

Chapter Five

VARIATIONS IN CONSCIOUSNESS

Review of Key Ideas

ON THE NATURE OF CONSCIOUSNESS

1. Discuss the nature and evolution of consciousness.

- 1-1.** The personal awareness of internal and external events is how psychologists define _____. Consciousness is like a moving stream in that it is constantly _____.
- 1-2.** Not only is consciousness constantly changing, it also exists at different levels. Freud believed that at its deepest level we would find the _____. Moreover, there is a _____ of levels of awareness from the conscious to the unconscious. There (is/is not) some awareness during sleep and even while under anesthesia.
- 1-3.** Consciousness must have evolved because it increased the likelihood of survival and reproductive success, perhaps because it allowed for forethought and _____. Several other equally plausible explanations have also been offered, but as of now (only one/none) has been supported by empirical evidence.

Answers: 1-1. consciousness, changing 1-2. unconscious, continuum, is 1-3. planning, none.

2. Discuss the relationship between consciousness and EEG activity.

- 2-1.** EEG recordings reveal that there (is/is not) some relationship between brain waves and levels of consciousness. There are four principal bands of brain wave activity, based on the frequency of the wave patterns, these are alpha, beta, delta, and theta. Identify these wave patterns from their descriptions given below.

- | | |
|------------------------------|-----------------------------------|
| _____ (a) alert (13-24 cps) | _____ (c) deep sleep (4-7 cps) |
| _____ (b) relaxed (8-12 cps) | _____ (d) deepest sleep (1-4 cps) |

- 2-2. While variations in consciousness are correlated with variations in brain activity, the causal basis of this relationship remains _____.

Answers: 2-1. is (a) beta (b) alpha (c) theta (d) delta 2-2. unknown.

BIOLOGICAL RHYTHMS AND SLEEP

3. Summarize what is known about our biological clocks and their relationship to sleep.

- 3-1. One of the biological rhythms, the daily or 24-hour circadian rhythm, is influential in the regulation of sleep and wakefulness. This is accomplished through the regulation of several bodily processes, including body temperature. Describe below what happens to body temperature when we:

(a) begin to fall asleep.

(b) continue into deeper sleep.

(c) begin to awaken.

- 3-2. There is evidence that exposure to _____ is responsible for regulating the 24-hour circadian clock. Sunlight affects the suprachiasmatic nucleus in the hypothalamus, which in turn signals the _____ gland. The pineal gland then secretes the hormone melatonin, which is a major player in adjusting biological clocks. Getting out of sync with the circadian rhythm is more likely to occur when the days are (shortened/lengthened).

Answers: 3-1. (a) temperature decreases (b) temperature continues to decrease (c) temperature begins to increase
3-2. light (or sunlight), pineal, shortened.

4. Discuss various methods of helping people to realign their circadian rhythms.

- 4-1. One method for realigning circadian rhythms is to take small doses of the hormone _____. Research results using this method produce (consistent/inconsistent) results.

- 4-2. Researchers have also tried carefully timed exposure to bright _____. The effects using this technique have been modest and (consistent/inconsistent).

- 4-3. Another strategy to help rotating shift workers involves gradually changing their rotation schedules by moving through progressively (earlier/later) starting times.

Answers: 4-1. melatonin, inconsistent. 4-2. light, inconsistent 4-3. later.

THE SLEEP AND WAKING CYCLE

5. Describe how sleep research is conducted.

- 5-1. Sleep research is conducted by electronically monitoring various bodily activities such as brain waves, muscular activity, eye movements, and so on, while persons actually _____ in a specially prepared laboratory setting. Through the use of a television camera or a window, researchers also _____ the subjects during sleep.

Answers: 5-1. sleep, observe (watch).

6. Describe how the sleep cycle evolves through the night.

- 6-1. Answer the following questions regarding the sleep cycle.
- (a) How many stages are there in one sleep cycle?
- (b) Which two stages make up slow-wave sleep?
- (c) Which brain waves are prominent during slow-wave sleep?

Answers: 6-1. (a) four (or five if you've included REM sleep) (b) 3 and 4 (c) delta.

