CHAPTER 6


# Consciousness

**In this chapter, you will learn about:**

- how consciousness is described
- states of consciousness
- sleeping and dreaming

*Can we really explain why we do the things we do? Neuroscientist Michael Gazzaniga discovered that the conscious mind provides reasons for behavior that may not be real. Working with patients whose right and left brain hemispheres had been disconnected, Gazzaniga found that when a word such as* laugh *was sent to the patient's right brain to process, the person would laugh. The patient's verbal left brain did not receive the message. However, when the patient was asked, "Why did you laugh?" the person responded with a logical reason, such as, "You guys are so funny." The left brain in this case made up a reason to explain the behavior.*

*Consciousness consists of a complex collection of processes, such as waking consciousness, the subconscious, and the unconscious. In addition, there are various altered states of consciousness, such as daydreaming, meditation, drug-induced states, and perhaps hypnosis.*

*Sleeping and dreaming are among the most important states of consciousness—vital to the maintenance of one's health. Sleep disorders may affect the amount of sleep one gets or the psychological activity that occurs during dreaming. Fascinating and surprising information about consciousness continues to accumulate as research techniques improve.*

## What Is Consciousness?

What do you think of when you hear the word *consciousness?* A common definition of being conscious is being aware, but science has a much more difficult time explaining what consciousness really is.

Consciousness may seem like a single experience. Yet, it is a highly complex phenomenon. It involves several physiological structures or processes and the interactions among them. We may understand the parts of the brain and nervous system that process sensory information, and we can trace the path that sensory information takes through the brain and into the centers of higher thought, but scientists don't agree on how those electrical signals result in our subjective experience of ourselves and the world.

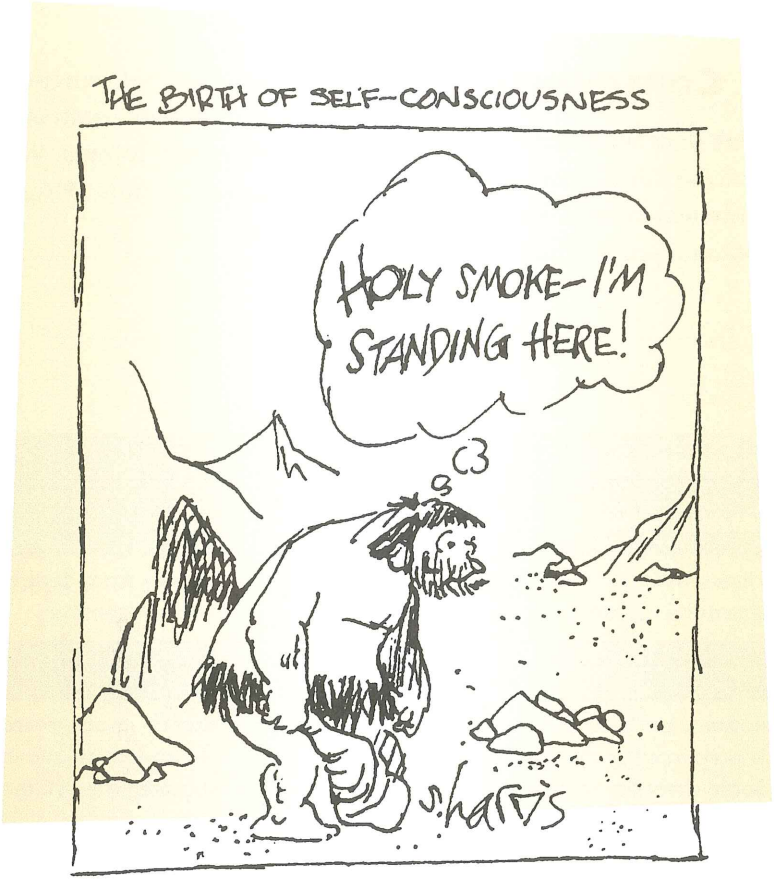
We can observe events like chemical reactions and photosynthesis, but how can we study an internal experience such as consciousness? It is the scientist's challenge to understand the conscious mind. But how does a scientist get outside his or her own mental processes to study those same processes?

