

Unit VIII

Motivation, Emotion, and Stress

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After an ill-fated Saturday morning in the spring of 2003, experienced mountaineer Aron Ralston understood how motivation can energize and direct behavior. Having bagged nearly all of Colorado's tallest peaks, Ralston ventured some solo canyon hiking that seemed so risk-free he didn't bother to tell anyone where he was going. In Utah's narrow Bluejohn Canyon, just 150 yards above his final rappel, he was climbing over an 800-pound rock when disaster struck: It shifted and pinned his right wrist and arm. He was, as the title of his book says, caught *Between a Rock and a Hard Place*.

Realizing no one would be rescuing him, Ralston tried with all his might to dislodge the rock. Then, with a dull pocketknife, he tried chipping away at it. When that, too, failed, he rigged up ropes to lift the rock. Alas, nothing worked. Hour after hour, then cold night after cold night, he was stuck.

By Tuesday, he had run out of food and water. On Wednesday, as thirst and hunger gnawed, he began saving and sipping his own urine. Using his video recorder, he said good-bye to family and friends, for whom he now felt intense love: "So

again love to everyone. Bring love and peace and happiness and beautiful lives into the world in my honor. Thank you. Love you."

On Thursday, surprised to find himself still alive, Ralston had a seemingly divine insight into his reproductive future, a vision of a preschool boy being scooped up by a one-armed man. With this inspiration, he summoned his remaining strength and his enormous will to live and, over the next hour, willfully broke his arm bones and then proceeded to use that dull knife to cut off his arm. He put on a tourniquet, chopped the last piece of skin, and, after 127 hours, broke free. He then rappelled with his bleeding half-arm down a 65-foot cliff and hiked 5 miles before finding someone. He was, in his own words, "just reeling with this euphoria . . . having been dead and standing in my grave, leaving my last will and testament, etching 'Rest in peace' on the wall, all of that, gone and then replaced with having my life again. It was undoubtedly the sweetest moment that I will ever experience" (Ralston, 2004). Ralston's thirst and hunger, his sense of belonging to others, and his brute will to live and become a father highlight *motivation's* energizing and directing power.

His intense emotional experiences of love and joy demonstrate the close ties between our feelings, or *emotions*, and our motivated behaviors. In this unit, we explore our motivations and emotions, and the health effects of intense or prolonged emotions such as anger and stress.

AP® Exam Tip

The introduction to Module 37 is important, because it informs you how the whole module is organized. Read it carefully now and perhaps return to it as a review when you are through with the module.

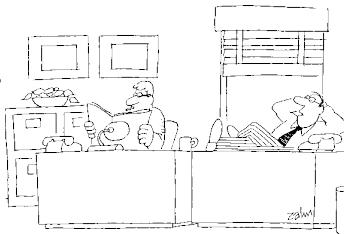
Module 37

Motivational Concepts

Module Learning Objective

37-1

Define *motivation* as psychologists use the term, and identify the perspectives useful for studying motivated behavior.



"What do you think . . . should we get started on that motivation research or not?"

37-1

How do psychologists define *motivation*? From what perspectives do they view motivated behavior?

Our **motivations** arise from the interplay between nature (the bodily "push") and nurture (the "pulls" from our thought processes and culture). Consider four perspectives for viewing motivated behaviors. *Instinct theory* (now replaced by the *evolutionary perspective*) focuses on genetically predisposed behaviors. *Drive-reduction theory* focuses on how our inner pushes and external pulls interact. *Arousal theory* focuses on finding the right level of stimulation. And Abraham Maslow's *hierarchy of needs* describes how some of our needs take priority over others.



Helene Wiersema/Getty Images

Instincts and Evolutionary Psychology

Early in the twentieth century, as the influence of Charles Darwin's evolutionary theory grew, it became fashionable to classify all sorts of behaviors as instincts. If people criticized themselves, it was because of their "self-abasement instinct." If they boasted, it reflected their "self-assertion instinct." After scanning 500 books, one sociologist compiled a list of 5759 supposed human instincts! Before long, this fad for naming instincts collapsed under its own weight. Rather than *explaining* human behaviors, the early instinct theorists were simply *naming* them. It was like "explaining" a bright child's low grades by labeling the child an "underachiever." To name a behavior is *not* to explain it.

To qualify as an **instinct**, a complex behavior must have a fixed pattern throughout a species and be unlearned (Tinbergen, 1951). Such behaviors are common in other species (Module 26 described salmon returning to their birthplace, and Module 48 will describe imprinting in birds). Human behavior, too, exhibits certain unlearned fixed patterns, including infants' innate reflexes for rooting and sucking.

Although *instinct theory* failed to explain most human motives, *evolutionary psychology*'s underlying assumption that genes predispose species-typical behavior remains as strong as ever. We saw this in Module 29's discussion of animals' biological predispositions to learn certain behaviors. And we will see this in later discussions of how evolution might influence our phobias, our helping behaviors, and our romantic attractions.



Drives and Incentives

When the original instinct theory of motivation collapsed, it was replaced by **drive-reduction theory**—the idea that a physiological need creates an aroused state that drives the organism to reduce the need by, say, eating or drinking. With few exceptions, when a physiological need increases, so does a psychological *drive*—an aroused, motivated state.

The physiological aim of drive reduction is **homeostasis**—the maintenance of a steady internal state. An example of homeostasis (literally "staying the same") is the body's temperature-regulation system, which works like a room thermostat. Both systems operate through feedback loops: Sensors feed room temperature to a control device. If the room temperature cools, the control device switches on the furnace. Likewise, if our body temperature cools, blood vessels constrict to conserve warmth, and we feel driven to put on more clothes or seek a warmer environment (**FIGURE 37.1**).

AP® Exam Tip

Note that this section illustrates psychology's biological perspective.

motivation a need or desire that energizes and directs behavior

instinct a complex, unlearned behavior that is rigidly patterned throughout a species.

Same motive, different wiring

The more complex the nervous system, the more adaptable the organism. Both humans and weaverbirds satisfy their need for shelter in ways that reflect their inherited capacities. Human behavior is flexible; we can learn whatever skills we need to build a house. The bird's behavior pattern is fixed; it can build only this kind of nest.

drive-reduction theory the idea that a physiological need creates an aroused tension state (a drive) that motivates an organism to satisfy the need.

homeostasis a tendency to maintain a balanced or constant internal state; the regulation of any aspect of body chemistry, such as blood glucose, around a particular level.

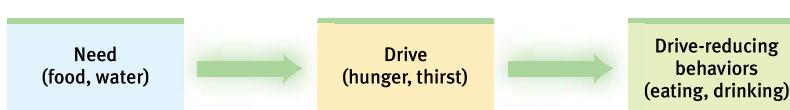


Figure 37.1

Drive-reduction theory Drive-reduction motivation arises from *homeostasis*—an organism's natural tendency to maintain a steady internal state. Thus, if we are water deprived, our thirst drives us to drink and to restore the body's normal state.

AP® Exam Tip

Read carefully! Homeostasis is *not* a motivation theory, but rather a biological principle that applies to some motivational theories (like drive-reduction).

FYI

Recall from Module 29 that we are also motivated by both *intrinsic* and *extrinsic* rewards.

Not only are we *pushed* by our need to reduce drives, we also are *pulled* by **incentives**—positive or negative stimuli that lure or repel us. This is one way our individual learning histories influence our motives. Depending on our learning, the aroma of good food, whether freshly baked pizza or freshly toasted ants, can motivate our behavior. So can the sight of those we find attractive or threatening.

When there is both a need and an incentive, we feel strongly driven. The food-deprived person who smells baking bread feels a strong hunger drive. In the presence of that drive, the baking bread becomes a compelling incentive. For each motive, we can therefore ask, “How is it pushed by our inborn physiological needs and pulled by incentives in the environment?”

Optimum Arousal

We are much more than homeostatic systems, however. *Optimal arousal theory* holds that some motivated behaviors actually *increase* arousal. Well-fed animals will leave their shelter to explore and gain information, seemingly in the absence of any need-based drive. Curiosity drives monkeys to monkey around trying to figure out how to unlock a latch that opens nothing or how to open a window that allows them to see outside their room (Butler, 1954). It drives the 9-month-old infant to investigate every accessible corner of the house. It drives you to read this text, and it drives the scientists whose work this text discusses. And it drives explorers and adventurers such as Aron Ralston and George Mallory. Asked why he wanted to climb Mount Everest, the *New York Times* reported that Mallory answered, “Because it is there.” Those who, like Mallory and Ralston, enjoy high arousal are most likely to seek out intense music, novel foods, and risky behaviors (Zuckerman, 1979). They are “sensation-seekers.”

Driven by curiosity Baby monkeys and young children are fascinated by things they’ve never handled before. Their drive to explore the relatively unfamiliar is one of several motives that do not fill any immediate physiological need.



Glenn Swier

So, human motivation aims not to eliminate arousal but to seek optimum levels of arousal. Having all our biological needs satisfied, we feel driven to experience stimulation and we hunger for information. We are “*infovores*,” said neuroscientists Irving Biederman and Edward Vessel (2006), after identifying brain mechanisms that reward us for acquiring information. Lacking stimulation, we feel bored and look for a way to increase arousal to some optimum level. However, with too much stimulation comes stress, and we then look for a way to decrease arousal.

Two early-twentieth-century psychologists studied the relationship of arousal to performance and identified what we now call the **Yerkes-Dodson law**, suggesting that moderate arousal would lead to optimal performance (Yerkes & Dodson, 1908). When taking an exam, for example, it pays to be moderately aroused—alert but not trembling with nervousness. We have since learned that optimal arousal levels depend the task as well, with more difficult tasks requiring lower arousal for best performance (Hembree, 1988) (**FIGURE 37.2**).

incentive a positive or negative environmental stimulus that motivates behavior.

Yerkes-Dodson law the principle that performance increases with arousal only up to a point, beyond which performance decreases.

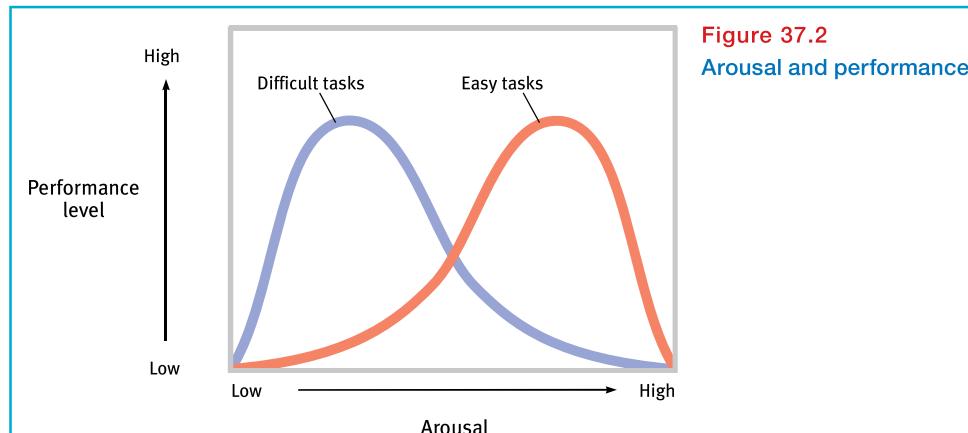


Figure 37.2
Arousal and performance

A Hierarchy of Motives

Some needs take priority over others. At this moment, with your needs for air and water hopefully satisfied, other motives—such as your desire to achieve (discussed in Module 82)—are energizing and directing your behavior. Let your need for water go unsatisfied and your thirst will preoccupy you. Just ask Aron Ralston. Deprived of air, your thirst would disappear.

