KUBAN STATE UNIVERSITY

FACULTY OF PEDAGOGY, PSYCHOLOGY AND

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the nuts and bolts OF

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This edition of *The nuts and Bolts of Psychology* is an affordable source of information about important theories and issues in this dynamic field. Addressing the academic use of the textbook in settings such as the classroom, topics covered include: learning, memory, motivation, emotion, perception, sensation, etc.

*The nuts and Bolts of Psychology* allows students to build gradually on what they have learned – at their own pace. Tests, self-checks, discussion points, vocabulary activities reinforce the information in each unit and allow to master the key concepts and terms of the authentic texts to prepare for exams. The step-by-step format of the textbook makes it fully accessible, providing an easily understood, comprehensive overview of the topics covered.

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**Unit 1. The Foundations of Psychology**

**Looking at the Word *Psychology:* From Ancient**

**to Modern Meanings**

The word **psychology** has had several different meanings from ancient to modern

times. Here is its present definition: *Psychology is the science that studies the behavior*

*of organisms.* This definition should guide you throughout your study of this

book.

Three words in the definition merit special attention: (1) science, (2) behavior,

and (3) organisms. Modern psychology is considered a *science* because it bases its

conclusions on **data,** information obtained by systematic observations.

**Behavior** has three aspects: (1) cognitive processes, (2) emotional states, and

(3) actions. **Cognitive processes** refer to what an individual thinks. **Emotional**

**states** refer to what an individual feels. **Actions** refer to what an individual

does.

An **organism** is any living creature. Consequently, the behavior of dogs, rats,

pigeons, and monkeys can be legitimately included in the study of psychology.

Such organisms have indeed been subjects in psychology experiments. However,

traditionally the principal focus of psychology has been humans. When animals

are used in experiments, the implicit goal is often to explore how such basic

processes as learning and motivation, as studied in animals, can cast a light on our

understanding of human behavior.

Although you now know the modern definition of psychology, it is important

to realize that the word *psychology* has its roots in ancient meanings associated with

philosophy. The Greek word **psyche** means soul. Consequently, to philosophers

living 400 to 300 B.C., psychology was the “study of the soul.” This was the

meaning given by Socrates, Plato, and Aristotle. In view of the fact that these

thinkers, particularly Socrates and Plato, did not believe that animals have souls, it

becomes evident why for many centuries psychology’s main attention has been

given to human beings. The ancient philosophers asserted that the soul is the seat

of consciousness. It is consciousness that makes mental life possible. This is why

psychology is often thought of as the science of the mind.

Indeed, this meaning is the one given to it by William James, the dean of

American psychologists. Working at Harvard a little more than one hundred years

ago, James defined psychology as “the science of mental life.” He believed that the

purpose of psychology should be to investigate such mental processes as thinking,

memory, and perception.)

This is where we stand now. Although psychology no longer is thought of as

the study of the soul, this original meaning colors our present-day approach, with

its emphasis on human behavior and the importance of cognition.

Contemporary, scientific psychology has four explicit goals: (1) describe,

(2) explain, (3) predict, and (4) control behavior. These goals are the same commonsense goals that we all use in everyday life. Let’s say that Jane tells her husband, Harry, that their son, seven-year-old Billy, was a brat today. Is this a good description of Billy’s behavior? No, it’s not. It’s too general, too abstract. On the other

hand, let’s assume that Jane says that Billy refused to do his homework and told her,

“Homework is stupid. I’m not going to do it anymore.” This constitutes a much

better description of behavior because is it is specific and concrete.

Similar specific descriptions may suggest to both parents that Billy misbehaves

more than most children. Jane and Harry now wonder *why* Billy is beginning to

misbehave more and more. Is he frustrated? Does he have an inferiority complex?

Does he have low self-esteem? Does he have Attention Deficit Disorder (ADD)?

Does he have an imbalance of certain key neurotransmitters in his brain? Does he

have a childhood neurosis? As you can see, potential explanations are plentiful.

They have to be evaluated.

This is where prediction and control come in. Let’s say that Dr. Helen G., the

family pediatrician, suggests that Billy *is* indeed suffering from Attention Deficit

Disorder. Let’s also assume that Dr. G. is convinced that Billy eats too many foods

with refined sugar and that this causes, through a complex biochemical reaction,

a depletion of certain neurotransmitters. She recommends a diet of natural foods

with little refined sugar. The physician is *predicting* that the change in diet will take

away the undesirable symptoms.

Let’s say that the diet is tried. Billy sticks to it. If there is no change in Billy’s

misbehavior after several weeks, both Dr. G. and the parents will conclude that the

explanation was incorrect. On the other hand, if the diet is therapeutic, and Billy’s

behavior becomes more manageable, then *control* has taken place. The explanation

will appear to be adequate.

**The Classical Schools of Psychology: Five Great Thinkers and Their Ideas**

It has been said that psychology has a long past and a short history. This statement

should be taken to mean that although psychology has its roots in philosophy, as a

scientific discipline psychology is only a little over 120 years old. As noted earlier,

the roots of psychology can be easily traced back about 2,400 years to ancient Greek

philosophers. However, the beginning of scientific psychology is usually associated

with the date 1879, the year that a German scientist named Wilhelm Wundt

founded the first psychological laboratory at the University of Leipzig in Germany.

Modern psychology arose in the context of what are known as **schools of**

**psychology.** The concept of a school of psychology can be easily understood by

thinking of a school of fish. In this case the word *school* is used similarly to the

word *group.* A school, or group, of fish follows a leader fish. So it is with a school

of psychology. There is a leader and a group of followers. The school has a viewpoint

and a set of important assumptions.

From a historical perspective, the first school of psychology to be established

was **structuralism.** Its founding personality was Wilhelm Wundt (1832–1920).

As already noted, he founded the world’s first psychological laboratory. Wundt

was trained in *physiology,* the study of the functions of the body. He became interested

in studying not so much the physiology of the sense organs such as the eyes

and ears, but in how simple sensations associated with the sense organs combined

to form what we call human consciousness.

Imagine that you are looking at an oil painting of a landscape. You perceive

trees, a river, a valley, and a sky. But what are the elemental sensations, the *basic*

*building blocks,* that make the visual grasp of the picture possible? What, in a word,

is the “structure” of your consciousness? Wundt trained assistants in the art of

**introspection,** a skill characterized by paying attention not to the whole pattern

of a stimulus, but to an elemental part of a stimulus. Consequently, a trained introspectionist was not supposed to say, “I see a tree.” Instead, he or she was supposed

to say, “I see here a patch of green,” and “I see there a bit of brown,” and so forth.

These bits and pieces were the psychological “atoms” that made up the complex

“molecule” of the tree or other visual object.

Wundt’s studies of vision suggested that there are only three basic kinds of visual

sensations. First, there is *hue,* or color. Second, there is *brightness.* For example, a light

gray card is brighter than a dark gray card. Also, a page of print illuminated with an

intense light is brighter than a page illuminated with a light of lower intensity. Third,

there is *saturation.* This refers to the “richness” or “fullness” of a color.

No matter what visual stimulus Wundt’s subjects looked at, there were no

other kinds of sensations experienced than the three identified above. Consequently,

Wundt concluded that all visual experiences are structured out of these

same three types of elemental experiences. Similar statements can be made about

the other senses such as hearing, taste, and touch.

According to Wundt, the primary purpose of psychology is to study the

structure of consciousness. By the structure of consciousness, Wundt meant

the relationship of a group of sensations, a relationship that produces the complex

experiences we think of as our conscious mental life. This approach to

psychology has been called *mental chemistry.* As earlier indicated, the “atoms” of

experience are the sensations. The “molecules” of experience are our complex

perceptions.

Wundt is considered to be not only the first scientific psychologist, but also

the founder of psychology as an academic discipline. (Many beginning psychology

students think this honor belongs to Sigmund Freud. Although Freud *is* the

most famous psychologist who ever lived, he occupies a different place in psychology’s history than does Wundt.)

William James (1842–1910), teaching at Harvard in the 1870s, was following

Wundt’s research with interest. James had an interest not only in psychology, but

also in physiology and eventually in philosophy. James founded a psychological

laboratory at Harvard; he also authored *The Principles of Psychology,* the first psychology

textbook published in the United States. The book was published in

1890, and this can also be taken as the date when the school of psychology known

as **functionalism** was born. The principal personality associated with it is James,

and he is said to be the dean of American psychologists.

According to James, psychology should be more interested in how the mind

*functions,* or works, than how it is structured. Consequently, James stressed the

importance of studying such processes as thinking, memory, and attention. You

will recall that James defined psychology as “the science of mental life.” This definition is certainly reflected in the processes just identified.

In brief, functionalism as a school of psychology asserts that that the primary

purpose of psychology should be to study the functions of human consciousness,

not its structures.

The German psychologist Max Wertheimer (1880–1943), like James, was also

dissatisfied with Wundt’s structuralism. Wertheimer believed that Wundt’s emphasis

on the importance of simple sensations as the building blocks of perceptions

was misguided. According to Wertheimer, a melody, for example, is more than an

aggregate of sensations. It is a pattern. And the perception of the melody depends

much more on the pattern itself than on the individual notes. A melody played in

the key of F can be transposed to the key of C, and *it is still the same melody.* However,

all of the notes, the sensations, are *different.*

The general pattern that induces a complex perception is described with the

German word **Gestalt.** Gestalt is usually translated as a “pattern,” a “configuration,”

or an “organized whole.”

In 1910 Wertheimer published an article setting forth the basic assumptions of

Gestalt psychology, and this is usually taken to be the starting date of the school.

The article reported a series of experiments using two of his friends, Kurt Koffka

and Wolfgang Kohler, as subjects. These two men went on to also become wellknown

Gestalt psychologists. In the experiments, Wertheimer demonstrated that

the perception of motion can take place if stationary stimuli are presented as a

series of events separated by an optimal interval of time. This sounds complicated.

However, in practice it’s simple enough. If you flip at just the right speed through

a special kind of cartoon book, you can perceive motion as the series of still pictures

flicker by. Perceiving motion in a motion picture is the same thing. At the

level of sensation, you are being presented with a series of still slides. At the level

of perception, you are experiencing motion. The presence of motion can’t be

explained by the nature of the sensations. Consequently, it must be the pattern of

presentation, or the Gestalt, that is inducing the perceived motion.

It became the goal of Gestalt psychology to study the effects that various

Gestalten (the plural of *Gestalt*) have on thinking and perception. Kohler’s research related Gestalt principles to insight learning.

In brief, Gestalt psychology asserts that patterns, or configurations, of stimuli have a powerful effect on how we think and perceive the world around us.

Returning to the United States, **behaviorism** is a fourth classical school of

psychology. Its founding personality is John B. Watson (1878–1958). A wave of

enthusiasm for Watson’s ideas swept him to the presidency of the American Psychological Association (APA) in 1915, and this can be taken as the starting date for

behaviorism. Doing research first at the University of Chicago and then at Johns

Hopkins University, Watson came to the conclusion that psychology was placing

too much emphasis on consciousness. In fact, he asserted that psychology is not a

mental science at all. The “mind” is a mushy, difficult-to-define concept. It can’t

be studied by science because it can’t be observed. Only you can know what’s

going on in your mind. If I say I’m studying your mind, according to Watson, it’s

only guesswork.

Consequently, Watson asserted that the purpose of psychology should be to

study *behavior itself,* not the mind or consciousness. Some critics of Watson say that

he denied the very existence of consciousness. Others assert Watson was primarily

saying that references to the consciousness, or mental life, of a subject don’t provide

solid explanations of behavior. In either event, Watson’s view is today

thought to be somewhat extreme and is referred to as *radical behaviorism,* a psychology

that doesn’t employ consciousness as an important concept.

Behaviorism has been very influential in American psychology. It inspired a psychologist named B. F. Skinner to study the process of learning. Skinner in time became the most famous behaviorist of the twentieth century.

In order to identify a fifth classical school of psychology, it is necessary to

return to the European continent, specifically to Austria; the school is **psychoanalysis.** The father of psychoanalysis is Sigmund Freud (1856–1939). Freud was

a medical doctor with a specialty in neurology. His findings and conclusions are

based primarily on his work with patients. Early in his career he concluded that a

large number of people with neurological symptoms such as paralysis, a numb

feeling in a hand or foot, complete or partial blindness, chronic headaches, and

similar complaints had no organic pathology. They were *not* biologically sick. Instead their symptoms were produced by intense emotional conflicts.

Freud’s original work was done with a colleague named Josef Breuer

(1842–1925). Breuer and Freud collaborated on the book *Studies on Hysteria.*

Published in 1895, it is the first book written on psychoanalysis. This can also be

taken to be the starting date for the school. After the publication of this first book,

Freud went on alone without Breuer; it was a number of years before he worked

again with colleagues.

The word **hysteria** is a diagnostic label. It used to be assigned to a patient if he

or she was experiencing neurological symptoms that were thought to be imaginary

in nature. The patient is not malingering. He or she believes that the symptoms are

real. Today this is a well-recognized disorder, and is called a **somatoform disorder,**

**conversion type.** This simply means that an emotional problem such as

chronic anxiety has converted itself to a bodily expression. (The Greek word *soma*

means “body.”)

In order to explain chronic emotional suffering, Freud asserted that human

beings have an unconscious mental life. This is the principal assumption of psychoanalysis. No other assumption or assertion that it makes is nearly as important.

The unconscious mental level is created by a defense mechanism called **repression.**

Its aim is to protect the ego against psychological threats, information that

will disturb its integrity. (The ego is the “I” of the personality, the center of the

self.) The kind of mental information repressed tends to fall into three primary

categories: (1) painful childhood memories, (2) forbidden sexual wishes, and (3)

forbidden aggressive wishes.

Psychoanalysis is not only a school of psychology, but also a method of therapy.

Freud believed that by helping a patient explore the contents of the unconscious mental level, he or she could obtain a measure of freedom from emotional suffering. It is important to note that of the five classical schools of psychology, psychoanalysis is the only one that made it an aim to improve the individual’s mental health.

**Ways of Approaching the Study of Behavior:**

**Searching for Explanations**

As noted earlier, one of the goals of scientific psychology is to explain behavior.

When someone does something, particularly something unexpected, often the

first question that pops into our minds is why. If the answer can be resolved to our

satisfaction, we have an explanation. There is often more than one way to explain

the same behavior. Sometimes rational thinkers disagree. This has resulted in a set

of *viewpoints,* major ways in which behavior can be explained. These viewpoints

greatly influence how research is done, how psychologists approach the study of

behavior.

The first viewpoint to be identified is the **biological viewpoint.** The biological

viewpoint asserts that behavior can be explained in terms of such factors as

genes, the endocrine system, or the brain and nervous system. The biological

viewpoint assumes that we are all organisms, made out of protoplasm, and the

most solid explanations are those that recognize this.

Let us say that a child is suffering from mental retardation. Assume that the

child receives a diagnosis of Down’s syndrome, a set of signs and symptoms suggesting that the child has three chromosomes on what is normally the twenty-first

pair of chromosomes. Mental retardation is very frequently associated with this

condition. Consequently, the genetic condition provides an explanation of the

mental retardation.

Assume that thirty-four-year-old Jane C. says, “I feel lazy.” This may seem to

be a psychological condition. If it is later discovered that she has a sluggish thyroid

gland and a low basal metabolism, her laziness may be explained in terms of her

low thyroid production.

Bill, a forty-five-year-old engineer, suffers from chronic depression. If it is discovered that he has low levels of the neurotransmitter *serotonin,* a chemical messenger

in the brain, he may be prescribed a psychiatric drug that brings the serotonin to an optimal level. His depression has been explained in terms of the brain’s neurotransmitters.

As you can see, the biological viewpoint is a powerful and useful one. It is the

viewpoint that tends to be favored by psychiatry, a medical specialty, and physiological psychology.

The second viewpoint to be identified is the **learning viewpoint.** The learning

viewpoint assumes that much, perhaps most, behavior is learned. Behaviors

are acquired by experience. The learning viewpoint owes much to the influence

of the philosopher John Locke (1632–1704), who said that the mind at birth is a

**tabula rasa** (i.e., a “blank slate”), meaning that there are no inborn ideas.

Let’s say that Opal smokes two packages of cigarettes a day. She thinks of it as

a “bad” habit, and the learning viewpoint agrees with this commonsense way of

looking at Opal’s smoking behavior. The behavior was acquired by processes such

as observation and reinforcement.

According to the learning viewpoint, both “good” and “bad” habits are

acquired by experience. We acquire more than habits by learning. We learn to talk

a specific language, we learn attitudes, we learn to like some people and dislike

others, and so forth. Learning is a vast ongoing enterprise in every human life.

The third viewpoint to be identified is the **psychodynamic viewpoint.** This

viewpoint owes much to the influence of Freud and psychoanalysis. It asserts that

a human personality contains a field of forces. Primitive sexual and aggressive

impulses are often in conflict with one’s moral and ethical values. An individual’s

emotional conflicts can induce or aggravate chronic anxiety, anger, or depression.

The psychodynamic viewpoint is of particular value when one seeks to understand

the behavior of a troubled person.

The fourth viewpoint to be identified is the **cognitive viewpoint.** This

viewpoint asserts that an immediate cause of a given action or an emotional state

is what a person thinks. For example, before you actually go to the supermarket

you usually think something such as, “I’ll stop at the store to get some milk and

cereal on the way home from work.” For a second example, when a person experiences depression, he or she may first think something such as, “My life is pointless.

Nobody loves me.”

Interest in the thinking process can be easily traced back to the writings of

William James. He is often said to be not only the dean of American psychologists

but the first cognitive psychologist in the United States. The cognitive viewpoint

has lead to a great interest in concept formation, rational thinking, and creative

thinking.

The fifth viewpoint to be identified is the **humanistic viewpoint.** This

viewpoint asserts that some of our behavior can only be understood in terms of

psychological processes that are uniquely human. This viewpoint owes much to

*existentialism,* a philosophical position originating in Europe that places an emphasis

on the importance of free will and responsibility.

Two processes that tend to receive emphasis are the need for self-actualization

and the will to meaning. **Self-actualization,** as defined by the psychologist

Abraham Maslow, is the need to fulfill your talents and potentialities. The **will to**

**meaning,** as defined by the psychiatrist Viktor Frankl, is a deep desire to make

sense out of life and discover values to live by.

The sixth viewpoint to be identified is the **sociocultural viewpoint.** This

viewpoint assumes that much of our behavior is determined by factors associated

with society and culture. For example, when a country has a great long-lasting

depression, there is often a rise in personal problems such as depression and alcohol

abuse. Society and culture find their expression in the family and its values, in

religious traditions, and in general codes of conduct.

Very few contemporary psychologists identify with a single school of psychology

or subscribe to a single explanatory viewpoint. **Eclecticism** is the point of view

that there is something of merit in most of the schools of psychology and in the various viewpoints described. The majority of today’s psychologists describe themselves

as eclectic. Eclecticism is by and large desirable. It is integrative and reflects an

open-minded attitude. On the other hand, critics of eclecticism say that it is vapid

and stands for nothing. Consequently, a competent psychologist must make an effort

to steer a clear course between either a dogmatic adherence to a single viewpoint or

an opposite extreme characterized by a lack of conviction and confidence.

**Fields of Psychology: Of Laboratories and Clinics**

Psychology as a profession expresses itself in different *fields,* or domains of interest.

There are a number of fields of psychology, such as clinical, experimental, counseling,

developmental, physiological, human factors, and industrial.

**Clinical psychology** is the field associated with psychotherapy and psychological

testing. A clinic is a place where sick people go for help; consequently,

clinical psychologists try to help persons with both well-defined mental disorders

and serious personal problems. The word **psychotherapy,** in terms of its roots,

means a “healing of the self.” In practice, a clinical psychologist who employs

psychotherapy attempts to work with a troubled person by using various methods

and techniques that are designed to help the individual improve his or her mental

health. This is done without drugs. An informal description of psychotherapy

refers to it as “the talking cure.”

**Psychological testing** is a process involving, in most cases, the administration

of paper-and-pencil intelligence and personality tests. Test results can be

helpful in both making an evaluation of the state of a person’s mental health and

suggesting a course of treatment.

A clinical psychologist should not be confused with a psychiatrist. A fully

qualified *clinical psychologist* has earned a Ph.D. degree (doctor of philosophy with

a specialization in psychology). **Psychiatry** is a medical specialty that gives its

attention to mental disorders. A fully qualified *psychiatrist* has earned an M.D.

degree (doctor of medicine). Although psychiatrists can and do practice psychotherapy, they can also prescribe drugs. Clinical psychologists, not being medical

doctors, do not prescribe drugs.

Clinical psychology is the largest single field of psychology. About 40 percent

of psychologists are clinical psychologists.

**Experimental psychology** is the field associated with research. Experimental

psychologists investigate basic behavioral processes such as learning, motivation,

perception, memory, and thinking. Subjects may be either animals or human

beings. Ivan Pavlov’s experiments on conditioned reflexes, associated with the

learning process, used dogs as subjects.

The great majority of experimental psychologists are found at the nation’s universities. Their duties combine research and teaching. In order to obtain a per-

manent position and achieve academic promotion, it is necessary for the psychologist

to publish the results of experiments in recognized scientific journals.

Experimental psychology is not a large field of psychology in terms of numbers

of psychologists. Only about 6 percent of psychologists are experimental psychologists. On the other hand, experimental psychology represents a cutting edge

of psychology; it is where much progress is made. The overall concepts and findings

in a book such as this one have been made possible primarily by experimental

work.

The remaining fields of psychology will be briefly described in terms of what

psychologists associated with them do.

A **counseling psychologist** provides advice and guidance, often in a school

setting. Sometimes he or she will, like a clinical psychologist, attempt to help individuals with personal problems. However, if the problems involve a mental disorder,

the individual will be referred to a clinical psychologist or a psychiatrist.

A **developmental psychologist** is concerned with maturational and learning

processes in both children and adults. Although a developmental psychologist

is usually thought of as a “child psychologist,” it is important to realize that a

given developmental psychologist might have a particular interest in changes associated with middle-aged or elderly people.

A **physiological psychologist,** like an experimental psychologist, does

research. Subject areas include the structures and functions of the brain, the activity

of neurotransmitters (i.e., chemical messengers), and the effect that hormones

produced by the endocrine glands have on moods and behavior.

A **human factors psychologist** combines a knowledge of engineering with

a knowledge of psychology. For example, he or she may be part of a team that is

attempting to redesign an aircraft control panel in an attempt to make it more “user

friendly” in order to reduce pilot error associated with misperceptions.

An **industrial psychologist** usually works for a corporation. The principal

aim is to provide a work environment that will facilitate production, reduce accidents,

and maintain employee morale. A theme that guides industrial psychology

is “the human use of human beings.”