You can be conscious of a thought, a sensation, the behavior of others, and your own existence. For our purposes, we'll define **consciousness** as the awareness of one's self and one's environment.

### Types of Conscious Experience

Here are some of the types of awareness that make up our consciousness.

* ***External sensory perception*** is awareness of sights, sounds, tastes, smells, and touch sensations in the environment.
* ***Internal sensory perception*** is the ability to internally experience sensory information from a remembered event or to create sensory representations of events we've never experienced, but only imagined.
* ***Abstract awareness*** involves the symbols we use to represent big ideas. We don't generally classify thoughts, ideas (about such things as freedom or peace), or emotions (such as disappointment or happiness) as sensory perceptions, yet we are conscious of them. Although we often describe or define such ideas without sensory references, some psychologists believe that we store everything in sensory images. These are often metaphors that carry the meaning of the more abstract term, such as an image of the Statue of Liberty for freedom or a feeling of relaxation or warmth for love.
* ***Awareness of self*** means you are aware of yourself as an individual apart from other individuals and objects in your environment. You not only have thoughts and feelings but are aware that you have them. You can have experiences and also observe these experiences from outside yourself. This is part of the puzzle of consciousness about which scientists theorize.




## Early Ideas About Consciousness

One of the most influential ideas about consciousness arose in the seventeenth century with the French philosopher René Descartes. He concluded that the fact that he had thoughts proved his existence—"I think, therefore I am." Descartes believed in what is now called the mind vs. body duality, the idea that the mind was a separate entity, apart from the body. Even today, when scientists have discovered the biological basis of so many mental events and often insist that "the mind is what the brain does," we still sense the mind as something apart from the body.

During its early history in the eighteenth and nineteenth centuries, psychology frequently defined itself as the study of consciousness. But in the early twentieth century, William James questioned whether consciousness existed and suggested that there was no value in studying it because it couldn't be directly observed or measured. Behaviorist John Watson insisted that psychology "discard all references to consciousness," focusing instead solely on the observable behaviors of a person.

## Levels of Consciousness

We typically think of consciousness in terms of what we are thinking or feeling at a particular moment in time. We may consciously work at a problem until we reach a solution. Yet sometimes ideas will pop into our minds—into our conscious awareness—fully formed. Where did these ideas come from? How were they processed?

| Levels of Consciousness |
| --- |
| **Normal or Waking Consciousness** |
| This state includes whatever we are aware of in the present. It can vary from daydreaming to intense concentration. Content is based, in part, on what we choose to attend to. |
| **Subconscious** |
| Thoughts, emotions, and behaviors are available to us, but not presently in our awareness. Some information is processed at this level of consciousness, such as the production and interpretation of language. Some theorists separate the subconscious into two subcategories. (Others simply use the term **subconscious** for both types of behaviors.) |
| In the **preconscious,** knowledge and memories are present in our minds but are not being accessed. For example: you can give your address if asked, but are unaware of that information unless your inner attention is directed toward it. |
| In the **nonconscious** are behaviors and thoughts that we process automatically, without conscious effort and sometimes without control. Examples include speaking, breathing, and blinking. |
| **Unconscious** |
| According to Freud, the **unconscious** mind contains desires, conflicts, or memories with which our conscious mind cannot easily deal. Although this theory is debatable, there does seem to be a part of the mind that serves as a well of resources, motives, or drives. When asked about some behaviors, we are often unable to explain clearly why we acted as we did. Freud would say that something in the unconscious was responsible for these behaviors. |

## Consciousness and Chronobiology

**Chronobiology** is the study of the effects of time on life processes. The timing of various biological events, including levels of consciousness, is regulated by a tiny piece of brain tissue, the suprachiasmatic nucleus (SCN), located near the intersection of the optic nerves from each eye. This **biological clock** programs activities in the body, such as changes in temperature and blood pressure, to occur at different times during a daily cycle. Biological clocks are almost always linked to some type of light-sensing cells. In other words, the amount of natural light influences each stage of each biological cycle.

### Circadian Rhythms

Hundreds of the body's natural functions occur as cycles—from the time that you prefer to go to sleep and wake up to changes in body temperature, blood pressure, and hormone levels. These cycles are called **circadian rhythms.** *Circa dies* is Latin for "about a day." A circadian rhythm is a cycle that occurs in roughly a 25-hour period.