Abraham Maslow (1970) described these priorities as a **hierarchy of needs** (FIGURE 37.3). At the base of this pyramid are our physiological needs, such as those for food and water. Only if these needs are met are we prompted to meet our need for safety, and then to satisfy our needs to give and receive love and to enjoy self-esteem. Beyond this, said Maslow (1971), lies the need to actualize one's full potential. (More on self-esteem and self-actualization in Modules 57 and 59.)

Near the end of his life, Maslow proposed that some people also reach a level of self-transcendence. At the self-actualization level, people seek to realize their own potential.

hierarchy of needs Maslow's pyramid of human needs, beginning at the base with physiological needs that must first be satisfied before higher-level safety needs and then psychological needs become active.

"Hunger is the most urgent form of poverty." -ALLIANCE TO END HUNGER, 2002

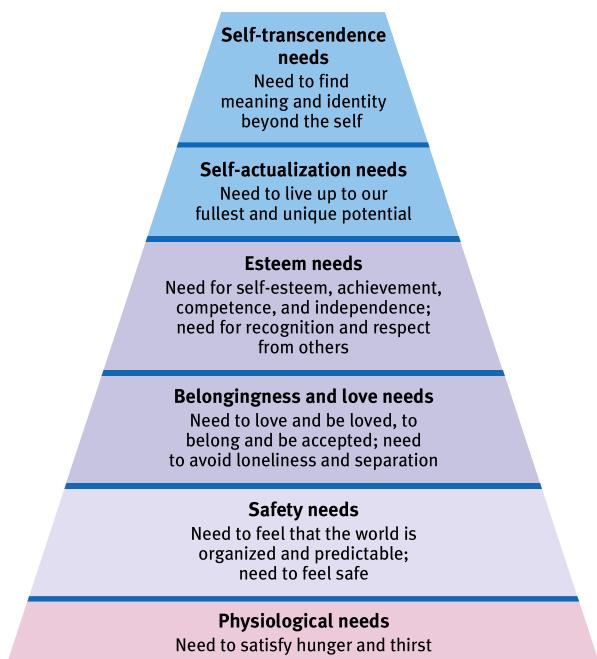


Figure 37.3

Maslow's hierarchy of needs Once our lower-level needs are met, we are prompted to satisfy our higher-level needs. (From Maslow, 1970.) For survivors of the disastrous tornadoes that swept across the Midwest and Southeastern United States in 2011, satisfying very basic needs for water, food, and safety became top priority. Higher-level needs on Maslow's hierarchy, such as respect, self-actualization, and meaning, become far less important during such times.

At the self-transcendence level, people strive for meaning, purpose, and communion that is beyond the self, that is *transpersonal* (Koltko-Rivera, 2006).

Maslow's hierarchy is somewhat arbitrary; the order of such needs is not universally fixed. People have starved themselves to make a political statement. Today's evolutionary psychologists concur with the first four levels of Maslow's needs pyramid. But they note that gaining and retaining mates, and parenting offspring, are also universal human motives (Kenrick et al., 2010).

Nevertheless, the simple idea that some motives are more compelling than others provides a framework for thinking about motivation. Worldwide life-satisfaction surveys support this basic idea (Oishi et al., 1999; Tay & Diener, 2011). In poorer nations that lack easy access to money and the food and shelter it buys, financial satisfaction more strongly predicts feelings of well-being. In wealthy nations, where most are able to meet basic needs, home-life satisfaction is a better predictor. Self-esteem matters most in individualist nations, whose citizens tend to focus more on personal achievements than on family and community identity. (**TABLE 37.1** summarizes the strengths and weaknesses of the different perspectives on motivation.)

In the ensuing modules, we will consider four representative motives, beginning at the physiological level with hunger and working up through sexual motivation and the need to belong. At each level, we shall see how experience interacts with biology.

Table 37.1

Motivational Theory	Strength	Weakness
<i>Instinct Theory and Evolutionary Psychology</i>	Evolutionary psychology helps explain behavioral similarities due to adaptations from our ancestral past.	Instinct theory explains animal behavior better than human behavior; humans have few true instincts.
<i>Drive-Reduction Theory</i>	Explains our motivation to reduce arousal by meeting basic needs, such as hunger or thirst.	Does not explain why some motivated behaviors increase arousal.
<i>Optimal Arousal Theory</i>	Explains that motivated behaviors may decrease or increase arousal.	Does not explain our motivation to address our more complex social needs.
<i>Maslow's Hierarchy of Needs</i>	Incorporates the idea that we have various <i>levels</i> of needs, including lower-level physiological and safety needs, and higher-level social, self-esteem, actualization, and meaning needs.	The order of needs may change in some circumstances. Evolutionary psychologists note the absence in the hierarchy of the universal human motives to find a mate and reproduce.

Before You Move On

► ASK YOURSELF

Consider your own experiences in relation to Maslow's hierarchy of needs. Have you ever experienced true hunger or thirst that displaced your concern for other, higher-level needs? Do you usually feel safe? Loved? Confident? How often do you feel you are able to address what Maslow called your "self-actualization" needs?

► TEST YOURSELF

While on a long road trip, you suddenly feel very hungry. You see a diner that looks pretty deserted and creepy, but you are *really* hungry, so you stop anyway. What motivational perspective would most easily explain this behavior, and why?

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 37 Review

37-1

How do psychologists define *motivation*? From what perspectives do they view motivated behavior?

- *Motivation* is a need or desire that energizes and directs behavior.
- The *instinct/evolutionary perspective* explores genetic influences on complex behaviors.
- *Drive-reduction theory* explores how physiological needs create aroused tension states (drives) that direct us to satisfy those needs. Environmental *incentives* can intensify

drives. Drive-reduction's goal is *homeostasis*, maintaining a steady internal state.

- Optimal arousal theory proposes that some behaviors (such as those driven by curiosity) do not reduce physiological needs but rather are prompted by a search for an optimum level of arousal.
- Abraham Maslow's *hierarchy of needs* proposes a pyramid of human needs, from basic needs such as hunger and thirst up to higher-level needs such as self-actualization and self-transcendence.

Multiple-Choice Questions

1. Which of the following is an unlearned, complex behavior exhibited by all members of a species?
 - a. Reflex
 - b. Drive
 - c. Incentive
 - d. Instinct
 - e. Motive
2. Which of the following is an aroused motivational state created by a physiological need?
 - a. Drive
 - b. Instinct
 - c. Incentive
 - d. Reflex
 - e. Motive
3. Which of the following is a conclusion that can be drawn from the Yerkes-Dodson law?
 - a. Performance on easy tasks is best when arousal is low.
 - b. Performance is best when arousal is extremely high.
 - c. Performance is best when arousal is extremely low.
 - d. Performance on difficult tasks is best when arousal is high.
 - e. Performance is best when arousal is moderate.
4. Which of the following is the lowest priority motive in Abraham Maslow's hierarchy of needs?
 - a. Belongingness and love needs
 - b. Physiological needs
 - c. Esteem needs
 - d. Self-actualization needs
 - e. Self-transcendence needs

Practice FRQs

1. How can you use Maslow's hierarchy of needs to explain why a
 - hungry young person would steal?
 - lonely new student in a school would join a club?
 - successful artist would continue to invest tremendous effort in her career?

2. Describe how three different motivational theories could explain a young man's desire to become an excellent soccer player.

(3 points)

Answer

1 point: A hungry young person would steal because of a physiological need.

1 point: A lonely new student would join a club to meet belongingness and love needs.

1 point: A successful artist would still work hard to satisfy the need for self-actualization.

Module 38

Hunger Motivation

Module Learning Objectives

- 38-1** Describe the physiological factors that produce hunger.
- 38-2** Discuss cultural and situational factors that influence hunger.
- 38-3** Discuss the factors that predispose some people to become and remain obese.



Jim West/Photo Edit

The power of physiological needs was vividly demonstrated when Ancel Keys and his research team (1950) conducted a now-classic study of semistarvation. They first fed 36 male volunteers (all wartime conscientious objectors) just enough to maintain their initial weight. Then, for six months, they cut this food level in half. The effects soon became visible. Without thinking about it, the men began conserving energy. They appeared sluggish and dull. After dropping rapidly, their body weights stabilized at about 25 percent below their starting point.

As Maslow might have guessed, the men became food obsessed. They talked food. They daydreamed food. They collected recipes, read cookbooks, and feasted their eyes on delectable forbidden food. Preoccupied with their unmet basic need, they lost interest in sex and social activities. As one man reported, "If we see a show, the most interesting part of it is contained in scenes where people are eating. I couldn't laugh at the funniest picture in the world, and love scenes are completely dull."

The semistarved men's preoccupations illustrate how activated motives can hijack our consciousness. As journalist Dorothy Dix (1861–1951) observed, "Nobody wants to kiss when they are hungry." When we're hungry, thirsty, fatigued, or sexually aroused, little else seems to matter. When we're not, food, water, sleep, or sex just don't seem like such big things in life, now or ever.

"Nature often equips life's essentials—sex, eating, nursing—with built-in gratification."
-FRANS DE WAAL, "MORALS WITHOUT GOD?", 2010



In studies, people in a motivational “hot” state (from fatigue, hunger, or sexual arousal) have easily recalled such feelings in their own past and have perceived them as driving forces in others’ behavior (Nordgren et al., 2006, 2007). (You may recall from Module 32 a parallel effect of our current good or bad mood on our memories.) Grocery shop with an empty stomach and you are more likely to see those jelly-filled doughnuts as just what you’ve always loved and will be wanting tomorrow. *Motives matter mightily.*

“The full person does not understand the needs of the hungry.” -IRISH PROVERB

The Physiology of Hunger

38-1 What physiological factors produce hunger?

Deprived of a normal food supply, Keys’ semistarved volunteers were clearly hungry. But what precisely triggers hunger? Are the pangs of an empty stomach the source of hunger? So it seemed to A. L. Washburn. Working with Walter Cannon (Cannon & Washburn, 1912), Washburn agreed to swallow a balloon attached to a recording device (**FIGURE 38.1**). When inflated to fill his stomach, the balloon transmitted his stomach contractions. Washburn supplied information about his *feelings* of hunger by pressing a key each time he felt a hunger pang. The discovery: Washburn was indeed having stomach contractions whenever he felt hungry.

Can hunger exist without stomach pangs? To answer that question, researchers removed some rats’ stomachs and created a direct path to their small intestines (Tsang, 1938). Did the rats continue to eat? Indeed they did. Some hunger persists similarly in humans whose stomachs have been removed as a treatment for ulcers or cancer. So the pangs of an empty stomach are not the *only* source of hunger. What else might trigger hunger?