7. Compare and contrast REM and NREM sleep.

- 7-1. What particularly differentiates NREM sleep from rapid eye movement sleep, or _____ sleep, is that during REM sleep the brain wave pattern resembles that of a person who is wide _____. However, REM sleep is actually a fifth stage of sleep in which the muscle tone is extremely relaxed, and the sleeper is virtually _____. It is also during REM sleep that vivid _____ is most likely to occur.
- 7-2. The sleep cycle is repeated approximately _____ times during an average night of sleep. NREM sleep dominates the early part of the sleep period, but _____ sleep and dreaming dominate the later stages of sleep. As one progresses through the night, the depth of NREM sleep tends to progressively (increase/decrease).

Answers: 7-1. REM, awake, paralyzed, dreaming 7-2. four, REM, decrease.

8. Summarize age trends in patterns of sleep.

- 8-1. Not only do newborns sleep more frequently and for more total hours during a day than do adults, they also spend a greater proportion of time in _____ sleep. As they grow older, children move toward longer but (more/less) frequent sleep periods, and the total proportion of REM sleep declines from about 50 percent to the adult level of about _____ percent. During adulthood there is a gradual shift towards the (lighter/deeper) stages of sleep.

Answers: 8-1. REM, less, 20, lighter.

9. Summarize how culture influences sleep patterns.

- 9-1. Answer the following questions regarding sleeping patterns across cultures.
- Which pattern, children sleeping with their parents (co-sleeping) or children sleeping alone, is the most widely practiced?
 - Where are the “siesta” cultures generally located?
 - What is the effect of industrialization on the practice of siestas?

Answers: 9-1. (a) co-sleeping (b) tropical regions (c) The practice declines.

10. Discuss the neural and evolutionary basis of sleep.

- 10-1. Sleep and wakefulness is apparently under the control of several neural structures, but one that appears to be particularly essential for both sleep and wakefulness is the reticular _____. When a part of this system, called the ascending _____ system (ARAS), is severed in cats, the cats remain in continuous _____. When the ARAS is stimulated in normal cats, they act _____.
- 10-2. However, many other brain structures and at least five neurotransmitters are also involved in the regulation of sleep. There (is/is not) a “sleep center” in the brain, nor is there any one neurotransmitter that serves as a _____ chemical.
- 10-3. At least three hypotheses attempt to account for the evolutionary (adaptive) basis of sleep: sleep evolved to conserve energy, it reduces exposure to many sources of danger, and it helps to restore body resources. Which hypothesis has the greater empirical support?

Answers: 10-1. formation, reticular activating, sleep, alert or awake 10-2. is not, sleep 10-3. Sleep evolved to conserve energy.

11. Summarize evidence on the effects of complete and partial sleep deprivation, including the chapter’s Featured Study.

- 11-1. Answer the following questions regarding the effects of different kinds of sleep deprivation.
- While both complete and partial sleep deprivation have a negative effect on mood and also on performance on both cognitive and perceptual-motor tasks, what is rather surprising about the degree of these negative effects?
 - In what way might increased sleepiness be a major problem with respect to the workplace?

- 11-2.** In the Featured Study it was observed that sleep deprived students performed substantially worse on a cognitive task than non-deprived students. How did the sleep-deprived students rate their own effort, concentration, and performance?

Answers: 11-1. (a) The effects tend to be modest. (b) It can lead to increased accidents. 11-2. They were unaware of these deficits.

12. Discuss the effects of selective deprivation of REM sleep and slow-wave sleep.

- 12-1.** Studies in which subjects were selectively deprived of REM sleep, leaving NREM sleep undisturbed, found (substantial/little) negative effects from REM deprivation. One curious effect that has been noted from selective REM deprivation is that subjects tend to increase their amount of (NREM/REM) sleep when given the first opportunity to do so. This same rebound effect has also been found with stages 3 and 4, or _____ - _____ sleep.

Answers: 12-1. little, REM, slow-wave.