Each person has preferred circadian rhythms, particularly in the area of sleep. Some prefer to rise early and go to bed early—"early birds." Others prefer to rise later and go to bed later—"night owls." Many people experience a reduced alertness in early afternoon, related to decreased temperature and changes in hormone levels. In the circadian rhythm of temperature, many people's temperature reaches a low point at about 4 A.M.

### Changes in Circadian Rhythms

If humans were permitted to establish a normal waking/sleep cycle in a cave into which no natural light could enter, they would settle into a free-running cycle of about 25 hours—the body's natural circadian rhythm. Because we normally live in a 24-hour cycle of light and darkness, our biological clocks set themselves to match that environment rather than the body's natural one. This is called **entrainment**—the alteration of a natural cycle to fit a different rhythm. Infants, who initially wake every couple of hours to be fed, gradually entrain their schedules to sleep through the night. Some changes in circadian rhythms can cause problems:

* ***Shift Work.*** Working during the hours when one would normally sleep may increase the risk of accidents and absenteeism and lead to poor job satisfaction, in addition to fatigue, stomach problems, and depression. Studies into the causes of the *Challenger,* Three Mile Island, Chernobyl, and *Exxon Valdez* disasters all found evidence of human error occurring on a night shift.
* ***Jet Lag.*** When you fly across a number of time zones, you may land where, locally, it is early morning. Your body, on a different geographical time, thinks it is bedtime. It may take several days to entrain to the new hours of daylight and darkness, during which time you may have difficulty sleeping at night and tend to be sluggish and unable to function as effectively as at home.

## Altered States of Consciousness

While consciousness is often associated with a waking state, there are many variations on how aware or alert a person is or on the types of mental processes that may be going on in different levels of consciousness. States other than the common levels of consciousness are often called **altered states of consciousness**. Examples are shown in the accompanying table. In addition to the states described in the table, sleeping, dreaming, and a hypnotic state are also altered states of consciousness. These will be discussed in more detail later in this chapter.

**Altered States of Consciousness**

| State | What Is It? | Effects/Uses | Other Issues |
|---|---|---|---|
| **Daydreaming** | Fanciful imagery or unfocused thoughts that may be different from a person's reality. | Allows useful information from the subconscious to emerge and be processed. Enhances creativity. Can be a substitute for impulsive behavior. Can be restful in a stressful situation. | Problematic when time spent in daydreaming is excessive, when it is used frequently as an escape from reality, or when it interferes with normal, waking activities or responsibilities. |
| **Drug-Induced State** | The result of chemicals that alter the mental state, often through physiological changes and various effects on neurotransmitters in the brain. Stimulants (nicotine, amphetamines, and cocaine); depressants (alcohol, heroin); and hallucinogens (LSD and marijuana) all cause drug-induced states. | Some of these experiences are actually hallucinations or delusions—ideas that may seem real, but aren't, such as the ability to fly. Studies have shown that some drugs can permanently alter brain structure and/or chemistry, causing problems in later life. | Specific drugs will be discussed in Chapter 15. Some medications prescribed by doctors can reverse altered states of consciousness produced by mental illness. Improper use of prescription or illegal drugs is more likely to produce mental aberrations than to enhance mental processing. |

| *more* **Altered States of Consciousness** | | | |
|---|---|---|---|
| **State** | **What Is It?** | **Effects/Uses** | **Other Issues** |
| **Hallucination** | Experiencing sights and sounds that do not occur. The person is unable to distinguish his or her perceptions from those produced by real experience. | In Western cultures, hallucinations are not considered useful because one is removed from reality and likely to make poor judgments. Some cultures value states in which people appear to access experiences outside of ordinary reality. | Hallucinations can arise from some mental illnesses, drug use, or through sensory deprivation—a situation in which incoming sensory information is greatly reduced. |
| **Meditative State** | A highly focused state of consciousness achieved by concentrating on a repetitive, peaceful stimulus (a sound or one's breathing). | Meditation can lower heart rate and blood pressure and alter metabolism and brain wave pattern. Can be used to counter stress. | The meditative state is entered consciously through deliberate relaxation. |
| **State Induced by Biofeedback** | The self-monitoring of one's physiological states to control certain bodily functions such as heart rate. | People can learn to reduce pain and tension by altering brain waves rather than by taking medication. | Some research indicates that biofeedback doesn't work as well under stressful (real-life) conditions as under controlled (laboratory) conditions. |
| **Lucid Dreaming** | Dreaming while you're aware that you're dreaming. One might control the direction of the dream. Lucid dreaming is learned through practice. | Can help overcome nightmares, provide rehearsal for waking experiences, and increase creativity and problem solving. | Studies have shown that lucidity was seven times more likely to make nightmares better than worse. |