**TEST**

1. The primary subject matter of psychology is

a. the philosophical concept of the psyche

b. the behavior of organisms

c. the conscious mind

d. the unconscious mind

2. Which one of the following is *not* a goal of scientific psychology?

a. To abstract behavior

b. To explain behavior

c. To predict behavior

d. To control behavior

3. What characterizes a school of psychology?

a. Its physiological research

b. Its stand on Gestalt psychology

c. Its orientation toward psychoanalysis

d. Its viewpoint and assumptions

4. Functionalism, associated with William James, is particularly interested in

a. introspection

b. the structure of consciousness

c. how the mind works

d. developmental psychology

5. Which one of the following is correctly associated with the German word

*Gestalt?*

a. Neuron

b. Organized whole

c. Physiological psychology

d. Repression

6. What school of psychology indicates that it is important to study behavior

itself, not the mind or consciousness?

a. Behaviorism

b. Structuralism

c. Psychoanalysis

d. Functionalism

7. The principal assumption of psychoanalysis is that

a. habits determine behavior

b. human beings do not have an unconscious mental life

c. human beings have an unconscious mental life

d. all motives are inborn

8. The cognitive viewpoint stresses the importance of

a. learning

b. thinking

c. motivation

d. biological drives

9. What viewpoint stresses the importance of the activity of the brain and nervous system?

a. The psychodynamic viewpoint

b. The learning viewpoint

c. The humanistic viewpoint

d. The biological viewpoint

10. Psychotherapy is a work activity associated with what field of psychology?

a. Experimental psychology

b. Developmental psychology

c. Clinical psychology

d. Physiological psychology

**True or False**

1. T F Modern psychology is defined as the science of the mind.

2. T F The goals of scientific psychology are to (1) describe, (2) explain, (3) predict,

and (4) control behavior.

3. T F Sigmund Freudwas the principal founding personality of psychoanalysis.

4. T F The biological viewpoint assumes that most behavior is learned.

5. T F Clinical psychology, a field that stresses psychotherapy and psychological

testing, is the single largest field of psychology.

**Self-check**

• define psychology;

• state the goals of scientific psychology;

• identify the five classical schools of psychology and their founding personalities;

• name and describe the six principal viewpoints used to explain behavior;

• name and describe seven important fields of psychology.

**Think about the places in which you might encounter each of the specialties.**

|  |  |
| --- | --- |
| **Specialty** | **Places in which they work:** |
| **1.** clinical psychologist |  |
| **2.** counseling psychologist |  |
| **3.** developmental psychologist |  |
| **4.** educational psychologist |  |
| **5.** industrial/organizational psychologist |  |
| **6.** environmental psychologist |  |
| **7.** forensic psychologist |  |
| **8.** health psychologist |  |
| **9.** experimental psychologist |  |

**Match the terms with their definitions**

a)

|  |  |
| --- | --- |
| **applied science** | the pursuit of knowledge about natural phenomena for its own sake |
| **basic science** | discovering ways to use scientific findings to accomplish practical goals |
| **cognitive** | a general approach to gathering information and answering questions so that errors and biases are minimized |
| **hypothesis** | having to do with an organism’s thinking and understanding |
| **physiological** | a set of assumptions used to explain phenomena and offered for scientific study |
| **psychology** | having to do with an organism’s physical processes |
| **scientific method** | an assumption or prediction about behavior that is tested through scientific research |
| **theory** | the scientific study of behavior that is tested through scientific research |

b)

|  |  |
| --- | --- |
| **behaviorist** | a psychologist who focuses on how we process, store, and use information and how this information influences our thinking, language, problem solving, and creativity |
| **humanist** | a psychologist who analyzes how organisms learn or modify their behavior based on their response to events in the environment |
| **introspection** | a psychologist who studied the basic elements that make up conscious mental experiences |
| **cognitivist** | a psychologist who studied the function (rather than the structure) of consciousness |
| **functionalist** | a psychologist who studies how unconscious motives and conflicts determine human behavior |
| **psychoanalyst** | a psychologist who studies how physical and chemical changes in our bodies influence our behavior |
| **psychobiologist** | a psychologist who believes that each person has freedom in directing his or her future and achieving personal growth |
| **structuralist** | a method of self-observation in which participants report on their thoughts and feelings |

c)

|  |  |
| --- | --- |
| **clinical psychologist** | a psychologist who diagnoses and treats people with emotional disturbances |
| **community psychologist** | a psychologist who may work in a mental health or social welfare agency operated by the government or private organization |
| **counseling psychologist** | a psychologist who usually helps people deal with problems of living |
| **developmental psychologist** | a psychologist who studies the emotional, cognitive, biological, personal, and social changes that occur as an individual matures |
| **educational psychologist** | a psychologist who is concerned with helping students learn |
| **experimental psychologist** | a psychologist who studies sensation, perception, learning, motivation, and emotion in carefully controlled laboratory conditions |
| **industrial/organizational psychologist** | a psychologist who uses psychological concepts to make the workplace a more satisfying environment for employees and managers |
| **psychiatry** | a branch of medicine that deals with mental, emotional, or behavioral disorders |
| **psychologist** | a scientist who studies the mind and behavior of humans and animals |

d)

|  |  |
| --- | --- |
| **case study** | research method that involves an intensive investigation of one or more participants |
| **control group** | the group of participants that is treated in the same way as the experimental group except that the experimental treatment (the independent variable) is not applied |
| **correlation** | the measure of a relationship between two variables or sets of data |
| **cross-sectional study** | research method in which data is collected from groups of participants of different ages and compared so that conclusions can be drawn about differences due to age |
| **experimental group** | the group of participants to which an independent variable is applied |
| **hypothesis** | an educated guess about the relationship between two variables |
| **longitudinal study** | research method in which data is collected about a group of participants over a number years to assess how certain characteristics change and remain the same during development |
| **naturalistic observation** | research method in which the psychologist observes the participantin a natural setting without interfering |
| **sample** | the small group of participants, out of the total number available, that a researcher studies |
| **survey** | research method in which information is obtained by asking many individuals a fixed set of questions |
| **variable** | any factor that is capable of change |

**Unit 2. Sensation: Studying the Gateways of Experience**

A whole industry can sometimes be based on a single sense. The early motion

picture industry appealed primarily to vision. Radio appeals primarily to hearing.

Today’s motion pictures and television make a combined appeal to vision and

hearing. Other senses such as taste and smell play important roles in the food

industry and the perfume industry.

It is difficult to overestimate the importance of the senses. They are our gateways

to experience. Without our senses we would be creatures living in solitary

confinement. We wouldn’t know the world “out there,” the world beyond the

self. Learning would be impossible because, the very definition of learning requires that we be capable of experience. Consequently, psychology considers it important to study the process of sensation, the basic process by which we obtain information about external reality.

Here is a useful way to think about the character of conscious experience.

Imagine three ascending steps. The first step is associated with **sensation.** Sensation

refers to the raw data of experience. Seeing a flash of light, hearing a single

note sounded on a musical instrument, or feeling the touch of a fingertip, are all

examples of simple sensations. Instead of yourself, imagine that an infant only a

few days old is having these sensations. To the extent that they have little organization

and little meaning, they are close to simple sensations.

The second step is associated with **perception.** Perception refers to organized

experience. If a set of notes sounded on a musical instrument takes on a particular

form, and you hear a melody, you have attained the level of perception.

The third step is associated with **cognition.** Cognition refers to knowing.

Thinking and concept formation are processes associated with cognition. If you

perceive a melody and remember the name of the song, you have attained the

level of cognition. You know what you’re listening to. (Note that the familiar

word *recognition* can be broken down into “re” and “cognition,” suggesting that its

root meaning is to “know again.”)

**Vision: Seeing Is Believing**

Most people think of vision as the primary sense. We need to see in order to drive,

to read, to look at the people we love, and so forth. If asked what sense they consider

the most important, most students in an introductory psychology class

answer that it is vision.

In order to appreciate the visual process it is necessary first to give some attention

to the stimulus that makes it possible. That stimulus is light. From the point

of view of physics, there are two ways to look at light. It can be said that light consists

of a set of electromagnetic waves. Or it can be said that light consists of a

stream of particles, or quanta, called **photons.** In either case, light travels at the

same speed—about 186,000 miles per second. For the purposes of psychology, we

will limit our description of light to the electromagnetic wave theory.

An **electromagnetic wave,** consisting of a system of electrical and magnetic

fields, is a unique kind of wave. It can even travel through a vacuum—without a

medium to carry it. Otherwise, communication with voyagers to the Moon or

with distant space probes would not be possible. Radio waves are one kind of

electromagnetic wave.

The waves to which we give the name “light” are a narrow band of the **electromagnetic spectrum.** This spectrum ranges from relatively “long” radio

waves at one end of the spectrum to relatively “short” gamma rays at the other

end. In between the extremes we find the light waves. These range in length,

measured crest to crest, from 750 nanometers to 400 nanometers. (A nanometer

is one billionth of a meter.) The part of the electromagnetic spectrum we can see

is called the *visible spectrum.* The principal colors of the visible spectrum, also

known as the rainbow, starting at 750 nanometers, are red, orange, yellow, green,

blue, indigo, and violet. The colors always appear in the same order either in a

rainbow or when white light is broken up by a prism.

Waves a little longer than 750 nanometers are called **infra-red rays.** Waves a

little shorter than 400 nanometers are called **ultra-violet rays.** Both of these

kinds of waves are invisible to the naked eye.

Light is necessary for vision, but it is not sufficient. In order to see it is necessary

to have a sense organ that can convert light waves into useful neurological

information. This organ is, of course, the eye. In the front of the eye is the

**cornea,** a kind of window that allows light to enter the eye. Because the cornea

has a convex shape, it also is somewhat responsible for bending light waves and

making them converge on the lens.

The **lens** is used to focus light waves, and it produces an inverted, or upsidedown,

image on the retina. The **retina** is a photosensitive neurological structure.

Think of it as a target. The center of the target is called the **fovea,** and it plays a

dominant role in visual acuity and color vision. The outer rim of the target, the

**periphery,** plays an important part in signal detection and brightness vision. The

neurons in the retina are called **photoreceptors** because they are light sensitive.

The **optic nerve** conveys the retina’s activity pattern to the brain.

The two kinds of photoreceptors are the cones and the rods. They have been

given these names because of the shapes of their cell bodies. The **cones** are

located primarily in the fovea. The **rods** are located primarily in the periphery. As

already indicated, color vision is associated with the fovea, suggesting that the

cones have a lot to do with this particular quality of sensation.

A leading theory of color vision is the **trichromatic theory.** This theory is

also known as the Young-Helmholtz theory in honor of the scientists who first

introduced it. The trichromatic theory hypothesizes that we have three kinds of

cones. These are differentially sensitive to three wavelengths of light: (1) 750

nanometers, (2) 500 nanometers, and (3) 400 nanometers. The first wavelength,

750 nanometers, induces the sensation we call “red.” The second, 500 nanometers,

induces the sensation we call “green.” And 400 nanometers induces the sensation

we call “violet.” The language in the preceding sentences has been carefully chosen

in order to make it clear that the “color” is *not* in the stimulus itself (i.e., a light

wave), but is produced by the firing of a certain kind of photoreceptor.

The trichromatic theory also accounts for the sensation of colors other than the

three primary ones. The sensation of orange, for example, takes place because a wavelength of light such as 650 nanometers will cause the simulataneous firing of some

neurons that usually fire at 750 nanometers and some that fire at 500 nanometers.

White light is sensed when all of the wavelengths arrive at the retina in a random

or scrambled fashion. This causes the simultaneous firing of all three kinds of

cones. It is often pointed out that the trichromatic theory works very well. It is

the basis upon which color television sets are constructed.

However, there are flaws in the trichromatic theory. For example, people who

are red-green blind, lacking the two kinds of required photoreceptors, would not

be predicted to sense yellow—yet they seem to have a normal capacity to sense

yellow. As a consequence, other theories of color perception have been proposed.

They have not received the level of acceptance of the trichromatic theory; but it

is important to recognize that this major theory may explain some, but not all, of

what is involved in the physiology of color vision.

There are three basic sensations associated with vision. First, the sensation of

**hue** simply indicates, as already described, that we can see a range of colors. Second,

the sensation of **brightness** indicates that we can see that objects are white

or gray or black. We can also see that they are in low or high illumination. Third,

the sensation of **saturation** indicates that we can see how richly or deeply a color

seems to soak into an object.

**Hearing: The Sound of Music**

If you enjoy hearing music, you appreciate the importance of the sense of hearing.

Also, a moment’s reflection helps us to realize that hearing is the primary way

in which we overcome social isolation. It is by talking to each other, a behavior

that requires hearing, that we visit with family and friends. If one cannot hear, it

is important to learn skills such as lip reading and signing.

Like vision, the sense of hearing can be better understood by studying the

stimulus that makes it possible. This stimulus is the *sound wave.* A sound wave

requires a medium such as air or water. (The word *sonar* is associated with a sound

wave in water.) Let’s give our attention to a sound wave that uses air as its

medium. First, there must be a vibrating source in order to get a sound wave

going. An example of such a source is a guitar string. Another example is a human

vocal cord. The vibrations emanating from the source set up a traveling wave of

compressions, alternating with partial vacuums, in the air. The compressions strike

the eardrum somewhat like a series of hammer blows. The frequency of a sound

wave is measured with a unit called the **hertz (Hz).** One hertz is equal to one

cycle per second. The greater the number of cycles per second, the higher the

experienced pitch.

The intensity of a sound wave is measured with a unit called the **decibel (dB).**

The greater the decibel level, the louder the sound.

In order to experience the sensation of sound, it is necessary to have a functioning

ear. These are the principal structures and functions of the ear. The

eardrum, already mentioned, is also known as the **tympanic membrane.** Its

vibrations induce a series of events. The motion of the tympanic membrane is

conveyed to a structure called the **oval window.** The conveyance of the motion

is made possible by the motion of three linked bones called the **malleus** (“hammer”),

the **incus** (“anvil”), and the **stapes** (“stirrup”).

Vibrations of the oval window in turn set up vibrations within a fluid contained

in the **cochlea,** a bony structure reminiscent of a snail shell. A nervous system

structure within the cochlea called the **basilar membrane** plays a role in

hearing similar to the role that the retina plays in vision. The **auditory nerve**

conveys the basilar membrane’s activity pattern to the brain.

There are three basic sensations associated with hearing. First, **pitch** is the

ability to hear sounds ranging from low to high. Second, **loudness** is associated

with the magnitude of a sound. Third, **timbre** refers to the quality of a tone. In

general, the quality of a note played on a piano has more timber, or “richness,”

than a note of the same pitch played on a flute.

**Taste: “This Is Too Salty”**

The stimuli that control much of the sense of taste are various chemical compounds

such as those associated with salt, sugar, or lemon juice. The units that

make taste possible are clusters of neurons located on the tongue called **taste**

**buds.** The taste buds respond in such a way that they produce four basic taste sensations. These sensations are quite familiar. They are known as *sweet, salty, bitter,*

and *sour.*

All tastes and taste names refer to combinations of these sensations in various

patterns. How can there be many flavors if there are only four basic taste sensations?

Think of the four sensations as a kind of alphabet. There are twenty-six letters

in the standard English alphabet. Nonetheless, we have many thousands of

words. Similarly, the four sensations are able to produce many flavors.

Taste buds are gathered in specific areas of the tongue. For example, the taste

buds that produce the sensation of sweetness are located near the tip of the tongue.

It is estimated that we have about 10,000 taste buds.

It should also be noted that the sense of taste interacts with other senses such

as smell, vision, and touch. The aroma of a soup, the look of a steak, and differences

in texture on the tongue all change our taste impressions.

**Touch: Of Pain and Pressure**

It is common to refer to touch as one of the basic senses. It is more accurate, however, to speak of the **skin senses,** basic experiences associated with different kinds

of receptor neurons located in the skin. There are four skin senses: (1) light touch,

(2) deep touch, (3) temperature, and (4) pain. The sensation of **light touch** can

be induced by placing very little pressure on the surface of the skin or by slowly

stroking the skin. You are aware that you are being touched even if your eyes are

closed. Neurons located near the surface of the skin are the ones that give us the

sensation of light touch.

**Deep touch** can be induced by placing substantial pressure on the surface of

the skin. If someone shakes your hand too tightly or grips your arm with force,

you will experience deep touch. Deep touch is also known as the sensation of

*pressure.* Neurons located well below the surface of the skin are the ones that give

us the sensation of deep touch.

**Temperature** is induced by variations in the amount of heat being conducted

to or away from the skin. When heat is being conducted toward the skin, we usually

experience an increase in warmth. For example, the surrounding air temperature

might be raised by turning on a furnace, and heat will be conducted toward

the skin. When heat is being conducted away from the skin, we usually experience

an increase in cold. For example, your bare feet will usually feel cold on a tile

surface. This is because the skin of your feet makes such good contact with the

hard surface that heat is carried away from your body. Two basic kinds of neurons

for temperature are “hot” receptors and “cold” receptors.

**Pain** is a skin sense induced by tissue damage. A hard blow to the body or

being cut by a knife will usually cause pain. Be clear that the kind of pain being

described here is not the only type of pain. But the kind of pain associated with

the skin is called *cutaneous pain.* Neurons in the skin that can detect tissue damage

are the ones that give us this particular pain sensation.

**Smell: The Nose Knows**

You may think to yourself, “Someone in this room is wearing a perfume that I

can’t stand!” How do you know? You can’t see the perfume. You can’t hear the

perfume. But you, with your sense of smell, *know.*

The sense of smell allows us to detect the presence of some, but not all, airborne

chemical substances. The sense of smell is also known as **olfaction.** The receptor organ that makes the sense of smell possible is called the **olfactory epithelium,** and it is located high in the nose. It is to smell what the retina is to vision. Several kinds of neurons differentially sensitive to chemicals in gaseous forms induce the various smell sensations.

The exact number and kind of basic smell sensations, unlike the four basic

taste sensations, are somewhat debatable. Nonetheless, it is possible to identify a

number of elemental sensations. *Putrid* is one of them; it is the smell of something

rotting or decomposing. Blossoms and blooms have a *floral* odor. A smell that is

sharp or acrid, such as that produced by burning food, is said to be *pungent.* Cinnamon

or cloves are said to have a smell that is *spicy.* The wood and bark of the camphor tree have a penetrating, fragrant odor. Camphor is also obtained by synthesis and is used in some medicines. The odor is described simply as *camphoric.*

**Kinesthesis: Can You Touch the Tip of Your Nose with Your Eyes Closed?**

If you *can* touch the tip of your nose with your eyes closed, as most people can, you

have an intact sense of kinesthesis. **Kinesthesis,** also known as **proprioception,**

is the capacity to know the position in space of various parts of your body. (The

term *proprioception* is related to the word “property.” Your body belongs to you—

it’s your property.) Close your eyes and lift or lower a single finger. You know

where it is at all times. When you walk you can sense the position of your legs even

if you’re not looking at them. Pianists and dancers rely heavily on kinesthesis.

The receptor neurons for kinesthesis are located in the connective tissue surrounding the body’s joints as well as within the joints themselves.

**The Sense of Balance:Walking in an Upright Position**

The sense of balance informs you that you are walking in an upright position. What

you are sensing is the relationship of your body, and in particular your head, to the

Earth’s gravitational field. The sense of balance is made possible by receptor neurons

located in the **semicircular canals.** Located in the inner ear, the canals are tubular

bones filled with fluid. The movement of this fluid stimulates the firing of receptor

neurons within the canals, and the information is transmitted to the brain.

The sense of balance is also known as the **vestibular sense.** A **vestibule** is a

small antechamber or passageway. This is one way to describe the semicircular

canals, important components of the apparatus involved in the sense of balance.

**TEST**

1. Sensation refers to

a. organized experience

b. thinking and concept formation

c. meaningful knowledge

d. the raw data of experience

2. The waves to which we give the name “light” are a narrow band of

a. the electromagnetic spectrum

b. radio waves

c. ultra-violet waves

d. infra-red waves

3. The trichromatic theory proposes that we have

a. three kinds of optic nerves

b. a triad of lenses

c. three kinds of cones

d. three kinds of rods

4. A sound wave

a. can travel through outer space

b. cannot travel through water

c. has frequency, but not amplitude

d. requires a medium such as air or water

5. What structure in the ear is similar in function to the eye’s retina?

a. The basilar membrane

b. The auditory nerve

c. The tympanic membrane

d. The oval window

6. The four basic taste sensations are

a. sweet, salty, bitter, and hot

b. sweet, bitter, burned, and salty

c. sour, acid, sweet, and mint

d. sweet, salty, bitter, and sour

7. One of the following is *not* a skin sense.

a. Light touch

b. Incongruent pleasure

c. Deep touch

d. Temperature

8. The receptor organ that makes smell possible is called the

a. vestibular membrane

b. olfactory epithelium

c. odor membrane

d. synaptic epithelium

9. What sense makes it possible for you to touch the tip of your nose with your

eyes closed?

a. The vestibular sense

b. The cardiovascular sense

c. Kinesthesis

d. Synthesis

10. The vestibular sense lets you know when

a. a signal is present

b. a figure is perceived against a ground

c. you are walking upright

d. you have a subliminal perception

**True or False**

1. T F The word *sensation* refers to the raw data of experience.

2. T F The trichromatic theory of color perception hypothesizes that we

have three kinds of cones, differentially sensitive to three wavelengths

of light, in the retina of the eye.

3. T F A sound wave has the remarkable property of being able to travel

through a vacuum.

4. T F The units that make taste possible are clusters of neurons located on

the tongue called *taste buds.*

5. T F You have no receptor neurons in the joints of your body.

**Self-check**

• differentiate among sensation, perception, and cognition;

• describe key aspects of the visual process;

• explain the trichromatic theory of color perception;

• describe key aspects of the hearing process;

• identify principal features of the processes associated with taste, the skin senses,

smell, kinesthesis, and the vestibular sense.

**Match the terms with their definitions**

**a)**

|  |  |
| --- | --- |
| **absolute threshold** | the weakest amount of a stimulus that a person can detect half the time |
| **difference threshold** | the smallest change in a physical stimulus that can be detected between two stimuli |
| **perception** | the organization of sensory information into meaningful experiences |
| **psychophysics** | the study of the relationships between sensory experiences and the physical stimuli that cause them |
| **sensation** | what occurs when a stimulus activates a receptor |
| **signal-detection theory** | the study of people’s tendencies to make correct judgments in detecting the presence of stimuli |
| **Weber’s law** | the principle that for any change in a stimulus to be detected, a constant proportion of that stimulus must be added or subtracted |

**b)**

|  |  |
| --- | --- |
| **auditory nerve** | the sense of movement and body position |
| **binocular fusion** | the nerve that carries smell impulses from the nose to the brain |
| **kinesthesis** | three semicircular canals that provide the sense of balance located in the inner ear and connected to the brain by a nerve |
| **lens** | the nerve that carries impulses from the inner ear to the brain, resulting in the sensation of sound |
| **olfactory nerve** | the differences between the images stimulating each eye |
| **optic nerve** | the process of combining the images received from the two eyes into a single, fused image |
| **pupil** | the nerve that carries impulses from the retina to the brain |
| **retina** | the innermost coating of the back of the eye, containing the light-sensitive receptor cells |
| **retinal disparity** | a flexible, elastic, transparent structure in the eye that changes its shape to focus light on the retina |
| **vestibular system** | the opening in the iris that regulates the amount of light entering the eye |

**Unit 3. Perception:Why Do Things Look the Way They Do?**

Kurt Koffka (1886–1941), one of the founders of Gestalt psychology, said that

the great question of perception is: “Why do things look the way they do?”

At first the question seems almost silly. We are tempted to answer, “Because

things are they way they are.” It would seem that tall things look tall because they

*are* tall. And distant things look distant because they *are* distant. On the other

hand, why does the Moon look larger just above the horizon than it does when

it’s overhead? It hasn’t gotten any bigger, or any closer. And, if a series of disconnected dots are arranged in the pattern of, say, the letter F, it looks like the letter,

not a bunch of disconnected dots—which, it could be argued, it actually is.

Visual images on your retina are upsidedown.

