**Chapter 7**

**Objective 1**| **Discuss the history of psychology’s study of consciousness, and contrast conscious and unconscious information processing.***Consciousness,*currently defined as our awareness of ourselves and our environment, occurs in the normal states of seeing and hearing, reasoning and remembering, but also in the altered consciousness of sleep, hypnotic states, and chemically induced hallucinations. Psychology began as the study of consciousness, then, under the behaviorists, turned to the study of observable behavior. Under the impact of discoveries in neuroscience and cognitive psychology, the scientific investigation of states of mind is again one of psychology’s pursuits. We process information on two levels. Our conscious processing is serial and relatively slow, but this focused state of awareness enables us to perform voluntary acts, solve novel problems, and communicate with others. In unconscious processing, we perform familiar tasks automatically, and our sensory systems and neural pathways register stimuli rapidly and simultaneously on multiple tracks (parallel processing).

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**Objective 2**| **Distinguish four types of biological rhythms, and give an example of each.** Our internal “biological clocks” create periodic physiological fluctuations. These cycles occur annually (as in seasonal variations in appetite and mood), every 28 days (as in women’s menstrual periods), every 24 hours (as in daily cycles of alertness), and every 90 minutes (as in human sleep stages).

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**Objective 3**| **Describe the cycle of our circadian rhythm, and identify some events that can disrupt this biological clock.** The circadian rhythm’s 24-hour cycle regulates our daily schedule of sleeping and waking. 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. Time changes, long flights, shifts in sleep schedules, and exposure to bright light can reset this biological clock.

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**Objective 4**| **List the stages of the sleep cycle, and explain how they differ.** The cycle of five sleep stages totals about 90 minutes. Leaving the alpha waves of the awake, relaxed stage, we descend into transitional Stage 1 sleep, often with the sensation of falling or floating. Stage 2 sleep (the stage in which we spend the most time) follows about 20 minutes later, with its characteristic sleep spindles. Then follow Stages 3 and 4, together lasting about 30 minutes with large, slow delta waves. Reversing course, we retrace our path through these stages—with one difference: About an hour after falling asleep, we begin approximately10 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 outwardly paralyzed. As this up-and-down cycle repeats during a normal night’s sleep, periods of Stage 4 and then Stage 3 sleep progressively shorten and dreaming REM sleep lengthens. Pages: 276-279

**Objective 5**| **Explain why sleep patterns and duration vary from person to person.**Most people, if allowed to sleep as long as they want, will average about 9 hours. But sleep is affected by age—newborns, for example, sleep twice as much as adults. People also differ in their individual sleep requirements, and twin studies indicate these differences may be partly genetic. Cultural expectations about “the perfect sleep” also help determine the amount of sleep we feel is adequate.

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**Objective 6**| **Discuss several risks associated with sleep deprivation.**Sleep deprivation puts people at risk not only for fatigue, but also for a depressed immune system; impaired concentration, creativity, and communication; irritability; and slowed performance (with greater vulnerability to accidents). Chronic sleep deprivation can alter metabolic and hormonal functioning; creating conditions that may contribute to obesity, hypertension, and memory impairment.

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**Objective 7**|**Identify four theories of why we sleep.**Sleep may have played a protective role in human evolution by keeping people safe during potentially dangerous periods. Sleep gives the brain time to heal, as it restores and repairs damaged neurons. During sleep, we restore and rebuild memories of the day’s experiences, and a good night’s sleep promotes insightful problem-solving the next day. Sleep also encourages growth; the pituitary gland secretes a growth hormone in Stage 4 sleep.

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**Objective 8**| **Identify the major sleep disorders.**The disorders of sleep include insomnia (recurring wakefulness), narcolepsy (sudden uncontrollable sleepiness or lapsing into REM sleep), sleep apnea (the stopping of breathing while asleep), night terrors (high arousal and the appearance of being terrified), sleepwalking, and sleepwalking. Sleep apnea mainly targets overweight men. Children are most prone to night terrors, sleepwalking, and sleepwalking.

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**Objective 9**| **Describe the most common content of dreams.**We usually dream of ordinary events and everyday experiences, 80 percent of them involving some anxiety or misfortune. Fewer than 10 percent of dreams (and less among women) have any sexual content. Most dreams occur derringer sleep; those that happen during non-REM sleep tend tube vague fleeting images.

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**Objective 10**| **Compare the major perspectives on why we dream.**(1) Freud believed that dreams provide a safety valve, because their manifest content (or story line) is a censored version of latent content (some underlying meaning that gratifies our unconscious wishes). (2) The information-processing perspective on dreaming is that dreams help us sort out the day’s experiences and fix them in memory. (3) Other physiological theories of dreaming propose that REM-induced regular brain stimulation helps develop and preserve neural pathways in the brain. (4) The activation-synthesis explanation of dreaming is that REM sleep triggers impulses in the visual cortex, evoking random visual images that our brain tries to weave into a story line.(5) The brain-maturation/cognitive-development perspective believes dreams represent the dreamer’s level of development, knowledge, and understanding. Despite their differences, most sleep theorists agree that REM sleep and its associated dreams serve an important function, as shown by the REM rebound that occurs following REM deprivation.

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**Objective 11**| **Define**hypnosis, **and note some similarities between the behavior of hypnotized people and that of motivated unhypnotized people.** Psychologists now agree that hypnosis is a state of heightened suggestibility to which people are subject in varying degrees. Research indicates that the strength, stamina, learning, and perceptual abilities of hypnotized people may be matched by those of motivated unhypnotized people.

