

responses to a hypnotist? Does a split in consciousness, as when our minds go elsewhere while reading or texting, explain people's behavior while under hypnosis? And during sleep, when do those weird dream experiences occur, and why? Before considering these questions and more, let's ask a fundamental question: What is *consciousness*?

# Module 22

## Understanding Consciousness and Hypnosis

### Module Learning Objectives

- 22-1** Describe the place of consciousness in psychology's history.
- 22-2** Define *hypnosis*, and describe how a hypnotist can influence a hypnotized subject.
- 22-3** Discuss whether hypnosis is an extension of normal consciousness or an altered state.



Every science has concepts so fundamental they are nearly impossible to define. Biologists agree on what is alive but not on precisely what life is. In physics, *matter* and *energy* elude simple definition. To psychologists, consciousness is similarly a fundamental yet slippery concept.

### Defining Consciousness

- 22-1** What is the place of consciousness in psychology's history?

At its beginning, *psychology* was "the description and explanation of states of consciousness" (Ladd, 1887). But during the first half of the twentieth century, the difficulty of scientifically studying consciousness led many psychologists—including those in the emerging school of *behaviorism* (Module 26)—to turn to direct observations of behavior. By the 1960s, psychology had nearly lost consciousness and was defining itself as "the science of behavior." Consciousness was likened to a car's speedometer: "It doesn't make the car go, it just reflects what's happening" (Seligman, 1991, p. 24).

After 1960, mental concepts reemerged. Neuroscience advances related brain activity to sleeping, dreaming, and other mental states. Researchers began studying consciousness

"Psychology must discard all reference to consciousness."  
—BEHAVIORIST JOHN B. WATSON (1913)

altered by hypnosis and drugs. Psychologists of all persuasions were affirming the importance of *cognition*, or mental processes. Psychology was regaining consciousness.

Most psychologists now define **consciousness** as our awareness of ourselves and our environment. As we saw in Module 13, our conscious awareness is one part of the *dual processing* that goes on in our two-track minds. Although much of our information processing is conscious, much is unconscious and automatic—outside our awareness. Module 16 highlighted our *selective attention*, which directs the spotlight of our awareness, allowing us to assemble information from many sources as we reflect on our past and plan for our future. We are also attentive when we learn a complex concept or behavior. When learning to ride a bike, we focus on obstacles that we have to steer around and on how to use the brakes. With practice, riding a bike becomes semi-automatic, freeing us to focus our attention on other things. As we do so, we experience what the early psychologist William James called a continuous “stream of consciousness,” with each moment flowing into the next. Over time, we flit between different *states of consciousness*, including sleeping, waking, and various altered states (**FIGURE 22.1**).

### AP® Exam Tip

Note that our modern-day understanding of the unconscious is very different from Sigmund Freud's theory of the unconscious (Module 55). Freud believed the unconscious was a hiding place for our most anxiety-provoking ideas and emotions, and that uncovering those hidden thoughts could lead to healing. Now, most psychologists simply view the unconscious track as one that operates without awareness. Make sure you keep these two ideas of the unconscious straight.

Some states occur spontaneously	Daydreaming	Drowsiness	Dreaming
Some are physiologically induced	Hallucinations	Orgasm	Food or oxygen starvation
Some are psychologically induced	Sensory deprivation	Hypnosis	Meditation

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## Hypnosis



What is hypnosis, and what powers does a hypnotist have over a hypnotized subject?

Imagine you are about to be hypnotized. The hypnotist invites you to sit back, fix your gaze on a spot high on the wall, and relax. In a quiet voice the hypnotist suggests, “Your eyes are growing tired . . . Your eyelids are becoming heavy . . . now heavier and heavier. . . They are beginning to close. . . You are becoming more deeply relaxed. . . Your breathing is now deep and regular. . . Your muscles are becoming more and more relaxed. Your whole body is beginning to feel like lead.”

After a few minutes of this *hypnotic induction*, you may experience **hypnosis**. When the hypnotist suggests, “Your eyelids are shutting so tight that you cannot open them even if you try,” it may indeed seem beyond your control to open your eyelids. Told to forget the number 6, you may be puzzled when you count 11 fingers on your hands. Invited to smell a sensuous perfume that is actually ammonia, you may linger delightedly over its pungent odor. Told that you cannot see a certain object, such as a chair, you may indeed report that it is not there, although you manage to avoid the chair when walking around (illustrating once again that two-track mind of yours).