Nonetheless, you perceive them as right side up. At the level of sensation, it’s

an inverted world. At the level of perception, the world doesn’t look inverted at all.

Koffka’s question does not have to be limited to the sense of vision. The same

question could be adapted to the other senses. The principles set forth here, largely in connection with vision, can be readily applied to perception in general.

Sensation is the raw data of experience. **Perception,** on the other hand, is the organization and the meaning we give to primitive information. It can be said with some degree of confidence that we use sensory information to create a psychological world.

Returning to Koffka, he said that there is a distinction between the geographical

world and the psychological world. The **geographical world** is the actual world “out there,” the world as defined and described by physics. The **psychological world** is the world “in here,” the world as experienced by the subject. Although common sense usually says it’s the so-called “real world” or physical world that determines our behavior, it can be argued that common sense isn’t sufficiently analytical. Reflection suggests that we behave in terms of what we perceive to be true, not necessarily in terms of what is actually true.

If ice is thin in the physical world, and it is solid in your psychological world, you

are likely to skate on it. And, of course, you may make a serious mistake as a result.

In sum, it can be argued that we act to a large extent in terms of our perceptions.

And it is for this reason that the study of perception is a basic one in psychology.

**The Gestalt Laws: Is Our Perception of the World Due to Inborn Organizing Tendencies?**

Imagine that you are looking up and you see a single bird flying in the sky. The

bird is a **figure,** a well-defined perceptual object tending to stand out. The sky is

**ground** (or **background**), the perceptual field that surrounds the figure. This is

**figure-ground perception.** One of the features of this kind of perception is that

the figure is usually smaller than the ground and tends to be seen as coming forward

from the ground. Other examples include seeing a button on a blouse, a

book on a table, or a car on the road.

It can be argued that this kind of perception, the ability to distinguish a figure

from a field, is an inborn organizing tendency. We aren’t taught to do it. We probably

start doing it spontaneously early in infancy. An infant reaching for a milk

bottle suggests to us that he or she perceives the bottle as a perceptual object, a figure

in a field. Figure-ground perception is probably the most fundamental organizing

tendency we possess.

Keep in mind once again that perception does not necessarily reflect the structure

of the world itself. For example, a word printed in black ink on a white page

is perceived as slightly in front of the white surface. We are tempted to think that

this is because the word is “on” the page. But imagine that a black piece of paper

is covered with a stencil. The entire page is inked white, with the exception of the

word. Now, from a physical point of view, the white ink is on the black surface.

Nonetheless, unless carefully studied, the word, emerging in black, will be perceived

as slightly forward and on the page.

Various illusions demonstrate that figure-ground perception is reversible

under some conditions. The example of the word on a page and the illusions all

strongly suggest that figure-ground perception is a mental construction, not necessarily

a fact about the physical world.

Max Wertheimer is the father of Gestalt psychology. Adding to figure-ground perception, Wertheimer proposed a set of supplemental inborn organizing tendencies, or **Gestalt laws.** (The Gestalt laws are also traditionally called **innate tendencies,** which simply means “inborn.” The words *innate* and *inborn* can be used interchangeably.)

First, **proximity** refers to the nearness of the elements that make up a perception.

If four ink dots on a piece of paper are arranged in the form of a square,

this Gestalt (i.e., organized whole) will, of course, be perceived to be a square. Let

assume that two figures are drawn. Figure A has dots that are one inch apart. Figure

B has dots that are three inches apart. Figure A will give a stronger impression

of being a square than will Figure B.

When you look at stars in the sky and perceive constellations, it is because of

the law of proximity. The “nearness” of some stars to each other creates clusters

that we can easily imagine to be objects such as a dipper, a hunter, or a lion.

Second, **similarity** refers to characteristics that elements have in common.

Let’s say that the word *airplane* is printed on a page in a single color of ink. Imagine

that the same word is printed on a different page with its letters randomly

appearing in black, red, and green. The second word is more difficult to perceive

as a whole word, as a perceptual object, than is the first word. Similarity of the elements helps to make a perceptual object a coherent whole.

If a moth is dark gray and it lands on a tree with dark gray bark, it will be difficult

to perceive the moth at all. This is because its similarity to the bark makes it,

from a perceptual point of view, a part of the bark. However, if a light gray moth

lands on the same tree, it will be easy to pick the moth out as a figure.

Third, **closure** is the tendency to fill in gaps in information and make a perceptual

object into a complete whole. Imagine that an arc of 340 degrees is drawn

on a piece of paper. Although at a sensory level this is an arc, you will tend to perceive

it as a broken circle, as a coherent whole with a defect. (An unbroken circle

has 360 degrees.) A newspaper photograph made up of nothing but disconnected

dots is nonetheless perceived as a picture of people or things. Again, the principle

of closure is at work.

Fourth, **common fate** exists when all of the elements of a perceptual object

move or act together. (Their simultaneous activity is, in a sense, a “common

fate.”) When this happens, the perceptual object is quickly organized into a figure

and is easily discriminated from a ground. For example, a polar bear with white

fur surrounded by snow is more easily seen as a bear when it is moving than when

it is stationary. Other organizing tendencies exist; however, the ones presented

make clear the role that they appear to play in perception.

**Learned Aspects of Perception: Is the Infant’s World a Buzzing, Blooming Confusion?**

William James said that the infant’s world is “a buzzing, blooming, confusion.”

There are flashes of light, noises, pressure on the skin, and so forth. But do they

have any organization? Are patterns perceived? Or is there just a lot of random

sensory activity? One gets the impression from James’s comment that the infant,

at least temporarily, inhabits a chaotic psychological world. We have seen from

the exposition of the Gestalt laws that this is probably not completely correct.

Innate organizing tendencies either immediately or very quickly help the infant

to stabilize perceptions and introduce some sort of order into whatever is happening.

Nonetheless, it is important to appreciate that learning also plays a role in perception. The Gestalt laws may play a primary role, but learning certainly plays a secondary, and important, role.

Let’s say that a simple melody is played on the piano in the presence of

Tina, a two-week-old infant. Assume that Tina has had little or no experience

with hearing music. Does she now actually perceive a melody in somewhat the

same way that you perceive it? Or does she just hear a lot of disconnected

tones? You can put yourself in Tina’s position to some extent by imagining

yourself listening to the music of another country, one that uses a tonal scale

and patterns of harmony that are unfamiliar to you. When you first hear a song,

it may seem to have little or no pattern. However, hearing it two or three times

will help you to perceive the pattern. To the extent that you, or Tina, can hear

any pattern at all on the first presentation, it is probably due to the Gestalt laws.

The sharpening of perception on repeated presentations can be attributed to

learning.

One way to explain this sharpening of perception is to suggest that patterns of

stimulation set off chain reactions in neurons located, let us say, in the association

areas of the brain’s cortex. Each time a given stimulus is presented, the same set of

neurons fire. The research of the Canadian psychologist Donald O. Hebb suggests

that repeated firings form a **cell assembly,** a stable group of neurons that are used

over and over by the brain to create a representation of the external pattern. A pattern

can, of course, be quite complex. If this is so, a given cell assembly may represent

only a portion of a pattern. Hebb called a set of cell assemblies grouped together to form a larger pattern a **phase sequence.**

The existence of cell assemblies helps account for a memory of patterns and

perceptual objects. When you hear a melody or recognize something you have

seen before, it is quite possibly because an established cell assembly is firing.

Learning also plays a role in perception because we are conscious beings who

attach labels to perceptual objects. This brings us to the **cognitive hypothesis** in

perception, the hypothesis that we not only perceive, but know what we are perceiving. If you see a friend and think, “There’s Erin,” or hear a song and think,

“That’s ‘God Bless America’ by Irving Berlin,” then you have increased the acuity

of your perceptual world. **Cognitive learning,** learning in which consciousness

plays an important role, is an important aspect of the perceptual process.

**Illusions: What Do They Teach Us about Perception?**

An **illusion** is a false perception, a perception that does not fit an objective

description of a stimulus situation. An illusion is usually associated with a particular

sense. Consequently, there are optical illusions, auditory illusions, and so

forth. Illusions tend to be remarkably stable. They affect most normal observers in

the same way. For example, for almost all of us the Moon is perceived to be larger

when low and near the horizon than when it is high and overhead.

It is important to distinguish the concept of an illusion from a delusion and a hallucination. A **delusion** is a false belief. If Ray, a schizophrenic mental patient,

believes that he has an eye with X-ray vision on the back of his head, this is a delusion.

A **hallucination** is a perception created by the individual. It has no relationship

to reality at all. If Ray sees and hears an invisible companion that nobody else can see

or hear, this is a hallucination. Illusions are thought to be normal and experienced by

most of us. Delusions and hallucinations are thought to be abnormal and experienced

in an idiosyncratic fashion. Illusions teach us that perceptions are, to some extent, created by the brain and nervous system, that we are not passive observers of our world. Let’s return to figureground perception. We perceive the relationship between a figure and its associated ground as being a fact about the world itself. But is it? The **vase-faces illusion** can be perceived in two different ways. It can be seen as

a vase. Or it can be seen as two profiles facing each other. When seen as a vase, this

becomes figure and tends to stand forward a little in perception. The faces disappear

and become absorbed into a receding ground. When seen as two faces, these become

figure, and both tend to stand forward a little in perception. The vase disappears and

becomes absorbed into a receding ground. These two different perceptual alternations

will take place for most observers on a predictable basis. Also, it is impossible to

simultaneously perceive both organizations. All of this suggests that figure and ground

are organizing tendencies linked to perception, not facts about the external world.

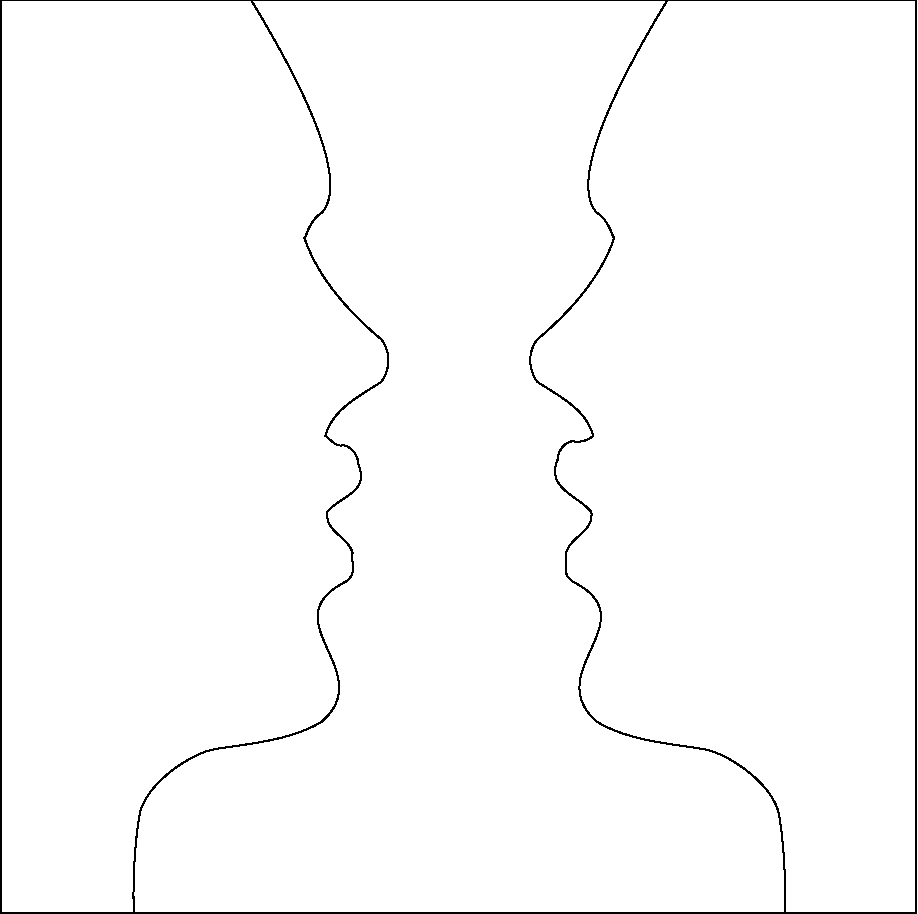
How can the vase-faces illusion be explained? Here is one approach. The vasefaces

drawing is said to be **ambiguous,** meaning that it can be perceived in more

than one way. The process of **attention,** characterized by a tendency to focus on

some stimuli and ignore others, determines that one organization will be temporarily

favored over another. Let us say that the first organization favored is the vase. The region of the brain being stimulated by the vase organization becomes satiated (“overfilled”) with the vase organization. It spontaneously rejects it for a second organization, one that is briefly refreshing. The **satiation hypothesis** suggests that the brain tends to reject excessive stimulation of one kind and tends to seek novel stimulation of another kind. Ambiguity, attention, and satiation are factors that all work together to produce the fluctuations in perception that take place when one experiences the vase-faces illusion.



**The vase-faces illusion.**

Returning to the Moon illusion, why does the Moon appear larger on the

horizon than when it’s overhead? The illusion is a variation of the **Ponzo illusion,**

an illusion associated with linear perspective. Parallel lines, like those associated

with railroad tracks or the sides of a roadway, appear to converge as they

approach the horizon. At the horizon itself they meet, and this is called the **vanishing**

**point.** If in a drawing two objects of the same size are simultaneously placed so that the first object is far from the horizon and the second one is near the horizon, the second object will be perceived as being larger than the first one. This is because, in a drawing, the retinal size of both objects is the same. However, the second object seems to be larger than it is in terms of comparisons we automatically make with other objects near the horizon.

Note that in everyday perception the Ponzo illusion does not occur. This is

because the retinal size of an object near the horizon is smaller than that of an

object closer to you. When the size of an image projected on the retina shrinks

with distance, the apparent size of the object remains the same. This is a perceptual

phenomenon called **size constancy.** For example, an approaching friend first

seen when twenty feet away and then when closer to you appears to be the same

size. However, in the case of the Moon illusion, the size of the Moon’s image pro-

jected on your retina is about the same size when it is near the horizon and when

it’s “far” from it (when it’s overhead). As the Moon orbits our planet, its actual

distance from the Earth doesn’t change significantly. Consequently, the conditions

of the Ponzo illusion are met.

What we learn from illusions is that the world appears to us the way it does

not only because it actually is the way it is. We also interpret sensory information,

transforming it into a constructed perceptual, or psychological, world. And it is

our perception of the world that determines much of our behavior.

**Depth Perception: Living in a Three-dimensional World**

One of the fascinating questions of perception is this one:Why do we perceive a

world of rounded shapes, of near and far things, of *depth* instead of a flat world

with one surface? A second, related question is: How is this accomplished?

A given eye’s retina is basically a surface, not a cube. (Although the eye itself

is a three-dimensional “ball,” the *surface* of the retina is not.) Think of the information

on the surface of the retina as having some similarity to an oil painting made on a flat canvas. Note that it *is* possible to perceive depth in a landscape painting made on a flat canvas.

Depth perception is made possible by various *cues,* signals or stimuli that provide

an observer with information. Depth perception is made possible by cues arising from binocular vision and monocular vision.

**Binocular vision** is vision with two eyes. The principal cue for depth perception

associated with binocular vision is **retinal disparity.** The pupils of the eyes are about three inches apart. This gives the right eye a somewhat different view of a scene than the one obtained with the left eye. Notice that although you sense two images, you only perceive one. (This is another example of the difference between sensation and perception.) This is sometimes called the **zipper function** of the brain, the capacity of the visual portion of the cortex to integrate two images into a meaningful whole. The whole image, in part because of retinal disparity, appears to be three-dimensional.

**Monocular vision** is vision with one eye. If a person is deprived of binocular

vision, then he or she can still perceive depth with the assistance of monocular

cues. (Although the loss of the use of an eye *impairs* depth perception, it does not

destroy it completely.) **Monocular cues** are available to one eye. These are the

kinds of cues that give a landscape painting depth. Although you normally look at

such a painting with both eyes open, in this case depth perception is not arising

because of retinal disparity. Close one eye and look at the painting. The perception

of depth will remain.

A first monocular cue is **linear perspective,** the tendency of parallel lines to

seem to converge as they approach the horizon. Linear perspective was referred to

earlier in connection with the Moon illusion. A second monocular cue is **interposition,** a cue created when one object blocks some portion of another object.

If a person is standing in front of a tree, and the tree is partly blocked, it is easy to

see that the tree is behind, not in front of, the person.

A third monocular cue is **shadows.** Shadows are differences in illumination

gradients. These tend to help us see rounded surfaces as convex or concave. A

fourth monocular cue is **texture gradient.** A texture gradient is perceived when

we can see less detail in far away objects than those that are closer to us. Such a

gradient appears spontaneously when we look at a field strewn with rocks.

A fifth monocular cue is **motion parallax,** the tendency when moving forward

fairly rapidly to perceive differential speeds in objects that are passing by and

in those that are being approached. For example, in a traveling car, nearby telephone

poles approach rapidly and then flash by. Look down the road. The telephone

poles seem to be approaching slowly. If you can see telephone poles very

far away, they seem to be almost stationary.

All of these monocular cues work together to enhance depth perception.

**Extrasensory Perception: Is It Real?**

The novel *Slan* by A. E. van Vogt has become a science-fiction classic. First serialized

in the magazine *Astounding Science Fiction* in 1940, the story relates the adventures of

a boy with telepathic powers and his conflicts with nontelepathic adversaries. Telepathy has become a staple of science fiction and is taken for granted as a power of the

mind in many novels and films. But is it real?

Before we address the fact or fiction of telepathy, let’s explore the phenomenon

as if it were real. This will permit us to understand more accurately what people

mean when they use words such as *telepathy.*

Telepathy belongs to a larger category of phenomena called **extrasensory**

**perception.** Extrasensory perception, or **ESP,** is the capacity to be aware of external

events without the use of one of the conventional senses such as vision or hearing.

ESP is referred to as the *sixth sense,* but there are at least seven readily identified senses. ESP should more accurately be called the *eighth sense.*

There are three kinds of extrasensory perception: (1) precognition, (2) telepathy,

and (3) clairvoyance. **Precognition** is the power to know what will happen

in the future. Living almost five hundred years ago, the French physician and

astrologer Nostradamus is one of the more famous individuals in history purported

to have had precognitive powers.

**Telepathy** is the power to send and receive mental messages. The ability to

read the minds of people who can’t read yours is also considered to be a telepathic

power. A spy with this ability would have a useful psychological tool. In the first

half of the twentieth century Upton Sinclair, author of *The Jungle* and a defeated

candidate for governor of California, conducted telepathic experiments with his

wife and published a book called *Mental Radio.*

**Clairvoyance** is the power to have visions and “see” something out of the

range of normal vision. (The word *clairvoyance* has French roots meaning “clear

seeing.”) Some clairvoyants are asserted to be able to give medical readings and

visualize an illness in another person in the same way that an X-ray machine can.

A person who can combine the two powers of precognition and clairvoyance is

thought to be able to both predict and visualize future events. The term *seer*

implies an ability to combine these powers.

Although not a form of ESP, there is another power often associated with it.

This is **psychokinesis** or **PK.** Psychokinesis is the power to move objects using

only energy transmitted by the mind. In the movie *The Empire Strikes Back,* the

hero Luke Skywalker lifts a small spaceship out of the muck of a bog with PK. A

gambler who believes in PK believes he can give the dice a mental nudge as

they’re rolling and influence the numbers that come up.

All four of the phenomena mentioned above are combined into a general class

of mental abilities called **psi powers,** powers of the mind that are thought to transcend the conventional laws of physics and our ordinary understanding of natural

science. Psi powers are sometimes also called “wild talents.”

Do psi powers, ESP and PK, actually exist? If one were to make a decision

on anecdotal evidence alone, then one would accept the reality of these powers.

There are many stories and personal experiences that relate vivid and seemingly

convincing events that tempt skeptical observers to become believers.

However, anecdotes and personal experiences are hardly the stuff of science.

They can’t be verified. They are difficult or impossible to replicate. Often the

only witness is one individual. When the number of subjects in a study is only

one, the study has no reliability and can’t be generalized. Consequently, wonderful

stories aren’t sufficient evidence in favor of the hypothesis that ESP and

PK are real.

On the other hand, experimental science has explored psi powers. Joseph B.

Rhine (1895–1980), working at Duke University, conducted many experiments on

ESP and PK. He called the study of such phenomena **parapsychology.** Telepathy

experiments were conducted with the aid of a set of twenty-five cards called **Zener**

**cards.** There are five symbols and these are each repeated five times. PK experiments

often involved the tossing of dice because probable outcomes could be accurately

stated. Rhine’s research favors accepting the hypothesis that psi powers are

real. Others such as Charles T. Tart, using the experimental method, have obtained

results that are similar to Rhine’s.

On the other hand, many psychologists remain unconvinced. They point out

that there are flaws in the methodology of the various parapsychological experiments.

Also, it should be noted that such experiments do not consistently support

the reality of psi powers. Skeptics assert that when parapsychological experiments are well designed and tightly controlled, many of the positive results

fade away.

It is not possible at this time to make a simple statement saying that psychology

either accepts psi abilities as real or rejects them as false. It *can* be asserted that

many psychologists—perhaps most—are unwilling to accept the reality of these

phenomena. They don’t believe that the data are sufficiently convincing.

**TEST**

1. According to Koffka, the actual world “out there,” the world as defined by physics is

a. the phenomenal world

b. the geographical world

c. the psychological world

d. the subjective world

2. The capacity to see a bird in the sky is an example of

a. the Ponzo illusion

b. a cell assembly working

c. a monocular cue

d. figure-ground perception

3. One of the following is *not* a Gestalt law.

a. Proximity

b. Similarity

c. The cognitive hypothesis

d. Closure

4. What hypothesis states that we not only perceive, but also know what we are perceiving?

a. The cognitive hypothesis

b. The sensory hypothesis

c. The motor-neuron hypothesis

d. The Wertheimer-Koffka hypothesis

5. An illusion is

a. a false belief

b. a kind of hallucination

c. the same thing as a delusion

d. a false perception

6. The vase-faces drawing is said to be ambiguous, meaning that

a. its borders are fuzzy

b. it can be perceived in more than one way

c. it can be perceived in one way only

d. it does not meet the criterion of subjectivity

7. The Moon illusion

a. is caused by large changes in the Moon’s distance from the Earth

b. provides a good example of size constancy

c. provides a case in which size constancy breaks down

d. violates figure-ground perception

8. The principal depth perception cue associated with binocular vision is

a. linear perspective

b. texture gradient

c. motion parallax

d. retinal disparity

9. One of the following is *not* a kind of extrasensory perception.

a. Psychokinesis

b. Precognition

c. Telepathy

d. Clairvoyance

10. What is the status of psi powers in psychology as a science?

a. Psi powers are proven facts

b. No one has done experiments on psi powers

c. The reality of psi powers is still open to question

d. Telepathy is real, but clairvoyance is not

**True or False**

1. T F In the study of perception, a distinction can be made between the

geographical world and the psychological world.

2. T F Figure-ground perception is always stable and never reversible.

3. T F Research suggests that there are innate, or inborn, organizing tendencies

in perception.

4. T F Learning appears to play no part in perception.

5. T F Clairvoyance is another name for psychokinesis.

**Self-check**

• state the Gestalt laws of perception;

• describe the role that learning plays in perception;

• explain what illusions teach us about perception;

• explain how both binocular vision and monocular cues play a role in depth perception;

• discuss some of issues associated with the topic of extrasensory perception.