13. Discuss the prevalence, causes, and treatments of insomnia.

- 13-1.** While practically everybody will suffer from occasional bouts of insomnia, it is estimated that about _____ of adults will suffer from occasional insomnia, and of these about _____ will suffer from chronic problems with insomnia. There are three basic types of insomnia, which are easily remembered because one type occurs at the beginning of sleep, one type during sleep, and the third type at the end of sleep. Thus, one type involves difficulty in initially _____ asleep; one type involves difficulty in _____ asleep; and one type involves persistent _____ awakening.
- 13-2.** While there are a number of different causes of insomnia, most of them appear to revolve around the anxiety and emotional reactions that result from the _____ of everyday living. Also health problems and taking certain _____ can be a factor.
- 13-3.** As there are many different causes of insomnia, it seems reasonable that there (is/is not) a single form of treatment. However, researchers agree that the most commonly used form of treatment, using sedatives, or _____ pills, is not the treatment of choice. Evidence shows that while sleeping pills do promote sleep, they also interfere with both the slow-wave and _____ part of the sleep cycle.

Answers: 13-1. 34%-35%, 15%-17%, falling, remaining, early 13-2. stress (or problems), drugs 13-3. is not, sleeping, REM.

14. Describe the symptoms of narcolepsy, sleep apnea, night terrors, nightmares, and somnambulism.

- 14-1.** Described below are five different case histories of persons suffering from five different sleep disorders. Make the appropriate diagnosis for each one.
- (a) Throckmorton is a young child who frequently wakes up during the night with a loud piercing cry, but cannot describe what happened to him; he usually returns quickly to sleep. A night spent at the sleep clinic discloses that the episodes generally occur during NREM sleep. Throckmorton is most likely suffering from _____.

- (b) Gazelda reports that occasionally, even when typing a term paper or driving a car, she will quickly drop into a deep sleep. The sleep is often accompanied by dreams, which indicates REM sleep. Gazelda is most likely suffering from _____.
- (c) Ajax is a young child who frequently wakes up terrified and relates vivid dreams to his parents who rush to comfort him. The family physician tells the parents there is probably nothing to worry about, unless these episodes persist, and that the child will most likely outgrow this problem. The diagnosis here is probably _____.
- (d) Mr. Whistletoe will occasionally get up late at night and walk around the house. Unfortunately, Mr. Whistletoe is completely unaware of this behavior and usually returns to bed without awakening. Upon awakening the next morning he is surprised by a new bruise on his leg, and he wonders how the chair in the living room got tipped over. Mr. Whistletoe would be diagnosed as suffering from _____, or sleepwalking.
- (e) Henrietta complains that during a night's sleep, she frequently wakes up gasping for breath. A visit to the sleep clinic discloses that, indeed, she does stop breathing for brief periods all through the night. Henrietta undoubtedly suffers from _____.

Answers: 14-1. (a) night terrors (b) narcolepsy (c) nightmares (d) somnambulism (e) sleep apnea.

THE WORLD OF DREAMS

15. Discuss the nature of dreams.

- 15-1. The conventional view of dreams is that they are mental experiences during REM sleep and often have a bizarre story like quality and vivid imagery. What do many theorists now think of this view?
- 15-2. In what way do non-REM dreams appear to differ from REM dreams?

Answers: 15-1. They question many aspects of this view. 15-2. They are less vivid and less story like.

16. Summarize findings on dream content.

- 16-1. Calvin Hall, who analyzed the contents of more than 10,000 dreams, concluded that the content of most dreams is (exotic/mundane). Moreover, he found that dreams seldom involve events that are not centered on _____. Hall also found that dreams tend to be like soap operas in that they revolve around such common themes as misfortune, _____, and _____.
- 16-2. Answer the following questions regarding the differences in dream content between men and women. Which sex is more likely to dream about:
 - _____ (a) acting aggressively
 - _____ (b) sex with strangers
 - _____ (c) children
- 16-3. What did Freud mean when he stated that our dreams reflect day residue?

16-4. What other factor has an inconsistent effect on our dreams?

Answers: 16-1. mundane, ourselves, sex, aggression 16-2. (a) men (b) men (c) women 16-3. They are influenced by what happens to us in our daily lives. 16-4. external stimuli (dripping water, ringing phones, etc.).

17. Describe some cultural variations in beliefs about the nature and importance of dreams.

17-1. Say which of the following statements about dreams is more characteristic of Western cultures (W) or non-Western cultures (NW).

- _____ (a) Little significance paid to the meaning of dreams.
- _____ (b) Remembering dreams is important.
- _____ (c) Believe that dreams may provide information about the future.
- _____ (d) Are likely to report frequent dreams involving food.