But is hypnosis really an *altered* state of consciousness? Let's start with some frequently asked questions.

### Frequently Asked Questions About Hypnosis

Hypnotists have no magical mind-control power. Their power resides in the subjects' openness to suggestion, their ability to focus on certain images or behaviors (Bowers, 1984). But how open to suggestions are we?

Figure 22.1

States of consciousness

In addition to normal, waking awareness, consciousness comes to us in altered states, including daydreaming and meditating.

**consciousness** our awareness of ourselves and our environment.

**hypnosis** a social interaction in which one person (the subject) responds to another person's (the hypnotist's) suggestions that certain perceptions, feelings, thoughts, or behaviors will spontaneously occur.

**AP® Exam Tip**

Psychological research corrects the mistaken popular belief that hypnosis or other methods can be used to tap into a pure and complete memory bank. You will learn much more about how memory really works when you get to Unit VII.

"Hypnosis is not a psychological truth serum and to regard it as such has been a source of considerable mischief." -RESEARCHER KENNETH BOWERS (1987)

**FVI**

See Module 33 for a more detailed discussion of how people may construct false memories.

"It wasn't what I expected. But facts are facts, and if one is proved to be wrong, one must just be humble about it and start again."  
-AGATHA CHRISTIE'S MISS MARPLE

**posthypnotic suggestion**

a suggestion, made during a hypnosis session, to be carried out after the subject is no longer hypnotized; used by some clinicians to help control undesired symptoms and behaviors.

- **Can anyone experience hypnosis?** To some extent, we are all open to suggestion. When people stand upright with their eyes closed and are told that they are swaying back and forth, most will indeed sway a little. In fact, *postural sway* is one of the items assessed on the Stanford Hypnotic Susceptibility Scale. People who respond to such suggestions without hypnosis are the same people who respond with hypnosis (Kirsch & Braffman, 2001).

Highly hypnotizable people—say, the 20 percent who can carry out a suggestion not to smell or react to a bottle of ammonia held under their nose—typically become deeply absorbed in imaginative activities (Barnier & McConkey, 2004; Silva & Kirsch, 1992). Many researchers refer to this as hypnotic ability—the ability to focus attention totally on a task, to become imaginatively absorbed in it, to entertain fanciful possibilities.

- **Can hypnosis enhance recall of forgotten events?** Most people believe (wrongly, as Module 32 will explain) that our experiences are all “in there,” recorded in our brain and available for recall if only we can break through our own defenses (Loftus, 1980). But 60 years of memory research disputes such beliefs. We do not encode everything that occurs around us. We permanently store only some of our experiences, and we may be unable to retrieve some memories we have stored.

“Hypnotically refreshed” memories combine fact with fiction. Since 1980, thousands of people have reported being abducted by UFOs, but most such reports have come from people who are predisposed to believe in aliens, are highly hypnotizable, and have undergone hypnosis (Newman & Baumeister, 1996; Nickell, 1996). Without either person being aware of what is going on, a hypnotist’s hints—“Did you hear loud noises?”—can plant ideas that become the subject’s pseudomemory.

So should testimony obtained under hypnosis be admissible in court? American, Australian, and British courts have agreed it should not. They generally ban testimony from witnesses who have been hypnotized (Druckman & Bjork, 1994; Gibson, 1995; McConkey, 1995).

- **Can hypnosis force people to act against their will?** Researchers have induced hypnotized people to perform an apparently dangerous act: plunging one hand briefly into fuming “acid,” then throwing the “acid” in a researcher’s face (Orne & Evans, 1965). Interviewed a day later, these people emphatically denied their acts and said they would never follow such orders.

Had hypnosis given the hypnotist a special power to control others against their will? To find out, researchers Martin Orne and Frederick Evans unleashed that enemy of so many illusory beliefs—the control group. Orne asked other individuals to *pretend* they were hypnotized. Laboratory assistants, unaware that those in the experiment’s control group had not been hypnotized, treated both groups the same. The result? All the *unhypnotized* participants (perhaps believing that the laboratory context assured safety) performed the same acts as those who were hypnotized.

