior known as purging. Constant bingeing-and-purging cycles and the use of drugs to induce vomiting or diarrhea can lead to heart failure. Often, though, the weight of a person suffering from bulimia remains normal.

Eating disorders are a growing problem: It has been estimated that 1 to 4 percent of high school and college women suffer from either anorexia nervosa or bulimia. As many as 10 percent of women suffer from bulimia at some point in their lives (“Eating Disorders,” 1997).

What are the causes of anorexia nervosa and bulimia? Some researchers suspect there is a biological cause such as a chemical imbalance in the hypothalamus or pituitary gland, perhaps brought on by genetic factors. Others believe that these disorders are rooted in societal preference for slenderness and the parallel notion that being obese

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**anorexia nervosa:** A severe eating disorder in which people may refuse to eat, while denying that their behavior and appearance—which can become skeletonlike—are unusual

**bulimia:** A disorder in which a person binges on incredibly large quantities of food, then purges by vomiting or by using laxatives



Despite looking skeleton-like to others, people with the weight disorder anorexia nervosa see themselves as overweight.

is undesirable. They maintain that people with anorexia nervosa and bulimia become preoccupied with their weight and take to heart the societal view that one can never be too thin. Consistent with such an explanation, as countries become more developed and westernized, and dieting becomes more popular, eating disorders increase. Finally, some psychologists suggest that the disorders occur as a consequence of overdemanding parents or other family problems (Schneider, 1996; Horesh et al., 1996; Walsh & Devlin, 1998).

The complete explanation for anorexia nervosa or bulimia remains elusive. The disorders probably stem from both biological and social causes, and successful treatment is likely to encompass several strategies, including therapy and dietary changes (Walsh & Devlin, 1998; Gilbert, 2000; Miller & Mizes, 2000). If you or a family member or a friend needs advice or help with an eating problem, contact the American Anorexia Bulimia Association at <http://www.aabainc.org> or at 165 W. 46th Street, Suite 1108, New York, NY 10036; 212-575-6200.

## BECOMING AN INFORMED CONSUMER OF PSYCHOLOGY

### *Dieting and Losing Weight Successfully*

For most of us, dieting is a losing battle: Most people who diet eventually regain the weight they have lost, so they try again and get caught in a seemingly endless cycle of weight loss and gain (Lowe, 1993). Given what we know about the causes of obesity, this is not entirely surprising, because so many factors affect eating behavior and weight.

According to diet experts, there are several things to keep in mind when trying to lose weight (Gurin, 1989; “How to Lose Weight and Keep It Off,” 1990; “Dieting and Weight Loss,” 1993):

- *There is no easy route to weight control.* You will have to make permanent changes in your life in order to lose weight without gaining it back. The most obvious strategy, cutting down on the amount of food you eat, is just the first step toward a lifetime commitment to changing your eating habits. You must consider the nutrient content, as well as the overall quantity of food that you consume.
- *Set reasonable goals.* Know how much weight you want to lose before you start to diet. Don't try to lose too much weight too quickly or you may doom yourself to failure.
- *Exercise.* When you exercise, you burn fat stored in your body, which is used as fuel for muscles. As this fat is used, you will probably lose weight. Almost any activity helps burn calories. The weight-set-point hypothesis suggests another advantage to moderate exercise: It might lower your set point. Although there is some dispute about just how much exercise is sufficient to lower weight, most experts recommend at least thirty consecutive minutes of moderate exercise at least three times a week. (If nothing else, the release of endorphins following exercise—discussed in Chapter 2—will make you feel better even if you don't lose weight.)
- *Decrease the influence of external, social stimuli on your eating behavior.* For instance, serve yourself smaller portions of food, and leave the table before you see what is being served for dessert. Don't even buy snack foods such as nachos or potato chips; if they're not readily available in the kitchen cupboard, you're not apt to eat them. Wrap foods in the refrigerator in aluminum foil so you cannot see the contents to avoid being tempted every time you open the refrigerator.
- *Avoid fad diets.* No matter how popular they are at a given time, extreme diets, including liquid diets, usually don't work in the long run and can be dangerous to your health.
- *Maintain good eating habits.* When you have reached your desired weight, maintain the habits built up while dieting to avoid gaining back the weight you have lost.
- *Don't feel guilty!* Above all, don't feel guilty if you don't succeed in losing weight. Given the evidence that obesity may be genetically determined, the inability to lose

weight should not be seen as a moral failing. Indeed, you are in good company, for some 90 to 95 percent of dieters put back the weight they have lost (Bennett & Gurin, 1982; Fritsch, 1999).

In light of how difficult it can be to lose weight, psychologists Janet Polivy and C. Peter Herman suggest—paradoxically—that the best approach might be to avoid dieting in the first place. They recommend that people eat what they really want to eat, even if this means indulging in candy or ice cream every so often. In turn, this freedom to eat anything can reduce binge eating, which is more likely to occur when people feel that bingeing is their only opportunity to eat what they really wish to eat. Although such an approach might not produce major weight loss, even a relatively small weight loss is better than none: Just a 10- to 15-pound drop in body weight can decrease the major health risks associated with obesity (Polivy & Herman, 1991; Foreyt & Goodrick, 1994; Bruce & Wilfley, 1996).

### Sexual Motivation: The Facts of Life

Anyone who has seen two dogs mating knows that sexual behavior has a biological basis. Dogs' sexual behavior appears to occur spontaneously, without much prompting from others. A number of genetically controlled factors influence the sexual behavior of non-human animals. For instance, animal behavior is affected by the presence of certain hormones in the blood, and many female animals are receptive to sexual advances only at certain relatively limited periods of time during the year.

Human sexual behavior, by comparison, is more complicated, although the underlying biology is not all that different from that of related species. In males, for example, the *testes* begin to secrete **androgens**, male sex hormones, at puberty. Not only do androgens produce male secondary sex characteristics, such as the growth of body hair and a deepening of the voice, they also increase the sex drive. Because the level of androgen production by the testes is fairly constant, males are capable of (and interested in) sexual activities without any regard to biological cycles. Given the proper stimuli leading to arousal, male sexual behavior can occur (Goldstein, 2000).

Females show a different pattern. When they reach maturity at puberty, the two *ovaries* begin to produce **estrogen** and **progesterone**, female sex hormones. However, these hormones are not produced consistently; instead, their production follows a cyclical pattern. The greatest output occurs during **ovulation**, when an egg is released from the ovaries, making the chances of fertilization by a sperm cell highest. In nonhumans, the period around ovulation is the only time the female is receptive to sex, but humans are different: females can be receptive to sex throughout their cycles, depending on the external stimuli they encounter in their environment (Hoon, Bruce, & Kinchloe, 1982).

Though biological factors “prime” people for sex, it takes more than hormones to motivate and produce sexual behavior (McClintock & Herdt, 1996). In animals the presence of a partner who provides arousing stimuli leads to sexual activity. Humans are considerably more versatile; not only other people, but nearly any object, sight, smell, sound, or other stimulus can lead to sexual excitement. Because of prior associations, then, people might be turned on sexually by the smell of Chanel No. 5 or Brut or the sound of a favorite song hummed softly in their ear. The reaction to a specific, potentially arousing stimulus, as we shall see, is highly individual—what turns on one person could do just the opposite for another.

Sexual fantasies also play an important role in producing sexual arousal. Not only do people have fantasies of a sexual nature during their everyday activities, but about 60 percent of all people have fantasies during sexual intercourse. Interestingly, such fantasies often include having sex with someone other than one's partner of the moment.

Men's and women's fantasies differ little from each other in terms of content or quantity (Jones & Barlow, 1990). Thoughts of being sexually irresistible and of engaging in oral-genital sex are most common for both sexes (Sue, 1979; McCauley & Swann, 1980). It is important to note that having a particular fantasy does not mean that one has a desire to fulfill

**androgens:** Male sex hormones secreted by the testes

**estrogen:** Female sex hormone

**progesterone:** Female sex hormone

**ovulation:** The point at which an egg is released from the ovaries



**Sexual fantasies**

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it in the real world. Thus, we should not assume from data of female fantasies that women want to be sexually overpowered, nor should we assume from data of male fantasies that every male desires to force sex on a submissive victim.