Answers: 17-1. (a) W (b) NW (c) NW (d) Persons from any culture who are chronically hungry.

18. Describe the three theories of dreaming covered in the chapter.

18-1. The text mentions three theories as to why we need to dream. Tell what cognitive purpose, if any, each of these theories proposes as to the purpose of dreaming.

- (a) This was Sigmund Freud's theory about the need to dream.

- (b) This theory proposed by Rosalind Cartwright is cognizant of the fact that dreams are not restricted by logic or reality.

- (c) The activation-synthesis theory of Hobson and McCarley proposes that dreams occur as side effects of neural activation of the cortex by lower brain centers.

Answers: 18-1. (a) Dreams serve the purpose of wish fulfillment. (b) Dreams allow for creative problem solving. (c) Dreams serve no cognitive purpose.

HYPNOSIS: ALTERED CONSCIOUSNESS OR ROLE PLAYING?

19. Discuss hypnotic susceptibility, and list some prominent effects of hypnosis.

19-1. While there are many different hypnotic induction techniques, they all lead to a heightened state of _____. Research shows that individuals (do/do not) vary in their susceptibility to hypnotic induction. In fact, approximately ____ percent of the population does not respond at all, and approximately ____ percent are highly susceptible to hypnotic induction. People who are highly susceptible to suggestions under hypnosis are also responsive to suggestions without being hypnotized. These people appear to have a trait characterized as _____ suggestibility.

- 19-2.** The text lists several of the more prominent effects that can be produced by hypnosis. Identify these effects from their descriptions given below.
- (a) Reducing awareness of pain. _____
 - (b) Engaging in acts one would not ordinarily do. _____
 - (c) Perceiving things that do not exist or failing to perceive things that do exist. _____
 - (d) Claiming that sour foods taste sweet. _____
 - (e) Carrying out suggestions following the hypnotic induction session. _____
 - (f) Claiming to forget what occurred during the induction session. _____

Answers: 19-1. suggestibility, do, 10, 10, imaginative 19-2. (a) anesthetic (b) disinhibition (c) hallucinations (d) sensory distortions (e) posthypnotic suggestions (f) amnesia.

20. Explain the role-playing and altered-states theories of hypnosis.

- 20-1.** A theory of hypnosis proposed by Barber and Orne is that hypnosis is really a form of acting or role-playing in which the subjects are simply playing as if they are hypnotized. What two lines of evidence support this theory?
- 20-2.** A theory of hypnosis proposed by Hilgard is that hypnosis does in fact result in an altered state of consciousness. This theory holds that hypnosis results in a dissociation or _____ of consciousness into two parts. One half of the divided consciousness communicates with the hypnotist while the other half remains _____, even from the hypnotized subject. In this case, pain perceived by the “hidden” part of the consciousness (is/is not) reported to the “aware” part of consciousness. The divided state of consciousness proposed by Hilgard (is/is not) a common experience in everyday life. One such example of this commonly experienced state is appropriately called highway _____.

Answers: 20-1. Nonhypnotized subjects can duplicate the feats of hypnotized subjects and it has been shown that hypnotized subjects are often merely acting out their expectations of how hypnotized subjects should act. 20-2. splitting or dividing, hidden, is not, is, hypnosis.

MEDITATION: PURE CONSCIOUSNESS OR RELAXATION?

21. Summarize the evidence on the physiological correlates and long-term benefits of meditation.

- 21-1.** Certain short-term physiological changes may occur during meditation. One of the most prominent of these changes is that EEG brain waves change from the rapid beta waves to the slower _____ and theta waves. This change to slower waves is accompanied by (an increase/a decrease) in metabolic activity such as heart rate, oxygen consumption, etc. All of these physiological changes are characteristic of a normal state of _____. This state of relaxation (is/is not) unique to meditation.
- 21-2.** Some recent brain imaging techniques have shown that experienced meditators (do/do not) show high activity in the prefrontal cortex (indicating focused attention) and low activity in an area in the parietal lobe (indicating lowered body awareness).

- 21-3.** The claims made for the long-term effects of meditation may have some merit in that some studies have shown that subjects had lower levels of some stress hormones, improved mental health, and reduced anxiety and drug abuse. These changes can (also/not) be induced by other commonly used methods for inducing relaxation. The claim that meditation can produce a unique state of pure consciousness (has/has not) been conclusively proven.