# Sleep

Perhaps the most familiar altered state of consciousness and the most obvious circadian rhythm for us all is the state of sleep. The reasons why we sleep and dream are not well understood, although it is known that these functions are essential to our survival.

## Why We Sleep

One way to explore reasons why we sleep is to observe what happens to people who have been deprived of sleep. Psychologists have recorded significant changes in body chemistry, perception, and the ability to think clearly and concentrate in those who go without sleep for several days.

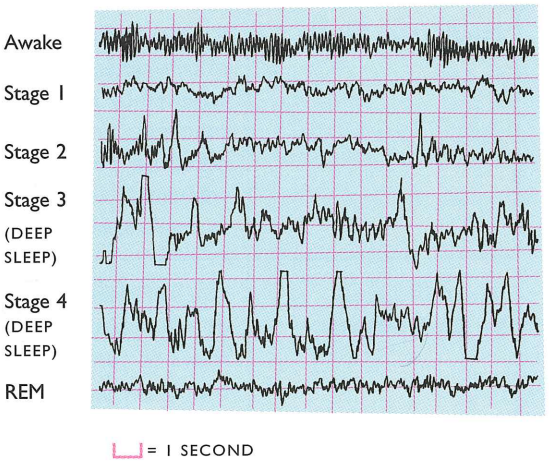
Here are **three** theories about why we sleep:

1. **Physical and/or Mental Recuperation.** During sleep, the production of new cells is at its highest rate, and chemicals used up during the day in the brain and body are replenished.
2. **Consolidation of Thoughts and Experiences.** Although we think of sleep as down time for our conscious mind, the level of mental activity during some stages of sleep is extremely high. In fact, during some stages of sleep, some nerve cells fire five to ten times more quickly than during wakefulness!
3. **Adaptation.** Sleep is an adaptive behavior that kept our ancient ancestors quiet and unmoving during the hours of darkness, when predators were more likely to roam.

## Stages of Sleep and Brain Waves

By monitoring brain waves, eye movement, and muscle tension during sleep, researchers have found that there are actually five stages of sleep—four nonrapid eye movement (NREM ) stages and one **rapid eye movement (REM)** sleep stage. The average time it takes to move through the five stages is about 90 minutes. Therefore, we move through the cycle about five to six times each night.

**The Stages of Sleep**




The stages are based on differences in electrical activity of the brain, described in terms of the frequency and height or amplitude of the waves that are being produced at any moment in time. When you are awake and alert, your brain is producing *beta waves*—low amplitude waves with a frequency greater than 12 hertz (one wave per second). The table on the next page shows what happens during the stages of sleep.

| The Stages of Sleep | | |
|---|---|---|
| **Sleep Stages** | **Physiological Changes** | **Psychological Changes** |
| **Awake, but Drowsy** | Body is relaxed, muscle tension low, heart rate slower than wakefulness. | Random, stream-of-consciousness thoughts and images—like light meditation. |
| **NREM Stages** | | |
| **Stage 1** | Heart rate slows further and muscle tension decreases. | Light sleep, still in a transition phase. Sometimes associated with increased imagery. |
| **Stage 2** | Body relaxes further. Stages 1 and 2 together last about 30 minutes. | During this period, a person may talk in his or her sleep. |
| **Stage 3** | Transition into deep sleep. Stages 3 and 4 together last about 30 minutes and occur during the first 2 to 3 sleep cycles of the night. | Complete sleep. Somewhat difficult to awaken. |
| **Stage 4** | Considerable movement. Little perception of external sounds. | The person is deeply asleep and most difficult to awaken in this stage. |
| **REM Sleep** | | |
| | About 90 minutes into the sleep cycle, people return quickly to Stage 1 and then begin REM sleep. In this state, people appear paralyzed, except for movement of the eyes. | When awakened from REM sleep, 85 percent to 90 percent of people report that they were dreaming and can recall contents of the dream. Periods of REM are longest during the last sleep cycles of the night. |

