

## CHAPTER 8

### Motivation and Emotion

#### CHAPTER OUTLINE

**Motivation** refers to factors affecting the initiation, direction, intensity, and persistence of behavior.

#### I. CONCEPTS AND THEORIES OF MOTIVATION

*Where does motivation come from?*

A **motive**, or a reason or purpose for behavior, gives researchers a way to see unity in the apparent diversity of many behaviors. Motivation is not observed directly but is inferred to explain relationships between stimuli and responses.

##### A. Sources of Motivation

1. Four main sources of motivation:

- a) *Biological factors* include needs for food, water, and proper temperatures.
- b) *Emotional factors* include panic, fear, anger, love, and hatred.
- c) *Cognitive factors* include your perceptions, beliefs about yourself, and expectations about others.
- d) *Social factors* include reactions to parents, teachers, siblings, friends, and television.

##### B. Instinct Theory and Its Descendants

**Instincts** are automatic, involuntary, and unlearned behavior patterns (sometimes called *fixed-action patterns*) that are consistently “released” in response to certain stimuli.

1. **Instinct theory** alone cannot explain all of human behavior. The list of human instincts grew so long (from 18 to 10,000) as to become meaningless behavioral descriptions rather than explanations. Conceptually, it is difficult to disprove the existence of an instinct. Instinct theory cannot accommodate the role of learning.
2. Instincts may explain how humans and other animals can be biologically “prepared” to learn certain associations or detect certain sensory or perceptual patterns.

##### C. Drive Reduction Theory

1. **Drive reduction theory** ties motivation to imbalances in **homeostasis**.

- a) Homeostasis is the tendency to keep psychological and physiological systems at a steady level, or *equilibrium*, with constant fine-tuning of adjustments to combat environmental changes.
  - b) By analogy, a furnace is set to maintain a constant temperature. When the temperature drops below a “set point,” the furnace turns on to raise the temperature until the set point temperature is met, when the furnace shuts off.
2. This theory argues that psychological or physiological imbalances create specific **needs**, which lead to specific **drives**.
- a) **Primary drives** arise from basic unlearned biological needs (e.g., food, water).
  - b) **Secondary drives** are learned from prior associations with fulfillment of primary drives.

##### D. Arousal Theory

1. Drive reduction theory cannot explain certain aspects of behavior. People and animals are curious, exploring and manipulating environments even when no obvious drive reduction occurs. Some human behaviors (e.g., sky diving, riding roller coasters, going to horror movies) *increase* arousal rather than decrease it.
2. **Arousal** is a general activation level, shown in the state of many physiological systems.
3. People work and feel best when moderately aroused, while overarousal hinders performance, especially on intellectual tasks.
4. **Arousal theory** argues that people act to maintain a personal *optimal arousal level*—seeking excitement when bored and relaxation when overexcited.

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- E. Incentive Theory  
**Incentive theory** sees behavior as goal directed, gaining positive incentives and avoiding negative ones.