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**Objective 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.** Highly hypnotizable people can focus attention totally on a task, become imaginatively absorbed in it, and entertain fanciful possibilities. Hypnosis does not enhance recall of forgotten events and may evoke false memories. Hypnotized people, like unhypnotized people, may perform unlikely acts when told to do so by an authoritative person. Posthypnotic suggestions have helped people harness their own healing powers to reduce headaches and other disorders but have not been effective in treating addictions. Hypnosis can contribute to significant pain relief.

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**Objective 13**| **Give arguments for and against hypnosis as unaltered state of consciousness.** The belief that hypnosis produces a dissociation—a split—between normal sensations and conscious awareness gains support from three sets of findings. (1) Hypnotized people may carry out posthypnotic suggestions when no one is watching. (2) Brain scans of hypnotized people told to “see” things that are not there (such as color) show activity in brain areas that usually light up only when we are sensing real stimuli. (3) People hypnotized for pain relief may show activity in brain areas that receive sensory information button in areas that normally process that information. Those who reject the hypnosis-as-altered-consciousness view believe that hypnosis is a by-product of normal social and cognitive processes and that the hypnotized person is unknowingly acting out the role of “good subject.” In one experiment supporting this interpretation, researchers tell hypnotized people that hypnosis reveals their gullibility and the participants stop responding as directed. Contemporary researchers are intrigued by the puzzle of how brain activity, attention, and social influences interact to create hypnotic phenomena.

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**Objective 14**| **Define**psychoactive drug. A *psychoactive drug*is a chemical substance that alters perceptions and mood.

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**Objective 15**| **Discuss the nature of drug dependence, and identify three common misconceptions about addiction.** Psychoactive drugs alter perceptions and moods. Continued use of these drugs produces tolerance (requiring larger doses to achieve the same effect) and may lead to physical or psychological dependence. Addiction is compulsive drug craving and use. Three common misconceptions about addiction are that (1) addictive drugs quickly corrupt; (2) therapy is always required to overcome addiction; and (3) the concept of addiction can meaningfully be extended beyond chemical dependence to a wide range of other behaviors.

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**Objective 16**| **Name the main categories of psychoactive drugs, and list three ways these substances can interfere with neurotransmission in the brain.**Depressants, stimulants, and hallucinogens are the three main categories of psychoactive drugs. These substances interfere with neurotransmission by stimulating, inhibiting, or mimicking the activity of chemical messengers (neurotransmitters) at synapses in the brain. The effects of psychoactive drugs also depend on the user’s expectations.

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**Objective 17**| **Explain how depressants affect nervous system activity and behavior, and summarize the findings on alcohol use and abuse.** Depressants, such as alcohol, barbiturates, and the opiates, reduce neural activity and slow body functions. Alcohol is a disinhibitor. It increases the likelihood that we will act on impulses—harmful or helpful—that we might not express in the absence of alcohol. It also slows nervous system activity, impairs judgment, reduces self-awareness, and disrupts memory processes by suppressing REM sleep. If people believe they have consumed alcoholic beverages, they will behave accordingly and explain their behavior as alcohol-induced.

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**Objective 18**| **Identify the major stimulants, and explain how they affect neural activity and behavior.** Stimulants—caffeine, nicotine, the amphetamines, cocaine, and Ecstasy—excite neural activity and speed up body functions. Methamphetamine is highly addictive, and continued use may permanently reduce dopamine production. Cocaine blocks the reuptake of dopamine, nor epinephrine, and serotonin at synapses in the brain and gives users a 15- to 30-minute rush of intense high feelings, followed by a crash. Cocaine’s highly addictive, and its risks include cardiovascular stress and suspiciousness. Ecstasy is a combined stimulant and mild hallucinogen. By releasing serotonin and blocking its reuptake at synapses, Ecstasy produces a euphoric high and feelings of intimacy. Its repeated use may suppress the immune system, disrupt the circadian clock, destroy serotonin producing neurons, and permanently damage mood and memory. Combined with physical activity, it can cause dehydration, leading to potentially fatal overheating.

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**Objective 19**| **Describe the physiological and psychological effects of hallucinogens, and summarize the effects of LSD and marijuana.**Hallucinogens, such as LSD and marijuana, distort perceptions and evoke sensory images in the absence of sensory input. Ladies chemically similar to one type of serotonin. The user’s mood and expectations influence the effects of LSD, but common components are hallucinations and emotions varying from euphoria to panic. Marijuana’s main active ingredient, THC, triggers variety of effects, including disinheriting, a euphoric high, and feelings of relaxation, relief from pain, and intense sensitivity to colors, sounds, tastes, and smells. It may also amplify feelings of anxiety or depression, impair motor coordination and reaction time, disrupt memory formation, and—because of the inhaled smoke in which it travels—damage lung tissue.

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**Objective 20**| **Discuss the biological, psychological, and social cultural factors that contribute to drug use.** Psychological factors (such as stress, depression, and hopelessness) and social factors (such as peer pressure) combine to lead many people to experiment with—and sometimes become dependent on—drugs. Cultural and ethnic groups have differing rates of drug use. Twin and adoption studies, as well as anima land molecular genetic studies, indicate that some people are biologically more likely to become dependent on drugs such as alcohol. Each of these influences—biological, psychological, social, and social-cultural—offers a possible path for drug prevention and treatment programs.

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**Objective 21**| **Describe the near-death experience and the controversy over whether it provides evidence for a mind-body dualism.** About one-third of those who have survived a brush with death, such as through cardiac arrest, later recall visionary near-death experiences. These sometimes involve out-of-body sensations and seeing or traveling toward a bright light. Dualists interpret these experiences as evidence of human immortality. Monists point out that reports of such experiences closely parallel reports of hallucinations and may byproducts of a brain under stress.

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