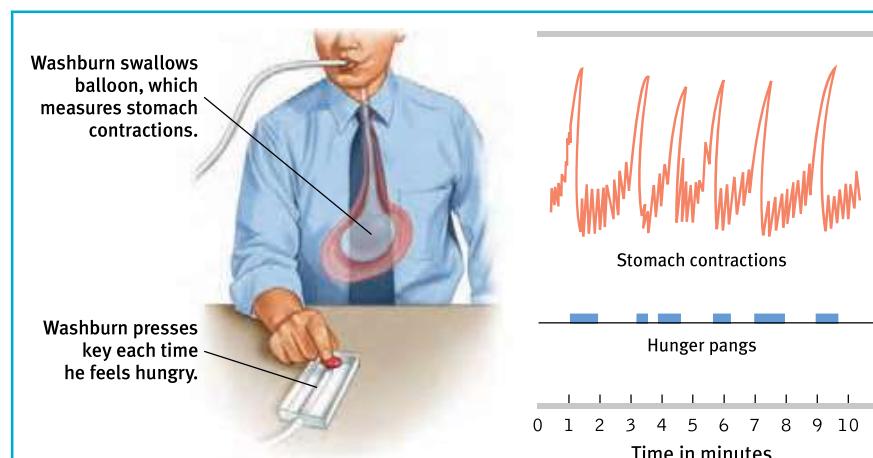


Figure 38.1

Monitoring stomach contractions

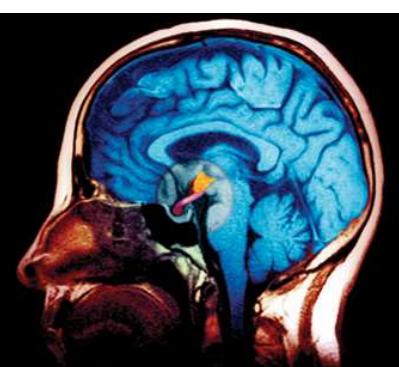
Using this procedure, Washburn showed that stomach contractions (transmitted by the stomach balloon) accompany our feelings of hunger (indicated by a key press). (From Cannon, 1929.)

Body Chemistry and the Brain

Somehow, somewhere, your body is keeping tabs on the energy it takes in and the energy it uses. If this weren’t true, you would be unable to maintain a stable body weight. A major source of energy in your body is the blood sugar **glucose**. If your blood glucose level drops, you won’t consciously feel this change, but your stomach, intestines, and liver will signal your brain to motivate eating. Your brain, which is automatically monitoring your blood chemistry and your body’s internal state, will then trigger hunger.

glucose the form of sugar that circulates in the blood and provides the major source of energy for body tissues. When its level is low, we feel hunger.

How does the brain integrate these messages and sound the alarm? The work is done by several neural areas, some housed deep in the brain within the hypothalamus (**FIGURE 38.2**). This neural traffic intersection includes areas that influence eating. For example, one neural arc (called the *arcuate nucleus*) has a center that secretes appetite-stimulating hormones, and another center that secretes appetite-suppressing hormones. Explorations of this neural area and others reveal that when an appetite-enhancing center is stimulated electrically, well-fed animals begin to eat. If the area is destroyed, even starving animals have no interest in food. The opposite occurs when an appetite-suppressing area is stimulated: Animals will stop eating. Destroy this area and animals will eat and eat, and become extremely fat (Duggan & Booth, 1986; Hoebel & Teitelbaum, 1966) (**FIGURE 38.3**).



ISM/Phototake

Figure 38.2

The hypothalamus As we saw in Module 11, the hypothalamus (colored orange) performs various body maintenance functions, including control of hunger.

set point the point at which an individual's "weight thermostat" is supposedly set. When the body falls below this weight, an increase in hunger and a lowered metabolic rate may act to restore the lost weight.

basal metabolic rate the body's resting rate of energy expenditure.

FYI

Over the next 40 years you will eat about 20 tons of food. If, during those years, you increase your daily intake by just .01 ounce more than required for your energy needs, you will gain an estimated 24 pounds (Martin et al., 1991).

**Figure 38.3**

Evidence for the brain's control of eating The fat mouse on the left has nonfunctioning leptin receptors.

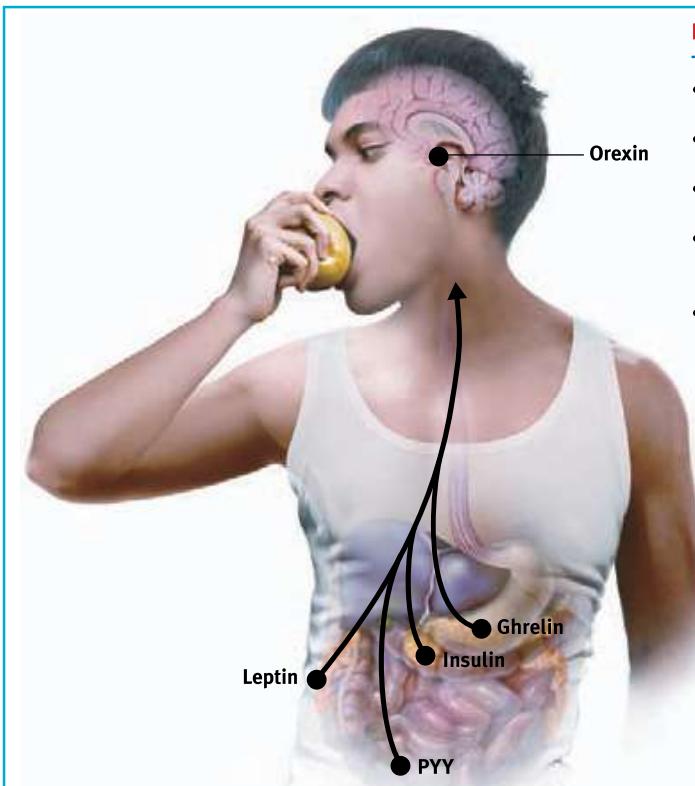
Olivier Voisin/Science Source

Blood vessels supply the hypothalamus, enabling it to respond to our current blood chemistry as well as to incoming neural information about the body's state. One of its tasks is monitoring levels of appetite hormones, such as *ghrelin*, a hunger-arousing hormone secreted by an empty stomach. During bypass surgery for severe obesity, surgeons seal off part of the stomach. The remaining stomach then produces much less ghrelin, and the person's appetite lessens (Lemonick, 2002). Other appetite hormones include *insulin*, *leptin*, *orexin*, and *PYY*; **FIGURES 38.3** and **38.4** illustrate and describe how they influence your feelings of hunger.

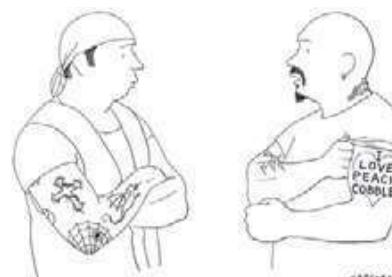
The interaction of appetite hormones and brain activity suggests that the body has some sort of "weight thermostat." When semistarved rats fall below their normal weight, this system signals the body to restore the lost weight. The rats' hunger increases and their energy output decreases. If body weight rises—as happens when rats are force fed—hunger decreases and energy expenditure increases. In this way, rats (and humans) tend to hover around a stable weight, or **set point**, influenced in part by heredity (Keesey & Corbett, 1983).

We humans (and other species, too) vary in our **basal metabolic rate**, a measure of how much energy we use to maintain basic body functions when our body is at rest. But we share a common response to decreased food intake: Our basal metabolic rate drops, as it did for participants in Keys' experiment. After 24 weeks of semistarvation, they stabilized at three-quarters of their normal weight, although they were taking in only *half* their previous calories. How did their bodies achieve this dieter's nightmare? They reduced their energy expenditure, partly by being less active, but partly by dropping their basal metabolic rate by 29 percent.

Some researchers have suggested that the idea of a biologically *fixed* set point is too rigid to explain some things. One thing it doesn't address is that slow, sustained changes in body weight can alter a person's set point (Assanand et al., 1998). Another is that when we

**Figure 38.4****The appetite hormones**

- **Insulin:** Hormone secreted by pancreas; controls blood glucose.
- **Ghrelin:** Hormone secreted by empty stomach; sends "I'm hungry" signals to the brain.
- **Orexin:** Hunger-triggering hormone secreted by hypothalamus.
- **Leptin:** Protein hormone secreted by fat cells; when abundant, causes brain to increase metabolism and decrease hunger.
- **PYY:** Digestive tract hormone; sends "I'm not hungry" signals to the brain.



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have unlimited access to a wide variety of tasty foods, we tend to overeat and gain weight (Raynor & Epstein, 2001). And set points don't explain why psychological factors influence hunger. For all these reasons, some prefer the looser term *settling point* or *set range* to indicate the level at which a person's weight settles in response to caloric intake and energy use. As we will see next, these factors are influenced by environment as well as biology.

The Psychology of Hunger

38-2 What cultural and situational factors influence hunger?

We have seen that our eagerness to eat is pushed by our body chemistry and brain activity. Yet there is more to hunger than meets the stomach. This was strikingly apparent when trickster researchers tested two patients who had no memory for events occurring more than a minute ago (Rozin et al., 1998). If offered a second lunch 20 minutes after eating a normal lunch, both patients readily consumed it . . . and usually a third meal offered 20 minutes after they finished the second. This suggests that one part of our decision to eat is our memory of the time of our last meal. As time passes, we think about eating again, and those thoughts trigger feelings of hunger.

Taste Preferences: Biology and Culture

Body chemistry and environmental factors together influence not only the when of hunger, but also the what—our taste preferences. When feeling tense or depressed, do you crave starchy, carbohydrate-laden foods? Carbohydrates such as pasta, chips, and sweets help boost levels of the neurotransmitter serotonin, which has calming effects. When stressed, even rats find it extra rewarding to scarf Oreos (Artiga et al., 2007; Boggiano et al., 2005).

An acquired taste People everywhere learn to enjoy the fatty, bitter, or spicy foods common in their culture. For these Alaska Natives (left), but not for most other North Americans, whale blubber is a tasty treat. For Peruvians (right), roasted guinea pig is similarly delicious.



RICHARD GUSENIUS/NGS Image Collection



Jeffrey Jackson/Alamy

Our preferences for sweet and salty tastes are genetic and universal, but conditioning can intensify or alter those preferences. People given highly salted foods may develop a liking for excess salt (Beauchamp, 1987). People sickened by a food may develop an aversion to it. (The frequency of children's illnesses provides many chances for them to learn to avoid certain foods.)

Our culture teaches us that some foods are acceptable but others are not. Bedouins enjoy eating the eye of a camel, which most North Americans would find repulsive. North Americans and Europeans also shun horse, dog, and rat meat, all of which are prized elsewhere.

But there is biological wisdom to many of our taste preferences. Environments can influence the human genetics that affect diet and taste. In places where agriculture has produced milk, for example, survival patterns have favored people with lactose tolerance (Arjamaa & Vuorisalo, 2010). And in hot climates (where foods spoil more quickly) recipes often include spices that inhibit the growth of bacteria (**FIGURE 38.5**). India averages nearly 10 spices per meat recipe; Finland, 2 spices. Pregnant women's food dislikes—and the nausea associated with them—peak about the tenth week, when the developing embryo is most vulnerable to toxins.

Rats tend to avoid unfamiliar foods (Scarfani, 1995). So do we, especially those that are animal based. This *neophobia* (dislike of things unfamiliar) surely was adaptive for our ancestors by protecting them from potentially toxic substances. In time, though, most people who repeatedly sample an initially novel fruit drink or ethnic food come to appreciate the new taste (Pliner, 1982, Pliner et al., 1993).