**II. HUNGER AND EATING**

*What makes me start eating, and stop eating?*

- A. Biological Signals for Hunger and Satiety
1. **Hunger** is the state of wanting to eat; **satiety** is the state of feeling full, of no longer wanting to eat.
  2. Signals from the Stomach
    - a) The stomach contracts during hunger pangs and increased pressure within the stomach can reduce appetite.  
*Note:* To study the role of stomach cues in hunger, Walter Cannon had subjects swallow a deflated balloon, which was then inflated. A tube to the balloon measured pressure from stomach contractions exerted against the balloon. The study showed that hunger feelings are often related to stomach movements.
    - b) People with stomachs removed still get hungry and eat normally, so stomach cues can affect eating but do not control it.
  3. Signals from the Blood
    - a) Specialized brain neurons detect blood “signals” related to hunger or satiety.
      - (1) The blood signals include the level of *food nutrients* such as *glucose* (from carbohydrates), *fatty acids* (from fats), and *amino acids* (from proteins).
      - (2) The blood signals also include the level of hormones like *insulin* and *leptin* that participate in the digestive process.
- B. Hunger and the Brain
1. Neurons in the brain’s hypothalamus detect blood signals and help regulate hunger.
    - a) If fibers in the *ventromedial nucleus* are destroyed, rats eat huge amounts, increasing body weight as much as 300 percent. If the ventromedial nucleus is stimulated, rats stop eating. This may be a “stop-eating” brain region.
    - b) When fibers in the *lateral hypothalamus* are destroyed, rats stop eating. When the lateral hypothalamus is stimulated, rats eat voraciously. This may be a “start-eating” brain region.
  2. The *set-point* concept argues that homeostatic brain mechanisms defend some level of body weight or other related cue. Animals eat until reaching their set point, then stop until their brain senses a drop in desirable intake, then eat again. Destroying or stimulating hypothalamic areas may alter one’s set point.
  3. The idea of discrete “start-eating” and “stop-eating” brain centers is too simplistic. For example, the *paraventricular nucleus* plays a role similar to the ventromedial nucleus. Also, hunger can be caused by neurotransmitters’ effect on neurons. For example, *neuropeptide Y* stimulates carbohydrate eating, *serotonin* suppresses it, *galanin* motivates eating of high fat food, *enterostatin* reduces fatty food desire, *endocannabinoids* stimulate eating in general, and *peptide YY<sub>3-36</sub>* causes a feeling of fullness and reduced food intake.
- C. Flavor, Cultural Learning, and Food Selection
1. *Flavor*—a blending of smell and taste—affects eating. Taste cues influence one’s eating because people eat more food from a multicourse meal with several flavors than from a meal with only one type of food.
  2. *Appetite* motivates you to seek food’s pleasures, overriding brain set-point mechanisms.

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3. Food selection—the choice of which foods to eat—is influenced by biology, culture, cravings, and specific hungers. *Food culture* explains why some people consider a food to be a delicacy and other people consider it to be disgusting.
- D. Eating Disorders
  1. Problems in the processes regulating hunger and eating may cause an *eating disorder*.
  2. Obesity
    - a) **Obesity** is defined as a condition in which a person's body-mass index (BMI) is greater than 30.  $BMI = \text{weight in kilograms} \div \text{the square of height in meters}$ . According to the BMI, 21–30% of Americans are obese.
    - b) Obesity is caused when people take in more calories than the body metabolizes (uses). Extra calories are stored as fat. Obese people are more finicky eaters than others, eating greater amounts of high-calorie, tasty foods but lesser amounts of less tasty foods.
    - c) Overweight people may be less active than lean people, a pattern that often begins in childhood.
    - d) A genetic predisposition may bias people toward obesity. Their brains indicate satiety more slowly and a recently discovered virus may be involved.
    - e) Losing weight can be especially difficult when metabolism slows in response to the decreased food intake. Exercise and slower weight loss programs can help to counteract this. Anti-obesity drugs are being tested, but will take time before they are ready for use in humans.
    - f) The most effective weight-loss programs include reduced food intake, changing habits and attitudes toward food, and increased exercise.
  3. Anorexia Nervosa
    - a) In **anorexia nervosa**, self-starvation brings weight to below 85% of normal. Often, anorexics feel hunger and may be obsessed with food, yet eat little.
    - b) About 95 percent of anorexics are female. About 6 percent will die of starvation, chemical imbalances, or suicide.
    - c) Anorexics are often obsessed with thinness and attractiveness, and often have a self-punishing, perfectionistic personality. Anorexics may still see themselves as fat even after losing over 50 percent of a normal body weight.
    - d) Treatment may include drugs, hospitalization, and psychotherapy.
  4. Bulimia Nervosa
    - a) In **bulimia nervosa**, one “binges” on massive amounts of food and then eliminates the food by self-induced vomiting or strong laxatives. Bulimia can cause dehydration, nutritional problems, intestinal damage, dental problems, and throat damage.
    - b) It appears to be caused by perfectionism, low self-esteem, overconcern with thinness and attractiveness, depression and other emotional problems, and biological problems such as defective satiety mechanisms.
    - c) Treatment typically includes individual or group psychotherapy and sometimes antidepressants.

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### III. SEXUAL BEHAVIOR

*How often does the average person have sex?*

Human sexual behaviors and arousal are shaped by both biology and culture. Humans show a huge variety of *sexual scripts*, learned behavioral patterns leading to and surrounding sex.