**Match the terms with their definitions**

a)

|  |  |
| --- | --- |
| **constancy** | an ability to gain information by some means other than the ordinary senses |
| **extrasensory perception (ESP)** | perceptions that misrepresent physical stimuli |
| **Gestalt** | the tendency to perceive certain objects in the same way regardless of changing angle, distance, or lighting |
| **illusions** | the apparent movement of stationary objects relative to one another that occurs when the observer changes position |
| **motion parallax** | brief auditory or visual messages that are presented below the absolute threshold |
| **subliminal messages** | the experience that comes from organizing bits and pieces of information into meaningful wholes |

**Think about how your brain uses perceptual cues to make sense out of sensory information. Give an example of each type of perception below.**

|  |  |
| --- | --- |
| **Type of Perception** | **Example** |
| Figure-Ground Perception | **1.** |
| Perceptual Inference | **2.** |
| Monocular Depth Cue | **3.** |
| Binocular Depth Cue | **4.** |
| Constancy | **5.** |

**Unit 4. Learning: Understanding Acquired Behavior**

Think of ways to use the word *learned* in a sentence, using yourself as a subject

of the sentence. Here are some examples collected from psychology students:

“I learned to drive a car.”

“I learned quite a bit of Italian when I was stationed in Italy for two years.”

“Little by little I have learned to hate my business partner.”

“I learned a lot on the streets where I grew up.”

“I learned to be a more loving, understanding person after I got married.”

“I learned good table manners when I was a child.”

“I learned to smoke by hanging out with friends who smoked.”

The above examples of the ways students think about the learning process

reveal that learning takes place under many conditions and in many situations.

Although learning takes place in school, it is clear that much—perhaps most—

learning goes on outside of the classroom. Indeed, the learning process affects

almost everything we do.

**Learning** is a more or less permanent change in behavior, or a behavioral tendency, as a result of experience. There are several points to be made about this definition. First, learning is “more or less” permanent. This suggests that although learning tends to resist change once it is acquired, it sometimes does change. Learning can be forgotten. Learning is sometimes subject to a process known as *extinction* (to be explained later). Also, what has been learned can sometimes be shaped or modified. So learning is far from permanent.

Second, the term **behavioral tendency** indicates that learning is sometimes

dormant, that it does not reflect itself in immediate action. This phenomenon is

called *latent learning* and it too will be discussed later.

Third, note the focus on the word **experience** in the definition. In order to

learn it is necessary to receive information. This is done through our sense organs.

Imagine an infant born without vision or hearing. It would be terribly difficult for

that infant to learn and develop normal intelligence. If the infant had no sense of

touch or smell or balance, then learning would be next to impossible.

**Classical Conditioning: Responding to Signals**

Imagine that you are reading a menu in a restaurant and your mouth begins to

water. Is this an example of classical conditioning? Yes, it is. You were not born

with a tendency to salivate when looking at a menu. This is behavior acquired

through experience, and, consequently, a kind of learning. Salivating to words on

paper is a conditioned reflex.

Classical conditioning was the first kind of learning to be studied experimentally.

The pioneer researcher into classical conditioning was Ivan Pavlov (1849–1936), a Russian physiologist. **Classical conditioning** is characterized by the capacity of a previously neutral stimulus to elicit a reflex. If a dog is trained to salivate each time that it hears a tone of a specific frequency, then the tone is the previously neutral stimulus and the act of salivating is the reflex. Pavlov achieved his results primarily with a number of dogs that were trained to patiently cooperate with the researcher while being restrained in harnesses in the laboratory.

There are four basic terms, all closely related, that you need to learn as the

foundation stones of your understanding of classical conditioning. These are (1)

the unconditioned stimulus, (2) the conditioned stimulus, (3) the unconditioned

reflex, and (4) the conditioned reflex.

The **unconditioned stimulus** is a stimulus that has an inborn power to elicit

a reflex. Food in the mouth is such a stimulus. The physiology of the body is such

that when salivary glands are stimulated by food, saliva will flow.

The **conditioned stimulus** is created by the learning process. It acquires a

power that is sometimes (not always) similar to that of the unconditioned stimulus.

If a tone precedes food in the mouth a number of times, then the tone may

acquire the power to elicit saliva. If a dog salivates when it hears a tone, then the

tone is a conditioned stimulus. It can be argued that the dog has associated the

tone with food and that the tone has become a signal conveying the meaning that

food is coming soon. Indeed, this is one of the important meanings that Pavlov

gave to classical conditioning. He thought of conditioned stimuli as signals.

The **unconditioned reflex** is an inborn response pattern. A dog has an

inborn tendency to salivate when food is placed in its mouth. Salivating under

these conditions is an unconditioned reflex. The word *response* is sometimes used

in place of the word *reflex.* This usage, although common, is somewhat imprecise.

A **response** to a stimulus is a behavior pattern that suggests a higher level of

organization and complexity than that associated with a reflex. Salivating when

reading a menu’s description of a hamburger is a reflex. Ordering the item and

asking that the meat be well done is a response.

A **conditioned reflex** is a learned response pattern. If a dog salivates to a

tone, then the elicited flow of saliva is a conditioned reflex.

Several important features of classical conditioning should be noted. First, the

word **conditioning** implies a kind of learning that does not require reflection and

reasoning. The learning takes place primarily through a process of association.

Infants are capable of classical conditioning. If a baby’s mouth begins to make

sucking motions when a milk bottle is in view, then the sucking motions are conditioned

reflexes.

Second, as indicated above, classical conditioning is not limited to dogs and

animals. Although Pavlov used dogs as research subjects, the results of his research

can be generalized to human beings.

Third, conditioned reflexes are **involuntary.** They are outside of the conscious

control of the subject.

There are various behavioral patterns associated with classical conditioning.

Three of these are extinction, stimulus generalization, and discrimination.

**Extinction** takes place when the conditioned stimulus is presented a number of

times without the unconditioned stimulus. If a conditioned dog is presented with

a tone, it will salivate. However, if the tone is presented without food a sufficient

number of times, the tone will cease to elicit the conditioned reflex. The dog has,

in effect, *unlearned* the conditioned reflex. Extinction should not be confused with

forgetting. Extinction is an active process that is designed to eliminate a conditioned

reflex. The process of actively extinguishing a conditioned reflex is taken

advantage of in desensitization therapy.

**Stimulus generalization** occurs when a stimulus that is similar to an original

conditioned stimulus elicits a conditioned reflex. For example, let’s say that

a dog is trained to salivate to a pitch that is the equivalent of middle C on the

piano. If a pitch the equivalent of D, a note that is close to C, is sounded, the dog

will also salivate. As the pitch goes higher, there may be some salivation. If the

pitch gets high enough, salivation will stop. This is **discrimination,** the subject’s

ability to tell the difference between an original conditioned stimulus and other

stimuli.

In a classical experiment, Rosalie Raynor, an assistant to John B. Watson,

trained a child to be afraid of a white rat. In subsequent testing, the child, known

in the research literature as Little Albert, showed fear reactions (conditioned

reflexes) when he saw a different white rat, a Santa Claus mask (with white fur),

or a rolled-up white terrycloth dishtowel. This research provides an example of

stimulus generalization in a human being.

**Trial-and-Error Learning: Taking a Rocky Road**

It is instructive to note that one of the most popular books on writing ever published

is called *Trial and Error* by the novelist Jack Woodford. It sold many copies

over a number of years, and communicated to would-be authors that the only

way to learn to write was by taking the rocky road of learning by making one’s

own mistakes.

The first kind of learning to be studied experimentally in the United States was

**trial-and-error learning.** Edward L. Thorndike (1874–1949) first studied maze

learning in baby chickens (with the assistance and approval ofWilliam James). Later

he studied the escape behavior of cats from puzzle boxes. The cats had to learn to

pull a string that released a latch connected to a door. The cats learned to pull the

string, but only very gradually. They showed no sudden burst of insight or comprehension. Thorndike concluded that the learning was a robotlike process controlled

primarily by its outcomes. If a specific behavior helped a cat to escape, that

behavior was retained by the cat. Thorndike called this process **stamping in,**

meaning that an action that is useful is impressed upon the nervous system.

What stamps in a response, according to Thorndike, is satisfaction. The cat

that escapes from a puzzle box is rewarded with food. Thorndike called the tendency

to retain what is learned because satisfactory results are obtained the **law of**

**effect.** Thorndike’s law of effect is the forerunner of what today is usually known

as the process of *reinforcement.*

**Operant Conditioning: How Behavior Is Shaped by Its Own Consequences**

**Operant behavior** is characterized by actions that have consequences. Flick a

light switch and the consequence is illumination. Saw on a piece of wood and the

consequence is two shorter pieces of wood. Tell a joke and the consequence is

(sometimes) the laughter of others. Work hard at a job all week and the consequence

is a paycheck. In each of these cases the specified action “operates” on the

environment, changes it in some way.

It was B. F. Skinner (1904–1990) who applied the term **operant** to the kind

of behaviors described above. He saw that operant behavior is both acquired and

shaped by experience. Consequently, he identified it as a kind of learning. In addition, he also categorized it as a form of conditioning because he believed that such concepts as consciousness and thinking are not necessary to explain much (perhaps most) operant behavior.

Skinner, long associated with Harvard, invented a device called the **operant**

**conditioning apparatus;** its informal name is the **Skinner box.** Think of the

apparatus as something like a candy machine for animals such as rats and

pigeons. A rat, for example, learns that it can obtain a pellet of food when it

presses a lever. If the pellet appears each time the lever is pressed, the rate of

lever pressing will increase. Lever pressing is operant behavior (or simply an *operant.*)

The pellet is a reinforcer. A **reinforcer** is a stimulus that has the effect of

increasing the frequency of a given category of behavior (in this case, lever

pressing).

The concept of reinforcement plays a big part in Skinner’s way of looking at

behavior. Consequently, it is important to expand on the concept. Note in the

above definition that a reinforcer is understood in terms of its *actual effects.* It is to

be distinguished from a reward. A **reward** is perceived as valuable to the individual

giving the reward, but it may not be valued by the receiving organism. In the

case of a reinforcer, it is a reinforcer *only* if it has some sort of payoff value to the

receiving organism. By definition, a reinforcer has an impact on operant behavior.

Its function is always to *increase* the frequency of a class of operant behaviors.

One important way to categorize reinforcers is to refer to them as positive and

negative. A **positive reinforcer** has value for the organism. Food when you are

hungry, water when you are thirsty, and money when you’re strapped for cash all

provide examples of positive reinforcers.

A **negative reinforcer** has no value for the organism. It does injury or is noxious

in some way. A hot room, an offensive person, and a dangerous situation all

provide examples of negative reinforcers. The organism tends to either escape

from or avoid such reinforcers. The operant behavior takes the subject *away* from

the reinforcer. Turning on the air conditioner when a room is hot provides an

example of operant behavior designed to escape from a negative reinforcer. Note

that the effect of the negative reinforcer on behavior is still to *increase* the frequency

of a class of operants. You are more likely to turn on an air conditioner

tomorrow if you have obtained relief by doing so today.

It is also important to note that a negative reinforcer is *not* punishment. In the

case of punishment, an operant is *followed* by an adverse stimulus. For example, a

child sasses a parent and then gets slapped. Getting slapped comes *after* the child’s

behavior. In the case of a negative reinforcer, the adverse stimulus is *first* in time.

Then the operant behavior of escape or avoidance follows.

Another important way to classify reinforcers is to designate them as having

either a primary or a secondary quality. A **primary reinforcer** has intrinsic value

for the organism. No learning is required for the worth of the reinforcer to exist.

Food when you are hungry and water when you are thirsty are not only positive

reinforcers, as indicated above, they are also primary reinforcers.

A **secondary reinforcer** has acquired value for the organism. Learning is

required. Money when you’re strapped for cash is a positive reinforcer, as indicated

above, but it is a secondary one. You have to learn that cash has value. An

infant does not value cash, but does value milk. A medal, a diploma, and a trophy

all provide examples of secondary reinforcers.

One of the important phenomena associated with operant conditioning is

extinction. Earlier, we discussed how extinction takes place when the conditioned

stimulus is presented a number of times without the unconditioned stimulus.

Extinction also takes place when the frequency of a category of operant responses

*declines.* If, using the operant conditioning apparatus, reinforcement is withheld

from a rat, then lever pressing for food will decline and eventually diminish to

nearly zero. The organism has learned to give up a given operant because it no

longer brings the reinforcer.

Both animal and human research on extinction suggest that it is a better way

to “break” bad habits than is punishment. If a way can be found to eliminate the

reinforcer (or reinforcers) linked to a behavior pattern, the behavior is likely to

be given up. Punishment tends to temporarily suppress the appearance of an

operant, but extinction has not necessarily taken place. Consequently, the

unwanted operant has “gone underground,” and may in time surface as an

unpleasant surprise. Also, punishment is frustrating to organisms and tends to

make them more aggressive.

Another important phenomenon associated with operant conditioning is the

**partial reinforcement effect,** the tendency of operant behavior acquired under

conditions of partial reinforcement to possess greater resistance to extinction than

behavior acquired under conditions of continuous reinforcement. Let’s say that rat

1 is reinforced every time it presses a lever; this rat is receiving continuous reinforcement. Rat 2 is reinforced every other time it presses a lever; this rat is receiving

partial reinforcement. Both rats will eventually acquire the lever-pressing response. Now assume that reinforcement is withheld for both rats. The rat that will, in most cases, display greater resistance to extinction is rat 2. Skinner was surprised

by this result. If reinforcement is a kind of strengthening of a habit, then rat

1, receiving more reinforcement, should have the more well-established habit.

And it should demonstrate greater resistance to extinction than rat 2.

Nonetheless, the partial reinforcement effect is a reality, and Skinner became

interested in it. He and his coworkers used many schedules of reinforcement to

study the partial reinforcement effect. In general, it holds for both animals and

human beings that there is indeed a partial reinforcement effect. **Random reinforcement** is determined by chance, and is, consequently, unpredictable. If behavior is acquired with random reinforcement, it exaggerates the partial reinforcement

effect. Skinner was fond of pointing out that random payoffs are associated

with gambling. This explains to some extent why a well-established gambling habit is hard to break.

Assume that an instrumental conditioning apparatus contains a light bulb.

When the light is on, pressing the lever pays off. When the light is off, pressing

the lever fails to bring forth a reinforcer. Under these conditions, a trained experimental animal will tend to display a high rate of lever pressing when the light is

on and ignore the lever when the light is off. The light is called a **discriminative**

**stimulus,** meaning a stimulus that allows the organism to tell the difference

between a situation that is potentially reinforcing and one that is not. Cues used

to train animals, such as whistles and hand signals, are discriminative stimuli.

Skinner notes that discriminative stimuli control human behavior, too. A factory

whistle communicating to workers that it’s time for lunch, a bell’s ring for a

prizefighter, a school bell’s ring for a child, and a traffic light for a driver are all

discriminative stimuli. Stimuli can be more subtle than these examples. A lover’s

facial expression or tone of voice may communicate a readiness or lack of readiness

to respond to amorous advances.

Skinner asserts that in real life both discriminative stimuli and reinforcers automatically control much of our behavior.

**Consciousness and Learning: What It Means to Have an Insight**

Although classical and operant conditioning play a large part in both animal and

human learning, it is generally recognized by behavioral scientists that these two

related processes give an insufficient account of the learning process, particularly

in human beings. Consequently, it is important to identify at least four additional

aspects of learning. These are (1) observational learning, (2) latent learning, (3)

insight learning, and (4) learning to learn.

**Observational learning** takes place when an individual acquires behavior

by watching the behavior of a second individual. Albert Bandura, a principal

researcher associated with observational learning, identified important features

of this particular process. The second individual is a **model,** and either intentionally

or unintentionally demonstrates behavior. If the observer identifies with

the model and gains imaginary satisfaction from the model’s behavior, then

this is vicarious reinforcement. **Vicarious reinforcement** is characterized by

imagined gratification. Psychologically, it acts as a substitute for the real thing.

Let’s say that Jonathan admires a particular tennis star. When the star wins an

important tournament, Jonathan is ecstatic. This emotional state is a vicarious

reinforcer.

It should be noted that the concept of watching a model is very general. Reading

a mystery novel and identifying with the detective is a kind of observational

behavior. The thrills associated with the hero’s adventures are vicarious thrills.

**Social learning theory,** associated with Bandura’s research, states that much

of our behavior in reference to other people is acquired through observational

learning. Let’s say that Carol is a fifteen-year-old high school student. She is on

the fringe of a group of adolescent females who admire a charismatic eighteenyear-

old named Dominique. Dominique smokes, uses obscenities, and brags

about her sexual exploits. Carol observes Dominique and obtains a lot of vicarious

reinforcement from Dominique’s behavior. If Carol begins to imitate

Dominique’s behavior, then social learning has taken place.

Both prosocial behavior and antisocial behavior can be acquired through

observational learning. **Prosocial behavior** is behavior that contributes to the

long-run goals of a traditional reference group such as the family or the population

of the nation. If an individual admires one or both parents, then the parents may be taken as role models. Many adolescents and young adults acquire attitudes and personal habits that resemble those of their parents. If one is patriotic and ready to defend one’s nation during time of war, it is quite likely that the individual is taking important historical figures such as presidents and generals as role models.

**Antisocial behavior** is behavior that has an adverse impact on the long-run

goals of a traditional reference group. From the point of view of Carol’s parents,

if Carol begins to act like Dominique, then Carol’s behavior is antisocial.

**Latent learning** is a second kind of learning in which consciousness

appears to play a large role. Pioneer research on latent learning is associated with

experiments conducted by the University of California psychologist Edward C.

Tolman and his associates. Let’s say that a rat is allowed to explore a maze without

reinforcement. It seems to wander through the maze without any particular

pattern of behavior. It is probably responding to its own curiosity drive, but no

particular learning appears to be taking place. Let’s say that after ten such opportunities, reinforcement in the form of food in a goal box is introduced. The rat,

if it is typical, will quickly learn to run the maze with very few errors. Its learning

curve is highly accelerated compared to that of a rat that has not had an earlier

opportunity to explore the maze. This is because the first rat was actually

learning while it was exploring. The function of reinforcement in this case is to

act as an **incentive,** a stimulus that elicits and brings forth whatever learning the

organism has acquired.

Note that the learning was actually acquired when the rat was exploring.

Therefore learning was taking place without reinforcement. Such learning is called

*latent learning,* meaning learning that is dormant and waiting to be activated.

Let’s say that Keith is an adolescent male. For years his mother has forced him,

with no particular reinforcement, to make his bed and hang up his clothes neatly.

But Keith has, from his mother’s point of view, been a slow learner. He does both

tasks poorly. He enlists in the army shortly after his eighteenth birthday. In basic

training he makes his bed and hangs up his clothes neatly. He has been told that

he will obtain his first weekend pass only if he performs various tasks properly.

The fact that Keith shows a very rapid learning curve under these conditions provides

an example of latent learning. He was learning under his mother’s influence,

but he wasn’t motivated to bring the learning forth.

The process of latent learning calls attention to the **learning-performance**

**distinction.** Learning is an underlying process. In the case of latent learning it is

temporarily hidden. Performance is the way in which learning is displayed in

action. Only performance can actually be observed and directly measured.

*Insight learning* is a third kind of learning in which consciousness appears to

play a major role. Groundbreaking research on insight learning was conducted by

Wolfgang Koehler, one of the principal Gestalt psychologists. One of Koehler’s

principal subjects was an ape named Sultan. Sultan was presented with two short

handles that could be assembled to make one long tool, a kind of rake. An orange

was placed outside of Sultan’s cage and it was beyond the reach of either handle.

Sultan spent quite a bit of time using the handles in useless ways. He seemed to be

making no progress on the problem.

Then one day Sultan seemed to have a burst of understanding. He clicked

together the handles and raked in the orange. Koehler called this burst of understanding an **insight,** and defined it as a sudden reorganization of a perceptual

field. Originally, Sultan’s perceptual field contained two useless handles. With

insight, Sultan’s perceptual field contained a long rake. The conscious mental

process that brings a subject to an insight is called **insight learning.**

Insight learning is also important for human beings. Let’s say that a child in

grammar school is told that pi is the ratio of the circumference of a circle to the

diameter, and that a rounded value for pi is 3.14. The child memorizes the definition,

but the definition has little meaning. If, on the other hand, the child is

encouraged to measure the diameters and the circumferences of cans, pie tins, and

wheels using a string and a ruler, the child may acquire the insight that round

items are always about three times bigger around than they are across. Acquiring

an insight is more satisfying than just memorizing material. Also, insights tend to

resist the process of forgetting.

Harry Harlow, a former president of the American Psychological Association,

using rhesus monkeys as subjects, discovered a phenomenon called *learning*

*sets.* Assume that a monkey is given a discrimination problem. It is required to

learn that a grape, used as a reinforcer, is always to be found under a small circular

container instead of a square one. The learning curve is gradual, and a

number of trials are required before learning is complete. A second similar

problem is given. The discrimination required is between containers with two

patterns, a crescent moon and a triangle. The learning curve for the second

problem is more accelerated than the learning curve for the first problem. By

the time a fourth or a fifth similar problem is given, the monkey is able to solve

the problem in a very few trials. The monkey has acquired a **learning set,** an

ability to quickly solve a given type of problem. The underlying process is called

**learning to learn.**

Human beings also acquire learning sets. A person who often solves crossword

puzzles tends to get better and better at working them. A mechanic who has

worked in the automotive field for a number of years discovers that it is easier and

easier to troubleshoot repair problems. A college student often finds that advanced

courses seem to be easier than basic courses. All of these individuals have learned

to learn.

**Memory: Storing What Has Been Learned**

What would life be like without memory? You would have no personal history.

You would have no sense of the past—what you had done and what your child-

hood was like. Learning would be a meaningless concept, because learning implies

retention. You will recall that the definition of learning includes the idea that

learning is more or less permanent.

**Memory** is a process that involves the encoding, storage, and retrieval of cognitive

information. Let’s explore these three related processes one by one. **Encoding**

is a process characterized by giving an informational input a more useful

form. Let’s say that you are presented with the letters TCA. They seem meaningless.

You are told that the letters represent an animal that meows. You think, “The

animal is a cat.” You have just transformed the informational input TCA into

CAT, and it has become more useful to you. The use of symbols, associations, and

insights are all examples of human encoding.

The use of a **mnemonic device,** a cognitive structure that improves both

retention and recall, is a special case of encoding. Let’s say that in a physics class

you are asked to memorize the colors of the rainbow in their correct order—red,

orange, yellow, green, blue, indigo, and violet. You can use the name Roy G. Biv

as a mnemonic device, using the first letter of each color.

**Storage** refers to the fact that memories are retained for a period of time. A

distinction is made between short-term memory and long-term memory. **Shortterm**

**memory,** also known as **working memory,** is characterized by a temporary

storage of information. If you look up a telephone number, hold it in at the

conscious level of your mind for a few minutes, use it, and then promptly forget

it, you are employing the short-term memory process. **Long-term memory** is

characterized by a relatively stable, enduring storage of information. The capacity

to recall much of your own personal history and what you learned in school provide

examples of the long-term memory process.

If short-term memory is impaired, as it is in some organic mental disorders, then this interferes with the capacity to form new long-term memories.

**Retrieval** of cognitive information takes place when a memory is removed

from storage and replaced in consciousness. Three phenomena are of particular

interest in connection with the retrieval process: recall, recognition, and repression.