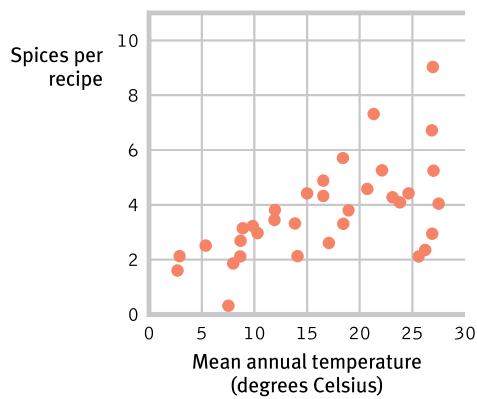


Figure 38.5
Hot cultures like hot spices

Situational Influences on Eating

To a surprising extent, situations also control our eating—a phenomenon psychologists have called the *ecology of eating*. Here are three situations you may have noticed but underestimated:

- Do you eat more when eating with others? Most of us do (Herman et al., 2003; Hetherington et al., 2006). After a party, you may realize you've overeaten. This happens because the presence of others tends to amplify our natural behavior tendencies. (You'll hear more about *social facilitation* in Module 76.)
- *Unit bias* occurs with similar mindlessness. Working with researchers at France's National Center for Scientific Research, Andrew Geier and his colleagues (2006) explored a possible explanation of why French waistlines are smaller than American waistlines. From soda drinks to yogurt sizes, the French offer foods in smaller portion sizes. Does it matter? (One could as well order two small sandwiches as one large one.) To find out, the investigators offered people varieties of free snacks. For example, in the lobby of an apartment house, they laid out either full or half pretzels, big or little Tootsie Rolls, or a big bowl of M&M's with either a small or

large serving scoop. Their consistent result: Offered a supersized standard portion, people put away more calories. In other studies (Wansink, 2006, 2007), even nutrition experts helped themselves to 31 percent more ice cream when given a big bowl rather than a small one, and 15 percent more when scooping with a big rather than a small scoop. Portion size matters.

- *Food variety* also stimulates eating. Offered a dessert buffet, we eat more than we do when asked to choose a portion from one favorite dessert. For our early ancestors, these behaviors were adaptive. When foods were abundant and varied, eating more provided a wide range of vitamins and minerals and produced fat that protected them during winter cold or famine. When a bounty of varied foods was unavailable, eating less extended the food supply until winter or famine ended (Polivy et al., 2008; Remick et al., 2009).



NBCU Photo Bank via Getty Images

Obesity and Weight Control

38-3 What factors predispose some people to become and remain obese?

Obesity can be socially toxic, by affecting both how you are treated and how you feel about yourself. Obesity has been associated with lower psychological well-being, especially among women, and increased risk of depression (de Wit et al., 2010; Luppino et al., 2010; Mendes, 2010a). Obese 6- to 9-year-olds are 60 percent more likely to suffer bullying (Lumeng et al., 2010). And, as we will see, obesity has physical health risks as well. Yet few overweight people win the battle of the bulge. Why? And why do some people gain weight while others eat the same amount and seldom add a pound?

The Physiology of Obesity

Our bodies store fat for good reasons. Fat is an ideal form of stored energy—a high-calorie fuel reserve to carry the body through periods when food is scarce—a common occurrence in our prehistoric ancestors' world. No wonder that in many developing societies today (as in Europe in earlier centuries) people find heavier bodies attractive: Obesity signals affluence and social status (Furnham & Baguma, 1994; Swami et al., 2011).

In parts of the world where food and sweets are now abundantly available, the rule that once served our hungry distant ancestors—*When you find energy-rich fat or sugar, eat it!*—has become dysfunctional. Pretty much everywhere this book is being read, people have a growing problem. The World Health Organization (WHO) (2007) has estimated that more than 1 billion people worldwide are overweight, and 300 million of them are clinically *obese*, defined by the WHO as a *body mass index* (BMI) of 30 or more. (See www.cdc.gov/healthyweight/assessing/bmi to calculate your BMI.) In the United States, the adult obesity rate has more than doubled in the last 40 years, reaching 34 percent, and child-teen obesity has quadrupled (Flegal et al., 2010).

Significant obesity increases the risk of diabetes, high blood pressure, heart disease, gallstones, arthritis, and certain types of cancer, thus increasing health care costs and shortening life expectancy (de Gonzales et al., 2010; Jarrett et al., 2010; Sun et al., 2009). Recent research also has linked women's obesity to their risk of late-life cognitive decline, including Alzheimer's disease and brain tissue loss (Bruce-Keller et al., 2009; Whitmer et al., 2008). One experiment found improved memory performance 12 weeks after severely obese people had weight-loss surgery and lost significant weight. Those not having the surgery showed some further cognitive decline (Gunstad et al., 2011).

Research on the physiology of obesity challenges the stereotype of severely overweight people being weak-willed gluttons.

Cooking shows increase appetites but not healthful home cooking Julia Child was once the only chef on TV. Today dozens of U.S. cooking shows are broadcast to millions of viewers daily. Yet fewer Americans than ever are home cooking their own, more healthful meals (Pollan, 2009). Nations that devote more time to food preparation at home tend to have lower rates of obesity (Cutler et al., 2003).

"Americans, on average, report that they weigh 177 pounds, but would like to weigh 161."
-ELIZABETH MENDES,
WWW.GALLUP.COM, 2010

SET POINT AND METABOLISM

Once we become fat, we require less food to maintain our weight than we did to attain it. Fat has a lower metabolic rate than does muscle—it takes less food energy to maintain. When an overweight person's body drops below its previous set (or settling) point, the person's hunger increases and metabolism decreases. Thus, the body adapts to starvation by burning off fewer calories.

Lean people also seem naturally disposed to move about. They burn more calories than do energy-conserving overweight people who tend to sit still longer (Levine et al., 2005). These individual differences in resting metabolism help explain why two people of the same height, age, and activity level can maintain the same weight, even if one of them eats much less than the other does.

THE GENETIC FACTOR

Do our genes predispose us to fidget or sit still? Studies do reveal a genetic influence on body weight. Consider two examples:

- Despite shared family meals, adoptive siblings' body weights are uncorrelated with one another or with those of their adoptive parents. Rather, people's weights resemble those of their biological parents (Grilo & Pogue-Geile, 1991).
- Identical twins have closely similar weights, even when reared apart (Hjelmborg et al., 2008; Plomin et al., 1997). Across studies, their weight correlates +.74. The much lower +.32 correlation among fraternal twins suggests that genes explain two-thirds of our varying body mass (Maes et al., 1997).

THE FOOD AND ACTIVITY FACTORS

Genes tell an important part of the obesity story. But environmental factors are mighty important, too.

Studies in Europe, Japan, and the United States show that children and adults who suffer from *sleep loss* are more vulnerable to obesity (Keith et al., 2006; Nedeltcheva et al., 2010; Taheri, 2004a,b). With sleep deprivation, the levels of leptin (which reports body fat to the brain) fall, and ghrelin (the appetite-stimulating stomach hormone) rise.

Social influence is another factor. One 32-year study of 12,067 people found them most likely to become obese when a friend became obese (Christakis & Fowler, 2007). If the obese friend was a close one, the odds of likewise becoming obese almost tripled. Moreover, the correlation among friends' weights was not simply a matter of seeking out similar people as friends. Friends matter.

The strongest evidence that environment influences weight comes from *our fattening world* (**FIGURE 38.6**). What explains this growing problem? *Changing food consumption and activity levels* are at work. We are eating more and moving less, with lifestyles approaching those of animal feedlots (where farmers fatten inactive animals). In the United States, jobs requiring moderate physical activity declined from about 50 percent in 1960 to 20 percent in 2011 (Church et al., 2011).

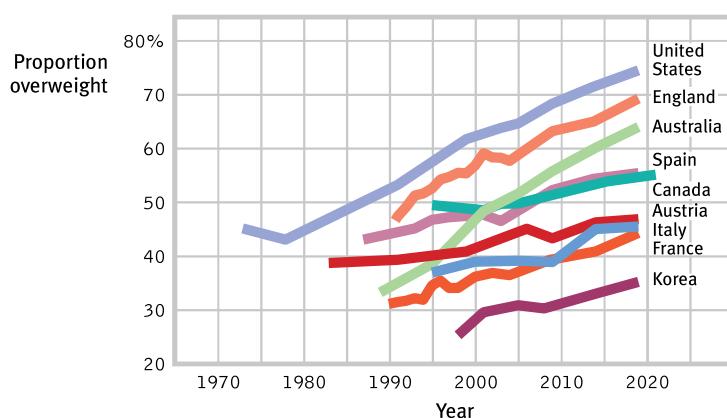
The "bottom" line: New stadiums, theaters, and subway cars—but not airplanes—are widening seats to accommodate the girth growth (Hampson, 2000; Kim & Tong, 2010). Washington State Ferries abandoned a 50-year-old standard: "Eighteen-inch butts are a thing of the past" (Shepherd, 1999). New York City, facing a large problem with Big Apple bottoms, has mostly replaced 17.5-inch bucket-style subway seats with bucketless seats (Hampson, 2000). In the end, today's people need more room.

We will revisit this lesson in Unit XI's study of individual differences. There can be high levels of heritability (genetic influence on individual differences in such things as intelligence) without heredity explaining group differences. Genes mostly determine why one person today is heavier than another. Environment mostly determines why people today



Corey Nolen/Aurora Open/Corbis

"We put fast food on every corner, we put junk food in our schools, we got rid of [physical education classes], we put candy and soda at the checkout stand of every retail outlet you can think of. The results are in. It worked." -HAROLD GOLDSTEIN, EXECUTIVE DIRECTOR OF THE CALIFORNIA CENTER FOR PUBLIC HEALTH ADVOCACY, 2009, WHEN IMAGINING A VAST U.S. NATIONAL EXPERIMENT TO ENCOURAGE WEIGHT GAIN

**Figure 38.6**

Past and projected overweight rates, by the Organization for Economic Cooperation and Development

are heavier than their counterparts 50 years ago. Our eating behavior also demonstrates the now-familiar interaction among biological, psychological, and social-cultural factors. For tips on shedding unwanted pounds, see Close-up: Waist Management.

Close-up

Waist Management

Perhaps you are shaking your head: “Slim chance I have of becoming and staying thin.” People struggling with obesity are well advised to seek medical evaluation and guidance. For others who wish to take off a few pounds, researchers have offered these tips.

Begin only if you feel motivated and self-disciplined.

For most people, permanent weight loss requires making a career of staying thin—a lifelong change in eating habits combined with increased exercise.

Exercise and get enough sleep. Inactive people are often overweight (FIGURE 38.7). Especially when supported by 7 to 8 hours of sleep a night, exercise empties fat cells, builds muscle, speeds up metabolism, and helps lower your settling point (Bennett, 1995; Kolata, 1987; Thompson et al., 1982).

Minimize exposure to tempting food cues. Food shop only on a full stomach. Keep tempting foods out of the house, and store other appealing foods out of sight.

Limit variety and eat healthy foods. Given more variety, people consume more; eat simple meals with whole grains, fruits, and vegetables. Healthy fats, such as those found in olive oil and fish, help regulate appetite and artery-clogging cholesterol (Taubes, 2001, 2002). Better crispy greens than Krispy Kremes.

Reduce portion sizes. Serve food with smaller bowls, plates, and utensils.

Don’t starve all day and eat one big meal at night. This eating pattern, common among overweight people, slows metabolism. Moreover, those who eat a balanced breakfast are, by late morning, more alert and less fatigued (Spring et al., 1992).

Beware of the binge. Especially for men, eating slowly can lead to eating less (Martin et al., 2007). Among people who do consciously restrain their eating, drinking alcohol or feeling anxious or depressed can unleash the urge to eat (Herman & Polivy, 1980).

Before eating with others, decide how much you want to eat.

Eating with friends can distract us from monitoring our own eating (Ward & Mann, 2000).

Remember, most people occasionally lapse. A lapse need not become a full collapse.