## Sleep Disorders

### *Sleep Apnea*

* In one form, a person with sleep apnea experiences sudden and regular breathing stoppages during sleep.
* It is especially dangerous in young children. Devices may be used to signal parents when breathing has stopped.
* It is associated with snoring.

### *Sleepwalking*

* Although deeply asleep, a sleepwalker may interact or talk with people.
* Sleepwalking occurs in NREM sleep.
* A person who is sleepwalking awakens with no memory of the activity.

### *Insomnia*

* Insomnia is difficulty getting to sleep or staying asleep.
* A person with insomnia awakens unrefreshed, even after sufficient sleep.
* Causes of insomnia include diet, exercise patterns, sleeping environment, worry, or concern.

### *Hypersomnia*

* A person with hypersomnia experiences chronic, excessive sleeping; irresistible drowsiness and napping during the day; and difficulty waking up.

### *SIDS*

* Sudden Infant Death Syndrome (SIDS) is the sudden death of an infant under one year of age that remains unexplained after investigation.
* It is not technically a sleep disorder, although it often occurs when a child is sleeping.

### *REM Behavior Disorder*

* A sleeper with REM behavior disorder may act out dream activity and in severe cases may endanger him or herself and others with movements.

### *Narcolepsy*

* A person with narcolepsy falls asleep suddenly, unpredictably, and uncontrollably.
* It is thought to have a biological basis.
* The person may exhibit sudden loss of muscle control.

### *Night Terrors*

* During night terrors, the sleeper will be terrified and may have eyes open but is not awake. When awakened, the person remains very frightened but in many cases does not remember why.
* Night terrors occur during NREM sleep Stage 4.

### *Nightmares*

* Nightmares occur during REM sleep. Sleeper will often awaken and recall an apparently long and movielike frightening dream.


### Sleep Deprivation

A recent poll by the National Sleep Foundation found that the average adult sleeps 6 hours and 58 minutes per night during the work week. Dr. Mary Carskadon of the Sleep Foundation is especially concerned about the sleep habits of children and teenagers. She says that teenagers need about 9.5 hours of sleep a night but get only 6.5 to 7.5. Because of the hormonal changes associated with puberty, the biological clocks of teens may not signal that it is time for sleep until 11 P.M. or later. Given that most teens must get up early for school, they are, according to Dr. Carskadon, ". . . among the most sleep-deprived in our society." Sixty percent of children ages 4 to 17 complained of feeling tired during the day. Data on automobile crashes show a high percentage of young drivers in sleep-related crashes. Dr. William Dement, head of the Sleep Disorders Center at Stanford University, warns that lack of sleep "is the most common brain impairment." Dr. Dement maintains that the national "sleep debt" is more important than the national monetary debt.

## Dreaming

Although many people believe that dreams occur only during REM sleep, a significant percentage of people have also reported dreams when awakened during other sleep stages. However, REM dreams tend to be the longest and are primarily visual. Contrary to old views, a dream may take as long as the actual events would have taken and most dreams are about ordinary experiences and emotions.

People deprived of REM sleep often do not feel refreshed from sleep and often make up the deficit by having longer REM periods when they are allowed to sleep naturally.

### Why We Dream

Scientists aren't certain why we dream. Freud suggested that dreams were the creations of the unconscious mind, producing in symbol what a person is unable to deal with consciously. Some contemporary theorists suggest that, during certain stages of sleep, neurons within the brain fire randomly. Dreams are the brain's attempt to make sense of the firings by weaving a story around them.

Have you ever watched a dog sleeping? Occasionally, although the dog's eyelids are closed, its eyes appear to be moving rapidly. The dog's paws may twitch and it may make sounds as if excited. Dreaming

and REM sleep are as important for some animals as they are for humans, suggesting that the explanation for dreams may be biological, as well as psychological.

