CHAPTER PREVIEW

Consciousness is our awareness of ourselves and our environment. Conscious information processing enables us to exercise control and to communicate our mental states to others. Beneath the surface, unconscious processing occurs simultaneously on many parallel tracks.

Our daily schedule of waking and sleeping is governed by a biological clock known as circadian rhythm. Our sleep also follows a repeating cycle. Awakening people during REM sleep yields predictable “dreamlike” reports that are mostly of ordinary events. Freud’s view that dreams can be traced back to erotic wishes is giving way to newer theories, for example, that dreams help us process information and fix it in memory or that dreams erupt from neural activity.

Studies of hypnosis indicate that, although hypnotic procedures may facilitate recall, the hypnotist’s beliefs frequently work their way into subjects’ recollections. Hypnosis can be at least temporarily therapeutic and has the potential of bringing significant pain relief. Hypnosis may be an extension both of normal principles of social influence and of everyday splits in consciousness.

Psychoactive drugs also alter consciousness. Depressants act by depressing neural functioning. Although their effects are pleasurable, they impair memory and self-awareness and may have other physical consequences. Stimulants act at the synapses by influencing the brain’s neurotransmitters. Their effects depend on dosage and the user’s personality and expectations. Hallucinogens can distort judgment of time and can alter sensations and perceptions.

A number of those who survive a brush with death later recall visionary experiences. Some scientists point out that such near-death experiences closely parallel reports of hallucinations.

CHAPTER GUIDE

➤ Exercise: Fact or Falsehood?

Consciousness and Information Processing

➤ Videos: Discovering Psychology, Updated Edition: The Mind Awake and Asleep; Discovering Psychology, Updated Edition: The Mind Hidden and Divided
➤ Lecture: Automatic Processing
➤ Project: A Penny for Your Thoughts
1. Discuss the history of psychology’s study of consciousness, and contrast conscious and unconscious information processing.

Psychology began as the study of consciousness, our awareness of ourselves and our environment. But the difficulty of scientifically studying consciousness led many psychologists to turn to direct observations of behavior, and by the middle of the twentieth century psychology was defined as the science of behavior. By 1960, mental concepts began to reenter psychology, and today, investigating states of mind is again one of psychology’s pursuits. Advances in neuroscience made it possible to relate brain activity to various mental states—waking, sleeping, dreaming.

Conscious information processing enables us to exert voluntary control and to communicate our mental states to others. It takes place in sequence, is relatively slow, and has limited capacity. Beneath the surface, faster unconscious processing occurs simultaneously on many parallel tracks. For example, when we meet someone, we instantly and unconsciously react to gender, race, and appearance, and then become aware of our response.

Sleep and Dreams

➤ Exercises: The Sleep and Dream Information Questionnaire-Revised; The Sleep IQ Test; Larks or Owls?; Am I Sleep Deprived?; Sleep Strategies
➤ Projects: Keeping a Sleep Diary; Telephone Screening for Daytime Sleepiness; Remembering Daydreams; Remembering Night Dreams; Catching the Hypnagogic State; Dreaming and Problem Solving
➤ Lectures: Afternoon Naps; The Neural Basis of Biological Rhythms; Melatonin; How Long Can Humans Stay Awake?; Sleep and Memory; Sleep Disorders; Treating Insomnia
➤ PsychSim 5: EEG and Sleep Stages
➤ Transparencies: 90 Brain Waves and Sleep Stages; 91 The Stages in a Typical Night’s Sleep; 92 Are You Sleep Deprived?

2. Distinguish four types of biological rhythms, and give an example of each.

Over varying periods of time, physiological fluctuations called biological rhythms affect human functioning. For example, on an annual cycle, people may experience seasonal variations in appetite, sleep length, and moods. Similarly, many believe that the 28-day female menstrual cycle causes fluctuating moods. Humans also experience 24-hour cycles of varying alertness, body temperature, and growth hormone secretion. Finally, people move through various stages of sleep in 90-minute cycles.

3. Describe the cycle of our circadian rhythm, and identify some events that can disrupt this biological clock.

Our daily schedule of waking and sleeping is governed by a biological clock known as circadian rhythm. This cycle is in part a response to light striking the retina, signaling the suprachiasmatic nucleus in the hypothalamus to trigger alterations in the level of biochemical substances, including decreased output of sleep-inducing melatonin by the pineal gland. Our body temperature rises as morning approaches, peaks during the day, dips for a time in early afternoon, and then begins to drop again before we go to sleep. The cycle lasts approximately 24 hours, but it can be disrupted by bright light, time changes, and alterations in our sleep schedule (such as occurs with jet lag). Recent research indicates that thinking is sharpest and memory most accurate when people are at their peak in circadian arousal.