- **Can hypnosis be therapeutic?** *Hypnotherapists* try to help patients harness their own healing powers (Baker, 1987). **Posthypnotic suggestions** have helped alleviate headaches, asthma, and stress-related skin disorders.

In one statistical digest of 18 studies, the average client whose therapy was supplemented with hypnosis showed greater improvement than 70 percent of other therapy patients (Kirsch et al., 1995, 1996). Hypnosis seemed especially helpful for the treatment of obesity. However, drug, alcohol, and smoking addictions have not responded well to hypnosis (Nash, 2001). In controlled studies, hypnosis speeds the disappearance of warts, but so do the same positive suggestions given without hypnosis (Spanos, 1991, 1996).

- **Can hypnosis relieve pain?** Hypnosis can relieve pain (Druckman & Bjork, 1994; Jensen, 2008). When unhypnotized people put their arm in an ice bath, they feel intense pain within 25 seconds. When hypnotized people do the same after being given suggestions to feel no pain, they indeed report feeling little pain. As some dentists know, light hypnosis can reduce fear, thus reducing hypersensitivity to pain.

Hypnosis inhibits pain-related brain activity. In surgical experiments, hypnotized patients have required less medication, recovered sooner, and left the hospital earlier than unhypnotized control patients (Askay & Patterson, 2007; Hammond, 2008; Spiegel, 2007). Nearly 10 percent of us can become so deeply hypnotized that even major surgery can be performed without anesthesia. Half of us can gain at least some pain relief from hypnosis. The surgical use of hypnosis has flourished in Europe, where one Belgian medical team has performed more than 5000 surgeries with a combination of hypnosis, local anesthesia, and a mild sedative (Song, 2006).



**Hypnotherapy** This therapy aims to help people uncover problem-causing thoughts and feelings, or to change an unwanted behavior.

## Explaining the Hypnotized State

### 22-3 Is hypnosis an extension of normal consciousness or an altered state?

We have seen that hypnosis involves heightened suggestibility. We have also seen that hypnotic procedures do not endow a person with special powers but can sometimes help people overcome stress-related ailments and cope with pain. So, just what *is* hypnosis? Psychologists have proposed two explanations.

#### HYPNOSIS AS A SOCIAL PHENOMENON

Our attentional spotlight and interpretations powerfully influence our ordinary perceptions. Might hypnotic phenomena reflect such workings of normal consciousness, as well as the power of social influence (Lynn et al., 1990; Spanos & Coe, 1992)? Advocates of the *social influence theory of hypnosis* believe they do.

Does this mean that subjects consciously fake hypnosis? *No*—like actors caught up in their roles, they begin to feel and behave in ways appropriate for “good hypnotic subjects.” The more they like and trust the hypnotist, the more they allow that person to direct their attention and fantasies (Gfeller et al., 1987). “The hypnotist’s ideas become the subject’s thoughts,” explained Theodore Barber (2000), “and the subject’s thoughts produce the hypnotic experiences and behaviors.” Told to scratch their ear later when they hear the word *psychology*, subjects will likely do so—but only if they think the experiment is still under way. If an experimenter eliminates their motivation for acting hypnotized—by stating that hypnosis reveals their “gullibility”—subjects become unresponsive. Such findings support the idea that hypnotic phenomena are an extension of normal social and cognitive processes.

These views illustrate a principle that Module 75 emphasizes: *An authoritative person in a legitimate context can induce people—hypnotized or not—to perform some unlikely acts.* Or as hypnosis researcher Nicholas Spanos (1982) put it, “The overt behaviors of hypnotic subjects are well within normal limits.”