#### A. Focus on Research: Tell Me About Your Sex Life

Human sexual behavior was extensively studied by Alfred Kinsey's questionnaires from the 1940s and in Masters and Johnson's laboratory observations of the human *sexual-response cycle* in the 1960s. Valid data on modern sexual behavior is scant and often flawed by nonrandom samples and methodological errors.

1. *What was the researchers' question?*  
Can researchers collect data that is more representative to describe people in general? To avoid key methodological problems researchers from the University of Chicago conducted the 1994 "National Health and Social Life Survey."
2. *How did the researchers answer the question?*
  - a) Subjects were not volunteers, but rather 3,432 people, ages eighteen to fifty-nine, selected at random to represent current U.S. sociocultural diversity.
  - b) Data were gathered in face-to-face interviews to assure that respondents understood and fully answered questions. Subjects could answer some of the more sensitive questions by writing and sealing responses in an anonymous envelope.
3. *What did the researchers find?*  
The results of the Chicago sex survey challenged popular culture and media images of sexuality in the United States.
  - a) Most people had sex about once a week in monogamous relationships, and a third had sex less than a few times in the past year.
  - b) Males had an average of six sexual partners in their lifetimes; women had an average of two.
  - c) People in committed, monogamous relationships had more frequent and satisfying sex.
  - d) The most common sexual act was penis-vagina intercourse.
4. *What do the results mean?*  
The images provided by our culture and the media may not be accurate, with people tending to be more conservative than portrayed.
5. *What do we still need to know?*
  - a) The Chicago survey did not ask about more controversial aspects of sexuality, such as pornography use, pedophilia (sexual attraction to children), and the role of sexual fetishes.
  - b) People in the United States were the focus of this study; therefore, to know about people in the rest of the world, the Chicago team has begun interviews in other countries.
  - c) Many questions are raised by studies like this. For example, when do people become interested in sex and why? How do people express their desires? How does learning modify the biological forces at the base of sexual motivation?

#### B. The Biology of Sex

1. The **sexual response cycle** is an arousal pattern that accompanies human sexual activity. Men and women differ in their patterns of response.

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2. Both sexes produce all **sex hormones**, but males have greater proportions of **androgens** (e.g., *testosterone*), the masculine hormones, while females have greater proportions of **estrogens** (e.g., *estradiol*) and **progestins** (e.g., *progesterone*), the feminine hormones.
  - a) Hormones' *organizing effects* physically change the brain and body. Some of these effects begin prenatally.
  - b) Hormones' *activating effects* are reversible behavioral changes. In humans, hormones alter sexual desire but not ability per se.
- C. Social and Cultural Factors in Sexuality
  1. Some sexual behaviors are learned along with *gender roles*.
  2. Attitudes toward sexual behavior can be changed through education and media campaigns.
    - a) At the start of one educational program, 36 percent of students in grades 7 through 10 thought premarital sex was a bad idea; at the end 66 percent thought so.
    - b) At the start of the same program, 35 percent of students saw the benefits in premarital abstinence; by the end of the semester 58 percent saw benefits.
    - c) One U.S. survey found that prior to 1985, first-time sexual experiences seldom included use of condoms or other contraceptives, but since then condom use has become the norm for first-time sexual experiences.
- D. Sexual Orientation
  1. *Sexual orientation* refers to the nature of a person's enduring emotional, romantic, or sexual attraction to others.
  2. Most humans' sexual orientation is **heterosexual**, attraction is between a male and a female. Sexual attraction between members of the same sex is **homosexual**. People who are attracted to both sexes are **bisexual**.
  3. Since homosexuals and bisexuals are often discriminated against, many hesitate to reveal their sexual orientation. Thus, it is difficult to estimate the relative mix of different sexual orientations. The best available data are that between 5 and 15 percent of the U.S. population are homosexual.
- E. *Thinking Critically: Does Biology Determine Sexual Orientation?*
  1. *What am I being asked to believe or accept?*

We do not learn a sexual orientation; we are born with it.
  2. *Is there evidence available to support the claim?*