Answers: 21-1. alpha, a decrease, relaxation, is not 21-2. do 21-3. also, has not.

ALTERING CONSCIOUSNESS WITH DRUGS

22. List and describe the major types of abused drugs and their effects.

- 22-1.** The text list six different categories of psychoactive drugs; identify these drugs from the descriptions given below.
- (a) This drug is the most widely used, and abused, of all psychoactive drugs and produces a relaxed euphoria that temporarily boosts self-esteem. Wine and beer are both examples of the drug _____.
 - (b) While this class of drugs derived from opium is effective at relieving pain, it can also produce a state of euphoria, which is the principal reason that opiates, or _____, are attractive to recreational users.
 - (c) The drugs in this class, such as LSD, mescaline and psilocybin, are known for their ability to distort sensory and perceptual experiences, which is why they are given the collective name of _____.
 - (d) The drugs in this class include marijuana, hashish, and THC. Although they vary in potency, each of them can produce a mild and easygoing state of euphoria along with enhanced sensory awareness and a distorted sense of time. This class of drugs gets its name from the hemp plant _____ from which they are all derived.
 - (e) This class of drugs is known for its sleep inducing (sedation) and behavioral depression effects, resulting in tension reduction and a relaxed state of intoxication. While there are several different drugs in this class, the barbiturates are the most widely abused. Commonly known as “downers”, they are more properly called _____.
 - (f) This class of drugs produces arousal in the central nervous system and ranges from mildly arousing drugs like caffeine and nicotine, to strongly arousing drugs like cocaine and the amphetamines. Known for their ability to produce an energetic euphoria, the drugs in this class go by the name of _____.
 - (g) This drug, also known as ecstasy, is a compound related to both amphetamines and mescaline and other hallucinogens. It produces a short-lived high.

Answers: 22-1. (a) alcohol (b) narcotics (c) hallucinogens (d) cannabis (e) sedatives (f) stimulants (g) MDMA.

23. Summarize which drugs carry the greatest risk of tolerance, physical dependence, and psychological dependence.

- 23-1. When a person must continue taking a drug to avoid withdrawal illness or addiction, _____ dependence is said to occur. When a person must continue taking a drug to satisfy intense emotional craving for the drug, then _____ dependence is said to occur.
- 23-2. As can be seen in Table 5.5 in the text, the three riskiest drugs in terms of tolerance and physical and psychological dependence are:
- 23-3. What physiological change in the brain appears to facilitate both physical and psychological dependence?

Answers: 23-1. physical, psychological 23-2. narcotics/opiates, sedatives, stimulants 23-3. alterations in synaptic transmission.

24. Explain how psychoactive drugs exert their effects on the brain.

- 24-1. Psychoactive drugs work primarily by altering neurotransmitter activity between neurons at junctions called _____. For example, amphetamines increase the release of DA and NE and they also slow reuptake at DA and NE synapses. Similarly, the drug _____ mainly blocks reuptake at DA, NE, and serotonin synapses.
- 24-2. Endorphins, produced naturally by the body, produce an effect very similar to that produced by _____ drugs.
- 24-3. Virtually all abused drugs increase activity in the (mesolimbic) pathway, which has been characterized as a “_____ pathway.”

Answers: 24-1. synapses, cocaine 24-2. narcotic 24-3. reward.

25. Summarize evidence on the major physical health risks associated with drug abuse.

- 25-1. What two physical effects were found in the study in which rats were allowed unlimited access to heroin or cocaine, and which drug was the most deadly?
- 25-2. There are three major ways in which drugs may affect physical health. The most dramatic way is when a person takes too much of a drug, or drugs, and dies of an _____. Another way is when drug usage directly damages bodily tissue; this is referred to as a _____ effect. The third way is when drug usage results in accidents, improper eating and sleeping habits, infections, etc. These effects are collectively called _____ effects.

Answers: 25-1. loss of body weight and death, cocaine 25-2. overdose, direct, indirect.

26. Discuss controversies about marijuana's health risks and preliminary evidence on the risks associated with MDMA use.

26-1. Say whether the following statements concerning marijuana are true or false.