Connect to a support group. Join with others, either face-to-face or online, with whom you can share your goals and progress (Freedman, 2011).

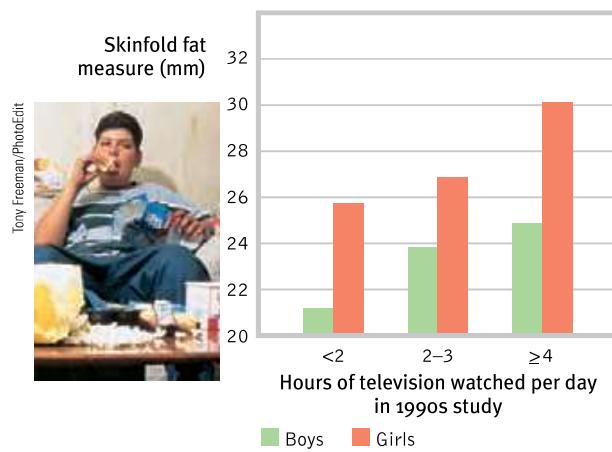


Figure 38.7 American idle: Couch potatoes beware—TV watching correlates with obesity As lifestyles have become more sedentary and TV watching has increased, so has the percentage of overweight people in Britain, Canada, and the United States (Pagani et al., 2010). When California children were placed in a TV-reduction educational program, they watched less—and lost weight (Robinson, 1999). Don’t watch TV? Then watch out for other screen time that keeps your motor idling.

Before You Move On

► ASK YOURSELF

Do you feel in touch with your body's hunger signals? Do you eat when your body needs food? Or do you tend to be more externally influenced by enticing foods even when you're full?

► TEST YOURSELF

You've skipped lunch to meet with your guidance counselor so you haven't eaten anything in eight hours. As your favorite dish is placed in front of you, your mouth waters. Even imagining this may set your mouth to watering. What triggers this anticipatory salivation?

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 38 Review

38-1 What physiological factors produce hunger?

- Hunger's pangs correspond to the stomach's contractions, but hunger also has other causes.
- Neural areas in the brain, some within the hypothalamus, monitor blood chemistry (including glucose level) and incoming information about the body's state.
- Appetite hormones include insulin (controls blood glucose); ghrelin (secreted by an empty stomach); orexin (secreted by the hypothalamus); leptin (secreted by fat cells); and PYY (secreted by the digestive tract).
- *Basal metabolic rate* is the body's resting rate of energy expenditure.
- The body may have a *set point* (a biologically fixed tendency to maintain an optimum weight) or a looser settling point (also influenced by the environment).

38-3 What factors predispose some people to become and remain obese?

- Genes and environment interact to produce obesity.
 - Obesity correlates with depression, especially among women.
 - Twin and adoption studies indicate that body weight is also genetically influenced.
 - Environmental influences include lack of exercise, an abundance of high-calorie food, and social influence.
- Those wishing to lose weight are advised to make a lifelong change in habits: Get enough sleep; boost energy expenditure through exercise; limit variety and minimize exposure to tempting food cues; eat healthy foods and reduce portion sizes; space meals throughout the day; beware of the binge; monitor eating during social events; forgive the occasional lapse; and connect to a support group.

38-2 What cultural and situational factors influence hunger?

- Hunger also reflects our memory of when we last ate and our expectation of when we should eat again.
- Humans as a species prefer certain tastes (such as sweet and salty), but our individual preferences are also influenced by conditioning, culture, and situation.
- Some taste preferences, such as the avoidance of new foods, or of foods that have made us ill, have survival value.

Multiple-Choice Questions

- 1.** Which of the following is the major source of energy in your body?
 - a. PYY
 - b. Arcuate nucleus
 - c. Hypothalamus
 - d. Ghrelin
 - e. Glucose
- 2.** Which of the following is the best term or phrase for the body's resting rate of energy expenditure?
 - a. Hunger
 - b. Set point
 - c. Basal metabolic rate
 - d. Body chemistry
 - e. Settling point
- 3.** Which of the following statements is true?
 - a. We eat less dessert when there are three different desserts available.
 - b. Serving sizes in France are generally larger than in the United States.
 - c. Offered a supersized portion, most of us consume fewer calories.
 - d. We eat more when we're around others.
 - e. Food variety generally decreases appetite.

Practice FRQs

- 1.** Explain the activity of the appetite hormones insulin and leptin.

Answer

1 point: Insulin controls blood glucose.

1 point: Leptin causes the brain to increase metabolism and decrease hunger.

- 2.** Explain the difference between set point and basal metabolic rate.

(2 points)

Module 39

Sexual Motivation

Module Learning Objectives

39-1 Describe the human sexual response cycle, and identify the dysfunctions that disrupt it.

39-2 Discuss the impact of hormones, and external and internal stimuli, on human sexual motivation.



Steve Cole/Getty Images

sexual response cycle the four stages of sexual responding described by Masters and Johnson—excitement, plateau, orgasm, and resolution.

Sex is part of life. Had this not been so for all your ancestors, you would not be reading this book. Sexual motivation is nature's clever way of making people procreate, thus enabling our species' survival. When two people feel an attraction, they hardly stop to think of themselves as guided by their genes. As the pleasure we take in eating is nature's method of getting our body nourishment, so the desires and pleasures of sex are our genes' way of preserving and spreading themselves. Life is sexually transmitted.

The Physiology of Sex

Like hunger, sexual arousal depends on the interplay of internal and external stimuli. To understand sexual motivation, we must consider both.

The Sexual Response Cycle

39-1 What is the human sexual response cycle, and what dysfunctions disrupt it?

In the 1960s, gynecologist-obstetrician William Masters and his collaborator Virginia Johnson (1966) made headlines by recording the physiological responses of volunteers who masturbated or had intercourse. With the help of 382 female and 312 male volunteers—a somewhat atypical sample, consisting only of people able and willing to display arousal and orgasm while being observed in a laboratory—Masters and Johnson monitored or filmed more than 10,000 sexual “cycles.” Their description of the **sexual response cycle** identified four stages. During the initial *excitement phase*, men’s and women’s genital areas become engorged with blood, a woman’s vagina expands and secretes lubricant, and her breasts and nipples may enlarge.

In the *plateau phase*, excitement peaks as breathing, pulse, and blood pressure rates continue to increase. The penis becomes fully engorged and some fluid—frequently containing enough live sperm to enable conception—may appear at its tip. Vaginal secretion continues to increase.

Masters and Johnson observed muscle contractions all over the body during *orgasm*; these were accompanied by further increases in breathing, pulse, and blood pressure rates.

At orgasm, pulse rate surges from about 70 to 115 beats per minute (Jackson, 2009). A woman's arousal and orgasm facilitate conception by positioning the uterus to receive sperm, and drawing the sperm further inward. A woman's orgasm therefore not only reinforces intercourse, which is essential to natural reproduction, it also increases retention of deposited sperm (Furlow & Thornhill, 1996).

The pleasurable feeling of sexual release apparently is much the same for both sexes. In one study, a panel of experts could not reliably distinguish between descriptions of orgasm written by men and those written by women (Vance & Wagner, 1976). University of Groningen neuroscientist Gert Holstege and his colleagues (2003a,b) understand why. They discovered that when men and women undergo PET scans while having orgasms, the same subcortical brain regions glow. And when people who are passionately in love undergo fMRI scans while viewing photos of their beloved or of a stranger, men's and women's brain responses to their partner are pretty similar (Fisher et al., 2002).

The body gradually returns to its unaroused state as the engorged genital blood vessels release their accumulated blood—relatively quickly if orgasm has occurred, relatively slowly otherwise. (It's like the nasal tickle that goes away rapidly if you have sneezed, slowly otherwise.) During this *resolution phase*, the male enters a **refractory period**, lasting from a few minutes to a day or more, during which he is incapable of another orgasm. The female's much shorter refractory period may enable her to have more orgasms if restimulated during or soon after resolution.

Sexual Dysfunctions and Paraphilic Disorders

Masters and Johnson sought not only to describe the human sexual response cycle but also to understand and treat the inability to complete it. **Sexual dysfunctions** are problems that consistently impair sexual arousal or functioning. Some involve sexual motivation, especially lack of sexual energy and arousability. For men, others include *erectile disorder* (inability to have or maintain an erection) and *premature ejaculation*. For women, the problem may be pain or *female orgasmic disorder* (distress over infrequently or never experiencing orgasm). In separate surveys of some 3000 Boston women and 32,000 other American women, about 4 in 10 reported a sexual problem, such as orgasmic disorder or low desire, but only about 1 in 8 reported that this caused personal distress (Lutfey et al., 2009; Shifren et al., 2008). Most women who experience sexual distress relate it to their emotional relationship with the partner during sex (Bancroft et al., 2003).

Men and women with sexual dysfunctions can often be helped through therapy. In behaviorally oriented therapy, for example, men learn ways to control their urge to ejaculate, and women are trained to bring themselves to orgasm. Starting with the introduction of Viagra in 1998, erectile disorder has been routinely treated by taking a pill.

Sexual dysfunction involves problems with arousal or sexual functioning. People with *paraphilic disorders* such as exhibitionism, fetishism, and pedophilia, do experience sexual arousal, but they direct it in unusual ways. The American Psychiatric Association (2013) only classifies such behavior as disordered if

- a person experiences distress from their unusual sexual interest or
- the sexual desire or behavior entails harm or risk of harm to others.

Hormones and Sexual Behavior

39-2 How do hormones, and external and internal stimuli, influence human sexual motivation?

Sex hormones have two effects: They direct the physical development of male and female sex characteristics, and (especially in nonhuman animals) they activate sexual behavior. In most mammals, nature neatly synchronizes sex with fertility. The female becomes sexually receptive

refractory period a resting period after orgasm, during which a man cannot achieve another orgasm.

sexual dysfunction a problem that consistently impairs sexual arousal or functioning.

FYI

In a National Center for Health Statistics survey of adult Americans, using computer-assisted self-interviews that guaranteed privacy, nearly 98 percent of 30- to 59-year-olds reported having had sex with someone (Fryar et al., 2007).

(in other animals, being “in heat”) when secretion of the female hormones, the **estrogens** (such as estradiol), peaks during ovulation. In experiments, researchers can stimulate receptivity by injecting female animals with an estrogen. Male hormone levels are more constant, and hormone injection does not so easily manipulate the sexual behavior of male animals (Feder, 1984). Nevertheless, castrated male rats—having lost their testes, which manufacture the male sex hormone **testosterone**—gradually lose much of their interest in receptive females. They gradually regain it if injected with testosterone.

AP® Exam Tip

The central principle here is that there are many biological processes that govern human behavior less rigidly than they govern the behaviors of other species. Because of our highly developed brain, sex hormones have less control over our behavior than they do over other animals’ behavior.

estrogens sex hormones, such as estradiol, secreted in greater amounts by females than by males and contributing to female sex characteristics. In nonhuman female mammals, estrogen levels peak during ovulation, promoting sexual receptivity.

testosterone the most important of the male sex hormones. Both males and females have it, but the additional testosterone in males stimulates the growth of the male sex organs in the fetus and the development of the male sex characteristics during puberty.