### *Masturbation: Solitary Sex*

**masturbation:** Sexual self-stimulation

If you were to listen to physicians fifty years ago, you would have been told that **masturbation**—sexual self-stimulation, often by using the hand to rub the genitals—would lead to a wide variety of physical and mental disorders, ranging from hairy palms to insanity. Had they been correct, however, most of us would be wearing gloves to hide the sight of our hair-covered palms—for masturbation is one of the most frequently practiced sexual activities. Some 94 percent of all males and 63 percent of all females have masturbated at least once, and among college students the frequency ranges from “never” to “several times a day” (Hunt, 1974; Houston, 1981; Michael et al., 1994).

Men and women typically begin to masturbate for the first time at different ages. Furthermore, men masturbate considerably more often than women, although there are differences in frequency according to age. For instance, male masturbation is most frequent in the early teens and then declines, whereas females both begin and reach a maximum frequency later (Oliver & Hyde, 1993).

Although masturbation is often thought of as an activity to engage in only if no other sexual outlets are available, this is not the reality. Close to three-quarters of married men (age 20 to 40) report masturbating an average of twenty-four times a year, and 68 percent of married women in the same age group masturbate an average of ten times a year (Hunt, 1974; Michael et al., 1994).

Despite the high incidence of masturbation, attitudes toward it still reflect some of the negative views of yesteryear. For instance, one survey found that around 10 percent of the people who masturbated experienced feelings of guilt, and 5 percent of the males and 1 percent of the females considered their behavior perverted (Arafat & Cotton, 1974). Despite these negative attitudes, however, most experts on sex view masturbation not only as a healthy, legitimate—and harmless—sexual activity, but also as a means of learning about one’s own sexuality.

### *Heterosexuality*

**heterosexuals:** People who are sexually attracted to persons of the opposite sex

People often believe that the first time they have sexual intercourse they have achieved one of life’s major milestones. However, **heterosexuality**—sexual attraction and behavior directed to the opposite sex—consists of far more than intercourse. Kissing, petting, caressing, massaging, and other forms of sex play are all components of heterosexual behavior. Still, the focus of sex researchers has been on the act of intercourse, particularly in terms of its first occurrence and its frequency.

**Premarital Sex** Until fairly recently, premarital sexual intercourse was considered one of the major taboos of our society, at least for women. Traditionally, women have been warned by society that “nice girls don’t do it”; men have been told that although premarital sex is OK for them, they should make sure they marry virgins. This view, that premarital sex is permissible for males but not for females, is called the **double standard**.

**double standard:** The view that premarital sex is permissible for males but not for females

Although as recently as the 1960s the majority of adult Americans believed that premarital sex was always wrong, since that time there has been a dramatic change in public opinion. For example, the percentage of middle-aged people who say that sex before marriage is “not wrong at all” has increased considerably over the past thirty years.

Changes in attitudes toward premarital sex were matched by changes in actual rates of premarital sexual activity during the same period. For instance, the most recent figures show that just over one-half of women between the ages of 15 and 19 have had premarital sexual intercourse. These figures are close to double the number of women in the same age range who in 1970 reported having had intercourse. Clearly, the trend over the last several decades has been toward more women engaging in premarital sexual activity (Singh & Carroch, 1999).

Males, too, are having more premarital sexual intercourse, although the increase has not been as dramatic as for females—probably because the rates for males were higher to begin with. For instance, the first surveys of premarital intercourse carried out in the 1940s showed an incidence of 84 percent across males of all ages; recent figures put the figure at closer to 95 percent. Moreover, the average age of males' first sexual experience has also been declining steadily. Almost half of all males have had sexual intercourse by the age of 18; and 88 percent have had intercourse by the time they reach 20 (Arena, 1984; Centers for Disease Control, 1992; Singh et al., 2000).

**Marital Sex** To judge by the number of articles about sex in marriage, one would think that sexual behavior is the number one standard by which marital bliss is measured. Married couples are often concerned that they are having too little sex, too much sex, or the wrong kind of sex (Sprecher & McKinney, 1993).

Although many different dimensions have been used to consider sex in marriage, one is certainly the frequency of sexual intercourse. What is typical? As with most other types of sexual activity, there is no easy answer because there are such wide variations in patterns between individuals. We do know that 43 percent of married couples have sexual intercourse a few times a month, and 36 percent have it two or three times a week. With increasing age and length of marriage, the frequency of intercourse declines. Still, sex continues into late adulthood, with almost half of people reporting they engage in sexual activity at least once a month and that its quality is high (Michael et al., 1994).

Although early research suggested that **extramarital sex** is widespread, apparently this is not true. According to more recent surveys, 85 percent of married women and more than 75 percent of married men are faithful to their spouses. Furthermore, the median number of sex partners, inside and outside of marriage, since the age of 18 for men was 6, and for women 2. Accompanying these numbers is a high, consistent degree of disapproval of extramarital sex, with nine out of ten people saying that it is “always” or “almost always” wrong (Michael et al., 1994; Westera & Bennett, 1994; Calmes, 1998).

### *Homosexuality and Bisexuality*

**Homosexuals** are sexually attracted to people of their own sex; **bisexuals** are sexually attracted to people of the same sex *and* people of the opposite sex. (Many male homosexuals prefer the term *gay* and female homosexuals the label *lesbian*, because they refer to a broader array of attitudes and lifestyle than the term *homosexual*, which focuses on the sexual act.)

The number of people who choose same-sex sexual partners at one time or another is considerable. Estimates suggest that around 20 to 25 percent of males and about 15 percent of females have had at least one homosexual experience during adulthood. The exact number of people who identify themselves as exclusively homosexual has proven difficult to gauge, with some estimates as low as 1.1 percent and some as high as 10 percent. Most experts suggest that between 5 and 10 percent of both men and women are exclusively homosexual during extended periods of their lives (Hunt, 1974; Sells, 1994; Firestein, 1996).

Although many people view homosexuality and heterosexuality as completely distinct sexual orientations, the issue is not that simple. Pioneering sex researcher Alfred Kinsey acknowledged this when he considered sexual orientation in terms of a scale or continuum, with “exclusively homosexual” at one end and “exclusively heterosexual” at the other. In the middle were people who showed both homosexual and heterosexual behavior. Kinsey's approach suggests that sexual orientation is dependent on a person's sexual feelings and behaviors and romantic feelings (Weinberg, Williams, & Pryor, 1991).

What determines people's sexual orientation? Although there are a number of theories, none has proved completely satisfactory. Biological explanations for sexual orientation suggest that there may be genetic or hormonal causes. Evidence for a genetic origin of sexual orientation comes from studies of identical twins, which have found that

**extramarital sex:** Sexual activity between a married person and someone who is not his or her spouse

**homosexuals:** Persons who are sexually attracted to people of their own sex

**bisexuals:** Persons who are sexually attracted to people of the same sex *and* people of the opposite sex



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*Extensive research has found that bisexuals and homosexuals enjoy the same overall degree of mental and physical health as heterosexuals.*

when one twin identified himself or herself as a homosexual, the occurrence of homosexuality in the other twin was higher than in the general population. This was the case even for twins who were separated early in life and therefore were not necessarily raised in similar social environments (Hamer et al., 1993; Turner, 1995; Bailey et al., 1997).

Furthermore, there is some evidence that differences in brain structures might be related to sexual orientation. For instance, the anterior hypothalamus, an area of the brain that governs sexual behavior, has a different structure in male homosexuals than in male heterosexuals. Similarly, other research shows that, compared with heterosexual men or women, homosexual men have a larger anterior commissure, which is a bundle of neurons connecting the right and left hemispheres of the brain (LeVay, 1991, 1993; Harrison, Everall, & Catalan, 1994; Byne, 1996).

However, research into biological causes for sexual orientation is not conclusive, given that most findings are based on only small samples of individuals. Still, the possibility is real that

inherited or biological factors predispose people to their sexual orientations, if certain environmental conditions are met (Bailey & Pillard, 1994; Gladue, 1995; Looy, 1995; Bailey, 1995; Rice et al., 1999).

Other theories of sexual orientation have focused on childhood and family background. Freud believed that homosexuality occurred as a result of inappropriate identification with the opposite-sex parent during development. He and other psychoanalysts have suggested that the nature of the parent–child relationship can lead to homosexuality, and that male homosexuals frequently have overprotective, dominant mothers and passive, ineffective fathers (Freud, 1922/1959; Bieber et al., 1962; Bailey & Zucker, 1995).