- ___ (a) Marijuana produces only a slight and insignificant decrease in the immune response.
- ___ (b) Marijuana can have lasting effects on a male-smoker's sexual functioning.
- ___ (c) Heavy use of marijuana can produce measurable impairments in attention and memory.

26-2. Say whether the following statements regarding the long-term use of MDMA are true or false.

- ___ (a) There is evidence linking heavy MDMA use with sleep disorders, depression, anxiety, or hostility.
- ___ (b) There is no evidence linking MDMA use with subtle effects on cognitive function and memory deficits.

Answers: 26-1. (a) true (b) false (c) true 26-2. (a) true (b) false.

REFLECTING ON THE CHAPTER'S THEMES

27. Explain how the chapter highlighted four of the text's unifying themes.

27-1. Identify which of the underlying themes (psychology evolves in a sociohistorical context, experience is subjective, cultures mold some aspects of behavior, and psychology is theoretically diverse) is illustrated by the following statements.

- (a) Psychologists have followed many different approaches and developed many different theories in their attempt to understand consciousness.
- (b) The study of consciousness by psychologists followed rather than preceded renewed public interest in this topic.
- (c) There are striking individual differences in the way people respond to hypnosis, meditation, and drugs.
- (d) The significance given to dreams and sleep patterns can be influenced by this factor.

Answers: 27-1. (a) Psychology is theoretically diverse. (b) Psychology evolves in a sociohistorical context. (c) Experience is subjective. (d) Culture molds some aspects of behavior.

APPLICATION: ADDRESSING PRACTICAL QUESTIONS ABOUT SLEEP AND DREAMS

28. Summarize evidence on common questions about sleep discussed in the Application.

28-1. Answer the following questions about sleep and napping.

- (a) How much sleep do we require?
- (b) While napping can be refreshing for most people, in what way can it prove inefficient?
- (c) Why are drugs such as sedatives and alcohol likely to interfere with refreshing sleep?

(d) What does evidence show about the effectiveness of attempting to learn complex material, such as a foreign language, during deep sleep?

28-2. In addition to developing sensible daytime habits to combat insomnia, there are numerous methods for facilitating actually going to sleep. A common feature in all of them is that they generate a feeling of _____. Some methods generate a feeling of boredom, which is akin to relaxation. The important point here is that one (does/does not) ruminate on the heavy events in life when attempting to go to sleep.

Answers: 28-1. (a) It varies across individuals. (b) Insufficient time is spent in deeper sleep. (c) They interfere with REM and slow-wave sleep. (d) It is very ineffective. 28-2. relaxation or calmness, does not.

29. Summarize evidence on the common questions about dreams discussed in the Application.

29-1. While there are some persons who claim they never dream, what is really happening is that they cannot _____ their dreams. Dreams are best recalled when waking occurs during or immediately following (REM/NREM) sleep. Determination and practice (can/cannot) improve one's ability to recall dreams. A dream whose action takes place over a 20-minute period will actually last for approximately _____ minutes.

29-2. Freud believed that dreams do require interpretation because their true meaning, which he called the _____ content, is symbolically encoded in the obvious plot of the dream, which he called the _____ content. Freud's theory that dreams carry hidden symbolic meaning would mean that dream interpretation (is/is not) a very complicated affair. More recent researchers now believe that dreams are (more/less) complicated than Freud believed. Calvin Hall makes the point that dreams require some interpretation simply because they are mostly (visual/verbal).

29-3. In what way does lucid dreaming differ from regular dreaming?

29-4. Indicate whether the following statements are "true" or "false".

_____ (a) Evidence shows that some control over one's dreams is possible, but it is not easy and results are not always consistent.

_____ (b) There have been several reported cases of persons reporting their own deaths as the result of fatal dreams.

_____ (c) It has been shown that subjects can communicate with researchers using prearranged eye signals during lucid dreaming.

Answers: 29-1. remember (or recall), REM, can, 20 29-2. latent, manifest, is, less, visual 29-3. In lucid dreaming one is aware that one is dreaming. 29-4. (a) true (b) false (c) true.

CRITICAL THINKING APPLICATION

30. Discuss the influence of definitions and how they are sometimes misused as explanations for the phenomena they describe.

30-1. Whether alcoholism is a disease or a result of personal failure depends on _____ gets to make up the definition. In fact, there is (only one/no) conclusive way to determine if alcoholism is a disease.