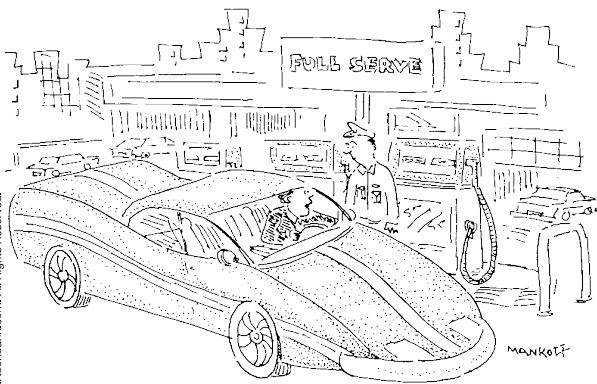
In humans, hormones more loosely influence sexual behavior, although sexual desire rises slightly at ovulation among women with mates (Pillsworth et al., 2004). When at peak fertility in their menstrual cycle, women express increased preference for masculine faces and ability to detect sexual orientation, but also increased apprehensiveness of men perceived as potentially sexually coercive (Eastwick, 2009; Little et al., 2008; Navarrete et al., 2009; Rule et al., 2011). One study invited partnered women not at risk for pregnancy to keep a diary of their sexual activity. (These women were either using intrauterine devices or had undergone surgery to prevent pregnancy.) On the days around ovulation, intercourse was 24 percent more frequent (Wilcox et al., 2004).

Women’s sexuality differs from that of other mammalian females in being more responsive to testosterone level (van Anders & Dunn, 2009). If a woman’s natural testosterone level drops, as happens with removal of the ovaries or adrenal glands, her sexual interest may wane. But testosterone-replacement therapy sometimes restores diminished sexual appetite. That is the finding of experiments with hundreds of surgically or naturally menopausal women, for whom a testosterone-replacement patch restored sexual activity, arousal, and desire more than did a placebo (Braunstein et al., 2005; Buster et al., 2005; Petersen & Hyde, 2011). For men with abnormally low testosterone levels, testosterone-replacement therapy often increases sexual desire and also energy and vitality (Yates, 2000).

In men, normal fluctuations in testosterone levels, from man to man and hour to hour, have little effect on sexual drive (Byrne, 1982). Indeed, fluctuations in male hormones are partly a *response* to sexual stimulation. In the presence of an attractive female, Australian skateboarders’ testosterone surges, which contributes to riskier moves and more crash landings (Ronay & von Hippel, 2010). Thus, sexual arousal can be a cause as well as a consequence of increased testosterone levels.

Although normal short-term hormonal changes have little effect on men’s and women’s desire, large hormonal shifts over the life span have a greater effect. A person’s interest in dating and sexual stimulation usually increases with the pubertal surge in sex hormones. If the hormonal surge is precluded—as it was during the 1600s and 1700s for prepubertal boys who were castrated to preserve their soprano voices for Italian opera—the normal development of sex characteristics and sexual desire does not occur (Peschel & Peschel, 1987). When adult men are castrated, sex drive typically falls as testosterone levels decline sharply (Hucker & Bain, 1990). Male sex offenders taking Depo-Provera, a drug that reduces testosterone levels to that of a prepubertal boy, similarly lose much of their sexual urge (Bilefsky, 2009; Money et al., 1983). In later life, as sex hormone levels decline, the frequency of sexual fantasies and intercourse declines as well (Leitenberg & Henning, 1995).

To summarize: We might compare human sex hormones, especially testosterone, to the fuel in a car. Without fuel, a car will not run. But if the fuel level is minimally adequate, adding more fuel to the gas tank won’t change how the car runs. The analogy is imperfect, because hormones and sexual motivation interact. However, it correctly suggests that biology is a necessary but not sufficient explanation of human sexual behavior. The hormonal fuel is essential, but so are the psychological stimuli that turn on the engine, keep it running, and shift it into high gear.



“Fill'er up with testosterone.”

The Psychology of Sex

Hunger and sex are different sorts of motivations. Hunger responds to a *need*. If we do not eat, we die. Sex is not in this sense a need. (We may feel like dying, but we do not.) Nevertheless, there are similarities between hunger and sexual motivation. Both depend on internal physiological factors. Both reflect the interplay of excitatory and inhibitory responses—the body's acceleration and braking systems (Bancroft et al., 2009). And both are influenced by external and imagined stimuli, and by cultural expectations (**FIGURE 39.1**).

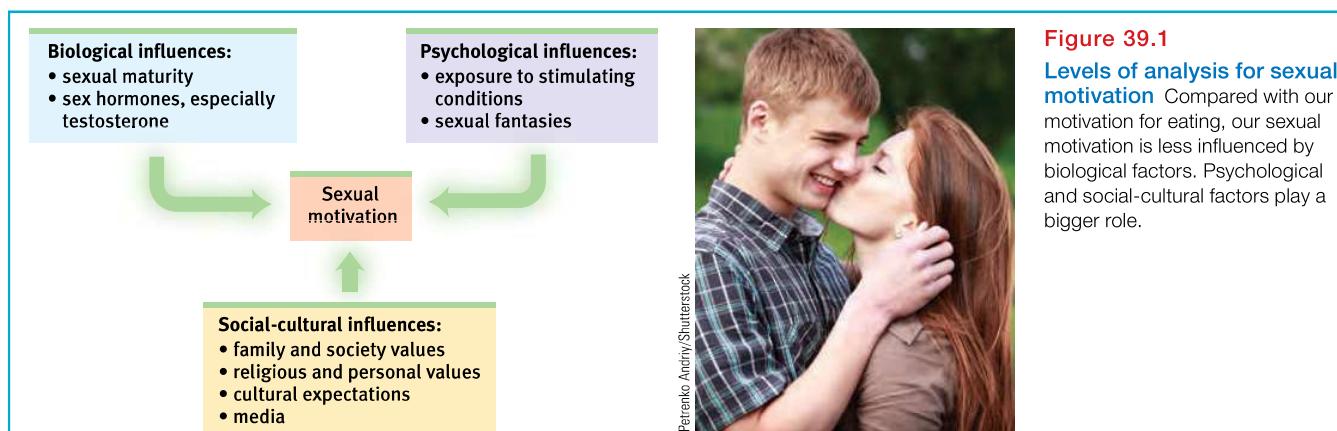


Figure 39.1

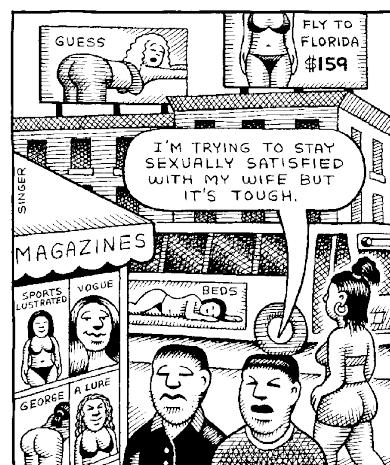
Levels of analysis for sexual motivation Compared with our motivation for eating, our sexual motivation is less influenced by biological factors. Psychological and social-cultural factors play a bigger role.

External Stimuli

Many studies confirm that men become aroused when they see, hear, or read erotic material. Surprising to many (because sexually explicit materials are marketed mostly to men) is that most women—at least the less-inhibited women who volunteer to participate in such studies—report or exhibit nearly as much arousal to the same stimuli (Heiman, 1975; Stockton & Murnen, 1992). (Their brains do, however, respond differently, with fMRI scans revealing a more active amygdala in men viewing erotica [Hamann et al., 2004].) In 132 such experiments, men's feelings of sexual arousal have much more closely mirrored their (more obvious) genital response than have women's (Chivers et al., 2010).

People may find sexual arousal either pleasing or disturbing. (Those who wish to control their arousal often limit their exposure to such materials, just as those wishing to control hunger limit their exposure to tempting cues.) With repeated exposure, the emotional response to any erotic stimulus often lessens, or *habituates*. During the 1920s, when Western women's hemlines first reached the knee, an exposed leg was a mildly erotic stimulus.

Can sexually explicit material have adverse effects? Research indicates that it can. Depictions of women being sexually coerced—and liking it—tend to increase viewers' acceptance of the false idea that women enjoy rape, and they tend to increase male viewers' willingness to hurt women (Malamuth & Check, 1981; Zillmann, 1989). Viewing images of sexually attractive women and men may also lead people to devalue their own partners and relationships. After male collegians viewed TV or magazine depictions of sexually attractive women, they often found an average woman, or their own girlfriend or wife, less attractive (Kenrick & Gutierres, 1980; Kenrick et al., 1989; Weaver et al., 1984). Viewing X-rated sex films similarly tends to diminish people's satisfaction with their own sexual partner (Zillmann, 1989). Perhaps reading or watching erotica creates expectations that few men and women can fulfill.



Andrew Singer

"Ours is a society which stimulates interest in sex by constant titillation. . . . Cinema, television, and all the formidable array of our marketing technology project our very effective forms of titillation and our prejudices about man as a sexy animal into every corner of every hotel in the world." -GERMAINE GREER, 1984

Imagined Stimuli

The brain, it has been said, is our most significant sex organ. The stimuli inside our heads—our imagination—can influence sexual arousal and desire. People who, because of a spinal-cord injury, have no genital sensation can still feel sexual desire (Willmuth, 1987). Consider, too, the erotic potential of dreams. Sleep researchers have discovered that genital arousal accompanies all types of dreams, even though most dreams have no sexual content. But in nearly all men and some 40 percent of women, dreams sometimes contain sexual imagery that leads to orgasm (Wells, 1986). In men, nighttime orgasm and nocturnal emissions (“wet dreams”) are more likely when orgasm has not occurred recently.

About 95 percent of both men and women say they have sexual fantasies. Men (whether gay or straight) fantasize about sex more often, more physically, and less romantically. They also prefer less personal and faster-paced sexual content in books and videos (Leitenberg & Henning, 1995). Fantasizing about sex does *not* indicate a sexual problem or dissatisfaction. If anything, sexually active people have more sexual fantasies.

Before You Move On

► ASK YOURSELF

What psychological and social-cultural factors have affected your sexual motivation?

► TEST YOURSELF

How might the evolutionary perspective, drive-reduction theory, and arousal theory explain our sexual motivation?

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 39 Review

39-1

What is the human sexual response cycle, and what dysfunctions disrupt it?

- William Masters and Virginia Johnson described four stages in the human *sexual response cycle*: excitement, plateau, orgasm (which seems to involve similar feelings and brain activity in males and females), and resolution.
- In the resolution phase, males experience a *refractory period*, during which renewed arousal and orgasm are impossible.
- *Sexual dysfunctions* are problems that consistently impair sexual arousal or functioning. They can often be successfully treated by behaviorally oriented therapy or drug therapy.

39-2

How do hormones, and external and internal stimuli, influence human sexual motivation?

- The female *estrogen* and male *testosterone* hormones influence human sexual behavior less directly than they influence sexual behavior in other species. Short-term shifts in testosterone level are normal in men, partly in response to stimulation.
- External stimuli can trigger sexual arousal in both men and women, although the activated brain areas differ somewhat.
 - Men respond more specifically to sexual depictions involving their preferred sex.
 - Sexually explicit material may lead people to perceive their partners as comparatively less appealing and to devalue their relationships. Imagined stimuli (dreams and fantasies) also influence sexual arousal.

Multiple-Choice Questions

- 1.** Which of the following best describes the relationship between gender and orgasm?
 - a. You can use fMRIs to identify when orgasm occurs in men, but this method is unreliable in women.
 - b. Men describe orgasm in physical terms and women describe orgasm in emotional terms.
 - c. Orgasm activates subcortical regions in men and cortical regions in women.
 - d. Men and women describe orgasm similarly.
 - e. Orgasm serves evolutionary purposes in women but not in men.