The problem with such theories is that there are probably as many homosexuals who were not subjected to the influence of such family dynamics as there are homosexuals who were. The evidence does not support explanations that rely on child-rearing practices or on the nature of the family structure (Bell & Weinberg, 1978; Isay, 1990).

Another explanation for sexual orientation rests on learning theory (Masters & Johnson, 1979). According to this view, sexual orientation is learned through rewards and punishments in much the same way that we might learn to prefer swimming over tennis. For example, a young adolescent who has an unpleasant heterosexual experience might learn to link unpleasant associations with the opposite sex. If that same person has a rewarding, pleasant homosexual experience, homosexuality might be incorporated into his or her sexual fantasies. If such fantasies are then used during later sexual activities—such as masturbation—they could be positively reinforced through orgasm, and the association of homosexual behavior and sexual pleasure might eventually cause homosexuality to become the preferred form of sexual behavior.

Although the learning theory explanation is plausible, several difficulties rule it out as a definitive explanation. Because our society tends to hold homosexuality in low esteem, one ought to expect that the punishments involved in homosexual behavior would outweigh the rewards attached to it. Furthermore, children growing up with a homosexual parent are statistically unlikely to become homosexual, thus contradicting the notion that homosexual behavior might be learned from others (Victor & Fish, 1995; Golombok & Tasker, 1996).

Given the difficulty in finding a consistent explanation, the majority of researchers reject the notion that any single factor produces sexual orientation. Most experts suspect that a combination of biological and environmental factors is at work (McWhirter, Sanders, & Reinisch, 1990; Greene & Herek, 1994; Bem, 1996).

Although we don't know at this point exactly why people develop a particular sexual orientation, one thing is clear: There is no relationship between sexual orientation and psychological adjustment. Bisexuals and homosexuals enjoy the same overall

degree of mental and physical health as heterosexuals do. They hold equivalent ranges and types of attitudes about themselves, independent of sexual orientation. For such reasons, the American Psychological Association and most other mental health organizations have endorsed efforts to reduce discrimination against gays and lesbians, such as efforts to revoke the ban against homosexuals in the military (Herek, 1993; Shawver, 1995; Perez, DeBord, & Bieschke, 2000).

### EXPLORING DIVERSITY

#### *Female Circumcision: A Celebration of Culture—or Genital Mutilation?*

Waris Dirie was just an innocent, unknowing child of 5 when she begged her mother to let her be circumcised like virtually all females in Somalia. “When you’ve been told over and over that, until this happens, you’re filthy and no man would ever marry you, you believe what everybody says,” Dirie explains. “I just wanted to be like the other girls.”

Months later her awful wish came true. As her mother held down the crying, blindfolded Dirie, a gypsy performed the circumcision using a dirty, dull razor and no anesthetic. She sewed the ragged wound with thorns and thread. “It’s not a pain you forget,” says Dirie, in a whisper. She was left with only a tiny opening, and urinating became torture. Later, menstruation was so unbearable that Dirie routinely fainted. (Chekalos & Heyn, 1998, p. 149)

The operation in question—female circumcision—is one of the most controversial sex-related procedures in the world. In such an operation, the clitoris is removed, resulting in a permanent inability to experience sexual pleasure.

Some 80 million women, living mostly in Africa and Asia, have undergone female circumcision. More than 90 percent of Nigerian women have been circumcised during childhood, and more than 90 percent intend to circumcise their daughters. In some cases, the surgery is more extensive; additional parts of the female genitals are removed or are sewn together with catgut or thorns (Ebomoyi, 1987; Rosenthal, 1993; French, 1997).

Those who practice female circumcision say it upholds an ancient societal tradition, no different from other cultural customs. Its purpose, they say, is to preserve virginity before marriage, to keep women faithful to their husbands after marriage, and to enhance a woman’s beauty. Proponents believe that it differs little from the common Western practice of male circumcision, in which the foreskin of the penis is surgically removed soon after birth.

Critics, on the other hand, argue that female circumcision is nothing less than female mutilation. Not only does the practice permanently eliminate sexual pleasure, but it can also lead to constant pain and infection, depending on the nature of the surgery. In fact, because the procedure is traditionally conducted in a ritualistic fashion without anesthetic, using a razor blade, sawtooth knife, or glass, the circumcision itself can be physically traumatic (Dugger, 1996).

The procedure raises some difficult issues, which have been brought to light in various court cases. For instance, a Nigerian immigrant, living temporarily in the United States, went to court to argue that she should be allowed to remain permanently. Her plea: If she and her young daughters were sent back to Nigeria, her daughters would face circumcision upon their return. The court agreed and permitted her to stay indefinitely (Gregory, 1994; Dugger, 1996).

In reaction to the controversy about female circumcision, Congress recently passed laws that make the practice illegal in the United States. Still, some argue that female circumcision is a valued cultural custom, and that no one, particularly someone using the perspective of another culture, should prevent people from carrying out the customs they think are important. In addition, critics point to the practice of *male* circumcision, in which the foreskin of the penis is surgically removed. They suggest that male circumcision provides few significant health benefits, and the decision to have male infants circumcised—an accepted practice in U.S. society—rests on religious, social, and cultural traditions (American Academy of Pediatrics, 1999a).



**Female circumcision**  
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**need for achievement:** A stable, learned characteristic in which satisfaction is obtained by striving for and attaining a level of excellence

### PsychLink

*Discussion of need for achievement*

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**need for affiliation:** An interest in establishing and maintaining relationships with other people



**Figure 8-2** This ambiguous picture is similar to those used in the Thematic Apperception test to determine people's underlying motivation (© 1943 by the President and Fellows of Harvard College; 1971 by Henry A. Murray). What do you see? Do you think your response is related to your motivation?

## The Need for Achievement: Striving for Success

Though hunger might be one of the most potent primary drives in our day-to-day lives, we are also motivated by powerful secondary drives that have no clear biological basis (McClelland, 1985; Geen, 1984, 1995). Among the most prominent of these is the need for achievement.

The **need for achievement** is a stable, learned characteristic in which satisfaction is obtained by striving for and attaining a level of excellence (McClelland et al., 1953). People with a high need for achievement seek out situations in which they can compete against some standard—be it grades, money, or winning at a game—and prove themselves successful. But they are not indiscriminate when it comes to picking their challenges: They tend to avoid situations in which success will come too easily (which would be unchallenging) and situations in which success is unlikely. Instead, people high in achievement motivation are apt to choose tasks that are of intermediate difficulty.

In contrast, people with low achievement motivation tend to be motivated primarily by a desire to avoid failure. As a result, they seek out easy tasks, being sure to avoid failure, or they seek out very difficult tasks for which failure has no negative implications because almost anyone would fail at them. People with a high fear of failure will stay away from tasks of intermediate difficulty, because they might fail where others have been successful (Atkinson & Feather, 1966; Sorrentino, Hewitt, & Raso-Knott, 1992; Elliot & Church, 1997).

The outcomes of a high need for achievement are generally positive, at least in a success-oriented society such as our own (Heckhausen, Schmalt, & Schneider, 1985; Spence, 1985). For instance, people motivated by a high need for achievement are more likely to attend college than their low-achievement counterparts, and once in college they tend to receive higher grades in classes that are related to their future careers (Atkinson & Raynor, 1974). Furthermore, high achievement motivation is associated with future economic and occupational success (McClelland, 1985).

### Measuring Achievement Motivation

How can we measure a person's need for achievement? The technique used most frequently is to administer a *Thematic Apperception Test (TAT)* (Spangler, 1992). In the TAT, people are shown a series of ambiguous pictures, such as the one in Figure 8-2. They are told to write a story that describes what is happening, who the people are, what led to the situation, what the people are thinking or wanting, and what will happen next. A standard scoring system is then used to determine the amount of achievement imagery in people's stories. For example, someone who writes a story in which the main character is striving to beat an opponent, studying in order to do well at some task, or working hard in order to get a promotion shows clear signs of an achievement orientation. It is assumed that the inclusion of such achievement-related imagery in their stories indicates an unusually high degree of concern with—and therefore a relatively strong need for—achievement.