**Recall** takes place when a memory can be retrieved easily by an act of will. You

see a friend and think, “There’s Paula.” You have recalled the name of your friend.

**Recognition** takes place when the retrieval of a memory is facilitated by the

presence of a helpful stimulus. A multiple-choice test that provides four names,

one of them being the correct answer, is an example of an instructional instrument

that eases the path of memory. The item to be remembered is right there in

front of you.

**Repression** takes place when the ego, as a form of defense against a psychological

threat, forces a memory into the unconscious domain. This is a psychoanalytical

concept, and it was proposed by Freud. He suggested that memories

associated with emotionally painful childhood experiences are likely to be

repressed.

**TEST**

1. The unconditioned reflex is

a. a kind of behavior acquired by experience

b. always associated with voluntary behavior

c. a learned response pattern

d. an inborn response pattern

2. What takes place when the conditioned stimulus is presented a number of

times without the unconditioned stimulus?

a. Forgetting

b. Extinction

c. Discrimination

d. Stimulus generalization

3. Thorndike said that when satisfactory results are obtained there is a tendency

to retain what has been learned. He called this tendency the

a. law of effect

b. principle of reinforcement

c. principle of reward

d. law of positive feedback

4. Operant behavior is characterized by

a. actions that have no meaning

b. its inability to be affected by reinforcement

c. its conscious nature

d. actions that have consequences

5. What principle is associated with the phrase *greater resistance to extinction?*

a. The law of effect

b. The total reinforcement effect

c. The partial reinforcement effect

d. The pleasure-pain effect

6. Vicarious reinforcement is characterized by

a. primary gratification

b. imagined gratification

c. extinction

d. the discriminative stimulus

7. What did Kцhler define as the sudden reorganization of a perceptual field?

a. Operant conditioning

b. Classical conditioning

c. Insight

d. Extinction

8. The concept of a learning set is associated with what underlying process?

a. Spontaneous inhibition

b. The law of effect

c. Learned optimism

d. Learning to learn

9. The use of a mnemonic device is a special case of

a. encoding

b. short-term memory

c. antagonistic stimuli

d. involuntary conditioning

10. Which one of the following is not associated with the memory process of

retrieval?

a. Recall

b. Recognition

c. Cognitive inhibition

d. Repression

**True or False**

1. T F Learning is a more or less permanent change in behavior, or a behavioral

tendency, as a result of experience.

2. T F A conditioned reflex is an inborn response pattern.

3. T F Operant behavior is characterized by actions that have no meaning for

an organism, and, consequently, no consequences.

4. T F Observational learning takes place when an individual acquires behavior

by watching the behavior of a second individual.

5. T F There is no such thing as short-term memory.

**Self-check**

• describe the principal aspects of the learning process;

• identify basic concepts in classical conditioning;

• explain the process of operant conditioning;

• give an example of the important role that consciousness plays in learning;

• specify the most important aspects of the memory process.

**Match the terms with their definitions**

a)

|  |  |
| --- | --- |
| **classical conditioning** | the gradual disappearance of a conditioned response when the conditioned stimulus is repeatedly presented without the unconditioned stimulus |
| **conditioned response (CR)** | the ability to respond differently to similar but distinct stimuli |
| **conditioned stimulus (CS)** | responding similarly to a range of similar stimuli |
| **discrimination** | the learned reaction to a conditioned stimulus |
| **extinction** | a once-neutral event that has come to elicit a given response after a period of training in which it has been paired with an unconditioned stimulus |
| **generalization** | an organism’s automatic reaction to a stimulus |
| **neutral stimulus** | a stimulus that elicits a certain predictable response typically without previous training |
| **unconditioned response (UCR)** | a stimulus that does not initially elicit any part of the unconditioned response |
| **unconditioned stimulus (UCS)** | a learning procedure in which associations are made between a natural stimulus and a learned, neutral stimulus |

b)

|  |  |
| --- | --- |
| **aversive control** | the training of an organism to remove or withdraw from an unpleasant stimulus before it starts |
| **avoidance conditioning** | the training of an organism to remove or terminate an unpleasant stimulus |
| **escape conditioning** | increasing the strength of a given response by removing or preventing a painful stimulus when the response occurs |
| **fixed-interval schedule** | the process of influencing behavior by means of unpleasant stimuli |
| **fixed-ratio schedule** | learned reactions that follow one another in sequence, each reaction producing the signal for the next |
| **negative reinforcement** | the technique of operant conditioning in which the desired behavior is “molded” by first rewarding any act similar to that behavior and then requiring closer and closer approximations to the desired behavior before giving the reward |
| **operant conditioning** | a schedule of reinforcement in which changing amounts of time must elapse before a response will obtain reinforcement each time |
| **primary reinforcer** | a schedule of reinforcement in which a specific amount of time must elapse before a response will elicit reinforcement |
| **reinforcement** | a schedule of reinforcement in which an unpredictable number of responses are required before reinforcement can be obtained each time |
| **response chain** | a schedule of reinforcement in which a specific number of correct responses is required before reinforcement can be obtained |
| **secondary reinforcer** | a stimulus such as money that becomes reinforcing through its link with a primary reinforcer |
| **shaping** | a stimulus that is naturally rewarding, such as food or water |
| **variable-interval schedule** | a stimulus or event which follows a response and increases the likelihood that the response will be repeated |
| **variable-ratio schedule** | a form of learning in which a certain action is reinforced or punished, resulting in corresponding increases or decreases in the likelihood that similar actions will occur again |

c)

|  |  |
| --- | --- |
| **behavior modification** | a form of conditioning in which desirable behavior is reinforced with valueless objects or points, which can be accumulated and exchanged for various rewards |
| **cognitive learning** | a systematic application of learning principles to change people’s actions and feelings |
| **cognitive map** | learning by imitating others, copying behavior |
| **latent learning** | a condition in which repeated attempts to control or influence a situation fail, resulting in the belief that the situation is uncontrollable and that any effort to cope will fail |
| **learned helplessness** | alteration of a behavioral tendency that is not demonstrated by an immediate, observable change in behavior |
| **modeling** | a mental picture of spatial relationships or relationships between events |
| **social learning** | a form of learning that involves mental processes and may result from observation or imitation |
| **token economy** | a form of learning in which the organism observes and imitates the behavior of others |

d)

|  |  |
| --- | --- |
| **chunking** | memory of learned skills that does not require conscious recollection |
| **declarative memory** | memory of knowledge that can be called forth consciously as needed |
| **encoding** | memory of one’s life, including time of occurrence |
| **episodic memory** | knowledge of language, including its rules, words, and meanings |
| **maintenance rehearsal** | process of grouping items to make them easier to remember |
| **memory** | system for remembering that involves repeating information to oneself without attempting to find meaning in it |
| **procedural memory** | memory that is limited in capacity to about seven items and in duration by the subject’s active rehearsal |
| **retrieval** | very brief memory storage immediately following initial reception of a stimulus |
| **semantic memory** | the process of obtaining information that has been stored in memory |
| **sensory memory** | the process by which information is maintained over a period of time |
| **short-term memory** | the transforming of information so that the nervous system can process it |
| **storage** | the storage and retrieval of what has been learned or experienced |

e)

|  |  |
| --- | --- |
| **confabulation** | techniques for using associations to memorize information |
| **decay** | the linking of new information to material that is already known |
| **eidetic memory** | blockage of a memory by previous or subsequent memories |
| **elaborative rehearsal** | fading away of memory over time |
| **interference** | the ability to remember with great accuracy visual information on the basis of short-term exposure |
| **mnemonic devices** | conceptual frameworks a person uses to make sense of the world |
| **recall** | the act of filling in memory gaps |
| **recognition** | the alteration of a recalled memory that may be simplified, enriched, or distorted, depending on a person’s experiences and attitudes |
| **reconstructive processes** | memory retrieval in which a person reconstructs previously learned material |
| **schemas** | memory retrieval in which a person identifies an object, idea, or situation as one he or she has or has not experienced before |

**Think about how a neutral stimulus becomes a conditioned stimulus.**

|  |  |  |
| --- | --- | --- |
| **Before Conditioning** | **During Conditioning** | **After Conditioning** |
| **1.** A neutral stimulus results in | **3.** A conditioned stimulus is paired with the | **5.** A conditioned stimulus results in a(n) |
| **2.** An unconditioned stimulus results in a(n) | **4.** The result is a(n) | **6.** The conditioning will last unless occurs. |

**Think about the decisions you make that affect your actions.**

|  |  |
| --- | --- |
| **Type of Social Learning** | **Examples** |
| Cognitive learning | **1.** |
| Modeling | **2.** |
| Behavior modification | **3.** |

**Think about how people learn, and the different types of memories. Give an example of each concept below.**

|  |  |
| --- | --- |
| **Memory Concept** | **Example** |
| Maintenance Rehearsal | **1.** |
| Chunking | **2.** |
| Primacy-Recency Effect | **3.** |
| Semantic Memory | **4.** |
| Episodic Memory | **5.** |

**Think about some things that get in the way of accurate recall. For each problem below, describe how it affects recall.**

|  |  |
| --- | --- |
| **Problem** | **Effect on Recall** |
| Confabulation | **1.** |
| Schemas | **2.** |
| Interference | **3.** |
| Repression | **4.** |
| Amnesia | **5.** |

**Unit 5. Motivation:Why Do We Do What We Do?**

Human beings spend most of their time during the day engaged in actions.

They drive cars, raise children, have vocations, spend time with hobbies, go on

vacations, gamble, take unnecessary risks, play, and so forth. Why do we do what

we do? This is the great question associated with the subject of motivation.

The word **motivation** is related to words such as *motor, motion,* and *emotion.*  All of these words imply some form of activity, some kind of movement. And this is one of the principal features of life—a kind of restless movement that appears to arise from sources within the organism. These sources are called motives.

A **motive** is a state of physiological or psychological arousal that is assumed to

play a causal role in behavior. Physiological arousal refers to such states as hunger

and thirst. Psychological arousal refers to motives such as the need for achievement.

The two factors, physiological and psychological, of course interact. For

example, a biological drive such as sex tends to interact with a psychological

motive such as the need to be loved.

It is important to note that from the point of view of psychology as a science, a

motive is an intervening variable. An **intervening variable** is a variable used to

explain behavior. It is assumed to reside within the organism and “intervene”

between stimulus and response. An intervening variable can’t be seen or otherwise

directly observed. It is inferred from studying behavior. If we see someone buying a

sandwich in a snack bar, we may infer that the individual is hungry. However, he or

she may in fact be buying the sandwich for a friend. The important point is that when

we act as investigators of the behavior of others, we do not experience their motives.

**Biological Drives: The Need for Food and Water**

We would not do anything at all if we were not alive. That is why in some sense it

can be argued that the root cause of all behavior can be traced to a group of biological

drives. **Biological drives** are inborn drives, and their principal feature is that

they impel us to attend to our tissue needs, to maintain ourselves as organisms. The

basic theme associated with biological drives is *survival.*We would die fairly quickly

if we did not follow the dictates of our biological drives on a fairly regular basis.

The biological drives are familiar. The following are frequently specified:

hunger, thirst, sleep, temperature, oxygen hunger, pain, and sex. Note that if the

word *hunger* appears without an adjective in front of it, then the word refers to the

hunger for food. Also note how any of the biological drives can act as a motive.

For example, if your temperature level is such that you feel cold, you might be

motivated to put a coat on.

Most of the drives direct us *toward* a stimulus. We seek food if we are hungry.

We seek water if we are thirsty. Pain is unlike the other drives in this particular

regard. Pain directs us *away* from a stimulus. It motivates us to escape from the

source of the pain.

Sex also has a unique status among the biological drives. The general theme

of the biological drives, as already noted, is survival. Usually we think of this as

the survival of the individual. However, in the case of sex, survival is generalized

beyond the individual. The long-run purpose of sex is to assure the survival of

the species.

An important physiological process associated with the biological drives is

homeostasis. **Homeostasis** is a physiological process characterized by a tendency

for biological drives to maintain themselves at optimal levels of arousal. The term

*homeostasis* was introduced in the 1920s by the physiologist Walter B. Cannon, and

it can be roughly translated as “an unchanging sameness.”

The hunger drive provides an example of how homeostasis works. If your

blood sugar is low, you will feel hungry. You will be motivated to seek food and

eat. If you eat an appropriate amount of food, your blood sugar will gradually

rise to an optimal level. On the other hand, if you happen to overeat, your blood

sugar will rapidly rise to an overly high level. Under these circumstances, your

pancreas will secrete extra insulin, returning your blood sugar from its overly

high level to a lower one. The body’s goal is to maintain blood sugar at an optimal

level.

Hormones, secretions of the endocrine glands, also play a role in mediating the

activity of the biological drives. We have already seen how the hormone melatonin is involved in the regulation of sleep. The estrogen hormones and testosterone are associated with the sexual drive.

Biological drives play a significant role in the learning process. **Drive reduction**

**theory** states that when an action pays off in such a way that it reduces the

tension associated with a biological drive in a state of arousal, then that action is

reinforced. It is reinforcing for a hungry rat in an operant conditioning apparatus

to obtain food by pressing a lever. This principle can be readily generalized to

some human behavior. A hunter’s learned actions provide an example. These may

include how to load a particular kind of gun or the skills involved in tracking a

specific animal. If the ultimate goal of a series of actions is food, water, escape

from pain, sexual gratification, or another biological drive, then the drive reduction

principle may operate to shape learned behavior.

**General Drives: Looking for New Experiences**

**General drives,** like biological drives, are inborn. Unlike biological drives,

they do not appear to operate on the principle of homeostasis. Three general

drives of particular interest are the curiosity drive, the activity drive, and the

affectional drive.

The **curiosity drive** urges us to seek novel stimulation, to look for new

experiences. The drive is active in infants. Present an infant with a familiar rattle.

The infant may show a little interest, and then put the rattle aside. Present the

infant with a second, unfamiliar rattle. Interest will be renewed. The renewed

interest is explained by the curiosity drive. The different color or the different

shape of the novel rattle elicits attention. The curiosity drive is activated by

**change of stimulation.**

The need for stimulation is a profound one. Sensory deprivation research

brings this point into bold relief. **Sensory deprivation** exists when vision, hearing,

and the other senses are forced to operate with little or no information arising

from the external world. Volunteer subjects deprived of light, sound, and

other information to the senses often report sensory hallucinations. Some see flying

fireballs. Others hear strange music. Some have out-of-body experiences. All

of this suggests that it is necessary to have a flow of stimulation in order to maintain

perceptual stability.

And change of stimulation, sought by the curiosity drive, has a greater value

than constant stimulation. The same note played over and over and over again is

experienced as boring. A series of notes played in different pitches and with time

variations becomes an interesting melody.

The curiosity drive may also play a role in **risk-taking behavior,** behavior

in which individuals unnecessarily place themselves in physical jeopardy. Examples

of such behavior include sky diving, hang gliding, hot air ballooning, driving

over the speed limit, and so forth. One interpretation of such behavior is to

hypothesize that some individuals have self-destructive tendencies. And it is

possible that such tendencies may play an important role in the behavior. A second

interpretation of risk-taking behavior is to hypothesize that some individuals

are somewhat bored with their day-to-day lives, lives that do not include

enough change of stimulation. Risk-taking behavior is one way of increasing

the level of stimulation, increasing central nervous system arousal, and experiencing

excitement.

A second general drive to be identified is the **activity drive,** one that urges

us to make motor movements even when our biological drives are satisfied. A

rat that is not hungry, thirsty, nor otherwise in biological need can be placed in

a wheeled cage. If it runs, the cage will spin. And the rat will run for no particular

reason other than to run. Infants display a certain amount of restless

motion. If an adult is forced to sit and wait for a long time in a physician’s office,

it is likely that the individual will cross and uncross his or her legs, get up and

walk around, step outside for a few minutes, and so forth. The movement is an

end in itself.

A third general drive to be identified is the **affectional drive,** the need for

the kind of emotional nurturance that helps to sustain a sense of well-being and

an optimistic attitude toward life. The research psychologist Harry Harlow, a former

president of the American Psychological Association, deprived a group of

rhesus monkeys of their biological mothers. He raised the monkeys in social isolation.

He discovered that, deprived of mother love, many of the monkeys displayed

behavior somewhat similar to **infantile autism,** a pathological condition

characterized by a lack of interest in others, self-destructiveness, and a preoccupation

with rigid, self-oriented behavior.

The psychoanalyst Erik Erikson, an important personality theorist, theorized

that the first stage of psychosocial development is **trust versus mistrust**. If an infant develops a sense of trust during the first two years of life, this positive foundation will have a beneficial impact on future personality development. If an infant develops a sense of mistrust during the first two years of life, this negative foundation will have an adverse impact on future personality development. A major factor in the development of a sense of trust is the meeting of an infant’s need for affection.

**Acquired Motives: Exploring the Need to Achieve**

**Acquired motives** are motives in which learning plays a large role. This does not

mean that acquired motives do not have underpinnings in biological and general

drives. However, these drives have been modified by experience, and express

themselves in ways that are unique to the individual. One way to look at acquired

motives is to think of them as somewhat stable, persistent behavioral tendencies.

Quite a bit is known about a person if one is familiar with the pattern of that per-

son’s acquired motives. These motives are also sometimes called **social motives,**

meaning they affect the way we relate to other people.

First, the **need for achievement** is a motive to reach one’s goals. All social

motives can be thought of as ranging from high to low. A person with a high need

for achievement is likely to be ambitious, strive to make a success of a business, or

earn academic recognition. A person with a low need for achievement may lack

ambition, be unconcerned about financial reward, and have very few dreams or

aspirations.

Second, the **need for autonomy** is a motive to do what one wants to do

without too much regard for what others expect. The need is reflected in phrases

such as “do your own thing” or “I’m doing it my way.” A person with a high need

for autonomy is likely to pursue a pathway in life that is self-defined. A person

with a low need for autonomy often feels that he or she is the victim of the

demands of others.

Third, the **need for order** is a motive that urges the individual to impose

organization on the immediate environment. A person with a high need for order

is likely to keep good records, have important papers neatly filed, dislike clutter in

the home, and so forth. A person with a low need for order doesn’t seem to mind

a certain amount of disorganization in the immediate environment. Neatness does

not have a high priority.

Fourth, the **need for affiliation** is a motive to associate with others. A person

with a high need for affiliation is likely to have a lot of friends, socialize frequently,

and dislike being alone. A person with a low need for affiliation will

have a few carefully selected friends, not be attracted to parties, and seek time

alone.

Fifth, the **need for dominance** is a motive to control the behavior of others.

A person with a high need for dominance will seek positions of authority in the

workplace or to be the principal decision maker in a marriage. A person with a low

need for dominance will tend to be somewhat submissive and often overly agreeable.

Sixth, the **need for exhibition** is a motive to be noticed by others. A person

with a high need for exhibition is likely to talk loudly, dress in novel ways, or

otherwise call attention to himself or herself. A person with a low need for exhibition

is likely to be somewhat retiring and conforming when relating to others.

Seventh, the **need for aggression** is a motive to engage in conflict or to hurt

others. A person with a high need for aggression may inflict physical harm on

others by hitting, cutting, or shooting. However the need for aggression can also

be expressed in psychological terms. A person with a high need for aggression is

likely to be insulting and to make demeaning remarks. A person with a low need

for aggression is likely to avoid conflict whenever possible and to avoid hurting the

feelings of others.

There are other acquired motives. The list above is representative, not

exhaustive.

Although the acquired motives were presented in terms of high and low needs,

many people, perhaps most, do not manifest the extremes. It is possible to have a

moderate need for achievement, a moderate need for autonomy, and so forth.

**Unconscious Motives: Hidden Reasons for Our Behavior**

Sigmund Freud, the father of psychoanalysis, believed that motives can be

unconscious. **Unconscious motives** may operate outside of the control of the

*ego,* the “I” of the personality. Freud asserted that there is a force in the mind

called **repression.** Repression is an ego defense mechanism characterized by an

involuntary tendency to shove mental information that threatens the integrity

and stability of the ego down to an unconscious psychological domain.

If Freud is correct, the reasons for human behavior are often obscure to the

individual. People act on impulse, do things they regret, and often muddle

through life. Some individuals appear to have only the murkiest of notions why

they make certain choices and take certain turns in life. Freud’s way of looking at

human motivation is particularly useful when one is trying to explain why people

do self-defeating things.

The two kinds of motives that tend to be repressed are forbidden sexual desires

and forbidden aggressive urges. Note the importance of the word *forbidden.* A

desire for sex with one’s spouse would not qualify as a forbidden sexual desire.

However, if Conrad, a married man, desires sex with his wife’s sister, then this is

likely to violate his moral code and to become repressed. Conrad finds himself, for

example, becoming hostile to his wife’s sister. He tells his wife that he doesn’t like

her sister and wishes she wouldn’t visit so often. His wife can’t understand why he

has so much animosity toward her sister.

The explanation for the animosity lies in an ego defense mechanism called

**reaction formation**. A reaction formation reinforces the repression.

By acting hostile toward a woman he is attracted to, the husband keeps her

at a distance, alienates her, and protects himself against his repressed sexual desire.

The behavior is, of course, self-defeating because he is undermining the quality of

his relationship with his wife and a relative.

One of the problems with unconscious motives is that they may lead to **acting**

**out,** behavior in which the unconscious motives gain temporary ascendancy

over the defense mechanism of repression. For example, Conrad has had one

drink too many at a New Year’s Eve party. He finds himself kissing or touching

his wife’s sister in an inappropriate way. She is furious, tells Conrad’s wife, and

Conrad’s marriage is threatened. The next day, sober, he says he can’t understand

“what took possession of me.”

Here is an example of how a forbidden aggressive urge can cause a problem in

living. Linette, a mother of three children and a full-time homemaker, is married

to Eric, an insurance broker. Eric is an authoritarian husband. He is demanding

and controlling and has very little regard for Linette’s feelings. She feels taken for

granted. In terms of her religious tradition and her concept of how a good wife

should behave, she does not allow herself the luxury of hostile feelings toward Eric

at a conscious level. Her frustrations induce her to feel aggressive toward Eric, but

her code of conduct is such that she needs to repress her wish to give him a piece

of her mind or refuse to be the sweet person she usually tries to be. The repressed

hostility takes its toll. She suffers from a moderate, chronic depression. When she

is cooking, she burns food “by accident.” She is an unenthusiastic sex partner.

According to Freud, forbidden sexual impulses and forbidden aggressive urges

play a significant role in self-defeating behaviors. Actions that seem paradoxical

and superficially unexplainable can be understood by examining the way in which

repressed motives express themselves in devious ways.

**Self-Actualization: Becoming the Person You Were Meant to Be**

Abraham Maslow, author of *Toward a Psychology of Being* and a principal advocate

of the humanistic viewpoint in psychology, presented a large-canvas description of

human motivation. This description is known as Maslow’s **hierarchy of needs.**

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According to Maslow, human needs can be ranked in terms of “lower needs” and

“higher needs.”

Imagine a pyramid in six layers. The needs ascend from the lower needs at the

base of the pyramid to the higher needs at the apex. The first layer of the pyramid

represents **physiological needs.** These are the need for food, water, and so forth.

These are associated with the biological drives.

The second layer of the pyramid represents **safety needs.** These include the

need for shelter, protection from injury, and so forth. Safety needs are reflected in

such individual behaviors as wearing a seat belt and such social behaviors as organizing a police force.

The third layer of the pyramid represents **love and belongingness needs.**

These include the need for affection, the need to love, and the need to be loved.