4. List the stages of the sleep cycle, and explain how they differ.

We pass through a cycle of five sleep stages that total about 90 minutes. As we lie awake and relaxed, before we sleep, our EEG shows relatively slow alpha waves. Stage 1 sleep is characterized by fantastic images resembling hallucinations. Stage 2 sleep (the stage in which we spend
the most time) follows about 20 minutes later, with its characteristic sleep spindles. Starting in
Stage 3 and increasingly in Stage 4, the brain emits large, slow delta waves. These two slow-wave
sleep stages last for about 30 minutes during which we are hard to awaken. Reversing course, we
retrace our path through these stages with one difference. About an hour after falling asleep, we
begin approximately 10 minutes of REM (rapid eye movement) sleep in which most dreaming
occurs. In this fifth stage (also known as paradoxical sleep), we are internally aroused but out-
wardly paralyzed. The sleep cycle repeats several times during a normal night’s sleep, with peri-
ods of Stage 4 sleep progressively shortening and periods of REM sleep lengthening.

5. Explain why sleep patterns and duration vary from person to person.

People differ in their individual sleep requirements. For example, newborns sleep twice as much
as adults. These age-related changes are rivaled by differences in the normal amount of sleep
among individuals of any age. Twin studies suggest that these differences may be partially genetic.
Sleep patterns are also culturally influenced. People in modern industrialized nations get less sleep
because of shift work and social diversions, for example.

6. Discuss several risks associated with sleep deprivation.

People today suffer from sleep patterns that thwart their having an energized feeling of well-being.
Findings suggest that sleep deprivation puts people at risk for a depressed immune system;
impairment, concentration, creativity, and communication; irritability; and slowed performance with
greater vulnerability to accidents. Chronic sleep deprivation can also alter metabolic and hormonal
function, creating conditions that may contribute to obesity, hypertension, and memory impair-
ment.

7. Identify four theories of why we sleep.

The first theory is that sleep may have played a protective role in human evolution by keeping
people safe during potentially dangerous times. A second theory is that sleep may help us recuper-
ate, restoring and repairing brain tissue. Third, sleep restores and rebuilds our fading memories of
the day’s experiences. After working on a task, then sleeping on it, people solve problems more
insightfully than do those who stay awake. Finally, sleep is linked with the release of pituitary
growth hormone.

8. Identify the major sleep disorders.

Some 10 to 15 percent of adults complain of insomnia in falling or staying asleep. Rarer but more
severe than insomnia are the sleep disorders narcolepsy and sleep apnea. People with narcolepsy
suffer periodic, overwhelming sleepiness, sometimes at the most inopportune times. The person
sometimes collapses directly into a brief period of REM sleep. Those who suffer sleep apnea
(mostly overweight men) intermittently stop breathing during sleep. After an airless minute or so,
decreased blood oxygen arouses the sleeper to snort in air for a few seconds. Still other sleepers,
mostly children, experience night terrors. They sit up or walk around, talk incoherently, experi-
ence a doubling of heart and breathing rates, and appear terrified.

9. Describe the most common content of dreams.

Our dreams are mostly of ordinary events; they often relate to everyday experiences and more
frequently involve anxiety or misfortune than triumphant achievement. Sometimes we experienced
lucid dreams. The story line of our dreams—what Sigmund Freud called their manifest content—
sometimes incorporates traces of previous days’ experiences and preoccupations. Only 1 in 10
dreams among young men and 1 in 30 among young women have sexual overtones. The sensory
stimuli of our environment may also intrude on our dreams.

10. Compare the major perspectives on why we dream.

Freud believed that a dream’s manifest content is a censored version of its latent content, which
gratifies our unconscious wishes. The information-processing perspective suggests that dreams
help us process information and fix it in memory. Some physiological theories propose that REM-induced regular brain stimulation helps develop and preserve neural pathways in the brain. The activation-synthesis explanation is that REM sleep triggers impulses in the visual cortex, evoking visual images that our brain weaves into a story line. The brain-maturation/cognitive development perspective maintains that dreams represent the dreamer’s level of development, knowledge, and understanding. Despite their differences, most theorists agree that REM sleep and its associated dreams serve an important function, as shown by the REM rebound that occurs following REM deprivation.