## The Need for Affiliation: Striving for Friendship

Few of us choose to lead our lives as hermits. Why?

One main reason is that most people have a **need for affiliation**, an interest in establishing and maintaining relationships with other people. Individuals with a high need for affiliation write TAT stories that emphasize the desire to maintain or reinstate friendships and show concern over being rejected by friends.

People who are higher in affiliation needs are particularly sensitive to relationships with others. They desire to be with their friends more of the time, and alone less often, than people who are lower in the need for affiliation (O'Connor & Rosenblood, 1996). However, gender is a greater determinant of how much time is actually spent with friends: Regardless of their affiliative orientation, female students spend significantly more time with their friends and less time alone than male students do (Wong & Csikszentmihalyi, 1991).

### The Need for Power: Striving for Impact on Others

If your fantasies include being elected president of the United States or running Microsoft, they could be reflecting a high need for power. The **need for power**—a tendency to seek impact, control, or influence over others, and to be seen as a powerful individual—is an additional type of motivation (Winter, 1973, 1987).

As you might expect, people with a strong need for power are more apt to belong to organizations and seek office than those low in the need for power. They are also apt to be in professions in which their power needs can be fulfilled, such as business management and—you may or may not be surprised—teaching (Jenkins, 1994). In addition, they seek to display the trappings of power. Even in college, they are more apt to collect prestigious possessions, such as stereos and sports cars.

There are some significant sex differences in the display of need for power. Men who are high in power needs tend to show unusually high levels of aggression, drink heavily, act in a sexually exploitative manner, and participate more frequently in competitive sports—behaviors that collectively represent somewhat extravagant, flamboyant behavior. In contrast, women display their power needs in a more restrained manner, congruent with traditional societal constraints on women’s behavior. Women high in the need for power are more apt than men to channel their power needs in a socially responsible manner, such as by showing concern for others or displaying highly nurturant behavior (Winter, 1988).

**need for power:** A tendency to seek impact, control, or influence over others, and to be seen as a powerful individual

#### Evaluate

1. Match the following terms with their definitions:
 

1. Hypothalamus	a. Leads to refusal of food and starvation
2. Lateral hypothalamic damage	b. Responsible for monitoring food intake
3. Ventromedial hypothalamic damage	c. Causes extreme overeating
2. The \_\_\_\_\_ is the particular level of weight the body strives to maintain.
3. \_\_\_\_\_ is the rate at which energy is produced and expended by the body.
4. Although the incidence of masturbation among young adults is high, once men and women become involved in intimate relationships, they typically cease masturbating. True or false?
5. The increase in premarital sex in recent years has been greater for women than for men. True or false?
6. Julio is the type of person who constantly strives for excellence. He feels intense satisfaction when he is able to master a new task. Julio most likely has a high need for \_\_\_\_\_.
7. Debbie’s Thematic Apperception Test (TAT) story depicts a young girl who is rejected by one of her peers and seeks to regain her friendship. What major type of motivation is Debbie displaying in her story?
  - a. Need for achievement
  - b. Need for motivation
  - c. Need for affiliation
  - d. Need for power

#### Rethink

1. In what ways do societal expectations, expressed by television shows and commercials, contribute to both obesity and excessive concern about weight loss? How could television contribute to better eating habits and attitudes toward weight? Should it be required to do so?
2. Can traits such as need for achievement, need for power, and need for affiliation be used to select workers for jobs? What other criteria, both motivational and personal, would have to be considered when making such a selection?

Answers to Evaluate Questions

1. 1-b; 2-a; 3-c; 2. weight set point 3. Metabolism 4. False 5. True 6. achievement 7. c

## Prepare

What are emotions, and how do we experience them?  
What are the functions of emotions?

## Organize

### Understanding Emotional Experiences

- The Functions of Emotions
- Determining the Range of Emotions

### The Roots of Emotions

- The James-Lange Theory
- The Cannon-Bard Theory
- The Schachter-Singer Theory
- Contemporary Perspectives on Emotion

**emotions:** Feelings that generally have both physiological and cognitive elements and that influence behavior

# Understanding Emotional Experiences

Karl Andrews held in his hands the envelope he had been waiting for. It could be the ticket to his future: an offer of admission to his first-choice college. But what was it going to say? He knew it could go either way; his grades were pretty good, and he had been involved in some extracurricular activities; but his SAT scores had been not-so-terrific. He felt so nervous that his hands shook as he opened the thin envelope (not a good sign, he thought). Here it comes. “Dear Mr. Andrews,” it read. “The Trustees of the University are pleased to admit you. . . .” That was all he needed to see. With a whoop of excitement, Karl found himself jumping up and down gleefully. A rush of emotion overcame him as it sank in that he had, in fact, been accepted. He was on his way.

At one time or another, all of us have experienced the strong feelings that accompany both very pleasant and very negative experiences. Perhaps it was the thrill of getting a sought-after job, the joy of being in love, the sorrow over someone’s death, or the anguish of inadvertently hurting someone. Moreover, we experience such reactions on a less intense level throughout our daily lives: the pleasure of a friendship, the enjoyment of a movie, or the embarrassment of breaking a borrowed item.

Despite the varied nature of these feelings, they all are emotions. Although everyone has an idea of what an emotion is, formally defining the concept has proved to be an elusive task. We’ll use a general definition: **Emotions** are feelings that generally have both physiological and cognitive elements and that influence behavior.

Think, for example, about how it feels to be happy. First, we obviously experience a feeling that we can differentiate from other emotions. It is likely that we also experience some identifiable physical changes in our body: Perhaps our heart rate increases, or—like Karl Andrews—we find ourselves “jumping for joy.” Finally, the emotion probably encompasses cognitive elements: Our understanding and evaluation of the meaning of what is happening prompts our feelings of happiness.

It is also possible, however, to experience an emotion without the presence of cognitive elements. For instance, we might react emotionally to an unusual or novel situation (such as encountering a person who, for no apparent reason, makes us feel uncomfortable, without cognitively understanding why).

Some psychologists argue that there are entirely separate systems governing cognitive responses and emotional responses. One current controversy is whether the emotional response is predominant over the cognitive response or vice versa. Some theorists suggest that we first respond to a situation with an emotional reaction, and later try to understand it (Zajonc, 1985; Zajonc & McIntosh, 1992; Murphy & Zajonc, 1993). For example, we might enjoy a complex modern symphony without at first understanding it or knowing why we like it.

In contrast, other theorists propose that people first develop cognitions about a situation and then react emotionally. This school of thought suggests that it is necessary for us to first think about and understand a stimulus or situation, relating it to what we already know, before we can react on an emotional level (Lazarus, 1991a, 1991b, 1994, 1995).

Both sides of this debate can cite research to support their viewpoints, and so the question is far from resolved. It may be the case that the sequence varies from situation to situation, with emotions predominating in some instances and cognitive processes occurring first in others. What both sides do agree on is that we can experience emotions that involve little or no conscious thought. We might not know why we’re afraid of mice, understanding that objectively they represent no danger, but still be frightened out of our wits when we see them (Lewis & Haviland-Jones, 2000).

## PsychLink

*Emotions and emotional intelligence*

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## The Functions of Emotions

Imagine what it would be like if we didn't experience emotion—no depths of despair, no depression, no remorse, but at the same time no happiness, joy, or love. Obviously life might be considerably less satisfying, and even dull, if we lacked the capacity to sense and express emotion.

But do emotions serve any purpose beyond making life interesting? Indeed they do. Psychologists have identified a number of important roles that emotions play in our daily lives (Scherer, 1984, 1994; Averill, 1994; Oatley & Jenkins, 1996). Among the most important daily functions of emotions:

- *Preparing us for action.* Emotions act as a link between events in our environment and our responses. For example, if we see an angry dog charging toward us, the emotional reaction (fear) is associated with physiological arousal of the sympathetic division of the autonomic nervous system (see Chapter 2). The role of the sympathetic division is to prepare us for emergency action, which presumably will get us moving out of the dog's way—quickly.
- *Shaping our future behavior.* Emotions help us learn information that improves our chances of making appropriate responses in the future. For example, the emotional response that occurs when we experience something unpleasant—such as the threatening dog—teaches us to avoid similar circumstances in the future. Similarly, pleasant emotions act as reinforcement for our prior behavior and therefore are apt to lead us to seek out similar situations in the future.
- *Helping us interact more effectively with others.* The emotions we experience are frequently obvious to observers, as they are communicated through our verbal and nonverbal behaviors. These behaviors can act as a signal to observers, allowing them to better understand what we are experiencing and to predict our future behavior. In turn, this promotes more effective and appropriate social interaction.