30-2. To say that someone drinks too much because she is alcoholic is an example of _____ reasoning. Definitions can never serve as _____ of the thing they are defining.

Answers: 30-1. who, no 30-2. circular, explanations.

Review of Key Terms

Alcohol	Hypnosis	Non-REM (NREM) sleep
Ascending reticular activating system (ARAS)	Insomnia	Physical dependence
Biological rhythms	Latent content	Psychoactive drugs
Cannabis	Lucid dreams	Psychological dependence
Circadian rhythms	Manifest content	REM sleep
Dissociation	MDMA	Sedatives
Electroencephalograph (EEG)	Meditation	Sleep apnea
Electromyograph (EMG)	Narcolepsy	Slow-wave sleep (SWS)
Electrooculograph (EOG)	Narcotics or opiates	Somnambulism
Hallucinogens	Nightmares	Stimulants
	Night terrors	Tolerance

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| _____ | 1. | A device that monitors the electrical activity of the brain. |
| _____ | 2. | A device that records muscle activity and tension. |
| _____ | 3. | A device that records eye movements. |
| _____ | 4. | Periodic fluctuations in physiological functioning. |
| _____ | 5. | The 24-hour biological cycles found in humans and many other species. |
| _____ | 6. | Sleep involving rapid eye movements. |
| _____ | 7. | Sleep stages 1 through 4, which are marked by an absence of rapid eye movements. |
| _____ | 8. | Consists of the afferent fibers running through the reticular formation that influence physiological arousal. |
| _____ | 9. | Drugs that are derived from opium that are capable of relieving pain. These drugs are also called narcotics. |
| _____ | 10. | Involves chronic problems in getting adequate sleep. |
| _____ | 11. | A disease marked by sudden and irresistible onsets of sleep during normal waking hours. |
| _____ | 12. | Reflexive grasping for air that awakens a person and disrupts sleep. |
| _____ | 13. | Abrupt awakenings from NREM sleep accompanied by intense autonomic arousal and feelings of panic. |
| _____ | 14. | Anxiety arousing dreams that lead to awakening, usually from REM sleep. |
| _____ | 15. | Occurs when a sleeping person arises and wanders about in deep NREM sleep. |
| _____ | 16. | A systematic procedure that typically produces a heightened state of suggestibility. |
| _____ | 17. | Involves a splitting off of mental processes into two separate, simultaneous streams of awareness. |
| _____ | 18. | A family of medical exercises in which a conscious attempt is made to focus attention in a nonanalytical way. |

- _____ 19. Chemical substances that modify mental, emotional, or behavioral functioning.
- _____ 20. Sleep stages 3 and 4, in which low-frequency delta waves become prominent in EEG recordings.
- _____ 21. Drugs that have sleep-inducing and behavioral depression effects.
- _____ 22. Drugs that tend to increase central nervous system activation and behavioral activity.
- _____ 23. A diverse group of drugs that have powerful effects on mental and emotional functioning, marked most prominently by distortions in sensory and perceptual experience.
- _____ 24. The hemp plant from which marijuana, hashish, and THC are derived.
- _____ 25. A variety of beverages containing ethyl alcohol.
- _____ 26. A progressive decrease in a person's responsiveness to a drug.
- _____ 27. A condition that exists when a person must continue to take a drug to avoid withdrawal illness.
- _____ 28. A condition that exists when a person must continue to take a drug to satisfy mental and emotional craving for the drug.
- _____ 29. Freud's term that refers to the plot of a dream at the surface level.
- _____ 30. Freud's term that refers to the hidden or disguised meaning of events in a dream.
- _____ 31. Dreams in which persons are aware that they are dreaming.
- _____ 32. A drug, also known as ecstasy, compounded from both amphetamine and hallucinogens that produces a short-lived high.

Answers: 1. electroencephalograph (EEG) 2. electromyograph (EMG) 3. electrooculograph (EOG) 4. biological rhythms 5. circadian rhythms 6. REM sleep 7. non-REM sleep 8. ascending reticular activating system (ARAS) 9. narcotics or opiates 10. insomnia 11. narcolepsy 12. sleep apnea 13. night terrors 14. nightmares 15. somnambulism 16. hypnosis 17. dissociation 18. meditation 19. psychoactive drugs 20. slow-wave sleep (SWS) 21. sedatives 22. stimulants 23. hallucinogens 24. cannabis 25. alcohol 26. tolerance 27. physical dependence 28. psychological dependence 29. manifest content 30. latent content 31. lucid dreams 32. MDMA.