Love and belongingness needs are reflected in such behaviors as joining a club,

forming friendships, getting married, and having children. The importance of

love and belongingness needs is evident in many popular songs. They frequently

focus on the elation one feels when a love relationship is going well or the despair

one feels when such a relationship is going badly.

The fourth layer of the pyramid represents **esteem needs.** These include

the need to be esteemed by others and self-esteem. The need to be esteemed by

others is reflected in behaviors such as seeking a higher rank within an organization

or working for a prestigious award or degree. **Self-esteem** is the sense of

value that one feels about oneself. It is a kind of inner psychological ranking.

Low self-esteem is associated with depression and a pessimistic outlook on life.

High self-esteem is associated with a positive mood and an optimistic outlook

on life.

The fifth layer of the pyramid represents **cognitive needs.** Cognitive needs

include the need for mental stimulation, the need to use one’s intelligence, and

the need to exercise creative abilities. Cognitive needs are reflected in such behaviors

as reading a book, writing a story, working a crossword puzzle, taking a class,

solving a problem, and so forth.

The sixth and top layer of the pyramid represents the **need for selfactualization.**

Of all the needs, this is the one that is primarily associated with

the thinking and research of Maslow. Maslow hypothesized that this need is

inborn. Also, it is **emergent,** meaning that it only becomes a pressing need when

the other lower needs are relatively satisfied. The need for self-actualization is the

need to maximize one’s talents and potentialities. It is sometimes informally

phrased as “the need to become the person you were meant to be.”

The need for self-actualization is reflected in such behaviors as working

toward success in a vocational field or seeking way of life that represents one’s own

idea of personal fulfillment. There is no field of work or style of life that can be

specified, because the individual’s choice and perception are of particular importance.

For one person, self-actualization might mean the pursuit of an acting

career. For another person, self-actualization might mean becoming a parent. The

important thing, according to Maslow, is that the individual discovers what is right

for himself or herself.

Maslow’s research suggested that many, perhaps most, people are not selfactualizing. The price paid for a failure to be self-actualizing is a sense of disappointment

in life and in oneself.

On the other hand, if one is in fact self-actualizing, there are important psychological rewards associated with the process. First, one will tend to experience

both a general sense of psychological health and a pleasant day-to-day emotional

tone. Second, the individual will from time to time have **peak experiences.**

These are moments or joy or ecstasy when a hurdle is overcome, a task is completed,

or a goal is reached.

Note that a person is not referred to as self-actualized, but as self-actualizing.

Maslow is talking about the process of becoming, not an end state. Self-actualization

as a process can be a rich source of psychological reward for most of one’s life.

Maslow makes a distinction between deficiency motivation and being motivation.

**Deficiency motivation** refers to those needs lowest on the hierarchy. We

need to overcome deficiency states such as hunger, thirst, and danger in order to

move upward toward the higher levels. **Being motivation** tends to be associated

with the higher levels, particularly with the need for self-actualization. The theme

of being motivation is growth.

**The Search for Meaning: Looking for the *Why* of Life**

It would seem that self-actualization is the greatest height that can be reached by

human motivation, and from reading Maslow’s writings one would get that distinct

impression. Nonetheless, it can be argued that there is one motivational level

extending above self-actualization. The existential psychiatrist Viktor Frankl,

author of *Man’s Search for Meaning,* argues that the highest level for human beings

is the **will to meaning,** the need for life to make sense and to have a purpose in

the larger scheme of things.

Frankl asserts that the will to meaning is inborn, that it is a real psychological

and emotional need. If a person lives a meaningful life, then that life will be full

and rewarding. If a person lives a meaningless life, then that life will be empty and

pointless. Frankl calls this adverse mental and emotional state the **existential vacuum.** One of its principal characteristics is demoralization, the conviction that

nothing has any value and that nothing is worth doing.

Some of Frankl’s assertions about the importance of our search for meaning

arise from his own experiences in a Nazi concentration camp. Although he was a

prisoner himself, he did not forget that he was a physician and a psychiatrist. He

felt it was his responsibility to give comfort and aid to his fellow prisoners whenever

possible. This became his reason for living, and he credits it with his ability to

survive under extremely harsh conditions. He argues that when a human being

has a reason for existence, he or she can often tolerate a high level of pain and frustration. It is instructive to note that the original title of *Man’s Search for Meaning*

was *From Death Camp to Existentialism.*

How is meaning fulfilled? Frankl argues that the will to meaning orients

itself toward **values,** perceived aspects of the world that seem to have worth or

importance to other individuals or to humanity in general. This may seem very

exalted, but in practice it can be very basic. Being fair and decent in one’s dealings

with friends and relatives is an example of a value. Raising one’s children

in a loving way is another example. For most people, meaning can readily be

found in living traditional social roles—being an effective teacher, parent, nurse,

auto mechanic, loving partner, and so forth. Note that in all of these social roles

there is some service or contribution to others. The will to meaning reaches

beyond the self.

For some people, humanity in general is served by the will to meaning. When

we think of great authors, scientists, or leaders, we see that their contributions to

life extend beyond an immediate family to the larger human family. But the basic

theme is the same—a concern with the welfare of others.

Frankl argues that values do not have to be invented. They need to be discovered.

He says that a person suffering from an existential vacuum is like a person in

a room with the lights out. The individual thinks that there is no furniture in the

room because he or she can’t see it. Then the lights are turned on and the furniture

becomes visible. Values, like the pieces of furniture in the room, are real and

present. But they have to be discovered by the light of human consciousness in

order for the individual to have a meaningful life.

**TEST**

1. From the point of view of psychology as a science a motive is

a. a dependent variable

b. an independent variable

c. a radical variable

d. an intervening variable

2. A physiological process characterized by a tendency for biological drives to maintain themselves at optimal levels of arousal is called

a. homeostasis

b. metamotivation

c. hyperstatic integration

d. heterostasis

3. Which of the following is clearly associated with the curiosity drive?

a. The need to escape from pain

b. The need for affiliation

c. The search for meaning in life

d. The tendency to seek novel stimulation

4. Which of the following is a motive to associate with others?

a. The need for dominance

b. The need for exhibition

c. The need for aggression

d. The need for affiliation

5. According to Freud, what force in the mind is responsible for the creation of

unconscious motives?

a. Repression

b. Ego inhibition

c. Superego excitation

d. Homeostasis

6. Which one of the following is associated with cognitive needs?

a. Seeking a higher rank within an organization

b. Working a crossword puzzle

c. Looking for love

d. Searching for shelter

7. Self-actualization is most closely linked to which of the following?

a. Feeling hungry

b. Maximizing potentialities

c. Seeking novel stimulation

d. Wanting affection

8. What does Maslow call moments of joy or ecstasy experienced when a hurdle

is overcome, a task is completed, or a goal is reached?

a. Hedonic experiences

b. Transcendental experiences

c. Peak experiences

d. Summit experiences

9. Frankl argues that the highest level of motivation for human beings is the

a. will to meaning

b. need for transcendental experience

c. wish to become one with the All

d. desire to exercise the will to power

10. If a person lives a meaningless life, then that life will be empty and pointless.

Frankl calls this mental and emotional state

a. major depressive episode

b. bipolar disorder

c. the existential vacuum

d. biochemical depression

**True or False**

1. T F Biological drives are regulated by a principle known as hyperstatic

integration.

2. T F General drives, unlike biological drives, are not inborn.

3. T F The need for autonomy is a motive to do what one wants to do.

4. T F According to Freud, all motives are conscious.

5. T F The need for self-actualization is the need to maximize one’s talents

and potentialities.

**Self-check**

• define the concept of motivation;

• list and describe the principal biological drives;

• specify the characteristics of the general drives;

• identify some of the principal acquired motives;

• explain the nature of unconscious motives;

• define the concept of self-actualization;

• explain the importance of the will to meaning.

**Match the terms with their definitions**

a)

|  |  |
| --- | --- |
| **drive** | engaging in activities because they are personally rewarding or because they fulfill our beliefs and expectations |
| **extrinsic motivation** | engaging in activities that either reduce biological needs or help us obtain  external incentives |
| **homeostasis** | an external stimulus, reinforcer, or reward that motivates behavior |
| **incentive** | the tendency of all organisms to correct imbalances and deviations from their normal state |
| **instincts** | a state of tension produced by a need that motivates an organism toward a goal |
| **intrinsic motivation** | a biological or psychological requirement of an organism |
| **motivation** | innate tendencies that determine behavior |
| **need** | an internal state that activates behavior and directs it toward a goal |

b)

|  |  |
| --- | --- |
| **fundamental needs** | the pursuit of knowledge and beauty or whatever else is required for the realization of one’s unique potential |
| **lateral hypothalamus (LH)** | the urge to belong and to give and receive love, and the urge to acquire esteem |
| **psychological needs** | biological drives that must be satisfied to maintain life |
| **self-actualization needs** | the part of the hypothalamus that can cause one to stop eating |
| **ventromedial hypothalamus (VMH)** | the part of the hypothalamus that produces hunger signals |

**Think about the four theories of motivation. For each theory listed below, give an example that supports it.**

|  |  |
| --- | --- |
| **Theory** | **Supporting Example** |
| Instinct Theory | **1.** |
| Drive-Reduction Theory | **2.** |
| Incentive Theory | **3.** |
| Cognitive Theory | **4.** |

**Think about the motivations that we learn from our environment. Complete each statement below.**

1. A person with high need for achievement\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. A person who fears failure might\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. A person who fears success might\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. A person trying to satisfy psychological needs might\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 6. Emotions: Riding Life’s Roller Coaster**

**What would life be like without emotions?**

In some ways life would be better. We would not experience the distress asso-

ciated with anger, fear, and depression. We would never be in a bad mood. There

would be no unhappiness.

On the other hand, without emotions there would be no joy, laughter, or

excitement. We would never know the pleasure of a good mood. There would be

no happiness.

Emotions give life much of its dimension and depth. Although emotions can

sometimes diminish the quality of existence, they also often enrich life. The ups

and downs associated with our emotional states give life something of the quality

of a roller-coaster ride. Some people live a wild emotional life characterized by

extreme highs and lows. Others lead a more rational emotional life—the highs

and lows are not too extreme. But we all ride life’s emotional roller coaster in one

way or another. Consequently, emotions merit study and have an important place

in psychology.

The word **emotion** is a contraction of two words: exit and motion. The ancient Greeks believed that the smiles and the frowns associated with such states as happiness or sadness indicated that the soul was coming out of the body and revealing itself. It was making an “exit motion.” This became “e-motion” or simply “emotion.”

An emotion is, at the physiological level, a disruption in homeostatic base-

lines. There are changes in heart rate, respiration rate, and blood pressure. These

are fluctuations in arousal. At the psychological level, these physiological changes

are experienced as either greater excitement or increased calmness. Human beings

also experience these changes as either pleasant or unpleasant.

It is evident from the above that there are two basic psychological dimensions

to emotions: excitement-calm and pleasant-unpleasant. The pleasant-unpleasant

dimension of emotions is identified as hedonic tone. The concept of hedo-

nism, as presented by the philosopher Aristotle, was a motivational concept.

Hedonism is the point of view that we approach stimulus situations that are pleas-

ant and avoid situations that are unpleasant.

The two dimensions of emotions generate four categories of emotions: (1)

excitement-pleasant, (2) excitement-unpleasant, (3) calm-pleasant, and (4) calm-

unpleasant. All of the many words that we use to describe emotions can be read-

ily placed in one of these categories. Words such as happy, joy, and ecstasy belong

in category 1. Words such as anger, fear, and rage belong in category 2. Words such

as relaxed, blissful, and tranquil belong in category 3. Words such as sad, melancholy,

and depressed belong in category 4.

There are three aspects to all emotions: (1) cognitive, (2) physiological, and (3)

behavioral. **The cognitive aspect** of emotions refers to what one is thinking

when one feels an emotion. Thoughts such as “What a wonderful day,” “I hate

him,” and “I think we’re going to crash” are likely to either induce emotional

states or be associated with them.

**The physiological aspect** of emotions refers to the disruption of homeo-

static baselines. As already indicated, emotions are associated with either increased

or decreased arousal. Fear is associated with increased arousal. Depression is asso-

ciated with decreased arousal.

**The behavioral aspect** of emotions refers to what people do when they feel

an emotion, what actions they take. Fear might induce a person to run away, if pos-

sible, from the stimulus source that is causing fear. If a person can’t run, he or she

might shake and tremble. If the fear is being caused by a threat from a menacing per-

son, one might plead, turn over a purse or wallet, or beg for mercy. On the other

hand, an emotion such as depression might induce a particular person to sit in a chair

and mope. Another person in response to depression might go on an eating binge.

**Theories of Emotion: Explaining the Process**

There are three principal theories of emotion that attempt to explain the general

emotional process: (1) the James-Lange theory, (2) the Cannon-Bard theory, and

(3) the cognitive appraisal theory.

**The James-Lange theory** was proposed independently by two men,

William James in the United States and Carl Lange in Denmark. The theory states

that an emotion can be induced by an action. The following example is based on

observations made by James. Let’s say that you see a bear in a forest. Common

sense tells you that if you run away, the action of running is motivated by fear. On

the other hand, according to James, common sense tells only half of the story. It

is equally true that running makes you feel fear. At first presentation this does not

seem reasonable. On the other hand, reflection suggests that the act of running has

the effect of increasing arousal. If you were simply to get up now and run in place

for two or three minutes, you would increase your pulse and heart rate; there

would be increased arousal. Under the condition of running away from the bear,

the act of running intensifies fear by increasing arousal.

If there is anything to the James-Lange theory, then one can influence one’s

feeling to some extent by willing one’s actions. The familiar advice to walk, not

run, when there is a fire in a public place conforms to the James-Lange theory. It

is widely recognized that the act of running, by increasing arousal, will cause fear

to escalate into panic.

In the musical play The King and I, Anna’s young son confesses to her that

he is afraid to enter Siam. Anna tells him that one of the tricks she uses to con-

quer fear is to whistle a happy tune. She says that by acting brave, he might

become as brave as he’s making believe he is. Again, the James-Lange theory is

at work. An action is inducing a change in an emotional state. Fear is being

turned into bravery.

**The Cannon-Bard theory**, also known as the thalamic theory, is based on

the collaboration of the two researchers Walter B. Cannon and Philip Bard. The

Cannon-Bard theory recognizes that the brain’s thalamus is a relay station. When

information comes in from the senses and arrives at the thalamus, the information

is simultaneously sent up to the cortex and down to the spinal cord. This means

that we become conscious of the cause of an emotion at the same time that our

body is preparing to deal with it by making changes in physiological arousal.

Returning to the bear-in-the-forest example, the Cannon-Bard theory says

that you are becoming aroused, and physiologically prepared to run, at the same

time that you are able to think, “That’s a bear!” This saves the individual precious

time in an emergency.

Proposed by the researcher Stanley Schachter, **the cognitive appraisal the-**

**ory**, also known as **the labeling-of-arousal hypothesis**, states that a person’s

self-labeling of a state of arousal converts that state into a specific emotion. Let’s

say that Earl is driving, has taken a wrong turn, and is lost in an unfamiliar area of

a big city. His pulse increases, his mouth feels dry, his muscles increase their ten-

sion. All of this is involuntary. He is experiencing increased arousal. He asks him-

self, “What’s going on? Why is my pulse faster?” Let’s say he thinks, “I’m afraid.”

By defining his state of arousal in this way, he clearly feels fear. On the other hand,

let’s say that he was to take a different cognitive approach. He’s a person who

often seeks adventure. He answers the questions posed above by thinking, “I’m

getting a kick out of this. It’s a kind of bang to be challenged.” By defining his

state of arousal in terms of a more positive outlook, he might be “having fun”—

a positive emotional state—instead of experiencing fear. The hedonic tone, the

sense that a state of arousal is pleasant or unpleasant, is often associated with the

label that we assign to the state of arousal.

It is not necessary to make a distinct choice among the theories in order to

determine which one is right and which one is wrong. All three theories have

some degree of validity and help us to explain emotional states.

**Stress and Health:Wear and Tear Takes Its Toll**

It is widely recognized that increases in arousal tend to be associated with stress. A

formal distinction is made between a stressor and stress. A stressor refers to the

source, or cause, of stress. The loss of a job, an argument with a spouse, a conflict

situation, excessive cold or heat, and a physical threat are examples of stressors.

Stress refers to wear and tear on the body. Chronic stress takes a toll. The body

loses some of its resiliance, its ability to bounce back.

Let’s say that you take a small piece of metal and fold it back and forth. A crack

appears in the metal after a number of foldings. Each act of folding is a stressor.

The crack is the stress.

The Canadian researcher Hans Selye (1907–1982) did a substantial amount of research on stress. Rats were subjected to such stressors as excessive cold, excessive heat, and high-pitched whistles. Also, the stressors were chronic in nature. They became a constant part of the animal’s environment. Under such conditions, the organism is forced to adapt, and Selye developed a set of observations about the organism’s behavior under such conditions. This set of observations is called the general adaptation syndrome (GAS), a pattern that describes how an organism responds under conditions that induce chronic stress. There are three stages in the general adaptation syndrome: (1) The alarm reaction, (2) the stage of resistance, and (3) the stage of exhaustion.

**The alarm reaction** is characterized by an increase in arousal and general

alertness. The pulse and respiration rates increase and the blood vessels of the stri-

ated muscles narrow. The organism prepares itself to deal with a threat. The alarm

reaction is the individual’s response to a novel stressor.

**The stage of resistance** is characterized by reduced agitation and excite-

ment. This stage represents an organism’s response to a stressor that has become

chronic. The individual learns to live with the stressor. During the stage of resist-

ance, the organism seems to have adapted to adverse conditions. Learning and

reproduction are possible.

**The stage of exhaustion** is associated with illness and death. The death is a

premature one. Postmortem examinations of rats subjected to chronic stressors

revealed that their adrenal glands were swollen. They had adapted at great physio-

logical cost. During the stage of resistance, the adrenal glands had pumped out

excessive amounts of their hormones and had overtaxed themselves.

The importance of the general adaptation syndrome has not been lost on

physicians and psychologists. Research suggests that human beings, like Selye’s

rats, are also subject to the damaging effects of chronic stressors. Research on life

change units and Type A behavior reveal the important role that stress plays in

human illness.

**Life change units (LCUs)** refers to stressors arising from events in a per-

son’s life that require adaptation. The two researchers who pioneered the general

approach are R. H. Rahe and T. H. Holmes. Studying a large group of subjects,

they developed a measuring device called the Social Readjustment Rating

Scale (SRRS). The scale, based on the perceptions of subjects, assigns weighted

values to life changes. The maximum value is 100, and this is assigned to the

death of a spouse. Getting married has a value of 50. Loss of a job has a value of

47. Being given a traffic ticket has a value of 11. There are a number of similar

items on the scale. If a person collects 150 or more LCUs within a two-year

period, there is a high likelihood that he or she will experience a distinct health

problem.

**The Type A behavior pattern** is characterized by hostility and impatience.

Research conducted by the cardiologists Meyer Friedman and Ray H. Rosenman

strongly supports the hypothesis that individuals who display this pattern are more

prone than people in general to heart attacks and cardiovascular disease.

The contrasting pattern is called the Type B behavior pattern, and it is

characterized by an absence of general hostility and a willingness to allow events

to take place at their own rate.

The existence of the Type A pattern suggests that behavior can itself be a source

of stress. Human beings are capable of **self-induced stress,** wear and tear on the

body generated by their own thoughts, choices, attitudes, and actions. The Roman

philosopher Cicero, writing about two thousand years ago, foreshadowed modern

research on stress when he said, “To live long it is necessary to live slowly.”

**Conflict: Making Difficult Choices**

Conflict is an important source of stress. Psychological conflict exists when

we are forced to make difficult choices in life. According to the social psy-

chologist Kurt Lewin, there are four basic ways to categorize conflict situations:

(1) the approach-approach conflict, (2) the avoidance-avoidance conflict, (3) the

approach-avoidance conflict, and (4) the double approach-avoidance conflict.

**The approach-approach conflict** exists when an individual is presented

with two desirable alternatives, but only one alternative can be obtained. Desir-

able alternatives are termed positive goals. A mild example of an approach-

approach conflict is selecting a birthday card for a friend or relative. Let’s say that

Olympia is trying to pick a birthday card for her husband. She’s narrowed her

options down to two cards, but is having a hard time making a final selection.

She’s in an approach-approach conflict.

An approach-approach conflict might seem to induce relatively low stress.

After all, the individual has at least two good choices. But such a conflict can in

some cases induce quite a bit of stress. Eighteen-year-old Kirk has been accepted

at two leading colleges. They are in different parts of the country. The selection

he finally makes will have great long-run significance. He is in an intense

approach-approach conflict.

**An avoidance-avoidance conflict** exists when the individual wants to

either escape from or avoid two undesirable alternatives. Undesirable alternatives

are termed negative goals. The central problem with this kind of conflict is that

moving away from one negative goal takes one in the direction of the other neg-

ative goal. Nineteen-year-old Nancy is in her first year of college. She doesn’t like

academic work, is barely passing, and is thinking of dropping out. On the other

hand, if she drops out, her parents have indicated they won’t support her. She’ll

have to take a low-paying, unskilled job. If she stays in school, she’ll be unhappy.

If she takes a low-paying job, she’ll be unhappy. She tells her best friend, “I’m

between a rock and a hard place.”

Associated with the research of the anthropologist Gregory Bateson, a term

sometimes used to identify an avoidance-avoidance conflict is a double bind. A

double bind is a no-win situation. Whatever the individual does, there is a sense

of failure or loss.

**An approach-avoidance conflict** exists when an individual perceives the

same goal in both positive and negative terms. Glen is in love with Margaret and

is thinking about marrying her. He sees her as beautiful, warm, and sexually desir-

able. On the other hand, Glen’s parents are opposed to Margaret. They point out

to him that she has a different religious affiliation than that of Glen and his par-

ents. Margaret takes her religion seriously. So do Glen and his parents. The two

religions are based on different assumptions. Glen’s parents tell him that they don’t

see how he can ever have a happy marriage with Margaret. If Glen and Margaret

have children, Margaret will want to raise them in her religious tradition. Glen

will want to raise them in his.

When Glen is away from Margaret, he thinks about her constantly. He misses

her, and often decides that he’ll propose marriage no matter what the conse-

quences. When he’s actually with her, the words associated with the marriage

proposal won’t leave his mouth. He gets cold feet at the last minute. One of the

characteristics of approach-avoidance conflicts is that the approach tendency tends

to gain strength when the positive aspect of the goal seems momentarily out of

reach. Conversely, the avoidance tendency tends to gain strength when in the

presence of the goal; under these conditions the negative factors tend to loom

large.

An individual caught in an approach-avoidance conflict often experiences a

sustained period of emotional conflict before a final decision is made.

**A double approach-avoidance conflict** exists when an individual simulta-

neously perceives two goals in both positive and negative terms. This conflict is a

more complex version of the singular approach-avoidance conflict. Let’s say that

Pamela is on a diet. She’s having lunch in a restaurant. She is thinking about

ordering either a burger with fries or a salad with broiled chicken. Goal 1, the

burger and fries, is the more appealing choice to Pamela from the point of view

of taste and general appeal. On the other hand, the negative aspect is that the

combination will have too many calories and she’ll be cheating on her diet. Goal

2, the salad with broiled chicken, is the more appealing choice to Pamela from the

point of view of caloric content. On the other hand, the negative aspect is that she

is weary of salad and wants to have a treat.