## Determining the Range of Emotions: Labeling Our Feelings

If we were to try to list the words in the English language that have been used for emotions, we would end up with at least 500 examples (Averill, 1975). The list would range from such obvious entries as *happiness* and *fear* to less common ones, such as *adventurousness* and *pensiveness*.

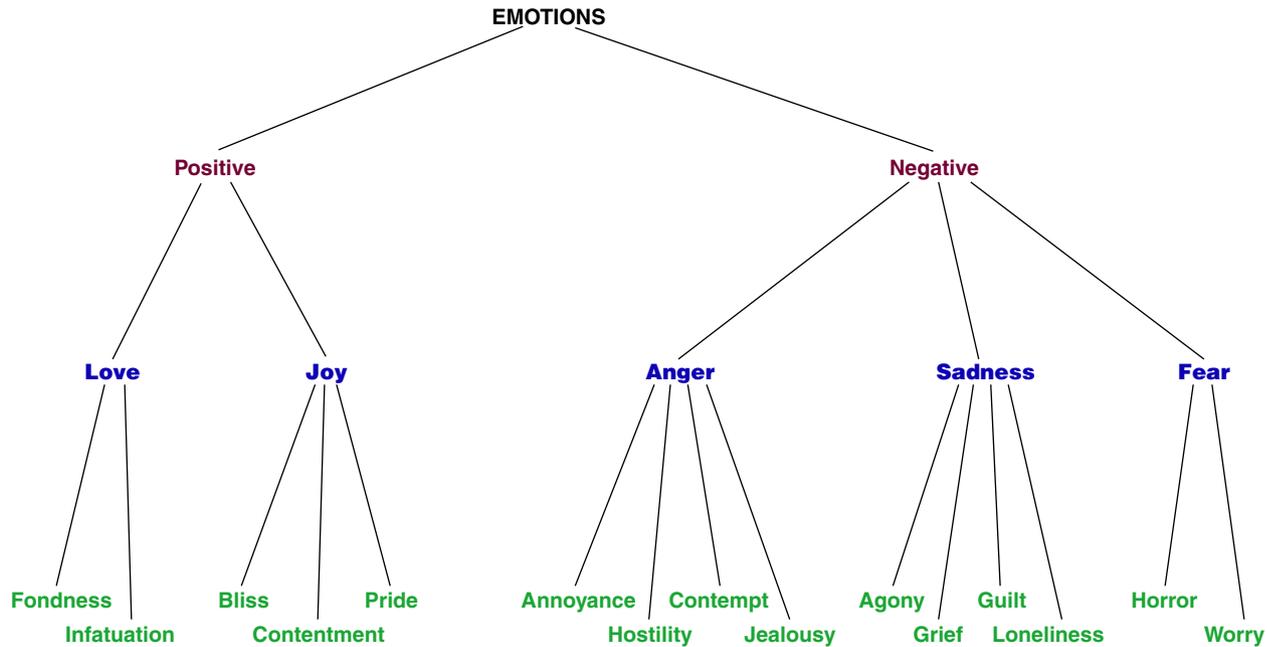
One challenge for psychologists has been to try to sort through this list in order to identify the most important, fundamental emotions. The issue of cataloguing emotions has been hotly contested, and various emotion theorists have come up with different lists, depending on how they define the concept of emotion. In fact, some reject the question entirely, saying that *no* set of emotions should be singled out as most basic, and that emotions are best understood by breaking them down into their component parts. Other researchers argue that it is best to look at emotions in terms of a hierarchy, dividing them into positive and negative categories, and then organizing them into increasingly narrower subcategories (see Fischer, Shaver, & Carnochan, 1990; Carroll & Russell, 1997; Figure 8-3).

Still, most researchers suggest that a list of basic emotions would include, at the minimum, happiness, anger, fear, sadness, and disgust. Other lists are broader, including such emotions as surprise, contempt, guilt, and joy (Plutchik, 1980; Ortony & Turner, 1990; Russell, 1991; Ekman, 1994a; Shweder, 1994).

One difficulty in finding a definitive basic set of emotions is that cultures differ substantially in how they describe emotions. For instance, Germans report experiencing *schadenfreude*, a feeling of pleasure over another person's difficulties, whereas the Japanese experience *hagaii*, a mood of vulnerable heartache colored by frustration. In Tahiti, people experience *musu*, a feeling of reluctance to yield to unreasonable demands made by one's parents.

Finding *schadenfreude*, *hagaii*, and *musu* in a particular culture doesn't mean that inhabitants of other cultures are incapable of experiencing such emotions, of course. It does suggest, though, that the existence of a linguistic category to describe a particular emotion may make it easier to discuss, contemplate, and perhaps experience the emotion (Russell, 1991; Mesquita & Frijda, 1992; Russell & Sato, 1995).





**Figure 8-3** One approach to organizing emotions is to use a hierarchy, in which emotions are divided into increasingly narrow subcategories (Adapted from Fischer, Shaver, & Carnochan, 1990).

## The Roots of Emotions

I've never been so angry before; I feel my heart pounding, and I'm trembling all over. . . . I don't know how I'll get through the performance. I feel like my stomach is filled with butterflies. . . . That was quite a mistake I made! My face must be incredibly red. . . . When I heard the footsteps in the night I was so frightened that I couldn't catch my breath.

If you examine our language, you will find that there are literally dozens of ways to describe how we feel when we experience an emotion, and that the language we use to describe emotions is, for the most part, based on the physical symptoms that are associated with a particular emotional experience (Koveces, 1987).

Consider, for instance, the experience of fear. Pretend that it is late one New Year's Eve. You are walking down a dark road, and you hear a stranger approaching behind you. It is clear that he is not trying to hurry by but is coming directly toward you. You think of what you will do if the stranger attempts to rob you—or worse, hurt you in some way.

While these thoughts are running through your head, something rather dramatic will be happening to your body. The most likely reactions, which are associated with activation of the autonomic nervous system (see Chapter 2), include an increase in your rate of breathing, an acceleration of your heart, a widening of your pupils (to increase visual sensitivity), and a dryness in your mouth as the functioning of your salivary glands, and in fact of your entire digestive system, ceases. At the same time, though, your sweat glands will likely increase their activity, since increased sweating will help you rid yourself of excess heat developed by any emergency activity in which you engage.

Of course, all these physiological changes are likely to occur without your awareness. At the same time, though, the emotional experience accompanying them will be obvious to you: You would most surely report feeling fearful.

Although it is relatively easy to describe the general physical reactions that accompany emotions, the specific role that these physiological responses play in the experience of emotions has proved to be a major puzzle for psychologists. As we shall see, some theorists suggest that there are specific bodily reactions that *cause* us to experience

a particular emotion—we experience fear, for instance, *because* our heart is pounding and we are breathing deeply. In contrast, other theorists suggest that the physiological reaction is the *result* of the experience of an emotion. In this view, we experience fear, and this emotional experience causes our heart to pound and our breathing to deepen.

### The James-Lange Theory: Do Gut Reactions Equal Emotions?

To William James and Carl Lange, who were among the first researchers to explore the nature of emotions, emotional experience is, very simply, a reaction to instinctive bodily events that occur as a response to some situation or event in the environment. This view is summarized in James’s statement, “we feel sorry because we cry, angry because we strike, afraid because we tremble” (James, 1890).

James and Lange took the view that the instinctive response of crying over a loss leads us to feel sorrow; that striking out at someone who frustrates us results in our feeling anger; that trembling at a menacing threat causes us to feel fear. They suggested that for every major emotion there is an accompanying physiological or “gut” reaction of internal organs—called a *visceral experience*. It is this specific pattern of visceral response that leads us to label the emotional experience.