Review of Key People

Theodore Barber
Rosalind Cartwright
William Dement

Sigmund Freud
Calvin Hall
Ernest Hilgard

J. Alan Hobson
William James

- _____ 1. Originated the term, "the stream of consciousness".
- _____ 2. Argued for the existence of the unconscious and the hidden meaning of dreams.
- _____ 3. As one of the pioneers in early sleep research, he coined the term REM sleep.
- _____ 4. After analyzing thousands of dreams, he concluded that their contents are generally quite mundane.
- _____ 5. Proposes a problem-solving view as a reason for dreaming.
- _____ 6. One of the authors of the role-playing theory of hypnosis.
- _____ 7. A proponent of the altered state (divided consciousness) theory of hypnosis.

8. His activation-synthesis model proposes that dreams are only side effects of neural activation.

Answers: 1. James 2. Freud 3. Dement 4. Hall 5. Cartwright 6. Barber 7. Hilgard 8. Hobson.

Self-Quiz

1. Which brain wave is probably operating while you are taking this quiz?
 - a. alpha
 - b. beta
 - c. theta
 - d. delta

2. What did William James mean by his term “the stream of consciousness”?
 - a. consciousness always remains at the same level
 - b. consciousness never stops
 - c. consciousness is constantly changing
 - d. consciousness is beyond personal control

3. The circadian rhythm operates around a:
 - a. 1-year cycle
 - b. 28-day cycle
 - c. 24-hour cycle
 - d. 90-minute cycle

4. The most vivid dreams generally occur during:
 - a. REM sleep
 - b. NREM sleep
 - c. the early hours of sleep
 - d. when alpha brain waves are present

5. What appears to be responsible for regulating the circadian rhythm?
 - a. amount of time spent sleeping
 - b. amount of time spent awake
 - c. cultural practices
 - d. exposure to light

6. Severing the ascending reticular activating system in cats caused them to:
 - a. become very aggressive
 - b. become very fearful
 - c. remain in continuous wakefulness
 - d. remain in continuous sleep

7. The content of most dreams is usually:
 - a. mundane
 - b. exotic
 - c. exciting
 - d. erotic

8. Which of the following sleep disorders is most life threatening?
 - a. nightmares
 - b. narcolepsy
 - c. sleep apnea
 - d. somnambulism

9. Persons can be made to act as if they are hypnotized even without the use of hypnotic induction. This statement is:
- true
 - false
10. Which of the following physiological changes is unique to meditation?
- increased alpha rhythms
 - decreased heart rate
 - decreased oxygen consumption
 - All of these things are common to many forms of relaxation.
11. Psychoactive drugs exert their effect on the brain by:
- decreasing blood supply to the brain
 - altering neurotransmitter activity
 - breaking down essential brain amino acids
 - penetrating the nucleus of the neurons
12. The most widely abused drug in the United States is:
- alcohol
 - cocaine
 - heroin
 - hallucinogens
13. Which of the following is likely to produce highly subjective events?
- hypnosis
 - meditation
 - psychoactive drugs
 - All of the above can produce highly subjective events.
14. Which of the following statements is correct?
- Most people do not dream in color.
 - Practice will not improve the ability to recall dreams.
 - From birth until death, everyone dreams.
 - Dreams generally last only one or two minutes.
15. What was found in the Featured Study regarding the effects of sleep deprivation in college students?
- sleep deprivation had little effect on their ability to perform cognitive tasks
 - sleep deprivation had a substantial negative effect on their mood
 - sleep deprivation had a substantial positive effect on their ability to perform cognitive tasks because the students compensated by increasing their effort
 - the students were unaware of the actual negative effect of the deprivation

Answers: 1. b 2. c 3. c 4. a 5. d 6. d 7. a 8. b 9. a 10. d 11. b 12. a 13. d 14. c 15. d.

InfoTrac Keywords

Biological Rhythms
Hallucinogens

Meditation

REM Sleep