- 2.** About _____ percent of the population experience sexual fantasies.
 - a. 95
 - b. 68
 - c. 50
 - d. 35
 - e. 20

- 3.** Which of the following is true concerning the effect of sex hormones?
 - a. Hormone injections can be used to easily manipulate sexual behavior in males but not in females.
 - b. Hormone injections can be used to easily manipulate sexual behavior in both males and females.
 - c. Sex hormones have a more direct effect on nonhuman animals than on humans.
 - d. The levels of sex hormones are more constant in females than in males.
 - e. While studies have shown that ovulation is associated with changes in women's fantasies, they have not established an association between ovulation and women's sexual behavior.

Practice FRQs

- 1.** Describe one influence on sexual motivation from each of the following categories:
 - Biological
 - Psychological
 - Social-cultural

- 2.** Name and briefly describe the four stages of the sexual response cycle identified by Masters and Johnson.
(4 points)

Answer

1 point: Biological: hormones, sexual orientation.

1 point: Psychological: exposure to sexually stimulating material, fantasizing.

1 point: Social-cultural: religious and personal values, media.

Module 40

Social Motivation: Affiliation Needs

Module Learning Objectives

- 40-1** Describe the evidence that points to our human affiliation need—our need to belong.
- 40-2** Describe how social networking influences us.



40-1 What evidence points to our human affiliation need—our need to belong?

The social stigma attached to obesity may bother an overweight person as much as, or more than, the health concerns. Why? We are what Greek philosopher Aristotle called *the social animal*. Cut off from friends or family—alone in prison or at a new school or in a foreign land—most people feel keenly their lost connections with important others. This deep *need to belong*—our *affiliation need*—seems to be a basic human motivation (Baumeister & Leary, 1995). Although healthy people vary in their wish for privacy and solitude, most of us seek to affiliate with others, even to become strongly attached to certain others in enduring, close relationships. Human beings, contended personality theorist Alfred Adler, have an “urge to community” (Ferguson, 1989, 2001, 2010). Our psychological needs drive our adaptive behaviors and, when satisfied, enhance our psychological well-being (Sheldon, 2011).

The Benefits of Belonging

Social bonds boosted our early ancestors’ chances of survival. Adults who formed attachments were more likely to reproduce and to co-nurture their offspring to maturity. Attachment bonds helped keep those children close to their caregivers, protecting them from many threats. Indeed, to be “wretched” literally means, in its Middle English origin (*wrecche*), to be without kin nearby.

Cooperation also enhanced survival. In solo combat, our ancestors were not the toughest predators. But as hunters, they learned that six hands were better than two. As food gatherers, they gained protection from two-footed and four-footed enemies by traveling in groups. Those who felt a need to belong survived and reproduced most successfully, and their genes now predominate. We are innately social creatures. People in every society on Earth belong to groups and (as Module 77 explains) prefer and favor “us” over “them.”

Do you have close friends—people with whom you freely disclose your ups and downs? Having someone who rejoices with us over good news helps us feel even better about the good news, as well as about the friendship (Reis et al., 2010). The need to belong runs deeper, it seems, than the need to be rich. One study found that *very* happy university students were distinguished not by their money but by their “rich and satisfying close relationships” (Diener & Seligman, 2002).

“We must love one another or die.” -W. H. AUDEN, “SEPTEMBER 1, 1939”

The need to belong colors our thoughts and emotions. We spend a great deal of time thinking about actual and hoped-for relationships. When relationships form, we often feel joy. Falling in mutual love, people have been known to feel their cheeks ache from their irrepressible grins. Asked, "What is necessary for your happiness?" or "What is it that makes your life meaningful?" most people have mentioned—before anything else—close, satisfying relationships with family, friends, or romantic partners (Berscheid, 1985). Happiness hits close to home.

Consider: What was your most satisfying moment in the past week? Researchers asked that question of American and South Korean collegians, then asked them to rate how much that moment had satisfied various needs (Sheldon et al., 2001). In both countries, the peak moment had contributed most to satisfaction of self-esteem and relatedness-belonging needs. When our need for relatedness is satisfied in balance with two other basic psychological needs—*autonomy* (a sense of personal control) and *competence*—we experience a deep sense of well-being, and our self-esteem rides high (Deci & Ryan, 2002, 2009; Milyavskaya et al., 2009; Sheldon & Niemiec, 2006). Indeed, *self-esteem* is a gauge of how valued and accepted we feel (Leary et al., 1998).

Is it surprising, then, that so much of our social behavior aims to increase our feelings of belonging? To gain acceptance, we generally conform to group standards. We monitor our behavior, hoping to make a good impression. We spend billions on clothes, cosmetics, and diet and fitness aids—all motivated by our search for love and acceptance.

By drawing a sharp circle around "us," the need to belong feeds both deep attachments and menacing threats. Out of our need to define a "we" come loving families, faithful friendships, and team spirit, but also teen gangs, ethnic rivalries, and fanatic nationalism.

For good or for bad, we work hard to build and maintain our relationships. Familiarity breeds liking, not contempt. Thrown together in groups at school, at band camp, on a hiking trip, we behave like magnets, moving closer, forming bonds. Parting, we feel distress. We promise to call, to write, to come back for reunions.

This happens in part because feelings of love activate brain reward and safety systems. In one experiment involving exposure to heat, deeply-in-love university students felt markedly less pain when looking at their beloved's picture (rather than viewing someone else's photo or being distracted by a word task) (Younger et al., 2010). Pictures of our loved ones also activate a brain region associated with safety—the prefrontal cortex—that dampens feelings of physical pain (Eisenberger et al., 2011). Love is a natural painkiller.

Even when bad relationships break, people suffer. In one 16-nation survey, and in repeated U.S. surveys, separated and divorced people have been half as likely as married people to say they were "very happy" (Inglehart, 1990; NORC, 2010). After such separations, loneliness and anger—and sometimes even a strange desire to be near the former partner—linger. For those in abusive relationships, the fear of being alone sometimes seems worse than the certainty of emotional or physical pain.

Children who move through a series of foster homes or through repeated family relocations know the fear of being alone. After repeated disruption of budding attachments, they may have difficulty forming deep attachments (Oishi & Schimmack, 2010b). The evidence is clearest at the extremes—the children who grow up in institutions without a sense of belonging to anyone, or who are locked away at home and severely neglected. Too many become withdrawn, frightened, speechless. Feeling insecurely attached to others during childhood can persist into adulthood, in two main forms (Fraley et al., 2011). Some display *insecure anxious attachment*, constantly craving acceptance but remaining vigilant to signs of possible rejection. Others are trapped in *insecure avoidant attachment*, feeling such discomfort over getting close to others that they employ avoidant strategies to maintain their distance.



Photodisc/Jupiterimages

The need to connect Six days a week, women from the Philippines work as "domestic helpers" in 154,000 Hong Kong households. On Sundays, they throng to the central business district to picnic, dance, sing, talk, and laugh. "Humanity could stage no greater display of happiness," reported one observer (*Economist*, 2001).



AP Photo/Vincent Yu

No matter how secure our early years were, we all experience anxiety, loneliness, jealousy, or guilt when something threatens or dissolves our social ties. Much as life's best moments occur when close relationships begin—making a new friend, falling in love, having a baby—life's worst moments happen when close relationships end (Jaremka et al., 2011). Bereaved, we may feel life is empty, pointless. Even the first weeks living on a college campus away from home can be distressing.

For immigrants and refugees moving alone to new places, the stress and loneliness can be depressing. After years of placing individual families in isolated communities, U.S. immigration policies began to encourage *chain migration* (Pipher, 2002). The second refugee Sudanese family settling in a town generally has an easier adjustment than the first.

Social isolation can put us at risk for mental decline and ill health (Cacioppo & Hawkley, 2009). But if feelings of acceptance and connection increase, so will self-esteem, positive feelings, and the desire to help rather than hurt others (Blackhart et al., 2009; Buckley & Leary, 2001).

The Pain of Being Shut Out

Can you recall feeling excluded or ignored or shunned? Perhaps you received the silent treatment. Perhaps people avoided you or averted their eyes in your presence or even mocked you behind your back. If you are like others, even being in a group speaking a different language may have left you feeling excluded, a linguistic outsider (Dotan-Eliaz et al., 2009). In one mock-interview study, women felt more excluded if interviewers used gender-exclusive language (*he, his, him*) rather than inclusive (*his or her*) or neutral (*their*) language (Stout & Dasgupta, 2011).

All these experiences are instances of *ostracism*—of social exclusion (Williams 2007, 2009). Worldwide, humans use many forms of ostracism—exile, imprisonment, solitary confinement—to punish, and therefore control, social behavior. For children, even a brief time-out in isolation can be punishing. Asked to describe personal episodes that made them feel especially *bad* about themselves, people will—about four times in five—describe a relationship difficulty (Pillemer et al., 2007). Feelings of loneliness can also spread from person to person like a disease, through one's acquaintances (Cacioppo et al., 2009).

Being shunned—given the cold shoulder or the silent treatment, with others' eyes avoiding yours—threatens one's need to belong (Williams & Zadro, 2001). "It's the meanest thing you can do to someone, especially if you know they can't fight back. I never should have been born," said Lea, a lifelong victim of the silent treatment by her mother and grandmother. Like Lea, people often respond to ostracism with depressed moods, initial efforts to restore their acceptance, and then withdrawal. After two years of silent treatment by his employer, Richard reported, "I came home every night and cried. I lost 25 pounds, had no self-esteem and felt that I wasn't worthy."

To experience ostracism is to experience real pain, as social psychologist Kipling Williams and his colleagues were surprised to discover in their studies of *cyber-ostracism* (Gonsalkorale & Williams, 2006). (Perhaps you can recall the feeling of being unfriended or having few followers on a social networking site, being ignored in a chat room, or having a text message or e-mail go unanswered.) Such ostracism, they discovered, takes a toll: It elicits increased activity in brain areas, such as the *anterior cingulate cortex*, that also activate in response to physical pain (Kross et al., 2011; Lieberman & Eisenberger, 2009). That helps explain another surprising finding: The pain-reliever acetaminophen (as in Tylenol and Anacin) lessens *social* as well as physical pain (DeWall et al., 2010). Across cultures, people use the same words (for example, *hurt, crushed*) for social pain and physical pain (MacDonald & Leary, 2005). Psychologically, we seem to experience social pain with the same emotional unpleasantness that marks physical pain.

Enduring the pain of ostracism

Caucasian cadets at the United States Military Academy at West Point ostracized Henry Flipper for years, hoping he would drop out. He somehow resisted their cruelty and in 1877 became the first African-American West Point graduate.



The Granger Collection, New York

CBS/Getty Images



Social acceptance and rejection Successful participants on the reality TV show *Survivor* form alliances and gain acceptance among their peers. The rest receive the ultimate social punishment as they are “voted off the island.”

Pain, whatever its source, focuses our attention and motivates corrective action. Rejected and unable to remedy the situation, people may seek new friends or relieve stress in a strengthened religious faith (Aydin et al., 2010). Or they may turn nasty. In a series of experiments, researchers (Baumeister et al., 2002; Twenge et al., 2001, 2002, 2007) told some students (who had taken a personality test) that they were “the type likely to end up alone later in life,” or that people they had met didn’t want them in a group that was forming. They told other students that they would have “rewarding relationships throughout life,” or that “everyone chose you as someone they’d like to work with.” Those excluded became much more likely to engage in self-defeating behaviors and to underperform on aptitude tests. The rejection also interfered with their empathy for others and made them more likely to act in disparaging or aggressive ways against those who had excluded them (blasting them with noise, for example). “If intelligent, well-adjusted, successful . . . students can turn aggressive in response to a small laboratory experience of social exclusion,” noted the research team, “it is disturbing to imagine the aggressive tendencies that might arise from . . . chronic exclusion from desired groups in actual social life.” Indeed, as Williams (2007) has observed, ostracism “weaves through case after case of school violence.”