Pamela’s dilemma presents a fairly mild version of the double approachavoidance

conflict. However, such conflicts can be quite intense. Imagine that Glen’s parents introduce him to Naomi. She and her parents are recent arrivals in the neighborhood, and they practice the same religion as Glen and his parents. Naomi is young, pretty, and interested in Glen. He takes her out on a couple of dates. He finds himself attracted to her, but not nearly as attracted as he is to Margaret.

By introducing Glen to Naomi, Glen’s parents have thrust him into a double

approach-avoidance conflict.

**TEST**

1. The word *emotion* is a contraction of the two words

a. *evaluation* and *motor*

b. *exit* and *motion*

c. *emission* and *movement*

d. *escape* and *mobile*

2. The two basic psychological dimensions of emotion are

a. excitement-calm and low arousal–high arousal

b. extraversion-introversion and pleasant-unpleasant

c. homeostasis-alpha and homeostasis-beta

d. excitement-calm and pleasant-unpleasant

3. Which one of the following is *not* a basic aspect of emotions?

a. The cognitive aspect

b. The formal-logical aspect

c. The physiological aspect

d. The behavioral aspect

4. The James-Lange theory of emotion states that

a. emotions are illusions

b. all emotions stem from unconscious motives

c. an emotion can be induced by an action

d. emotions are the motives for almost all actions

5. The cognitive appraisal theory of emotion states that

a. the brain’s thalamus is a relay station

b. we become conscious of the cause of an emotion at the same time that

our body is preparing to deal with it

c. emotions are metaphysical concepts

d. a person’s self-labeling of a state of arousal converts that state into a specific

emotion

6. Which one of the following is *not* a stage of the general adaptation syndrome

(GAS)?

a. The alarm reaction

b. The stage of resistance

c. The stage of frustration

d. The stage of exhaustion

7. The concept of life change units (LCU’s) is associated with which of the following?

a. The Social Readjustment Scale

b. The Wechsler Psychosocial Stressor Inventory

c. The Lewin Cognitive Test

d. The Selye Stress Test

8. The Type A behavior pattern is characterized by

a. hostility and impatience

b. a hedonistic attitude toward life

c. learned optimism

d. an absence of hostility and a willingness to allow events to take place at

their own pace

9. In the analysis of psychological conflict, undesirable alternatives are termed

a. positive goals

b. negative goals

c. neutral attributes

d. orienting functions

10. What kind of a conflict exists when the individual wants to either escape from

or avoid two undesirable alternatives?

a. An approach-approach conflict

b. An approach-avoidance conflict

c. A double approach-avoidance conflict

d. An avoidance-avoidance conflict

**True or False**

1. T F The pleasant-unpleasant aspect of emotions is associated with the point

of view, proposed by the philosopher Aristotle, known as hedonism.

2. T F The James-Lange theory proposes that feelings cause our actions.

3. T F Chronic stress appears to have no long-run effect on general health.

4. T F Type A behavior is associated with heart attacks and cardiovascular disease.

5. T F An approach-approach conflict exists when an individual perceives the

same goal in both positive and negative terms.

**Self-check**

• define the concept of emotions;

• identify the two basic psychological dimensions of emotions;

• describe the three aspects of all emotions;

• explain the three basic theories of emotions;

• specify how chronic stress affects general health;

• state the conditions of the four basic kinds of psychological conflict.

**Unit 7. Developmental Psychology: How Children Become Adults**

A familiar proverb states, “As the twig is bent, so grows the tree.” Meant to

apply as a metaphor to the raising of children, this saying contains within it an

entire justification for the study of developmental psychology. Every adult was

once a child, and the adult was shaped and formed by experiences during childhood.

Psychologists as far apart in many of their assumptions and conclusions as

Sigmund Freud and John Watson subscribed to the general view that in order to

understand adult behavior it is necessary to study child behavior.

The contemporary approach to developmental psychology expands the concept

of development well past childhood and adolescence. There are also developmental

stages associated with adulthood.

**Developmental psychology** is the study of the growth and maturation of

the individual over an extended span of time. **Child psychology** is a subset of

developmental psychology. It concerns itself primarily with the study of the

individual from birth to the beginning of adolescence (usually around the age of

twelve or thirteen). **Adolescent psychology** is also a subset of developmental

psychology. It concerns itself primarily with the study of the individual from the

beginning of adolescence to its end (usually around the age of eighteen). Sometimes

child psychology refers loosely to both child and adolescent psychology.

**Biological Aspects of Development: From Fertilized Egg**

**to Infant**

Freud said, “Biology is destiny.” Although Freud is usually thought of as a psychologist, not a biologist, his early academic love was the study of biology. He

was trained as a biologist before he became a medical doctor. Freud’s statement

recognizes that, although learning and experience shape behavior, much of our

behavior is based on a foundation of genetic givens. For example, if a fertilized

egg contains an XX chromosome pattern, the individual will become a female.

If the fertilized egg contains an XY pattern, the individual will become a male.

The fact that one is a female or a male will be an important determining factor

in countless behaviors from birth to death. For a second example, let’s say that

a fertilized egg contains three chromosomes where normally there is a twentyfirst

pair of chromosomes. This is a chromosomal anomaly known as **trisomy**

**21.** The individual will suffer from **Down’s syndrome,** a pattern characterized

by mental retardation and poor health. Freud’s view that biology is destiny has

much to recommend it. (A **chromosomal anomaly** is an abnormal chromosome

pattern.)

The individual begins when a given sperm and a given ovum unite. Provided

by the father, the **sperm,** or more completely **spermatozoon,** is a highly mobile

cell with a tail. Provided by the mother, the **ovum** is a single egg cell. Both the

sperm and the ovum contain twenty-three single chromosomes. When the egg is

fertilized, there will be twenty-three pairs of chromosomes. **Meiosis** is the process

that reduces pairs of chromosomes to the individual chromosomes found in either

the sperm or the ovum. **Mitosis,** on the other hand, is the process that allows a

cell to reproduce itself. This process starts with twenty-three pairs of chromosomes,

and all twenty-three pairs are replicated. It is mitosis that makes possible

the growth of the individual from one cell, the fertilized egg, to billions of cells.

A **chromosome** is a rodlike structure that contains genes. A chromosome is

so named because it is capable of picking up a dye, making the structure visible

under a microscope. *Chromo* refers to color, and *soma* refers to body. Thus a chromosome

is a “colored body.”

A **gene** is the basic unit of heredity. It is made up of strands of **deoxyribonucleic**

**acid (DNA),** a complex organic molecule with the unique ability to

replicate itself. It is the genes that do all of the active work associated with hereditary

influence. The relationship of a chromosome to a group of genes is similar to

the relationship of a ship to its crew. The chromosome is the ship. The genes are

the members of the crew.

There are four stages associated with conception and birth: (1) zygote, (2)

embryo, (3) fetus, and (4) neonate. When a sperm and an ovum unite to form a

fertilized egg, the new being is called a **zygote.** The stage of the zygote lasts for

one week. During this stage the zygote develops rapidly from a single cell to a

large group of cells. A zygote may be imagined as a ball of cells without differentiation.

From one week to seven weeks, the new being is called an **embryo.** As the

cells continue to divide and replicate themselves, some differentiation begins to

take place. Three basic embryonic layers emerge: (1) ectoderm, (2) mesoderm,

and (3) endoderm. The **ectoderm** is the outer layer of cells, and it will become

the sense organs, skin, and nervous system. The **mesoderm** is the middle layer of

cells, and it will become the heart, bones, and muscles. The **endoderm** is the

internal layer of cells, and it will become the stomach, intestines, and lungs.

From seven weeks to birth, the new being is called a **fetus.** Fetal development

is rich and complex. The cells continue to divide, and they become specialized in

their structures and functions. Brain cells (neurons), skin cells, hair cells, fat cells,

and many other kinds of cells form. The head, limbs, fingers and toes, and other

features of the body appear. In the typical case, the stage of the fetus lasts a little

over seven months, making the total time from conception to birth about nine

months.

At birth the new being is called a **neonate.** *Neo* means “new.” And *nate* means

“birth.” Thus the word *neonate* simply means “newborn.” If the neonate loses

weight after birth, then he or she is not referred to as an infant until birth weight

has been regained. The word **infant** is from Latin roots meaning “without

speech.”

**Freud’s Theory of Psychosexual Development: From the Oral to the Genital Stage**

The infant is on the threshold of continuing biological and psychological development. Freud’s theory of development has been highly influential. First proposed about eighty years ago, it has had a large impact on the way in which both psychologists and parents have thought about sexual development in children. It has also influenced child-rearing practices.

According to Freud, there are five stages in psychosexual development. **Psychosexual development** refers to the development of a sexual identity, attitudes

toward sexual behavior, and emotional reactions to sexual stimuli. Sexual development, in Freud’s view, is much more than biological. Identity, attitudes, and

emotional reactions are psychological in nature. That is why Freud used the term

*psychosexual* instead of simply *sexual* to refer to the kind of development he wanted

to study.

The five stages of psychosexual development are: (1) oral, (2) anal, (3) phallic,

(4) latency, and (5) genital. In order to appreciate Freud’s theory, it is necessary to

introduce a concept he employed called **libido.** Libido is thought of as psychosexual

energy, and Freud hypothesized that it is invested in different zones of the

body during the various stages of psychosexual development. These zones, or

areas, of the body are called the **erogenous zones,** and they are associated with

sexual pleasure. The principal erogenous zones are the oral, anal, and genital areas

of the body.

The **latency stage** lasts for about six years. It begins at age six or seven and

ends at age twelve or thirteen. In effect, it ends when puberty begins. The libido

has migrated from the oral to the anal to the phallic zone. Now it goes underground

and becomes, to surface appearance, dormant. The libido goes under-

psychological conflict. Freud suggested that the child has a certain amount of dawning sexual desire and tends to make the parent of the opposite sex the focus of this desire.

However, due to moral development, guilt sets in and the libido goes into hiding.

It is repressed to an unconscious level.

The emotional conflict associated with the child’s forbidden wish to seek sexual

expression with a parent is called the **Oedipus complex.** Freud was inspired

to coin this term from his familiarity with the Greek tragedy *Oedipus Rex* (i.e.,

“Oedipus, the King”) written by the dramatist Sophocles around 400 B.C. In the

play, Oedipus inadvertently kills his own father and unknowingly marries his own

mother. Writing in German in Austria, Freud used the term *Oedipus complex* to

refer to either males or females. Later authors, writing in the United States, sometimes

use the term *Oedipus complex* to refer to males and **Electra complex** to

refer to females. (*Electra* is also a Greek play. Written by the dramatist Euripides,

also around 400 B.C., it bears some resemblance to *Oedipus Rex.*)

The **genital stage** begins at twelve or thirteen and continues throughout

adulthood. With puberty, biological maturation can no longer be denied. The

repression lifts and the individual becomes intensely conscious of sexual interest.

Libido makes a final shift from the phallus to a more general interest in the opposite

sex. In normal development, the individual transfers sexual interest away from

the parent and toward potential partners who are not members of the family.

Freud’s outline suggests that much can go wrong with sexual development.

There can be too much excitation and arousal associated with one of the stages. Or,

conversely, there can be too much inhibition, punishment, or emotional injury associated with one of the stages. Freud indicated that either too much excitation or too

much inhibition can induce a **fixation of libido,** meaning the libido is to some

extent “stuck” in one particular erogenous zone. According to Freud, such fixations

may play a role in various problems and maladaptive behaviors, including overeating,

constipation, pedophilia, exhibitionism, fetishism, and sexual dysfunctions.

Freud’s theory is, as are all theories, a set of concepts, not a set of facts. Freud’s

theory has received its share of criticism. For example, research suggests that

although self-stimulation of the phallus is relatively common in children, it is not,

as Freud thought, a behavior pattern demonstrated by almost all children. The

psychoanalyst Karen Horney, one of Freud’s advocates, rejected the biological

sexuality of the Oedipus complex. Instead, Horney suggested that, for example, a

male child is often jealous of the position of power and importance the father has

with the mother. The male child has a forbidden wish to take the father’s place,

not so much as a sexual rival, but as a psychological one.

**Erikson’s Theory of Psychosocial Development: From Trust**

**to Integrity**

Erik Erikson (1902–1994) was personally trained by Freud, and maintained

respect for Freud’s theory. However, he expanded Freud’s concept of psychosexual

development to include psychosocial development. **Psychosocial development**

refers to the characteristic ways in which the individual learns to respond to

other people. The term **social world** is often used to refer to the constellation of

other human beings in our environment—parents, siblings, teachers, friends,

sweethearts and lovers, husbands and wives, and coworkers. This is the world

addressed by Erikson’s theory.

According to Erikson, there are eight stages in psychosocial development:

(1) trust versus mistrust, (2) autonomy versus shame and guilt, (3) initiative versus

guilt, (4) industry versus inferiority, (5) identity versus role confusion, (6) intimacy

versus isolation, (7) generativity versus self-absorption, and (8) integrity versus

despair.

In each stage the first attribute mentioned is a positive, or desirable, personality

trait. The second attribute is a negative, or undesirable, personality trait. Trust,

for example, is positive. Mistrust is negative. At each stage of development, the

individual is challenged by life to form the positive trait.

**Trust versus mistrust** is associated with infancy (birth to two years old). An

infant with a sense of trust tends to thrive and expects good things to happen.

Conversely, an infant with a sense of mistrust sometimes displays a failure to thrive

syndrome. A lack of interest in the surrounding world and poor health, associated

with mistrust, are characteristics of **infantile depression.** Affection, displayed in

the form of loving attention, tends to foster the trait of trust. Lack of affection

tends to foster the trait of mistrust. These last two statements concerning affection

tend to apply to future stages as well. In general, affection and positive reinforcement

tend to bring forth the positive traits.

**Autonomy versus shame and doubt** is associated with toddlerhood (two

to three years old). A toddler with a sense of autonomy will be interested in

exploring the immediate world and display an interest in novel stimulation. A

certain amount of self-direction will emerge. Conversely, a toddler with a sense

of shame and doubt will tend to hold back, to seem shy, and to lack selfconfidence.

**Initiative versus guilt** is associated with the preschool period (three to six

years old). A preschooler with a sense of initiative will be likely to start a project

and see it through to completion. For example, four-year-old Rosalyn says, “I’m

going to color all of the pictures in my coloring book.” Conversely, a preschooler

with a sense of guilt is hesitant, does not seek challenges, and holds back when an

opportunity for self-expression presents itself.

**Industry versus inferiority** is associated with middle childhood (six to

twelve years old). A child with a sense of industry will show an interest in school,

study, complete homework, agree to do reasonable chores, and in general display

responsible behavior. A child with a sense of inferiority will avoid studying,

homework, and chores. The child obtains no satisfaction from these activities,

particularly if the child often obtains poor grades or receives too much parental

criticism.

**Identity versus role confusion** is associated with adolescence (twelve to

eighteen years old). An adolescent with an identity has a sense of direction in life.

He or she already thinks in terms of a particular vocational area, has fairly welldefined

plans for the future, and a high level of self-esteem. Although goals are

not yet attained, they seem clearly desirable and possible. Conversely, an adolescent

suffering from role confusion imagines no particular pathway in life and

dreams of no well-shaped future. On the contrary, the future seems obscure and

formless.

**Intimacy versus isolation** is associated with young adulthood. This starts

when adolescence is over, usually around the age of eighteen. However, in practice,

young adulthood may be deferred for a number of years until an identity

has been attained. The present stage and the future stages to be discussed will

not be identified with particular years. A young adult with the capacity for intimacy

is able to form a close emotional bond with another person, often a marriage

partner. Intimacy exists when two people genuinely recognize the

importance of each other’s thoughts and feelings. Informally, they can “be

themselves” with each other, and do not have to put on an act. Conversely, isolation

exists when an individual treats another individual like a thing, an object

to be manipulated and taken advantage of. The term **I-thou relationship** is

sometimes used to characterize intimacy; the term **I-it relationship** is used to

characterize isolation.

**Generativity versus self-absorption** is associated with adulthood. An adult

with the trait of generativity is capable of productive work. Usually he or she will

spend many years employed in a vocation or a well-defined social role (e.g., parent).

Generativity is linked to giving something of value to the world. The adult

with this trait contributes in some way to the welfare of others. Conversely, an

adult with the trait of self-absorption is concerned only with his or her own welfare.

Taking, not giving, is the theme of the person’s life. He or she is, in essence,

a sort of parasite.

**Integrity versus despair** is associated with old age. An older person with the

trait of integrity can face approaching death with a certain amount of acceptance.

There is relative peace of mind because the individual is convinced that his or her

life was spent well, that it had meaning. An older person in a state of despair has a

sense of desperation as life draws to its inevitable end. There is very little peace of

mind because the individual is thinking that he or she needs a second chance, an

opportunity to get life right.

Although the individual has very little control over the first few stages of life,

with adolescence and adulthood there is greater self-consciousness. There is a

growth in the ability to reflect and think. Consequently, the individual bears some

responsibility for the self-fashioning of the later stages.

**Piaget’s Theory of Cognitive Development: From Magical Thinking to Logical Thinking**

The section on Erikson’s theory concluded with a comment on the ability to

reflect and think. Jean Piaget (1896–1980), often recognized as the foremost child

psychologist of the twentieth century, made the growth of the child’s ability to

think his particular domain of investigation.

Piaget, working primarily at Geneva University in Switzerland, began his

investigations into the workings of the child’s mind because of an interest in

epistemology. **Epistemology,** a branch of philosophy, is the study of knowing.

Piaget wanted to discover how we come to know what we know. Or, more

accurately, he wanted to discover how we come to think we know what we

think we know.

The method that Piaget used to study the child’s mind is called the phenomenological

method. The **phenomenological method** is characterized by asking

a child a series of carefully worded questions that direct the child’s attention to

particular details of the child’s immediate world. The child’s responses reveal the

way in which the he or she thinks about the world. Piaget’s investigations suggest

that there are four stages of **cognitive development,** the development of the

way in which the child thinks. Informally, cognitive development may be thought

of as the “growth of the mind.”

According to Piaget, there are four stages of cognitive development: (1) the

sensorimotor stage, (2) the preoperational stage, (3) the concrete operations stage,

and (4) the formal operations stage.

The **sensorimotor stage** is associated with infancy (birth to two years old).

During this stage the infant has consciousness, but not self-consciousness. He or

she is, of course, aware of the environment. There are reflexes. A stimulus induces

a patterned, predictable motor response. This provides a clue to the term *sensorimotor*

and why Piaget chose it. The infant senses the world and, without reflection

or analysis, acts in response to his or her impressions.

In the older infant there is even a certain amount of intentional behavior. But

the infant does not know that he or she exists in the same way that an older child

or an adult knows that he or she exists. There is no way to establish these assertions

beyond doubt, because a verbal interview with an infant is impossible. However,

an infant acts as if self-consciousness is absent. For example, one-year-old

James is shown his reflection in a mirror. He is curious, of course, and reaches out

to touch the reflection. But he does not seem to know that he is seeing himself.

There appears to be no sense of recognition. A postage stamp is lightly stuck to

his forehead. He touches it in the mirror, but doesn’t peel it off of his forehead.

Tested again, when he is a little over two years old, James immediately recognizes

that the stamp is on his own forehead, and, using the mirror, peels it off. He has

developed self-consciousness, a characteristic not of infancy, but of the next stage.

The **preoperational stage** is associated with toddlerhood and the preschool

age (two to seven years old). The term *preoperational* is used to suggest that during

this stage the child has not yet grasped the concept of cause and effect. Instead, the

child tends to think in magical terms. **Magical thinking** is characterized by an

absence of the recognition of the importance of the laws of nature. Four-year-old

Daniel sees no problem when a magician instructs a carpet to fly.

Two additional characteristics of the preoperational stage are anthropomorphic

thinking and egocentrism. **Anthropomorphic thinking** is characterized

by a tendency to explain natural events in terms of human behavior. Consequently,

leaves turn various colors in the fall because Jack Frost paints them. The

huffing and puffing of an invisible giant is the cause of a windy day.

**Egocentrism** is a tendency to perceive oneself as existing at the center of the

universe. Everything revolves around the self. Consequently, five-year-old

Danielle, when riding in a car at night with her parents, asks, “Why is the Moon

following us?” Two days later Danielle falls and scrapes her knee. She believes that

her mother can feel the pain. Six-year-old Edward thinks that people in a foreign

country on the other side of the world are upside down. He reasons that if the

world is round, and we’re right side up, then they have to be upside down. If an

adult tells Edward that the people are right side up, he will be confused.

The **concrete operations stage** is associated with middle childhood (seven

to twelve years old). The child at this stage can think in terms of cause and effect.

However, most of the thinking is “concrete,” meaning that cognitive processes at

this stage deal well with what can be seen or otherwise experienced, not with

abstractions. For example, eight-year-old Jack can easily understand that 3 + 7 =

10 because, if necessary, this can be demonstrated with physical objects such as

pennies or chips. On the other hand, Jack can’t grasp that x + 8 = 11 in problem

1, and that x + 8 = 24 in problem 2. If Jack is told that x is a variable, and that it

can have more than one numerical value in different problems, he will have a hard

time appreciating this fact. In brief, Jack can understand arithmetic, but he can’t

understand algebra.

During the stage of concrete operations, children are usually interested in how

clocks work, how measurements are made, and why this causes that to happen.

They often like to assemble things. A game such as Monopoly, with its play

money, property deeds, and tokens, is attractive.

The **formal operations stage** is associated with adolescence and adulthood.

(Adolescence begins at twelve or thirteen years old). The formal operations

stage is characterized by the ability to think in abstract terms. The

adolescent and adult can understand algebra. Subjects such as philosophy, with its

various viewpoints on life, become accessible. Not only thinking, but thinking

about thinking is possible. This is called **metathought.** It is what we are doing

in this section of the book.

Formal operational thought makes it possible to use both inductive and

deductive logic. The adult can reflect, analyze, and rethink

ideas and viewpoints. This kind of thought opens up avenues of mental flexibility

not available to children.

Piaget’s theory presents a blueprint for cognitive development that captures the

spectrum of thinking from its primitive beginning to its most sophisticated level.

**Kohlberg’s Theory of Moral Development: From a Power**

**Orientation to Living by Principles**

Lawrence Kohlberg, a developmental psychologist associated with Harvard University,

has drawn from Piaget’s theory of cognitive development and applied it to

moral development. **Moral development** is the development of the individual’s

sense of right and wrong. A high level of moral development is built on a foundation

of cognitive development. But, of course, more is involved.

Prior to Kohlberg’s actual research with subjects, theories of moral development

were based largely on speculation. The philosophers Plato and Immanuel

Kant believed that the moral sense is inborn, that it is a given of the human mind.

On the other hand, the philosophers Aristotle and John Locke assumed that moral

development requires learning and experience. Kohlberg’s approach tends to

favor the learning hypothesis. Human beings acquire a moral sense by learning to

think clearly, by the example of role models, and by social reinforcement.

According to Kohlberg, there are three principal levels of moral development:

(1) the premoral level, (2) the conventional level, and (3) the principled

level. (There are six stages associated with the three levels, two stages to

each level. The differences between the stages are subtle, and they will not be

specified.)

The **premoral level** is associated with early childhood (from about two to

seven years old). The theme of this level is **power orientation,** meaning that to

a child thinking at this level, “might makes right.” The parents are seen as “right”

because they are bigger and stronger than the child. Five-year-old Kenneth is considering whether or not he should steal a one-dollar bill from his mother’s purse.