Hypnosis

➤ Exercises: Attitudes Toward Hypnosis; Hypnosis as Heightened Suggestibility; The Creative Imagination Scale; Hypnosis—A Stage Demonstration
➤ Lectures: Treating Pain Through Hypnosis; Is Hypnosis an Altered State of Consciousness?
➤ Video: Module 2 of The Mind Series, 2nd ed.: Hypnotic Dissociation and Pain Relief
➤ Transparency: 93 Levels of Analysis for Hypnosis

11. Define hypnosis, and note some similarities between the behavior of hypnotized people and that of motivated unhypnotized people.

Hypnosis is a social interaction in which one person (the hypnotist) suggests to another (the subject) that certain perceptions, feelings, thoughts, or behaviors will spontaneously occur. Research indicates that the strength, stamina, learning, and perceptual abilities of hypnotized people are matched by those of unhypnotized people.

12. Discuss the characteristics of people who are susceptible to hypnosis, and evaluate claims that hypnosis can influence people’s memory, will, health, and perception of pain.

People who are highly hypnotizable frequently become deeply absorbed in imaginative activities. They have the ability to focus attention totally on a task. Hypnosis does not enhance recall of forgotten events and may even foster false memories. Research indicates that hypnotized people cannot be made to act against their will any more than nonhypnotized people can and that hypnosis can be at least temporarily therapeutic. Posthypnotic suggestions have helped people to reduce headaches, asthma, stress-related skins disorders, and behaviors related to obesity. Hypnotizable people can enjoy significant pain relief. One theory finds the answer to pain relief in dissociation, a split between different levels of consciousness.

13. Give arguments for and against hypnosis as an altered state of consciousness.

The belief that hypnosis produces a dissociation gains support from the fact that hypnotized subjects sometimes carry out suggested behaviors on cue, even when they believe no one is watching them. Furthermore, hypnosis is accompanied by distinctive brain activity. The divided-consciousness theory of hypnosis argues that hypnosis involves dissociation that is more extreme than the everyday dissociations that occur in our information processing. Hilgard suggests that a “hidden observer” accounts for a hypnotized subject’s awareness of experiences that go unreported during hypnosis.

Other psychologists argue that hypnosis is a by-product of normal social and cognitive processes and thus not a unique state of consciousness. These advocates of social influence theory note that behaviors produced through hypnotic procedures can also be produced without them. “Hypnotized” people may be acting the role of “good hypnotic subjects” and allowing the hypnotist to direct their fantasies. Evidence for this view comes from experiments in which the researcher tells hypnotized subjects that hypnosis reveals their gullibility, and they stop responding as directed.
Drugs and Consciousness

➤ Exercises: The Internet Addiction Test; Signs of Drug Abuse; Alcohol Expectancies
➤ Lectures: Incentive-Sensitization Theory; Alcohol Consumption Among College Students; Rohypnol—A Date Rape Drug; Caffeine—Is It Harmful?; The LSD Experience; Is Marijuana Good Medicine?; Treating Alcoholism; Factors in Drug Use
➤ Project: Debates on Drugs and Society
➤ PsychSim 5: Your Mind on Drugs
➤ Transparencies: 94 A Guide to Selected Psychoactive Drugs; 95 Cocaine Euphoria and Crash; 96 A Guide to Selected Psychoactive Drugs; 97 Levels of Analysis for Drug Use


Psychoactive drugs are chemicals that change perceptions and moods.

15. Discuss the nature of drug dependence, and identify three common misconceptions about addiction.

Continued use of a psychoactive drug produces tolerance, and cessation of use may produce the undesirable side effects of withdrawal. The pain of withdrawal and intense craving for a dose indicates a physical dependence. People can also develop psychological dependence, particularly for drugs used to relieve stress.

Many drug researchers believe the following three myths about addiction are false: (1) Medical drugs, for example, those used to control pain, are powerfully addictive; (2) addictions cannot be overcome voluntarily but only through treatment; and (3) we can extend the concept of addiction to cover a whole spectrum of repetitive, pleasure-seeking behaviors such as overeating, exercise, gambling, sex, and surfing the Internet.

16. Name the main categories of psychoactive drugs, and list three ways these substances can interfere with neurotransmission in the brain.