#### HYPNOSIS AS DIVIDED CONSCIOUSNESS

Other hypnosis researchers believe hypnosis is more than inducing someone to play the role of “good subject.” How, they ask, can we explain why hypnotized subjects sometimes carry out suggested behaviors on cue, even when they believe no one is watching (Perugini et al., 1998)? And why does distinctive brain activity accompany hypnosis (Oakley & Halligan, 2009)? In one

experiment, deeply hypnotized people were asked to imagine a color, and areas of their brain activated as if they were really seeing the color. To the hypnotized person's brain, mere imagination had become a compelling hallucination (Kosslyn et al., 2000). In another experiment, researchers invited hypnotizable and nonhypnotizable people to say the color of letters. This is an easy task, but it slows if, say, green letters form the conflicting word **RED**, a phenomenon known as the *Stroop effect* (Raz et al., 2005). When easily hypnotized people were given a suggestion to focus on the color and to perceive the letters as irrelevant gibberish, they were much less slowed by the word-color conflict. (Brain areas that decode words and detect conflict remained inactive.)

**dissociation** a split in consciousness, which allows some thoughts and behaviors to occur simultaneously with others.

These results would not have surprised famed researcher Ernest Hilgard (1986, 1992), who believed hypnosis involves not only social influence but also a special dual-processing state of **dissociation**—a split between different levels of consciousness. Hilgard viewed hypnotic dissociation as a vivid form of everyday mind splits—similar to doodling while listening to a lecture or typing the end of a sentence while starting a conversation. Hilgard felt that when, for example, hypnotized people lower their arm into an ice bath, as in **FIGURE 22.2**, the hypnosis dissociates the sensation of the pain stimulus (of which the subjects are still aware) from the emotional suffering that defines their experience of pain. The ice water therefore feels cold—very cold—but not painful.

**Figure 22.2**

**Dissociation or role playing?**

A hypnotized woman tested by Ernest Hilgard exhibited no pain when her arm was placed in an ice bath. But asked to press a key if some part of her felt the pain, she did so. To Hilgard, this was evidence of dissociation, or divided consciousness. Proponents of social influence theory, however, maintain that people responding this way are caught up in playing the role of "good subject."

**Divided-consciousness theory:**  
Hypnosis has caused a split in awareness.

**Attention is diverted from a painful ice bath. How?**

**Social influence theory:**  
The subject is so caught up in the hypnotized role that she ignores the cold.



Courtesy Elizabeth Jecker

**Biological influences:**

- distinctive brain activity
- unconscious information processing

**Psychological influences:**

- focused attention
- expectations
- heightened suggestibility
- dissociation between normal sensations and conscious awareness

**Social-cultural influences:**

- presence of an authoritative person in legitimate context
- role playing "good subject"

**Hypnosis**

Another form of dual processing—*selective attention*—may also play a role in hypnotic pain relief. PET scans show that hypnosis reduces brain activity in a region that processes painful stimuli, but not in the sensory cortex, which receives the raw sensory input (Rainville et al., 1997). Hypnosis does not block sensory input, but it may block our attention to those stimuli. This helps explain why an injured athlete, caught up in the competition, may feel little or no pain until the game ends.

Although the divided-consciousness theory of hypnosis is controversial, this much seems clear: There is, without doubt, much more to thinking and acting than we are conscious of. Our information processing, which starts with selective attention, is divided into simultaneous conscious and nonconscious realms. In hypnosis as in life, *much of our behavior occurs on autopilot*. We have two-track minds (**FIGURE 22.3**).

**Figure 22.3**

**Levels of analysis for hypnosis** Using a biopsychosocial approach, researchers explore hypnosis from complementary perspectives.

## Before You Move On

### ► ASK YOURSELF

You've read about two examples of dissociated consciousness: talking while texting, and thinking about something else while reading a child a bedtime story. Can you think of another example that you have experienced?

### ► TEST YOURSELF

When is the use of hypnosis potentially harmful, and when can hypnosis be used to help?

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

## Module 22 Review

22-1

What is the place of consciousness in psychology's history?

- After initially claiming consciousness as its area of study in the nineteenth century, psychologists had abandoned it in the first half of the twentieth century, turning instead to the study of observable behavior because they believed consciousness was too difficult to study scientifically.
- Since 1960, under the influence of cognitive psychology and neuroscience, *consciousness* (our awareness of ourselves and our environment) has resumed its place as an important area of research.

22-2

What is hypnosis, and what powers does a hypnotist have over a hypnotized subject?