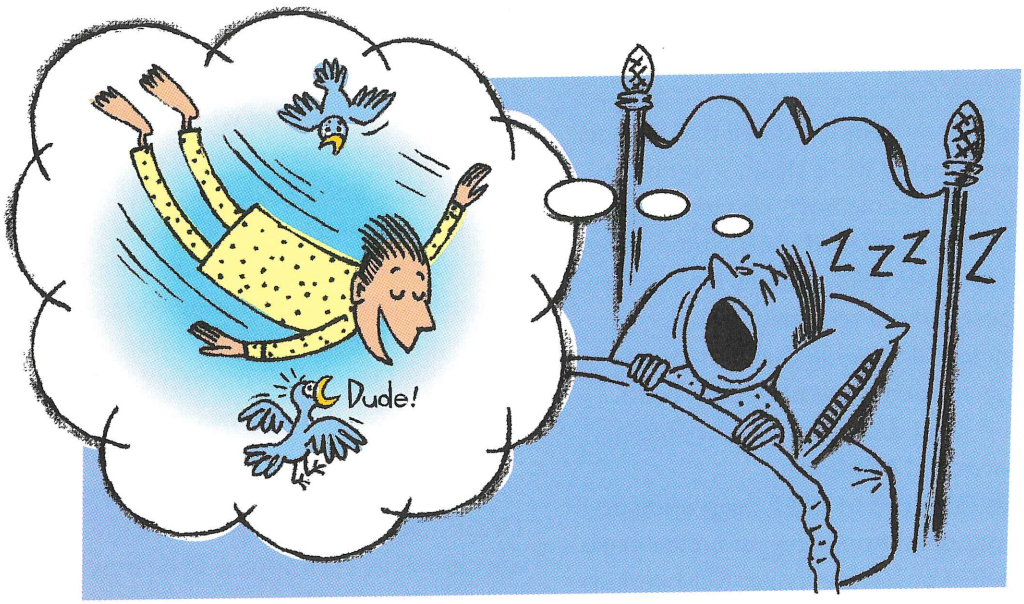
Dreaming and REM sleep have been shown to improve memory of information we try to learn just before retiring. Some theorists suggest that sleep and dreaming block out external stimuli that would require processing, thereby allowing the brain to consolidate information already there.

Although the functions of dreaming aren't fully known or understood, scientists do agree that REM sleep and dreaming are essential for good health. People deprived of this phase of sleep often feel as if they haven't had enough sleep and have difficulty concentrating.

## What Do Dreams Mean?

Given that scientists are not even in agreement about whether dreams are psychological or biological, there are no reliable methods for interpreting dreams. Dreams may be random, they may be involved in consolidating information or in solving problems at the subconscious level, they may arise from the unconscious, or they may be responses to neural activity.

Sometimes, people feel that they understand the meaning behind a dream. Others worry about what a recurring dream may mean. But even if we are merely creating stories around random neural firings, it is likely that recent events or problems in our lives would be the most accessible in the production of those stories. Even when a reasonable interpretation is given for a dream, how would we be certain that it is correct?




## Why Do We Dream?

*Some scientists believe that the reasons we dream are primarily psychological, while others believe they are primarily physiological. What can you find out?*

### THE ISSUES

**Psychological Reasons for Sleep**

Sigmund Freud believed that dreams reflected drives and wishes from the unconscious mind that people could not deal with when awake. Freud believed that because some wishes may be unacceptable or painful, they appeared in dreams as symbols. By interpreting these symbols, Freud tried to help a patient understand what his or her dreams really meant. People may dream about the same things, yet their dreams may have very different meanings.

Other psychologists believe that dreams are necessary to organize the day's experience and transfer it into permanent, long-term memory.

People often wake in the morning with answers to problems that seemed difficult the day before. When people have problems, they tend to sleep longer and have more dreams.

**Physiological Reasons for Sleep**

Those who believe that dreams are necessary for physiological reasons point to research with people who are awakened as soon as they enter REM sleep and are thus deprived of dreaming. The next day, these people often feel tired and unable to concentrate and report that their thinking is unclear. If allowed to sleep normally the next night, they will spend more time in REM sleep as if trying to catch up.