Psychoactive drugs include the depressants, stimulants, and hallucinogens. Drugs in all three categories operate at the brain’s synapses by stimulating, inhibiting, or mimicking the activity of neurotransmitters, the brain’s chemical messengers. Our expectations also play a role in the effects of drugs.

17. Explain how depressants affect nervous system activity and behavior, and summarize findings on alcohol use and abuse.

Depressants such as alcohol, the barbiturates, and the opiates act by reducing neural activity and slowing body functions. Each offers its own pleasures, but at the cost of impaired memory and self-awareness or other physical consequences. Alcohol is a disinhibitor and thus increases the likelihood that we will act on both helpful and harmful impulses. It also impairs judgment, reduces self-awareness, and disrupts memory processes by suppressing REM sleep. Research indicates that when people believe that alcohol affects social behavior in specific ways, and believe that they have been drinking alcohol, they will behave accordingly.

18. Identify the major stimulants, and explain how they affect neural activity and behavior.

Stimulants, such as caffeine, nicotine, and the amphetamines and the even more powerful cocaine, Ecstasy, and methamphetamine, excite neural activity and arouse body functions. As with nearly all psychoactive drugs, they act at the synapses by influencing the brain’s neurotransmitters, and their effects depend on dosage and the user’s personality and expectations. Methamphetamine is highly addictive; over time, it appears to reduce baseline dopamine levels. Cocaine produces a euphoric rush that lasts 15 to 30 minutes and depletes the brain’s supply of the neurotransmitters dopamine, serotonin, and norepinephrine. A crash of agitated depression follows...
withdrawal. Regular users become addicted and may experience emotional disturbance, suspiciousness, convulsions, cardiac arrest, or respiratory failure. Ecstasy (MDMA) is both a stimulant and mild hallucinogen. By releasing serotonin and blocking its reuptake, it produces euphoria and feelings of intimacy. Its repeated use may suppress the immune system, destroy serotonin-producing neurons, and permanently damage mood and memory.

19. Describe the physiological and psychological effects of hallucinogens, and summarize the effects of LSD and marijuana.

**Hallucinogens** distort perceptions and evoke sensory images in the absence of sensory input. LSD and other powerful hallucinogens are chemically similar to (and therefore block the actions of) a subtype of the neurotransmitter serotonin. Common components of the LSD experience are hallucinations and emotions ranging from euphoria to panic. A person’s current mood and expectations affect the drug’s effects. Marijuana’s main active ingredient, **THC**, produces a variety of effects, including disinhibition, a euphoric high, feelings of relaxation, relief from pain; and intense sensitivity to colors, sounds, tastes, and smells. It may also increase anxiety or depression, impair motor coordination and reaction time, and disrupt memory formation. Because THC lingers in the body for a month or more, regular users may achieve a high with smaller amounts of the drug than do occasional users.

20. Discuss the biological, psychological, and social-cultural factors that contribute to drug use.

Drug use among teenagers and young adults decreased during the 1980s, as attitudes changed, and began a rebound during the mid-1990s, recently tapering off. Twin and adoption studies, as well as animal and molecular genetics studies, indicate that some people are biologically more likely to become dependent on drugs such as alcohol. One biological basis for addiction is a brain pleasure pathway, the dopamine reward circuit. One psychological factor that contributes to drug use is the feeling that one’s life is meaningless and directionless. Studies reveal that heavy drug users often have experienced significant stress or failure and are depressed. Drug use can also have social roots, evident in differing rates of drug use across cultural and ethnic groups. In the United States, drug addiction rates are very low among the Amish, Mennonites, Mormons, and Orthodox Jews. Peer pressure may lead people, especially teenagers, to experiment with—and become dependent on—drugs. Possible avenues for treatment and prevention involve education, boosting people’s self-esteem and purpose in life, and inoculation against peer pressure.

Near-Death Experiences

➤ Lecture: Near-Death Experiences
➤ Exercise: The Dualism Scale

21. Describe the near-death experience and the controversy over whether it provides evidence for a mind-body dualism.

A number of those who have survived a brush with death later recall **near-death experiences**. These experiences are marked by out-of-body sensations, visions of tunnels and bright lights, and intense feelings of joy, love, and peace. Dualists, who believe the mind and body are two distinct entities, interpret these experiences as evidence of human immortality. Monists, who presume the mind and body are different aspects of the same thing, point out that reports of such experiences closely parallel reports of hallucinations and may be products of a brain under stress.