One study showed that homosexuality in males appears to be related to a gene on the X chromosome, but later studies did not support this finding. Other studies have shown that genetically identical male twins are more likely to share the same sexual orientation, compared to nonidentical male twins. Also, studies on women who were exposed to high levels of prenatal androgens found that they were more likely have a homosexual orientation. Anatomical brain differences exist between heterosexual and homosexual men, but it is unclear what is the cause and what is the effect. Finally, genetic control of sexual orientation is suggested by the lack of influence the sexual orientation of caregivers has on children's orientation. Children adopted by homosexual parents are no more or less likely to display a homosexual orientation than are children raised by heterosexual parents.
  3. *Can that evidence be interpreted another way?*

Correlations between genetics and sexual orientation are not demonstrations of cause and effect. Genetics might control a personality trait resulting in societal treatment that in turn "teaches" a particular sexual orientation. For example, in about 50 percent of identical-twin pairs, both members are either homosexual or bisexual. But, as identical

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twins are genetically identical, sexual orientation should be perfectly correlated if it were entirely a genetic phenomenon.

4. *What additional evidence would help to evaluate the alternatives?*  
It would be useful to know more about the personality and behavioral differences between people of different sexual orientation. If such differences exist, would they be due to learning or to genetics? The more we learn about sexual orientation, the more able we will ask questions about its role in whole facets of life.
5. *What conclusions are most reasonable?*  
It is likely that sexual orientation is heavily influenced by genetics, but not in a vacuum. Almost certainly, environment also shapes how orientation is expressed.

#### F. Sexual Dysfunctions

1. **Sexual dysfunctions**, which affect 30 to 40 % of U.S. adults, interfere with the desire for or ability to have satisfying sexual activity.
  - a) In men, *erectile disorder* (“impotence”) is an inability to have or maintain an erection adequate for intercourse. Most men have this problem at some point.
  - b) Male *premature ejaculation* is a recurring tendency to ejaculate in sex sooner than the man or his partner would like.
  - c) In women, *sexual arousal disorder* (formerly called *frigidity*) involves a reoccurring inability to become aroused during sexual activity. It may be related to insufficient genital stimulation, poor vaginal lubrication, self-consciousness, depression, or emotional dissatisfaction with a romantic relationship.

## IV. ACHIEVEMENT MOTIVATION

*Why do some people try harder than others to succeed?*

People work hard primarily due to *extrinsic motivation*, a desire for external rewards (e.g., money). Work and other behaviors can also be due to *intrinsic motivation*, a desire for internal satisfaction (e.g., a sense of accomplishment). Extrinsic and intrinsic motivation highlight the desire to increase one’s esteem from others and from oneself.

#### A. Need for Achievement

**Need achievement** is a specific motive to master tasks, bringing intense satisfaction from doing so.

##### 1. Individual Differences

- a) People with high need achievement tend to share the following characteristics:
  - (1) They set challenging, difficult, but realistic goals.
  - (2) They select tasks with clear-cut outcomes, preferring constructive criticism rather than merely positive feedback.
  - (3) They work independently, delay gratification, and carefully plan for the future.
- b) Differences in achievement motivation also appear in the *kinds* of goals people seek in achievement-related situations.
  - (1) People with *learning goals* engage in achievement-related activities mainly to develop competence in those activities. They tend to watch others and struggle with problems on their own. When they seek help, they will ask for task-related information, but not quick, easy answers.
  - (2) People with *performance goals* are primarily concerned with demonstrating competence they believe they already possess. They tend to seek information

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about how well they performed compared to others. When they seek help, they will ask for “the right answer” rather than tips on how to do it themselves. They tend to avoid new challenges and tend to quit in response to failure.

