

CHAPTER 7: STATES OF CONSCIOUSNESS

IF YOU LEARN ONLY THREE THINGS IN THIS CHAPTER . . .

1. People dream during REM sleep.
2. Sleep isn't easy for everyone. There are a variety of sleep disorders that are important to understand.
3. It is important to understand the different stages of sleep.

INTRODUCTION

The topic of consciousness is one that has intrigued psychologists since the beginning of experimental psychology. In fact, the earliest writings in psychology focused on the notion of consciousness. Wundt and James were fascinated with this concept, both from the perspective of how it was **organized** (Wundt) and how it **worked** (James). However, what is consciousness, and how do we understand it in modern psychology? And what does it mean to be in an awakened state of consciousness?

Defined, **consciousness** refers to the active processing of information in the brain. It could be thought of as a form of short-term memory and attention combined. It is the activity that is currently running through our heads or minds. As you sit here, what are you thinking about? This book? Your day? What you are going to have for dinner? All would be part of your consciousness. An altered state of consciousness would be a disruption in normal functioning (e.g., when someone takes drugs).

Studying consciousness is difficult, because we don't have a good definition of it and because we can't really see it. However, techniques have been developed to serve as a *proxy* for consciousness. One of the easiest ways to study consciousness is to examine the process that many high school and college students are interested in: **sleep**.

SLEEP

Sleep is a process that occurs for reasons that are not entirely clear. We do know there is a mechanism that causes us to fall asleep in the brain (two structures, really). And we believe that there is an evolutionary purpose for sleep (at one time, it was dangerous to be active at night). Yet the body does not do as much recuperation during sleep as we might believe, and the brain is active during sleep, so we are not really decreasing activity.

What we do know for sure is that sleep can be measured by tracing the brain waves of someone who sleeps. These brain waves indicate the stage of sleep the person is in.

STAGE 1

In stage 1 sleep, the brain waves are similar to those when someone is awake, where quite a bit of activity occurs. A person in stage 1 sleep is barely asleep; he can be awakened quite easily.

STAGE 2

In stage 2, a person's brain waves slow down dramatically. This is a deeper stage of sleep. Sleep spindles (bursts of neural activity that may be linked to muscle spasms or random neural firings) occur. A person in stage 2 is not so easy to wake up because there is less neural activity.

STAGE 3

This stage is the first of what is called **slow wave sleep**. The brain activity and, hence, the brain waves are very slow. A person in this stage sleeps more deeply and would be difficult to wake up.

STAGE 4

This is the deepest stage of sleep. During this stage, the brain waves are the slowest. In this stage, if a person tried to shut off his ringing alarm, he would remain very groggy. This is because he has to "speed up" his brain activity to engage in that conscious action. So it would take a minute just to get to the point of being able to move toward the clock.

REM SLEEP (OR PARADOXICAL SLEEP)

Rapid eye movement (**REM**) sleep is the stage during which we dream. When we are in REM, our brain waves work almost as fast as they do when we are awake, but the brain causes a decrease in

muscle tone and control. The purpose of this is to decrease the likelihood that you might act out your dreams! If it were severed, you would potentially move around and do a variety of activities that might not be appropriate.

One question psychology students always ask is, “When do we sleepwalk?” Not during REM sleep—it isn’t possible. Someone might sleepwalk during stage 3 or 4, but not during REM.

The typical person sleeps approximately eight hours a night (though this varies dramatically). Because each set of stages takes around 90 minutes, she will progress through these stages four to six times throughout the night. As the night goes on, more time is spent in REM sleep than in the other stages, which is why we remember dreaming when we awaken. Also, heart rate, blood pressure, and body temperature decrease early in the night but then begin to increase as morning comes. This explains why we cover up at night and then, closer to morning, will kick one leg out of the blankets to cool off.

During REM sleep, we typically experience dreams. Dreams have been of interest to humans for all of recorded history. At one time, they were considered to be messages from others or from evil spirits. But today, our theories of dreaming are much more scientifically based.

Dreams seem to be manifested by our interactions with others or events that occur during the day. When we dream, our brain is as active as it is while we are awake: We experience images, sensations, and so on that we synthesize into dreams. This is called the **activation-synthesis hypothesis**.

Dreams can be frightening, and we all suffer from nightmares occasionally. Yet in rare circumstances, children—boys, in particular—will experience **night terrors**, horrific thoughts that cause a great deal of agitation. Children often cannot describe the image or thought but are very scared by the image. Heart rate is high, and breathing rate increases. Night terrors differ from dreams in that they occur during stage 4 sleep—not REM sleep.

SLEEP DISORDERS

A variety of sleep disorders cause people to suffer.

NARCOLEPSY

Narcolepsy is a condition of excessive sleepiness. A person will fall asleep at unpredictable times and, in fact, cannot control her sleepiness. This type of

AP EXPERT TIP

A good way to help yourself organize the sleep disorders is to list them in order from “least disabling” to “most disabling.”

condition significantly affects a person's daily life. People with this disorder go immediately into REM. Narcolepsy is often associated with cataplexy. During cataplexy, a person will fall into REM sleep for reasons that are not clear. With a subsequent loss of motor control, the person will typically fall down.

INSOMNIA

Insomnia is marked by the inability to fall asleep or to maintain sleep during the night. Insomnia has several causes: stress, for one, but also a disorder called sleep apnea.

Sleep apnea occurs when someone stops breathing while sleeping and, thus, wakes up to catch a breath. People with sleep apnea may not know that they are waking up, but interrupted sleep causes them to feel sleepy during the day.

SOMNAMBULISM

Sometimes during stages 3 and 4, people will sleepwalk. They are *not* sleepwalking during dream state but, rather, during a deep stage of sleep.

Sleep is very interesting to discuss. However, we do not have a great deal of knowledge that allows us to fix problems. Medications have been developed, but in general, only symptoms are treated—not the disorders themselves.

ATTENTION

The concept of attention is sometimes discussed in a chapter on cognition. Essentially, **attention** is how we focus our mental energy on any one of a number of possible stimuli. The study of attention can examine either our ability to focus on one task while blocking out other stimuli or our ability to divide our attention among tasks.

SELECTIVE ATTENTION

When we select one stimulus to focus on, this is called **selective attention**. The research on this topic has varied dramatically over the years. Some of the earliest research was done by Chèrry and Moray, who utilized the method of dichotic listening to examine the issue. **Dichotic listening** involves wearing headphones and having two different messages coming into your ears. Your task is to listen to one ear and shadow that message while ignoring the other ear.

The research on dichotic listening suggested that we can ignore information in the unattended ear, but some information does get into the unattended channel. Moray demonstrated this via the **cocktail party phenomenon**. In such a situation, you may be focusing your attention on one task, but someone says something that is highly salient to you—things like names, the word *fire* if you are in a movie theater, and so on. When we hear those things, we switch to the unattended ear and

pay attention to that information. Thus, we can pay attention to one thing at a time, but we can be distracted by information that seems important.

DIVIDED ATTENTION

By studying divided attention, psychologists have found limits to how much we can divide our attention. Our capacity essentially limits our ability to focus on more than one complex topic at a time.

If we automatize a task (that is, learn it so well that we don't have to pay attention to do it), then we can do more than one task at a time. Just imagine how you can walk and talk to a friend. But if a task isn't automatized, when we try to do it with another task that requires a lot of attention, we fail at one or both of the tasks.

Attention is crucial to understanding human behavior and consciousness. When we are conscious, it is our attention that determines what is part of our short-term memory.