In sum, James and Lange proposed that we experience emotions as a result of physiological changes that produce specific sensations. In turn, these sensations are interpreted by the brain as particular kinds of emotional experiences (see Figure 8-4). This view has come to be called the **James-Lange theory of emotion** (Izard, 1990; Laird & Bresler, 1990).

The James-Lange theory has some serious drawbacks, however. For the theory to be valid, visceral changes would have to occur at a relatively rapid pace, because we experience some emotions—such as fear upon hearing a stranger rapidly approaching on a dark night—almost instantaneously. Yet emotional experiences frequently occur even before there is time for certain physiological changes to be set into motion. Because of the slowness with which some visceral changes take place, it is hard to see how they could be the source of immediate emotional experience.

The James-Lange theory poses another difficulty: Physiological arousal does not invariably produce emotional experience. For example, a person who is jogging has an increased

**James-Lange theory of emotion:** The belief that emotional experience is a reaction to bodily events occurring as a result of an external situation (“I feel sad because I am crying”)

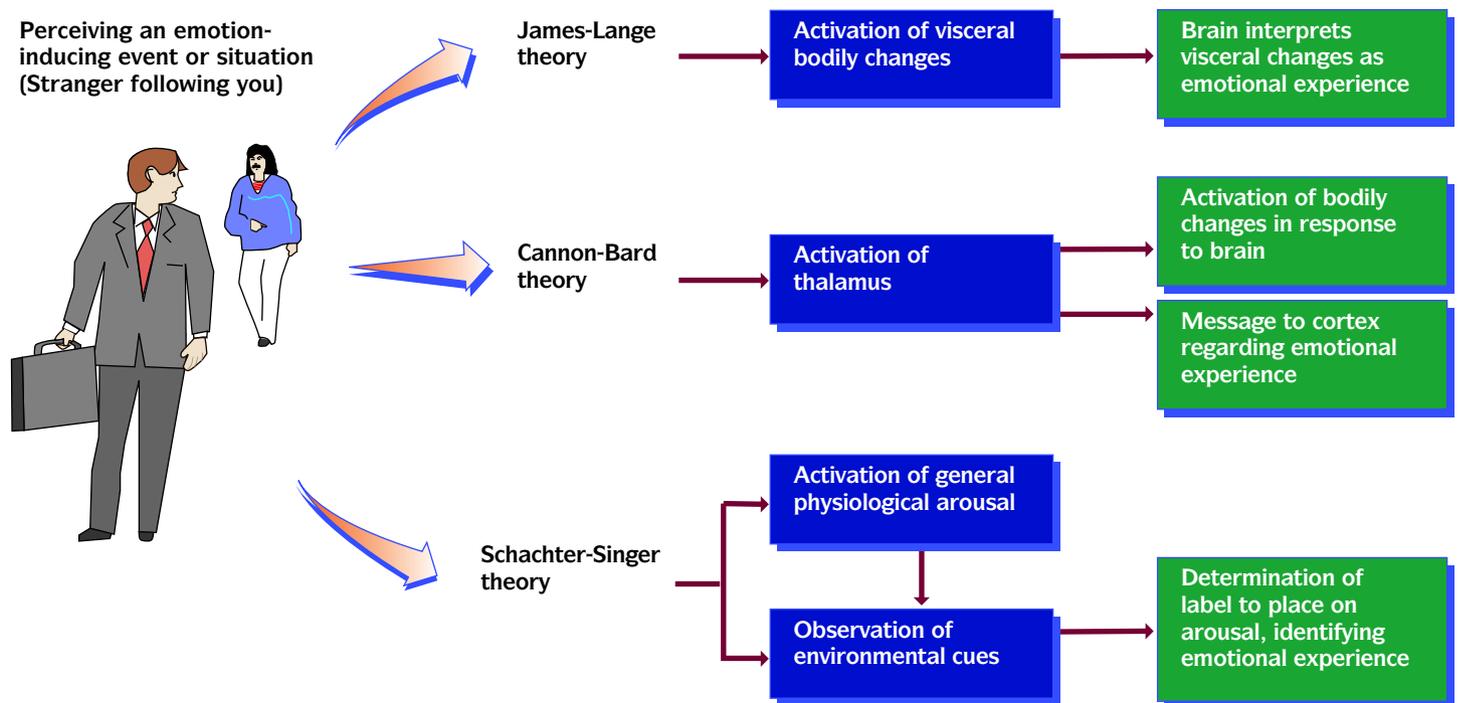


Figure 8-4 A comparison of three models of emotion.

heartbeat and respiration rate, as well as many of the other physiological changes associated with certain emotions. Yet joggers do not typically think of such changes in terms of emotions. There cannot be a one-to-one correspondence, then, between visceral changes and emotional experience. Visceral changes by themselves may not be sufficient to produce emotion.

Finally, our internal organs produce a relatively limited range of sensations. Although some types of physiological changes are associated with specific emotional experiences (Levenson et al., 1992; Levenson, 1992; Davidson et al., 1994), it is difficult to imagine how the range of emotions that people are capable of experiencing could be the result of unique visceral changes. Many emotions are actually associated with relatively similar sorts of visceral changes, a fact that contradicts the James-Lange theory.

### The Cannon-Bard Theory: Physiological Reactions as the Result of Emotions

In response to the difficulties inherent in the James-Lange theory, Walter Cannon, and later Philip Bard, suggested an alternative view. In what has come to be known as the **Cannon-Bard theory of emotion**, they proposed the model illustrated in the second part of Figure 8-4 (Cannon, 1929). The major thrust of the theory is to reject the view that physiological arousal alone leads to the perception of emotion. Instead, the theory assumes that both physiological arousal *and* the emotional experience are produced simultaneously by the same nerve stimulus, which Cannon and Bard suggested emanates from the brain's thalamus.

The theory states that after an emotion-producing stimulus is perceived, the thalamus is the initial site of the emotional response. In turn, the thalamus sends a signal to the autonomic nervous system, thereby producing a visceral response. At the same time, the thalamus communicates a message to the cerebral cortex regarding the nature of the emotion being experienced. Hence, it is not necessary for different emotions to have unique physiological patterns associated with them—as long as the message sent to the cerebral cortex differs according to the specific emotion.

The Cannon-Bard theory seems to have been accurate in its rejection of the view that physiological arousal alone accounts for emotions. However, more recent research has led to some important modifications of the theory. As you may recall from Chapter 2, we now understand that it is the hypothalamus and the limbic system, and not the thalamus, that play a major role in emotional experience. In addition, the simultaneity of the physiological and emotional responses, which is a fundamental assumption of the theory, has yet to be conclusively demonstrated (Pribram, 1984). This ambiguity has allowed room for yet another theory of emotions: the Schachter-Singer theory.

### The Schachter-Singer Theory: Emotions as Labels

Suppose that, as you were being followed down a dark street on New Year's Eve, you noticed a man being followed by a shady figure on the other side of the street. Now assume that instead of reacting with fear, the man begins to laugh and act gleeful. Might the reactions of this other individual be sufficient to lay your fears to rest? Might you, in fact, decide there is nothing to fear, and get into the spirit of the evening by beginning to feel happiness and glee yourself?

According to an explanation that focuses on the role of cognition, the **Schachter-Singer theory of emotion**, this might very well happen. This approach to explaining emotions emphasizes that we identify the emotion we are experiencing by observing our environment and comparing ourselves with others (Schachter & Singer, 1962).

A classic experiment found evidence for this hypothesis. In the study, participants were told that they would receive an injection of a vitamin. In reality, they were given epinephrine, a drug that causes an increase in physiological arousal, including higher heart and respiration rates and a reddening of the face, responses that typically occur during strong emotional reactions. Participants in both groups were then individually placed in a situation where a confederate of the experimenter acted in one of two ways. In one condition, he acted angry and hostile, while in the other condition he behaved as if he were exuberantly happy.

The purpose of the experiment was to determine how the participants would react emotionally to the confederate's behavior. When they were asked to describe their own

**Cannon-Bard theory of emotion:** The belief that both physiological and emotional arousal are produced simultaneously by the same nerve stimulus

**Schachter-Singer theory of emotion:** The belief that emotions are determined jointly by a nonspecific kind of physiological arousal and its interpretation, based on environmental cues

emotional state at the end of the experiment, those participants exposed to the angry confederate reported that they felt angry, whereas those exposed to the happy confederate reported feeling happy. In sum, the results suggest that participants turned to the environment and the behavior of others for an explanation of the physiological arousal they were experiencing.