His hesitation, if there is any, is based on the fear of being caught, not on guilt. He

is **amoral,** meaning that he has no actual moral sense, no internal feeling that he

is wrong to do something that is forbidden.

The **conventional level** is associated with late childhood and adolescence

(seven to eighteen years old). Also, many, probably most, adults continue to operate

at the conventional level, never progressing to the principled level. The theme

of the conventional level is “law and order.” Right is right because human beings

have codes of conduct and written laws. Fifteen-year-old Sally identifies with her

family. The family has a certain religion, certain attitudes, and well-defined

notions of what is and is not socially acceptable behavior. Sally doesn’t question

the family’s values. She doesn’t examine or challenge them. She is operating at the

conventional level. Thirty-four-year-old Kelvin pays his taxes, has earned an honorable

discharge from the army, and thinks of himself as a “good citizen.” Kelvin,

like Sally, is operating at the conventional level.

The **principled level** is associated with a relatively small percentage of adults.

These are people who think for themselves about what is right and wrong. They

are not chaotic in their thought processes. They are logical and clear sighted. In

certain cases, they may decide that a law or a group of laws are unjust, and they

may rebel. The founding fathers of the United States, men such as George Washington and Thomas Jefferson, fall in this last category. Saints, great leaders, and

prophets also fall in the principled category.

It is clear that not all adults outgrow even the first level, the premoral level.

Dictators who rule by brute force, who punish in accordance with their personal

whims, operate at the premoral level.

**Parental Style: Becoming an Effective Parent**

Whether it be psychosexual, psychosocial, cognitive, or moral, development is

greatly influenced what parents say and do. The general approach taken toward

child rearing by a parent is called **parental style.** Research conducted by developmental psychologists such as Stanley Coopersmith and Diane Baumrind, both

affiliated with the University of California, suggests that there are two primary

dimensions of parental style. These are: (1) authoritarian-permissive and (2)

accepting-rejecting.

The **authoritarian-permissive dimension** consists of bipolar opposites. At

the one extreme, parents who manifest an **authoritarian style** are highly controlling,

demanding, possessive, and overprotective. At the other extreme, parents

who manifest a **permissive style** are easygoing, overly agreeable, detached, and

easily manipulated by the child or adolescent. Such parents tend to avoid setting

well-defined limits on behavior.

The **accepting-rejecting dimension** also consists of bipolar opposites. At

the one extreme, parents who manifest an **accepting style** provide the child with

**unconditional love,** meaning that love is not withdrawn when a child’s behavior

is unacceptable. The child is loved for being himself or herself, and affection

does not stop just because the parent is sometimes disappointed in something the

child has done. There is much confusion about this particular point. Unconditional

love does not mean unconditional acceptance of all behavior. It is possible

to reject unacceptable behavior without rejecting the whole person.

Parents who manifest a **rejecting style** provide the child with either conditional

love or no love at all. **Conditional love** is characterized by providing the

tokens of love (e.g., kisses, hugs, and praise) only when they have been earned by

certain behaviors such as getting good grades, doing chores, and being polite. A

parent who provides no love seldom, if ever, brings forth demonstrations of love

in either words or actions. The child acquires the impression that the parent

wishes he or she had never been born.

The two dimensions generate five distinct categories of parental style:

(1) authoritarian-accepting, (2) permissive-accepting, (3) authoritarian-rejecting,

(4) permissive-rejecting, and (5) democratic-accepting. The first four styles are all

flawed, and each of them is likely to generate difficulties in the child’s adjustment

to life. The fifth style is the optimal style. The word **democratic** is used to indicate

an optimal midpoint on the authoritarian-permissive dimension. Parents who

manifest a democratic style give a child real options. The child is allowed to make

choices and important decisions. However, the democratic parent also sets realistic

limits. If the child’s choices are unacceptable and likely to create eventual problems

for the child, then the democratic parent draws a line and is capable of being firm.

Research suggests that a parent who manifests a democratic-accepting style

tends to induce optimal social behaviors in the child. This style tends to nurture the

intelligence, creativity, emotional adjustment, and self-esteem of the child.

**TEST**

1. The basic unit of heredity is the

a. chromosome

b. gene

c. trisomy 21 pattern

d. ribonucleic acid (RNA) anomaly

2. From seven weeks to birth, the new being is called

a. a fetus

b. an embryo

c. a zygote

d. a neonate

3. According to Freud’s usage, psychosexual energy is referred to as

a. libido

b. erotic ambivalence

c. metabolism

d. genital potency

4. The Oedipus complex is associated with what psychosexual stage?

a. The oral stage

b. The anal stage

c. The genital stage

d. The latency stage

5. A toddler with a particular positive psychosocial trait will be interested in

exploring the immediate world and display an interest in novel stimulation.

What is this trait?

a. Autonomy

b. Identity

c. Intimacy

d. Generativity

6. An older person with a particular positive psychosocial trait can face approaching

death with a certain amount of acceptance. What is this trait?

a. Generativity

b. Isolation

c. Identity

d. Integrity

7. What method did Piaget use to study the child’s mind?

a. The experimental method

b. The survey method

c. The phenomenological method

d. The correlational method

8. Magical thinking, anthropomorphic thinking, and egocentrism are associated

with what stage of cognitive development?

a. Trust versus mistrust

b. The sensorimotor stage

c. The formal operations stage

d. The preoperational stage

9. What level of moral development is associated with a law and order orientation?

a. The premoral level

b. The preconventional level

c. The conventional level

d. The principled level

10. Research suggests that a parent who manifests what style tends to induce optimal

social behaviors in the child?

a. Authoritarian-accepting

b. Democratic-accepting

c. Permissive-accepting

d. Authoritarian-rejecting

**True or False**

1. T F If a fertilized egg contains an XX chromosome pattern, the resulting

infant will be a female.

2. T F According to Freud, the five stages of psychosexual development are:

(1) oral, (2) anal, (3) phallic, (4) latency, and (5) genital.

3. T F In psychosocial development, the stage of identity versus role confusion

is associated with old age.

4. T F Cognitive development focuses primarily on the emotional adjustment

of the child.

5. T F An authoritarian parent tends to be easygoing, overly agreeable,

detached, and easily manipulated by the child or adolescent.

**Self-check**

• define developmental psychology;

• describe fetal development;

• explain Freud’s theory of psychosexual development;

• specify key features of Erikson’s theory of psychosocial development;

• identify the four stages in Piaget’s theory of cognitive development;

• identify the three levels in Kohlberg’s theory of moral development;

• describe the two basic dimensions of parental style.

**Match the terms with their definitions**

a)

|  |  |
| --- | --- |
| **developmental psychology** | the kind of verbal utterances in which words are left out, but the meaning is usually clear |
| **grasping reflex** | the internally programmed growth of a child |
| **maturation** | an infant’s response in turning toward the source of touching that occurs anywhere around his or her mouth |
| **rooting reflex** | an infant’s clinging response to a touch on the palm of his or her hand |
| **telegraphic speech** | the study of changes that occur as an individual matures |

b)

|  |  |
| --- | --- |
| **Accommodation** | a specific time in development when certain skills or abilities are most easily learned |
| **Assimilation** | inherited tendencies or responses that are displayed by newborn animals when they encounter new stimuli in their environment |
| **Conservation** | a young child’s inability to understand another person’s perspective |
| **critical period** | the principle that a given quantity does not change when its appearance is changed |
| **Egocentric** | the intellectual ability of a child to picture something in his or her mind |
| **Imprinting** | a child’s realization that an object exists even when he or she cannot see or touch it |
| **object permanence** | the adjustment of one’s schemas to include newly observed events and experiences |
| **representational thought** | the process of fitting objects and experiences into one’s schemas |
| **schema** | a conceptual framework a person uses to make sense of the world |

c)

|  |  |
| --- | --- |
| **authoritarian family** | children’s play that involves assuming adult roles, thus enabling the child to experience different points of view |
| **democratic/authoritative family** | the process of redirecting sexual impulses into learning tasks |
| **Identification** | the process by which a child adopts the values and principles of the same-sex parent |
| **permissive/laissez-faire family** | the process of learning the rules of behavior of the culture within which an individual is born and will live |
| **role taking** | children and adolescents have the final say; parents are less controlling and have a nonpunishing, accepting attitude toward children |
| **Socialization** | children and adolescents participate in decisions affecting their lives |
| **Sublimation** | parents attempt to control, shape, and evaluate the behavior and attitudes of their children and adolescents in accordance with a set code of conduct |

**Think about how infants learn new skills as their bodies grow. Next to each skill, write the age when children normally learn that skill.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Skill** | **Months** | **Skill** | **Months** |
| **1.** Raise head |  | **7.** Pull self to standing position |  |
| **2.** Roll over |  | **8.** Walk holding on to furniture |  |
| **3.** Smile |  | **9.** Crawl |  |
| **4.** Sit with support |  | **10.** Stand alone |  |
| **5.** Grasp objects |  | **11.** Walk |  |
| **6.** Sit without support |  |  | |

**Think about the key steps in cognitive and emotional development. Draw a line to match each principle on the left with its example on the right.**

|  |  |
| --- | --- |
| **Principle** | **Example** |
| **1.** object permanence  **2.** representational thought  **3.** conservation  **4.** formal operations stage  **5.** imprinting | **A.** A gosling sees a man soon after birth and follows the man wherever he goes.  **B.** A child is able to solve a math word problem.  **C.** A child sees another child throw a temper tantrum. The next day, the child imitates the tantrum.  **D.** When water is poured from one jar to another, a child no longer thinks the amount of water has changed.  **E.** When a child sees you hide her ball, she looks for it in the last place she saw you put it. |

**Think about the different theories of social development. Record the name of the theory that goes with each main idea presented.**

|  |  |
| --- | --- |
| **Main Idea** | **Theory of Social Development** |
| **1.** Children learn right from wrong as they learn to control their powerful sexual and aggressive impulses. | **1.** |
| **2.** Social approval is important to development. Development is a lifelong interactive process. | **2.** |
| **3.** Social development is a matter of conditioning and imitation. | **3.** |
| **4.** Social development is the result of children trying to make sense of their experiences and the world around them. | **4.** |

**Think about the ways that parents and peers influence adolescents. Also think about the warning signs of adolescents in trouble.**

|  |  |  |
| --- | --- | --- |
| **Influences of Parents** | **Influences of Peers** | **Signs of Trouble** |
| **1.** |  |  |
| **2.** |  |  |
| **3.** |  |  |
| **4.** |  |  |

**DISCUSSION POINTS**

1. Focus for one minute on exactly what you are doing. Write a complete description of your thought processes.
2. How can social psychologists use other psychological approaches to help resolve cultural or ethnic conflicts?
3. What kinds of career choices are you considering? Does the idea of making discoveries about human behavior interest you? Do you like helping people? Perhaps a career in psychology is in your future.
4. Which psychologists practice basic science? Applied science? Both types of science?
5. Have you ever wondered how pollsters can predict who is going to win an election? Have you ever considered how advertisers determine that 9 out of 10 people prefer a certain brand?
6. How do the methods used by psychologists to gather information differ from everyday information-gathering methods?
7. Have you ever believed strongly that something would happen? Have you ever acted to make sure that something happens?
8. Describe a time when your behavior influenced the behavior of someone else.
9. Why do you think some psychologists considered Milgram’s experiment unethical?
10. Why do you think the placebo effect works?
11. How can statistics help you evaluate a hypothesis?
12. Have you ever noticed that you can ignore practically anything if you are around it long enough? Have you ever tried to study in a noisy room, and just when you were able to tune it all out, someone said something really loud, grabbing your attention?
13. What are some ways that we organize words into language that others can understand?
14. When you are eating lunch in the school cafeteria, what stimuli do each of your five senses pick up?
15. What are some stimuli that your pet can sense before you can?
16. Say you turned up your car radio a certain amount. Then you went to a rock concert. During the concert, the musicians turned up the amplifiers the same amount as you did your radio. According to Weber’s law, in which situation would you perceive a greater increase in sound?
17. Give an example of adaptation by your sense of hearing.
18. When you are riding your bike with friends, what are some competing stimuli that might delay your detection of a dog running into your path?
19. Have you ever tried to do something with one eye closed? Was the activity more difficult to do this way? Have you ever felt dizzy after riding on a roller coaster or a boat?
20. What are the sense organs for the five familiar senses?
21. Bring a small object very close to your face. Look at it with one eye and then the other. Notice the differences in the two images. Then do the same with a distant object. Which object creates the greatest difference in what each eye sees?
22. When you hear sounds from a bass guitar, are you hearing waves with high frequency or low frequency?
23. Give an example of an activity that might overstimulate your vestibular system.
24. Is the sense of smell better in dogs or humans? Give an example.
25. Use the gate control theory of pain to explain why an injured athlete may be able to continue playing in the game.
26. Give an example of a kinesthetic sensation needed to play tennis.
27. Before you bite into a candy bar, how do you know it will taste good? If the first bite doesn’t taste very good, are you likely to take one more bite before concluding that it isn’t good?
28. If you didn’t have the ability to perceive, what would music sound like to you?
29. When you hear barking as you approach your house, what does perceptual inference tell you it is?
30. Say a child was bitten by a dog when young and is now afraid of dogs. If you show this child a picture of a dog, how might the child describe the dog in the picture?
31. Say you see a friend walking down the street toward you. How might the interposition cue tell you that your friend is closer than the next building?
32. If you didn’t have size constancy, which person would appear taller: a 6-foot person standing 50 yards away or a 5-foot person standing 3 feet away?
33. Give an example of an illusion you have seen, either performed by a magician or in a “fun house” at an amusement park or fair.
34. How do you think fortune-tellers can predict your future in a believable way?
35. Have you ever reached for your phone after hearing a ring on the television? Do you have a pet that runs to its food dish the minute you walk in the house?
36. Who was the first person to explain how classical conditioning worked?
37. If you strongly dislike broccoli, green beans, and spinach, what is your reaction likely to be if you are served green peas? Which process of classical conditioning would you be using?
38. If you develop a taste aversion, what can you do to overcome it?
39. Have you ever touched a hot iron and immediately pulled your hand away? Would you touch the iron again without testing it? We learn not to repeat behaviors that are harmful to us.
40. Name something you did in the past 24 hours that resulted in some kind of reward.
41. Would you use a primary or secondary reinforcer to train a dog to shake hands? Why?
42. Which types of schedules have a long-lasting effect on behavior? Why?
43. You have to teach a friend a cheerleading routine. Would you be more likely to use shaping or chaining to teach the skill? Defend your choice.
44. How might a child use avoidance conditioning to escape punishment for her action?
45. Everyone has habits. Do you have any habits you would like to change?
46. What types of cognitive maps do humans develop?
47. How do simple modeling and observational learning differ?
48. What rewards would you use to improve your study habits?
49. Have you ever remembered something from long ago and wondered why you still know it? Have you ever wondered how you can learn everything expected of you in school?
50. Give an example of something you remembered recently that you thought you had forgotten long ago.
51. Describe something you learned recently. What method of encoding did you use to try to remember it?
52. Give an example of semantic memory.
53. How might knowledge about how learning occurs benefit people?
54. Have you ever had something “on the tip of your tongue” and just couldn’t bring it to mind? Have you ever “remembered” an event, and someone else “remembered” it completely differently?
55. You must remember many things in your daily life—birthdays, dates with friends, due dates for schoolwork. How do you organize these things so you can retrieve the information when you need it?
56. How is the organization of information in memory like a card catalog or indexing system in a library?
57. Suppose a police officer asks a witness to describe the gun used in a robbery. The witness recalls a gun, even though the robber did not have one. What does this show about the way we recall memories?
58. Give an example of something you relearned. Was relearning easier than learning it for the first time?
59. Why might someone be unable to recall the details of a bad car accident that her or she had been involved in?
60. Suppose you want to memorize your friend’s phone number. You note that the number is the same as yours, except the last digit is a 6 instead of an 8. What memory improvement method would you be using?
61. Give an example from history of a new idea that someone invented to solve a problem.
62. Have you ever tried to solve a problem the same way you always solve such problems, only this time it didn’t work? Have you ever quit working on a problem in frustration, only to have the solution suddenly pop into your head?
63. You are trying to put together a new desk from written instructions. What kind of thinking would this involve?
64. To start a car, you put the key in the ignition, then you turn the key, and then you let it go. What kind of problem-solving strategy is this?
65. Why do you need to be able to think creatively to be a good problem solver?
66. When you have to speak in front of a group, what kinds of reactions do you feel in your body? Have you ever tried to “read” someone’s face or body language to try to figure out what the person is feeling?
67. Give an example of a decision you have made based on emotions.
68. If someone pointed a gun at you, what physical, behavioral, and cognitive reactions might you have?
69. Have you observed an infant’s language develop from simple sounds, to words, and finally to sentences? How do you think the infant learned to do this? Have you watched two pets communicate with each other? Do you think they were using language?
70. If there were no grammatical rules for how to combine words into sentences, what would communication be like?
71. How might an infant learn to say “mama”?
72. Give an example of animal communication that you observed. What makes you think that the animals understood each other?
73. Suppose that everything a girl read or heard while growing up used the pronoun *he* with doctor and *she* with nurse. How might this affect the girl’s view of what she can be when she grows up?
74. Have you ever done something and then wondered why you did it? If you have a job, why do you work? Have you ever done something just for the fun of it?
75. You have been working so hard that you forgot to eat lunch. Now your stomach is growling in protest. What might this internal state motivate you to do?
76. Have you ever taken a test given to everyone in your class? Did you know what your score meant? Did you think the test was fair?
77. Have you ever had to decide between two options, when both options were bad? How did this situation make you feel? Have you ever stressed out over something that didn’t seem to bother a friend at all?
78. Have you ever felt stress? What does it feel like?
79. Give an example of a time when someone might experience eustress.
80. Give an example of an approach-avoidance conflict you have faced.
81. What are some hassles you have experienced in the last week?
82. Have you ever felt so stressed that you just couldn’t think? Have you ever been under a lot of pressure over some major event in your life, but then blew up over something really small?
83. When you are very nervous, do you ever laugh? How does the laughter affect how you feel physically?
84. Describe how your body feels during times of great stress.
85. Why is the resistance stage important to dealing with a stressful situation?
86. If someone were really stressed over an upcoming test, how might she react when she cannot find her car keys to go to the library?
87. Give an example of a nervous habit that you have seen in yourself or someone else.
88. Think of someone who has a Type A personality. Describe the Type A behaviors you see in this person.
89. Think about what you do when you feel stressed. Do your behaviors help reduce the stress? Do you try to solve the problem, or just pretend it isn’t there?
90. Describe a stressful situation you faced. What is a positive side to this situation?
91. Suppose your family is moving to another state. What can you do to help deal with the stress of this major life change?
92. Have you ever lived apart from your family for a long time? What was it like? If you have never done so, what do you expect it to be like? If you could have any job in the world, what would it be? Why?
93. Why might separating from family cause stress?
94. Think about all the violence you see on TV and in movies and video games. Has seeing these scenes all the time made violence seem “normal” to you? Do you think it has added to violent behavior in our society?
95. Describe a violent act you have seen or heard about. Why do you think the person acted that way?
96. Describe the personality traits of someone you think is a “bully.”
97. How might hitting a punching bag when angry cause more rather than less aggression?
98. Give a real-life example of groups that are sometimes in conflict coming together to solve a problem.
99. What types of growth do developmental psychologists study?
100. In what ways do you behave like your father or mother? Do you think you inherited this behavior or learned it from them?
101. Have you ever given a cookie to an infant? Did the infant smile? What do you think this response says about the infant’s feelings about cookies?
102. If your child didn’t start walking until 14 months, would you be concerned? Why or why not?
103. Why do very young infants seem unafraid of the visual cliff, when crawling infants are afraid?
104. If a child says “Daddy *goed* yesterday,” why is this a “good” error?
105. Why can’t young children grasp the rules of a simple game like hide-and-seek? Why do infants seem to forget about toys when they are out of view? How do emotional bonds form between mother and child?
106. Describe something that you believed as a child that you would never believe now, as a young adult.
107. Suppose you show a child two identical pencils. You put them together so that the child can see that they are the same length. The child agrees that they are the same length. Then you move the pencils apart so that one pencil sticks out further, and ask which is longer. The child still says they are the same length. What principle has the child demonstrated?
108. Why is imprinting important to the survival of baby geese?
109. How would you describe your parents’ style of parenting? How do you think their style influenced your personality?
110. What are some experiences that taught you right from wrong?
111. How would families with each parenting style set a curfew for teens?
112. Why do you think child abuse often goes unreported?
113. How does role taking help children experience different points of view?
114. Do you remember anything from when you were a baby? How have you changed since then? When did you learn to crawl, stand, and walk? How did you learn to talk?
115. When you were between 10 years old and 16 years old, did you notice changes in your body? Did you experience strong emotions as well? What was adolescence like for you?
116. In what ways have you observed teenagers acting more like adults than children?
117. What are some of the stresses adolescents feel?
118. Why is it important for teenagers to feel good about their bodies?
119. Do you feel that you know who you are? What kinds of things make you who you are? Have you ever worried about your future?
120. Give an example of how a child thinks differently than an adult.
121. Suppose a scientist is conducting an experiment to find out if a new drug will cure a cold. What kind of thinking ability must the scientist have to do the experiment?
122. Give an example of higher moral thinking. (It can be from Stage 5 or Stage 6 of Kohlberg’s theory.)
123. What are some of the “important issues” that adolescents face as they try to form a sense of identity?
124. Do you have a group of friends? Do you dress and act like other people in the group? Have you ever felt pressure from your friends to do things that you normally would not do? Have you ever argued with your parents over some of the things you do?
125. Who are some of your peers?
126. Why might parents have a hard time letting their children become independent?
127. What warning signs can indicate that a teenager is in trouble?
128. When you see a baby in a stroller, are there any clues that tell you that the baby is a boy or a girl? In what ways do boys act differently than girls? The last section discussed the influences of family and friends on adolescent behavior.
129. What are some differences that you have noticed in the way male and female children play?
130. Describe some examples of gender stereotypes that you see on TV and in the movies.
131. Give an example of how male children are encouraged to be aggressive.
132. Suppose that a girl asks her parents for an action toy but they give her a doll instead. From this, she learns that girls should play with dolls, not action toys. Which theory would this example support?
133. Why are more women choosing to work outside the home?
134. Have you ever wondered what your life will be like when you are in your 30s or 40s, or even older? Do you worry about the changes to your body and mind as you age?
135. Why do you think it is important to have a positive outlook on life?
136. How might the experience gained with age help make up for the natural decline in physical abilities?
137. What kind of environment would help older adults remain mentally active?
138. How do the transitions at midlife differ for men and women?
139. How would you describe what “being old” is like? What major life changes have older people in your life had to face?
140. What negative images of aging have you seen on TV or in other media?
141. Give some examples of famous people who have made important contributions to society in their older years.
142. What kinds of things lead to poor health care for the elderly?
143. What are some major life changes that people face as they grow older?
144. How do you think an older person’s life would change if he or she could no longer drive a car?
145. Give an example of something that might be a warning sign of Alzheimer’s disease.
146. How would you react if a doctor told you that you were dying? How would you feel? What thoughts would go through your head? What would be important to you at that time?
147. Give an example of something the family usually does when someone dies.
148. Why might dying people prefer in-home care over care at a hospital or a hospice?

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Волкодав Татьяна Владимировна

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