FYI

Note: The researchers later debriefed and reassured the participants.

Connecting and Social Networking

40-2 How does social networking influence us?

As social creatures, we live for connection. Asked what he had learned from studying 238 Harvard University men from the 1930s to the end of their lives, researcher George Vaillant (2009) replied, “The only thing that really matters in life are your relationships to other people.” A South African Zulu saying captures the idea: *Umntu ngumuntu ngabantu*—“a person is a person through other persons.”

AP® Exam Tip

Free-response questions on the AP® exam often ask students to apply psychological principles to real-life situations. It’s easy to imagine a question that deals with social media.

Mobile Networks and Social Media

Look around and see humans connecting: talking, texting, posting, chatting, social gaming, e-mailing. The changes in how we connect have been fast and vast:

- Cell phones have been history’s most rapidly adopted technology. At the end of 2010, the world had 7.1 billion people and 6.8 billion mobile cell-phone subscriptions (ITU, 2013). Asia and Europe have lead the way. In 2012 in India, 925 million people had mobile phone access—more than had a home toilet (Krishna, 2012; Mishra, 2013). American youth have kept up with the world: In 2013, 78 percent of 12- to 17-year-olds were cell-phone users (Pew, 2013).

“There’s no question in my mind about what stands at the heart of the communication revolution—the human desire to connect.”
—SKYPE PRESIDENT JOSH SILVERMAN, 2009



Image Source/SuperStock

- Texting and e-mailing have been displacing phone talking, which by 2009 accounted for less than half of U.S. mobile network traffic (Wortham, 2010). In Canada and elsewhere, e-mailing has declined, displaced by texting, Facebook, and other messaging technology (IPSOS, 2010a). Speedy texting is not really writing, said one observer (McWhorter, 2012), but rather a new form of conversation—"fingered speech."
- For many, it's as though friends, for better or worse, are always present. How many of us are using social networking sites, such as Facebook or Twitter? Among 2010's entering American collegians, 94 percent were (Pryor et al., 2011). With a "critical mass" of your friends on a social network, its lure becomes hard to resist. Such is our need to belong. Check in or miss out.

The Social Effects of Social Networking

By connecting like-minded people, the Internet serves as a social amplifier. It also functions as an online dating matchmaker (more on those topics in Module 79). As electronic communication has become part of our "new normal," researchers have explored how these changes have affected our relationships.

HAVE SOCIAL NETWORKING SITES MADE US MORE, OR LESS, SOCIALLY ISOLATED?

In the Internet's early years, when online communication in chat rooms and during social games was mostly between strangers, the adolescents and adults who spent more time online spent less time with friends (Kraut et al., 1998; Mesch, 2001; Nie, 2001). As a result, their offline relationships suffered. Even in more recent times, lonely people have tended to spend greater-than-average time online (Bonetti et al., 2010; Stepanikova et al., 2010). Social networkers have been less likely to know their real-world neighbors and "64 percent less likely than non-Internet users to rely on neighbors for help in caring for themselves or a family member" (Pew, 2009).

But the Internet has also diversified our social networks. I am now connected to other hearing-technology advocates across the world and perhaps you, too, have found a group of kindred spirits online. Despite the decrease in neighborliness, social networking seems mostly to have strengthened our connections with people we already know (DiSalvo, 2010; Valkenburg & Peter, 2009). If your social networking helps you connect with friends, stay in touch with extended family, or find support in facing challenges, then you are not alone (Rainie et al., 2011). For many, though, being alone is not the problem. If you are like other students, two days of social networking deprivation would be followed by a glut of online time, much as you would eat voraciously after a two-day food fast (Sheldon et al., 2011). Social networks connect us, but they can also become gigantic time- and attention-sucking diversions. For some research-based strategies, see Close-up: Managing Your Social Networking.



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Close-up

Managing Your Social Networking

In today's world, each of us is challenged to find a healthy balance between our real-world time with people and our online sharing. In both Taiwan and the United States, excessive online socializing and gaming have been associated with lower grades (Chen & Fu, 2008; Kaiser Family Foundation, 2010). In one U.S. survey, 47 percent of the heaviest users of the Internet and other media were receiving mostly C grades or lower, as were just 23 percent of the lightest users (Kaiser Family Foundation, 2010). The heaviest users may be almost constantly connected, sometimes even awakening during the night long enough to reply to a text but not long enough to remember it the next day.

If you're trying to maintain a healthy balance between online connecting and real-world responsibilities, experts offer these practical suggestions:

- *Monitor your time.* Keep a log of how you use your time. Then ask yourself, "Does my time use reflect my priorities? Am I spending more time online than I intended? Is my time online interfering with school or work performance? Have family or friends commented on this?"
- *Monitor your feelings.* Again, ask yourself, "Am I emotionally distracted by online preoccupations? When I disconnect and move on to another activity, how do I feel?"
- *"Hide" your more distracting online friends.* And in your own postings, practice the golden rule. Before you post,

ask yourself, "Is this something I'd care about reading if someone else posted it?"

- *Try turning off your mobile devices or leaving them elsewhere.* Selective attention—the flashlight of your mind—can be in only one place at a time. When you want to study or work productively, squelch the temptation to check for messages, posts, or e-mails. And disable sound alerts and pop-ups. These distractions can interrupt your work and hijack your attention just when you've managed to get focused.
- *Try a social networking fast (give it up for an hour, a day, or a week) or a time-controlled social media diet (check in only after homework is done, or only during a predetermined break).* Take notes on what you're losing and gaining on your new "diet."
- *Replenish your focus with a nature walk.* University of Michigan researchers have reported that a walk in the woods, unlike walking on a busy street, replenishes people's capacity for focused attention (Berman et al., 2008). People learn better after a peaceful walk that restores their fatigued attention.

"The solution is not to bemoan technology but to develop strategies of self-control, as we do with every other temptation in life." -PSYCHOLOGIST STEVEN PINKER, "MIND OVER MASS MEDIA," 2010

DOES ELECTRONIC COMMUNICATION STIMULATE HEALTHY SELF-DISCLOSURE?

As we will see in Module 84, confiding in others can be a healthy way of coping with day-to-day challenges. When communicating electronically rather than face to face, we often are less focused on others' reactions, less self-conscious, and thus less inhibited. We become more willing to share joys, worries, and vulnerabilities. Sometimes this is taken to an extreme, as when teens send photos of themselves they later regret, or cyberbullies hound a victim, or hate groups post messages promoting bigotry or crimes. More often, however, the increased self-disclosure serves to deepen friendships (Valkenburg & Peter, 2009).

Although electronic networking pays dividends, nature has designed us for face-to-face communication, which appears to be the better predictor of life satisfaction (Killingsworth & Gilbert, 2010; Lee et al., 2011). Texting and e-mailing are rewarding, but eye-to-eye conversation with family and friends is even more so.

DO SOCIAL NETWORKING PROFILES AND POSTS REFLECT PEOPLE'S ACTUAL PERSONALITIES?

We've all heard stories of Internet predators hiding behind false personalities, values, and motives. Generally, however, social networks reveal people's real personalities. In one study, participants completed a personality test twice. In one test, they described their "actual personality"; in the other, they described their "ideal self." Volunteers then used the participants' Facebook profiles to create an independent set of personality ratings. The ratings based on Facebook profiles were much closer to the participants' actual personalities than to

their ideal personalities (Back et al., 2010). In another study, people who seemed most likable on their Facebook page also seemed most likable in face-to-face meetings (Weisbuch et al., 2009). Your online profiles may indeed reflect the real you!

DOES SOCIAL NETWORKING PROMOTE NARCISSISM? *Narcissism* is self-esteem gone awry. Narcissistic people are self-important, self-focused, and self-promoting. Some personality tests assess narcissism with items such as “I like to be the center of attention.” Given our constant social comparison—our measuring ourselves against others—many social networkers can’t resist comparing numbers of friends. (Evolutionary psychologist Robin Dunbar [1992, 2010] estimates we can have meaningful, supportive relationships with about 150 people—a typical size of tribal villages.)

Those who score high on narcissism are especially active on social networking sites. They collect more superficial “friends.” They offer more staged, glamorous photos. And, not surprisingly, they *seem* more narcissistic to strangers viewing their pages (Buffardi & Campbell, 2008).

For narcissists, social networking sites are more than a gathering place; they are a feeding trough. In one study, college students were randomly assigned either to edit and explain their online profile for 15 minutes, or to use that time to study and explain a Google Maps routing (Freeman & Twenge, 2010). After completing their tasks, all were tested. Who then scored higher on a narcissism measure? Those who had spent the time focused on themselves.

* * *

We have seen that identifiable physiological mechanisms drive some motives, such as hunger (though learned tastes and cultural expectations matter, too). Other motives, such as our need for affiliation, are more obviously driven by psychological factors, such as the social rewards that come from belonging. What unifies all motives is their common effect: the energizing and directing of behavior.

Before You Move On

► ASK YOURSELF

Have there been times when you felt out of the loop with family and friends, or even ostracized by them? How did you respond?

► TEST YOURSELF

How might the evolutionary perspective, drive-reduction theory, and arousal theory explain our affiliation needs?

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 40 Review

40-1

What evidence points to our human affiliation need—our need to belong?

- Our need to affiliate or belong—to feel connected and identified with others—had survival value for our ancestors, which may explain why humans in every society live in groups.
- Because of their need to belong, people suffer when socially excluded, and they may engage in self-defeating behaviors (performing below their ability) or in antisocial behaviors.
- Feeling loved activates brain regions associated with reward and safety systems.
- Social isolation can put us at risk mentally and physically.

40-2

How does social networking influence us?

- We connect with others through social networking, strengthening our relationships with those we already know.
- When networking, people tend toward increased self-disclosure.
- Working out strategies for self-control and disciplined use can help people maintain a healthy balance between social networking and school and work performance.

Multiple-Choice Questions

1. If you are trying to maintain a healthy balance between connecting with others online and a real-world perspective, which of the following suggestions should you follow?
 - a. Monitor your feelings.
 - b. Dismiss the notion of logging online time.
 - c. Interact often with your more distracting online friends.
 - d. Decrease physical activity.
 - e. Try a social networking marathon.
2. Which of the following statements about mobile networks and social media is accurate?
 - a. There are more home toilets in India than there are cell phones.
 - b. Cell phones have been history's most rapidly adopted technology.
 - c. Fewer than 75 percent of American youth are cell-phone users.
 - d. Phone calling has displaced texting.
 - e. Texting has declined in Canada and elsewhere because of e-mail.
3. Which of the following words or phrases best identifies our gauge of how valued and accepted we feel?
 - a. Hope
 - b. Autonomy
 - c. Competence
 - d. Self-esteem
 - e. Ostracism

Practice FRQs

1. Explain three potentially negative effects of social networking.

Answer

1 point each for explaining any of the following:

- Isolates us from others
- Can become a time-sucking diversion
- Can become an attention-sucking diversion
- People may self-disclose too much
- Can make us feel emotionally distracted
- Other effects (use teacher discretion)

2. Explain three things you can do to manage your social networking.

(3 points)