The results of the Schachter-Singer experiment, then, supported a cognitive view of emotions, in which emotions are determined jointly by a relatively nonspecific kind of physiological arousal *and* the labeling of the arousal based on cues from the environment (refer to the third part of Figure 8-4).

Although later research has found that arousal is not as nonspecific as Schachter and Singer assumed, it is clear that arousal can magnify, and be mistaken for, many emotions. For example, in one experiment, men who crossed a swaying 450-foot suspension bridge spanning a deep canyon were more attracted to a woman they encountered at the other end than those who crossed a stable bridge spanning a shallow stream. Apparently, the men who crossed the frightening bridge attributed their subsequent high arousal to the woman, rather than to the swaying bridge (Dutton & Aron, 1974; Reisenzein, 1983; Leventhal & Tomarken, 1986).

In short, the Schachter-Singer theory of emotions is important because of its suggestion that, at least under some circumstances, emotional experiences are a joint function of physiological arousal and the labeling of that arousal. When the source of physiological arousal is unclear, we may look to our surroundings to determine just what it is we are experiencing.

### Contemporary Perspectives on Emotion

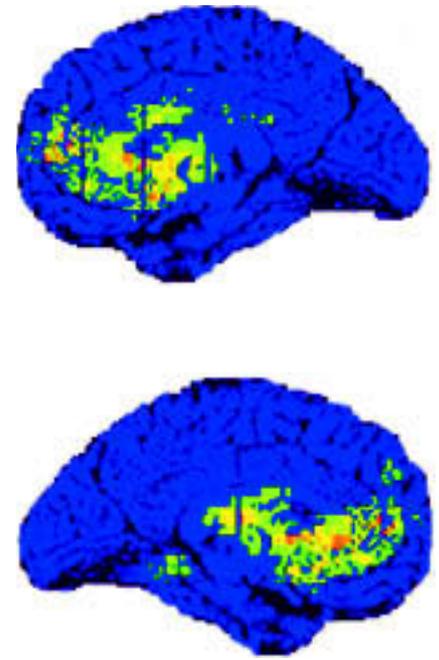
When Schachter and Singer carried out their groundbreaking experiment in the early 1960s, they were relatively limited in the ways that they could evaluate the physiology that accompanies emotion. However, advances in the measurement of the nervous system and other parts of the body have allowed researchers to examine more closely the biological responses that are involved in emotion. As a result, contemporary research on emotion is pointing to a revision of earlier views that physiological responses associated with emotions are undifferentiated. Instead, evidence is growing that specific patterns of biological arousal are associated with individual emotions (Davidson, 1994; Levenson, 1994; Franks & Smith, 1999).

For instance, researchers have found that specific emotions produce activation of very different portions of the brain. In one study using PET brain scans, participants were asked to recall either events that made them feel sad, such as deaths and funerals, or events that were happy, such as weddings and births. They also looked at photos of faces that were happy or sad. The results were clear: Happiness was related to a decrease in activity in certain areas of the cerebral cortex, and sadness was associated with increases in activity in particular portions of the cortex (see Figure 8-5). Ultimately, it might be possible to map particular emotions to specific sites in the brain (George et al., 1995).

As new approaches to emotion continue to be developed, it is reasonable to ask why there are so many theories of emotion and, perhaps even more important, which one provides the most complete explanation. But, we have only scratched the surface. There are almost as many explanatory theories of emotion as there are individual emotions (e.g., Izard, 1991; Lazarus, 1991b; Oatley, 1992; Ekman & Davidson, 1994; Strongman, 1996; Averill, 1997).

Why are theories of emotion so plentiful? The answer is that emotions are such complex phenomena, encompassing both biological and cognitive aspects, that no single theory has been able to fully explain all facets of emotional experience. For each of the approaches, there is contradictory evidence of one sort or another, and therefore no theory has proved invariably accurate in its predictions.

This abundance of perspectives on emotion is not a cause for despair—or unhappiness, fear, or any other negative emotion. It simply reflects the fact that psychology is an evolving, developing science. As more evidence is gathered, the specific answers to questions about the nature of emotions will become clearer. Furthermore, even as our understanding of emotions continues to grow, there are ongoing efforts to apply our knowledge of emotions to some practical problems—as you can see in the *Applying Psychology in the 21<sup>st</sup> Century* box.



**Figure 8-5** Experiencing different emotions activates particular areas of the brain. These scans, showing two views of the brain, indicate brain activity that occurs during the experience of sadness, as compared with situations in which no emotion is being experienced (Courtesy of Mark George, NIMH).

### PsychLink

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# Applying Psychology in the 21st Century

## The Truth About Lies: Do Lie Detectors Work?

Aldrich Ames was given routine lie detector tests periodically by his employer, the U.S. Central Intelligence Agency. On every occasion he passed the test. Yet at the very same time his truthfulness was being vouched for by the lie detector, he was involved in high-level spying for the Russians.

No surprise, at least among researchers who study the validity of lie detector test results. Repeatedly, lie detectors have proved to be unreliable indicators of lying.

A lie detector, or *polygraph*, is an electronic device designed to expose people who are telling lies. The basic assumption behind the apparatus is straightforward: The autonomic nervous system of people who are not being truthful becomes aroused as their emotionality increases. Polygraphs are designed to detect the physiological changes that are indicative of this arousal.

Actually, a number of separate physiological functions are measured simultaneously by a lie detector, including changes in breathing pattern, heart rate, blood pressure, and sweating. In theory, polygraph operators ask a series of questions, some of which they know will elicit verifiable, truthful responses. For instance, they might ask a person to provide his or her name and address. Then, when more critical questions

are answered, operators can observe the nature of the physiological changes that occur. Answers whose accompanying physiological responses deviate significantly from those accompanying truthful responses are assumed to be false (Reicherter, 1997).

That's the theory, at least. The reality is something different: There is no foolproof technique for assessing the extent of the physiological changes that can indicate a lie. Even truthful responses can elicit physiological arousal, if the question is emotion-laden (Waid & Orne, 1982). How many innocent people accused of a murder, for instance, would *not* respond emotionally when asked whether they committed the crime, since they know that their future may hang in the balance?

One further drawback of lie detector tests is that people are capable of fooling the polygraph. For instance, biofeedback techniques (see Chapter 2) can be employed to produce emotional responses to accompany even truthful statements, meaning that the polygraph operator will be unable to differentiate between honest and dishonest responses. Even biting one's tongue or hiding a tack in a shoe and pressing on it as each question is answered could be sufficient to produce physiological arousal during each response, making truthful and deceptive responses indistinguishable (Honts, Raskin, & Kircher, 1987; Honts & Kircher, 1994; Sleek, 1998).

Because of these sources of error, lie detector operators often make mistakes when trying to judge another person's honesty. The American Psychological Association has adopted a resolution stating that the evidence for the effectiveness of polygraphs "is still unsatisfactory." Even the major proponent of the use of polygraphs—the American Polygraph Association—admits an error rate between 4 and 13 percent, and critics suggest that research has shown that the actual rate is closer to 30 percent. Using such evidence, U.S. federal law bars employers from using polygraphs as screening devices for most jobs (Iacono, 1991; Saxe, 1994; Iacono & Lykken, 1997).

In short, there are good reasons to doubt that polygraph tests can determine accurately whether someone is lying. For now, then, you can be assured that any secrets you might harbor will remain hidden: No one has yet identified a foolproof way to distinguish people who are telling the truth from those who are lying (Saxe, 1994; Alliger, Lilienfeld, & Mitchell, 1996).

*Techniques for "fooling" lie detectors focus on artificially elevating emotional responses so that truthful and untruthful responses display similar patterns of emotionality. Do you think a lack of emotional response would therefore indicate truthfulness? Or is it possible to defeat a lie detector by depressing (rather than elevating) one's emotional response?*

## Evaluate

1. Emotions are always accompanied by a cognitive response. True or false?
2. The \_\_\_\_\_ - \_\_\_\_\_ theory of emotions states that emotions are a response to instinctive bodily events.
3. According to the \_\_\_\_\_ - \_\_\_\_\_ theory of emotion, both an emotional response and physiological arousal are produced simultaneously by the same nerve stimulus.
4. Your friend—a psychology major—tells you, "I was at a party last night. During the course of the evening, my general level of arousal increased. Since I was at a party where people were enjoying themselves, I assume I must have felt happy." What theory of emotion does your friend subscribe to?
5. The \_\_\_\_\_ or "lie detector" is an instrument used to measure physiological responses associated with answers to questions.