Some researchers suggest that the body physically recuperates during dreams and produces more of the biochemicals we use up during waking hours.

### THE PROCESS

1. **Restate the issues.** In your own words, state the two types of reasons.
2. **Provide evidence.** From your own experience and from the information above, list the evidence that *supports* each of the theories.
3. **Give opposing arguments.** From your own experience and from the information above, list evidence *against* each of the theories.
4. **Look for more information.** What else would you like to know about why we dream? Make a list of your questions and search the Internet or the library for answers. Include other ideas, such as animal dreams, how dreams occur in cycles, and immobilization of muscles during REM sleep.
5. **Evaluate the information.** Put a plus sign beside the items in your lists that are the strongest pieces of evidence. Underscore the questions you think are most important.
6. **Draw conclusions.** Write one paragraph explaining your answer to the question "Why do people dream?"

# Hypnosis

**Hypnosis** is a process that allows a person to enter a trancelike state during which time he or she becomes highly suggestible. Encouraging a person to focus on a single stimulus and to relax may induce a hypnotic trance. With practice, many people can enter a light hypnotic trance on their own.

Some psychologists claim that hypnosis is not truly an altered state. It may simply be a relaxed and highly focused state. Others argue that a hypnotic state is very different from sleep or waking states, but brain wave analysis doesn't always support this argument. On an EEG, hypnotized people have much the same pattern as those in a normal, relaxed state of consciousness.

The hypnotic state has **five** qualities:

## 1 Heightened Suggestibility

The person has a tendency to see, hear, or otherwise perceive what the hypnotist suggests. He or she may think or do what he or she is told but will generally not do things that are against his or her basic beliefs or moral code.

## 2 Dissociation

Some theorists suggest that a hypnotized person becomes dissociated, or separated, from the sensations connected to external reality. Someone suffering from the emotions of a traumatic event may be able to talk about it and work through the problems associated with it. A person who can dissociate from the pain of a physical illness may experience relief.

## 3 Vivid Imagery

A person who is told that a pungent liquid such as ammonia is actually perfume will experience it as such. People may be led to believe that real objects don't exist or that imagined ones do.

## 4 Enhanced Memory

A person might mentally return to past events and describe these events in detail. These events might not be recalled in a waking state and they have not been proven to be more accurate than those recalled while awake.

## 5 Posthypnotic Suggestion

Suggestions made to a person during an hypnotic trance that may remain after the trance are called **posthypnotic suggestions.** This technique is often used to help people quit smoking, eat in a more healthy manner, or manage pain. However, posthypnotic suggestions tend to fade over time and must be periodically renewed to remain effective. There is, therefore, no evidence that hypnosis is more effective than other methods of behavior modification.

Some psychologists argue that people who are willing to be hypnotized are highly suggestible. They believe that any changes that occur as a result of hypnosis are the result of self-deception. In any event, some people do achieve their goals. Psychologists agree that, because of the potential for unexpected reactions, hypnosis should always be done by a trained professional.

Sidebar

## Hypnosis and Market Research

Hal Goldberg, a consumer-behavior specialist, has a new use for hypnosis. Goldberg spent more than 20 years in the marketing business trying to determine the real reasons why people purchase specific brands. He realized that people in focus groups often gave him the information that they thought he wanted to hear or that might make them look good in the eyes of other group members.

Goldberg now runs focus group sessions with small groups of consumers who agree to be hypnotized. Under hypnosis, consumers appear less inhibited by what others might think.

"Imagine the last time you bought a sandwich spread in the grocery store. Do you see any brands?" asks Goldberg.

The consumer names one.

"And why did you buy that one?"

Goldberg then questions the consumer about the real reasons why the consumer chose that brand and about what factors in the packaging or advertising made the difference.

This is a type of qualitative research that focuses on individual thinking processes rather than on group tendencies. Manufacturers and advertisers have found it very helpful in their decision-making processes.