- *Hypnosis* is a social interaction in which one person suggests to another that certain perceptions, feelings, thoughts, or behaviors will spontaneously occur.
- Hypnosis does not enhance recall of forgotten events (it may even evoke false memories).
- It cannot force people to act against their will, though hypnotized people, like un hypnotized people, may perform unlikely acts.
- *Posthypnotic suggestions* have helped people harness their own healing powers but have not been very effective in treating addiction. Hypnosis can help relieve pain.

22-3

Is hypnosis an extension of normal consciousness or an altered state?

- Many psychologists believe that hypnosis is a form of normal social influence and that hypnotized people act out the role of "good subject" by following directions given by an authoritative person.
- Other psychologists view hypnosis as a *dissociation*—a split between normal sensations and conscious awareness. Selective attention may also contribute by blocking attention to certain stimuli.

## Multiple-Choice Questions

1. What do we call awareness of our environment and ourselves?
  - a. Selective attention
  - b. Hypnotism
  - c. Posthypnotic suggestion
  - d. Dissociation
  - e. Consciousness
2. Which of the following is true about daydreaming?
  - a. It occurs spontaneously.
  - b. It is physiologically induced.
  - c. It is psychologically induced.
  - d. It is considered the same as waking awareness.
  - e. It is more like meditation than it is like dreaming.
3. Which of the following states of consciousness occurs when one person suggests to another that certain thoughts or behaviors will spontaneously occur?
  - a. Dreaming
  - b. Hypnosis
  - c. Daydreaming
  - d. Hallucination
  - e. Waking awareness
4. Which of the following is the term most closely associated with the split in consciousness that allows some thoughts and behaviors to occur simultaneously with others?
  - a. Consciousness
  - b. Hypnosis
  - c. Hallucination
  - d. Dissociation
  - e. Meditation

## Practice FRQs

1. Identify two states of consciousness that are psychologically induced and two that occur spontaneously.
2. According to the biopsychosocial approach, identify a biological, a psychological, and a social-cultural influence on hypnosis.

(3 points)

### Answer

*1 point:* For any two psychologically induced states: sensory deprivation, hypnosis, or meditation.

*1 point:* For any two spontaneously occurring states: daydreaming, drowsiness, or dreaming.

# Module 23

## Sleep Patterns and Sleep Theories

### Module Learning Objectives

- 23-1** Describe how our biological rhythms influence our daily functioning.
- 23-2** Describe the biological rhythm of our sleeping and dreaming stages.
- 23-3** Explain how biology and environment interact in our sleep patterns.
- 23-4** Describe sleep's functions.

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Sleep—the irresistible tempter to whom we inevitably succumb. Sleep—the equalizer of teachers and teens. Sleep—sweet, renewing, mysterious sleep. While sleeping, you may feel “dead to the world,” but you are not. Even when you are deeply asleep, your perceptual window is open a crack. You move around on your bed, but you manage not to fall out. The occasional roar of passing vehicles may leave your deep sleep undisturbed, but a cry from a baby’s room quickly interrupts it. So does the sound of your name. Electroencephalograph (EEG) recordings confirm that the brain’s auditory cortex responds to sound stimuli even during sleep (Kutas, 1990). And when you are asleep, as when you are awake, you process most information outside your conscious awareness.

Many of sleep’s mysteries are now being solved as some people sleep, attached to recording devices, while others observe. By recording brain waves and muscle movements, and by observing and occasionally waking sleepers, researchers are glimpsing things that a thousand years of common sense never told us. Perhaps you can anticipate some of their discoveries. Are the following statements true or false?

1. When people dream of performing some activity, their limbs often move in concert with the dream.
2. Older adults sleep more than young adults.
3. Sleepwalkers are acting out their dreams.
4. Sleep experts recommend treating insomnia with an occasional sleeping pill.
5. Some people dream every night; others seldom dream.

All these statements (adapted from Palladino & Carducci, 1983) are *false*. To see why, read on.

“I love to sleep. Do you? Isn’t it great? It really is the best of both worlds. You get to be alive and unconscious.” —COMEDIAN RITA RUDNER, 1993

### Biological Rhythms and Sleep

Like the ocean, life has its rhythmic tides. Over varying periods, our bodies fluctuate, and with them, our minds. Let’s look more closely at two of those biological rhythms—our 24-hour biological clock and our 90-minute sleep cycle.