2. Development of Achievement Motivation
  - a) Achievement motivation tends to be learned in early childhood, especially from parents. Parents of children who score high on achievement motivation tests tend to do certain things.
    - (1) They encourage children to try difficult tasks, especially new ones.
    - (2) They offer praise and other rewards for success.
    - (3) They encourage children to find ways to succeed rather than letting them just complain about failure.
    - (4) They prompt children to go on to the next, somewhat more difficult challenge.
  - b) In many cultures, children’s books have stories with achievement themes.
  - c) Achievement motivation can be developed after childhood as well.
- B. Achievement and Success in the Workplace
  1. Employers tend to set up jobs in accordance with their ideas about how intrinsic and extrinsic motivation combine to shape employees’ performance
    - a) When workers are seen as lazy, untrustworthy, and lacking ambition, employers tend to offer highly structured, heavily supervised jobs and assume they are motivated mainly by extrinsic rewards, like money.
    - b) They are often surprised when their employees are dissatisfied and not motivated.
  2. In Western cultures, worker motivation is tied to thoughts and feelings about level of control over the work environment. Workers tend to be happier, more satisfied, and more productive if they are:
    - a) encouraged to participate in work decisions
    - b) given problems to solve
    - c) taught more than one skill
    - d) given individual responsibility
    - e) given public recognition for good performance.
  3. Allowing people to set and achieve clear goals can increase performance and job satisfaction, which in turn provide more economic benefits to the company (e.g., lower absenteeism, lower turnover). Effective goals have three features:
    - a) personally meaningful
    - b) specific and concrete
    - c) management supports workers’ own goal setting, offer special rewards, and give encouragement after failure.
- C. Achievement and Subjective Well Being

**Subjective well-being** is a blend of feeling satisfied with life, often having positive emotions, and infrequently having negative emotions.

  1. Research supports the idea that people under extreme stress feel less happy than people in better circumstances, but effects of events on mood do not last as long as might be expected.
  2. People generally return to a baseline level of happiness after an extremely positive or negative event, perhaps because temperament or personality has a major influence on our level of happiness. Inherited personality characteristics are more strongly related to happiness than money, popularity, or physical attractiveness.
  3. Close social ties, religious faith, and having adequate resources are important to happiness.

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4. People with a *deficiency orientation* tend to seek happiness by trying to acquire the goods and status they don't have, but think they need, rather than appreciate what they have and life itself. This orientation may actually contribute to unhappiness.

**V. RELATIONS AND CONFLICTS AMONG MOTIVES**

*Which motives move me most?*

A. Maslow's Hierarchy

1. Abraham Maslow described five basic classes of hierarchically organized needs. He stressed that "lower" needs must be at least partially satisfied; "higher" needs can be effective motivators.
  - a) *Biological* needs include those for food, water, oxygen, and sleep.
  - b) *Safety* motives include having a secure source of income and a place to live.
  - c) *Belongingness and love* motives involve being part of social groups and having affectionate relationships with others.
  - d) *Esteem* needs include feeling competent and confident and having a sense of achievement and individuality.
  - e) People seek *self-actualization* by trying to become all they are capable of.
2. Maslow's system is criticized as too simplistic. Even with unmet lower-level needs, higher levels in the hierarchy may motivate some people. Other needs have been found to be more important for college students, such as autonomy, relatedness, competence, and self-esteem. Also, cultures differ in the ordering of the needs.

B. Linkages: Conflicting Motives and Stress

Different motives are sometimes in conflict.

1. *Approach-approach conflicts* exist when one wants to approach two desirable but mutually exclusive motives. An example might be having to choose between two parties given at the same time.
2. *Avoidance-avoidance conflicts* force one to select from two unattractive choices. An example might be choosing between paying a fine or going to jail after being convicted of a crime.
3. *Approach-avoidance conflicts* occur when one activity has both attractive and unattractive features. An example might be that you want to go with some friends to the movies, but doing so requires more money than you want to spend.
4. *Multiple approach-avoidance conflicts* involve a choice between two or more alternatives, each of which has both positive and negative features. These conflicts are the most difficult to resolve, partly because the features of each option are often difficult to compare. An example might be if you had to choose between two jobs: one pays very little but allows you to be with your friends; the other job is boring work but offers good pay.

**VI. THE NATURE OF EMOTION**

*How do feelings differ from thoughts?*

A. Defining Characteristics

1. The inner, or *subjective*, experience of emotion has several characteristics:
  - a) Emotion is *temporary*, with a clear beginning and end, and is *positive* or *negative*.
  - b) Emotions arise partly from *mental assessment* of situations, and *alter thought processes*.
  - c) Emotions elicit an *action tendency*—a motivation to behave in a certain way.