### Answers to Evaluate Questions

1. False; emotions may occur without a cognitive response. 2. James-Lange. 3. Cannon-Bard. 4. Cannon-Bard. 5. Schachter-Singer. 6. Polygraph.

## Rethink

1. Many people enjoy watching movies, sporting events, and music performances in crowded theaters and arenas more than they like watching them at home alone. Which theory of emotions might help explain this? How?
2. If researchers learned how to control emotional responses so that targeted emotions could be caused or prevented, what ethical concerns might arise? Under what circumstances, if any, should such techniques be used?

### How does motivation direct and energize behavior?

- Motivation relates to the factors that direct and energize behavior. Drive is the motivational tension that energizes behavior to fulfill a need. Primary drives relate to basic biological needs. Secondary drives are those in which no obvious biological need is fulfilled. (p. 250)
- Motivational drives often operate under the principle of homeostasis, the maintenance of a steady internal state. (p. 251)
- A number of broad approaches to motivation move beyond explanations that rely on instincts. Drive-reduction approaches, though useful for primary drives, are inadequate for explaining behavior in which the goal is not to reduce a drive but to maintain or even increase excitement or arousal. In contrast, arousal approaches suggest that we try to maintain a particular level of stimulation and activity. (p. 252)
- Incentive approaches focus on the positive aspects of the environment that direct and energize behavior. Finally, cognitive approaches focus on the role of thoughts, expectations, and understanding of the world in producing motivation. Cognitive approaches draw a distinction between intrinsic and extrinsic motivation. (p. 252)
- Maslow's hierarchy of needs suggests that there are five needs: physiological, safety, love and belongingness, esteem, and self-actualization. (p. 254)

### What biological and social factors underlie hunger?

- Eating behavior is subject to homeostasis, because most people's weight stays within a relatively stable range. The brain's hypothalamus is central to the regulation of food intake. (p. 256)
- Social factors also play a role in the regulation of eating, determining when, what, and how much one eats. An oversensitivity to social cues and an insensitivity to internal cues might also be related to obesity. In addition, obesity could be caused by an unusually high weight set point—the weight at which the body attempts to maintain homeostasis—and genetic factors. (p. 258)

### What are the varieties of sexual behavior?

- Although biological factors, such as the presence of androgens (male sex hormones) and estrogen and progesterone (female sex hormones) prime people for sex, almost any kind of stimulus can produce sexual arousal, depending on a person's prior experience. (p. 261)
- The frequency of masturbation is high, particularly for males. Attitudes toward masturbation are now increasingly liberal. (p. 262)
- Heterosexuality, or sexual attraction to people of the opposite sex, is the most common sexual orientation. In terms of premarital sex, the double standard, in which premarital sex is thought to be more permissible for men than for women, has declined. For many people, the double standard has been replaced by endorsement of "permissiveness with affection," the view that premarital intercourse is permissible if it occurs in the context of a loving and committed relationship. (p. 262)

- The frequency of marital sex varies widely. However, younger couples tend to have sexual intercourse more frequently than older couples. In addition, most men and women do not engage in extramarital sex. (p. 263)
- Homosexuals are sexually attracted to people of their own sex; bisexuals are sexually attracted to people of the same sex and people of the opposite sex. No explanation of sexual orientation has been confirmed; possibilities include genetic or biological factors, childhood and family influences, and prior learning experiences and conditioning. (p. 263)

### How are needs relating to achievement, affiliation, and power motivation exhibited?

- Need for achievement refers to the stable, learned characteristic in which a person strives to attain a level of excellence. Need for achievement is usually measured through the Thematic Apperception Test (TAT), a series of pictures about which a person writes a story. (p. 266)
- The need for affiliation is a concern with establishing and maintaining relationships with others, whereas the need for power is a tendency to seek to exert an impact on others. (p. 266)

### What are emotions, and how do we experience them?

- Emotions are broadly defined as feelings that can affect behavior and generally have both a physiological and a cognitive component. There is debate over whether there are separate systems that govern cognitive and emotional responses, and whether one has primacy over the other. (p. 268)

### What are the functions of emotions?

- Several theories explain emotions. The James-Lange theory suggests that emotional experience is a reaction to bodily, or visceral, changes that occur as a response to an environmental event and are interpreted as an emotional response. (p. 271)
- In contrast, the Cannon-Bard theory contends that both physiological arousal *and* an emotional experience are produced simultaneously by the same nerve stimulus and that the visceral experience itself does not necessarily differ among differing emotions. (p. 272)
- The Schachter-Singer theory suggests that emotions are determined jointly by a relatively nonspecific physiological arousal and the subsequent labeling of that arousal, using cues from the environment to determine how others are behaving in the same situation. (p. 272)
- The most recent approaches to emotions focus on their biological aspects. For instance, it now seems that specific patterns of biological arousal are associated with individual emotions. Furthermore, new scanning techniques have identified the specific parts of the brain that are activated during the experience of particular emotions. (p. 273)

## Key Terms and Concepts

motivation (p. 250)	estrogen (p. 261)
instincts (p. 251)	progesterone (p. 261)
drive–reduction approaches to motivation (p. 251)	ovulation (p. 261)
drive (p. 251)	masturbation (p. 262)
homeostasis (p. 251)	heterosexuality (p. 262)
arousal approaches to motivation (p. 252)	double standard (p. 262)
incentive approaches to motivation (p. 252)	extramarital sex (p. 263)
cognitive approaches of motivation (p. 252)	homosexuals (p. 263)
self-actualization (p. 254)	bisexuals (p. 263)
obesity (p. 256)	need for achievement (p. 266)
weight set point (p. 257)	need for affiliation (p. 266)
metabolism (p. 257)	need for power (p. 267)
anorexia nervosa (p. 259)	emotions (p. 268)
bulimia (p. 259)	James–Lange theory of emotion (p. 271)
androgens (p. 261)	Cannon–Bard theory of emotion (p. 272)
	Schachter–Singer theory of emotion (p. 272)

## Psychology on the Web

1. Find two different websites that deal with nonverbal behavior. One site should present a fairly “academic” discussion of the topic, and the other should be more informal. (Hint: The terms *nonverbal behavior* and *nonverbal communication* might lead you to more formal discussions of the topic, whereas *body language* might lead you to the less formal discussions.) Compare and contrast your findings from the two sites.
2. Find one or more websites that offer information on losing weight. Evaluate the information on the website(s), using your understanding of obesity discussed in this chapter. Summarize your findings and conclusions in writing.

# Epilogue

In this chapter, we discussed motivation and emotions, two interrelated aspects of psychology. The topic of motivation has spawned a great deal of theory and research in its examination of primary and secondary drives. We then turned to a discussion of emotions, beginning with their functions and proceeding to a review of three major theories that seek to explain what emotions are and how they, and their associated physiological symptoms, emerge in the individual.

Before we proceed to Chapter 9, return to the scenario in the prologue to this chapter: how cyclist Lance Armstrong overcame cancer and won the Tour de France. Using your knowledge of motivation and emotion, consider the following questions:

1. Which approach or approaches to motivation—instinctual, drive reduction, arousal, incentive, or cognitive—most effectively explain why an athlete like Armstrong will work exceptionally hard over many years to become a competitive cyclist?



## Preview

For additional quizzing and a variety of interactive resources, visit the *Essentials of Understanding Psychology* Online Learning Center at

[www.mhhe.com/feldmaness5](http://www.mhhe.com/feldmaness5)

2. How might the need for achievement have contributed to Armstrong's decision to continue competitive cycling after his cancer treatment? Would the need for affiliation have played a role? How?
3. What function might Armstrong's emotions have served in helping him overcome his cancer and continue racing competitively?
4. How can Armstrong's comment about his win in the Tour de France ("I think it's a miracle") be interpreted in terms of your understanding of motivation and emotion?