## Hypnosis and Memory

Do people really recall more under hypnosis? Are repressed memories more likely to come to the surface when a person is in a hypnotic state of consciousness? Are these memories more accurate than waking memories? Despite the dramatic portrayals on TV shows, studies have shown that people who are not hypnotized are just as likely as people in a hypnotic trance to recall the details of a crime. Perhaps of more importance is that hypnotized people are just as likely to report incorrectly on what happened as those who are not hypnotized.

### Age Regression Under Hypnosis

It is a common belief that memories of unpleasant events earlier in one's life can be more easily recalled under hypnosis. People might even act the age that they were asked to "go back to" in a process called *age regression.* However, research has demonstrated that people are not truly acting that age. They are acting the way an adult believes someone that age would act. Further, the memories that they recall are a mixture of fact and fantasy. The slightest hint in the tone of voice of the hypnotist can influence the answers of a hypnotized person. If the hypnotist asks, "Did something bad happen?" the suggestible person will agree that it did. For this reason, most courts today do not accept testimony acquired under hypnosis.

It is possible that more detail is recalled by some people under hypnosis simply because they are focused on a memory, rather than being distracted by outside thoughts. Further, our memories are only as good as they were at their formation. Many children misinterpret the meaning of certain actions and keep that misinterpretation in their memory. The recalled memory will still possess the faulty interpretation. In general, memories recalled under hypnosis have not been proven to be more accurate than those recalled while awake.

## Current Theories of Consciousness

Theories about the nature of consciousness are plentiful. Psychologists and philosophers hotly debate everything from the definition of consciousness to whether animals are conscious. Newer theories of consciousness are described in books such as *Consciousness Explained* by Daniel Dennett, *How the Mind Works* by Steven Pinker, and *The Feeling of What Happens* by Antonio Damasio.

Damasio suggests that we actually have **two** types of consciousness:

### 1 Core Consciousness

This type is that which gives one a sense of self in the here and now. It is a simple biological phenomenon that need not be exclusively human and doesn't depend on memory, language, or reasoning.

### 2 Extended Consciousness

This type is that which "provides an organism with an elaborate sense of self—an identity and a person . . . and places that person at a point in individual historical time, richly aware of the lived past and of the anticipated future" and aware of the world outside of itself.

Damasio's is only one of many theories that attempt to explain what makes us human—and what gives us the awareness that we are human.

## Chapter 6 Wrap-up

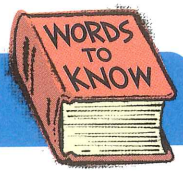
### CONSCIOUSNESS

*Consciousness is awareness of one's self and one's environment. It includes external awareness and an inner awareness that allows people to monitor and reflect on their thoughts and emotions. Consciousness includes waking consciousness, the subconscious, and the unconscious.*

*Altered states of consciousness are those other than normal waking consciousness. They include daydreaming, meditation, the state induced by biofeedback, hallucination, lucid dreaming, and drug-induced states.*

*Perhaps the most important altered state of consciousness is sleep, which includes dreaming. During sleep, a person passes through five different stages of brain activity. Hypnosis is an altered state that involves a suggestible, trancelike state.*

### Psychology




**altered state of consciousness**—state other than normal waking consciousness. *p. 84*

**biological clock**—structure within the brain that programs activities in the body to occur at different times during a daily cycle. *p. 83*

**chronobiology**—study of the effects of time on life processes. *p. 83*

**circadian rhythm**—cycle that occurs in roughly a 25-hour period. *p. 83*

**consciousness**—awareness of one's self and one's environment. *p. 80*

**entrainment**—alteration of a natural cycle to fit a different rhythm. *p. 83*

**hypnosis**—process wherein a person enters a trancelike state characterized by heightened suggestibility. *p. 92*

**nonconscious**—state in which we process behaviors and thoughts "automatically," without conscious effort and sometimes without control. *p. 82*

**posthypnotic suggestion**—suggestion made during hypnosis that remains when the person returns to normal consciousness. *p. 92*

**preconscious**—knowledge and memories that are present in the mind but are not being accessed. *p. 82*

**rapid eye movement (REM)**—stage of sleep in which there is rapid eye movement and during which dreams occur. *p. 86*

**subconscious**—below the level of waking consciousness. *p. 82*

**unconscious**—sum of wishes, memories, motives, or drives that influence behavior but are not consciously perceived. *p. 82*