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- d) Emotions are *passions* that happen to you, rather than states you can totally create on purpose, and also involve *expressive displays* and *physiological responses*.
  2. Objectively measurable aspects of emotion include *expressive displays* and *physiological responses*.
  3. An **emotion** is a temporary experience with either positive or negative qualities, felt with some intensity as happening to the self, generated in part by mental assessment and accompanied by learned and innate physical responses. They communicate internal states and intentions to others and motivate a person's thoughts and actions.
- B. The Biology of Emotion
- Brain areas of the *central nervous system* are involved in the generation and experience of emotions, and the *autonomic nervous system* gives rise to many of the physiological changes associated with emotional arousal.
1. Brain Mechanisms
    - a) The brain's *limbic system*, especially the *amygdala*, is central to emotional control.
    - b) Voluntary ("faked") facial expressions are controlled by the brain's *pyramidal motor system*, while automatic ("felt") facial expressions are controlled by the brain's *extrapyramidal motor system*.
    - c) The right hemisphere is more important than the left in the experience of negative emotion, the perception of any emotion exhibited in faces or other stimuli, and the facial expression of an emotion.
  2. Mechanisms of the Autonomic Nervous System
    - a) The autonomic nervous system (ANS), part of the peripheral nervous system, carries information between the brain and all body organs (except striated muscle). The ANS modulates the ongoing activity of the body's organs.
    - b) The ANS is organized into two divisions.
      - (1) The **parasympathetic nervous system** releases *acetylcholine* onto *target organs* leading to activity related to the protection, nourishment, and growth of the body.
      - (2) The **sympathetic nervous system** releases *norepinephrine* onto target organs, helping prepare the organism for vigorous activity. This system stimulates the **flight-or-fight syndrome**, a pattern of increased heart rate and blood pressure, rapid or irregular breathing, dilated pupils, sweating and dry mouth, increased blood sugar, and "goose bumps," which prepares the body to deal with stressors.
    - c) The ANS has no direct input to cortical sensory areas; any conscious feedback is indirect.

## VII. THEORIES OF EMOTION

*Is emotion in the heart, in the head, or both?*

### A. James's Peripheral Theory

1. Also called the *James-Lange theory*, this view argues that automatic, peripheral responses precede and cause subjective emotional experience. Emotion becomes conscious when the brain observes bodily responses.  
*Example:* If you see a bear, you first interpret the sensory information as a bear, then experience physiological changes. Recognizing those physiological changes creates the experience of fear.
2. Observing Peripheral Responses

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- a) The theory claims that becoming *aware* of a different and specific pattern of bodily activity causes each emotion.
  - b) The theory suggests that there is no “emotion center” in the brain and this may account for the difficulty we sometimes have in knowing our true feelings.
3. Evaluating James’s Theory
- a) Certain emotional states are associated with particular patterns of autonomic changes (e.g., fear is associated with decreased blood flow to the feet and hands).
  - b) The *facial feedback hypothesis*, a variation of the James-Lange theory, states that involuntary facial movements give sensory information that contributes to emotional responses. Research has supported this hypothesis.
4. Lie Detection
- a) *Polygraphs* try to detect lying by measuring ANS activity thought to be specific to lying. Presumably, ANS measures reflect one’s anxiety or guilt about not telling the truth.
  - b) Using a *control question test*, ANS responses to *control questions* (Have you ever lied?) are compared to responses to *relevant questions* (Did you stab someone on June 13, 2003?). An innocent person should have stronger emotional responses to the control questions than to the relevant questions.
  - c) The *directed lie test* compares a person’s physiological reactions when asked to lie and when telling the truth.
  - d) The *guilty knowledge test* seeks to determine if a person reacts in a notable way to information about the crime that only the perpetrator would know.
  - e) Estimates on the accuracy of polygraphs vary widely, but most researchers agree that a guilty person can “fool” a polygraph and some innocent people can be mislabeled as guilty.
  - f) The results of a polygraph test are affected by what people think about the act of lying and about the value of the test.
  - g) Lie detecting devices that do not depend on a link between deception and ANS responses are being investigated.
- B. Cannon’s Central Theory
1. Also called the *Cannon-Bard theory*, this view argues that a special brain region, specially the thalamus, interprets emotional situations. This results in signals for ANS responses being sent at the same time as signals to the cortex for the conscious emotional experience. This theory suggests direct central experience of emotion, with or without peripheral feedback.  
*Example:* If you see a bear, your brain receives sensory information about the bear, interprets that information as a bear, and experiences the emotion of fear while *at the same time* sending messages to the body.
  2. Updating Cannon’s Theory
    - a) Recent work suggests that there are brain areas involved in the direct central experience of emotion, but these do not center on the thalamus as originally proposed.
    - b) For example, fear is generated by connections from the thalamus to the amygdala.
    - c) The implication is that strong emotions may bypass the cortex, possibly explaining intense fear, or phobia.
    - d) Activation of some specific brain areas produces feelings of either pleasure or pain.
      - (1) Brain areas in which stimulation is experienced as pleasurable include dopamine-using systems. Stimulation of other brain areas causes unpleasant and aversive feelings.

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- (2) The areas of the brain activated by the kinds of events that elicit emotion have widespread connections throughout the brain, thus there is probably not an “emotion center” responsible for the experience of emotion.
- C. Cognitive Theories
1. The *Schachter-Singer theory* argues that emotion results from a cognitive interpretation of the situation that leads to bodily responses and of the nonspecific physiological arousal. According to the theory, our emotional label depends our **attribution**, the process of identifying the cause of some event. We attribute our arousal to different emotions depending on the information available about the situation.  
*Example:* You see a bear, have a basic fight-or-flight response, and then use environmental cues to “figure out” whether the physical changes were caused by fear, excitement, astonishment, or surprise.
  2. This theory predicts that attributing arousal to a nonemotional cause should reduce emotional intensity. Research supports this prediction.
  3. Few researchers today fully accept the Schachter-Singer theory, but it did stimulate research on **transferred excitation**, which occurs when arousal from one experience carries over to an independent situation. Thus, after exercising, you may be more likely to show anger when provoked.
  4. The *cognitive appraisal theory* argues that it is our interpretation of events themselves that are most important in producing an emotion. Specific emotions we experience depend on our individual goals, needs, standards, expectations, and past experiences.

### VIII. COMMUNICATING EMOTIONS

*Which emotional expressions are innate, and which are learned?*

In humans, facial expressions play a primary role in communicating emotions. The human face can generate 6,000 to 7,000 different expressions and people, especially females, are good at detecting them. People are exquisitely sensitive to minute changes in facial expression.

- A. Innate Expressions of Emotion
1. Charles Darwin saw basic emotional facial expressions as innate and serving the adaptive role of displaying emotional states to others. Thus, Darwin claimed, facial expressions are largely unlearned and fundamentally social in nature.
    - a) Infants show appropriate emotional facial expressions without being taught. Blind infants—who cannot imitate what they see in others—show the same emotional expressions as sighted infants.
    - b) For many “basic” emotions, people of all cultures show similar facial responses to similar emotional stimuli.
- B. Social and Cultural Influences on Emotional Expression
1. People show culture-specific variations in emotional facial expressions.
  2. People can learn to use facial expressions sarcastically or to disguise their feelings. Even facial expressions that arise from emotions can be somewhat controlled.
  3. Paul Ekman and colleagues categorized seventeen types of smiles, including “false smiles,” “masking smiles,” “miserable smiles,” and the *Duchenne smile*, the smile that occurs with genuine happiness.
- C. Learning About Emotions
1. One’s repertoire of facial expressions expands with age, as one practices imitating others. Emotional expressions are probably operantly shaped by others, thus ensuring that they do not become so idiosyncratic that people will not understand them.

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2. Children gradually learn an *emotion culture*—rules about where and when different emotions are appropriate and how they may be expressed. Some emotion words in other languages have no English meaning and some English emotion words have no equivalent in other cultures.
- D. Social Referencing
1. In uncertain situations, **social referencing** helps you figure out how to behave: Others' facial expressions give you a reference to reduce the uncertainty.
  2. Infants who cannot yet understand spoken language can depend on adults' emotional expressions for information.