

Dreams: A Modern Perspective¹

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ABSTRACT

Dreams are a universal human experience that can be described as a state of consciousness characterized by sensory, cognitive and emotional occurrences during sleep. Dreams are the stories and images that our minds create while we sleep. They can be entertaining, romantic, disturbing, frightening, and sometimes bizarre. Why and how we dream remains something of a mystery. There is no cognitive state that has been as extensively studied and yet as frequently misunderstood as dreaming. Reports of dreams tend to be full of emotional and vivid experiences that contain themes, concerns, dream figures, and objects that correspond closely to waking life. Dreams are an enduring source of mystery for scientists and psychological doctors. They are by nature difficult to study in a laboratory, but technology and new research techniques may help improve our understanding of dreams. They possibly represent a unique state of consciousness that incorporates experience of the present, processing of the past, and preparation for the future. Events experienced while awake are said to feature in 1 to 2 percent of dream reports, although 65 percent of dream reports reflect aspects of recent waking life experiences.

Keywords: *Consciousness; Sleep; Memory; Senses*

DREAMS - FACT FILE

- Everyone is thought to dream between 3 and 6 times per night
- It is thought that each dream lasts between 5 to 20 minutes.
- Around 95 percent of dreams are forgotten by the time a person gets out of bed.
- Dreams most likely happen during REM sleep.
- Dreaming can help you learn and develop long-term memories.
- Blind people dream more with other sensory components compared with sighted people.

CAUSES

There are several theories about as to why we dream. Possible explanations include:

- representing unconscious desires and wishes
- interpreting random signals from the brain and body during sleep
- consolidating and processing information gathered during the day
- working as a form of psychotherapy

From evidence and new research methodologies, researchers have speculated that dreaming serves the following functions:

- Offline memory reprocessing, in which the brain consolidates learning and memory tasks and supports and records waking consciousness

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- preparing for possible future threats
- helping develop cognitive capabilities
- reflecting unconscious mental function in a psychoanalytic way

There are significant differences between the neuro scientific and psychoanalytic approaches to dream analysis. Neuroscientists are interested in the structures involved in dream production, dream organization, and narratability. However, psychoanalysis concentrates on the meaning of dreams and placing them in the context of relationships in the history of the dreamer.

DREAMS AND PHASES OF SLEEP

Sleep happens in cycles. Each complete sleep cycle takes about 90 to 110 minutes. There are five phases of sleep in a sleep cycle: Rapid Eye Movement (REM) sleep is the deepest stage of sleep, and it is the only time that people dream. During this time, most people experience muscle atonia, which means that the body has shut down and is effectively in paralysis. The first REM sleep period usually occurs around 70 to 90 minutes after we fall asleep. During this phase, an amino acid known as glycine is released from the brain stem onto the motor neurons. These motor neurons conduct impulses outward from the brain or spinal cord. In this Stage breathing becomes more rapid, irregular, and shallow, eyes jerk rapidly in various directions, and limb muscles become temporarily paralyzed. Heart rate increases, blood pressure rises, and males develop penile erections. When people awaken during REM sleep, they often describe bizarre and illogical tales. This stage accounts for 20 to 25 percent of total sleep time

Researchers have different theories about the relationship between dreaming and REM sleep. One study has suggested that dreaming can happen during both REM and non-REM (NREM) sleep, but that different physiological processes underlie the dreaming at each stage. The dreams that occur during these periods may differ significantly in both quality and quantity and probably result from different processes.

CHARACTERS

Studies have examined the “characters” that appear in dream reports and how they the dreamer identifies them.

- Forty-eight percent of characters represented a named person known to the dreamer.
- Thirty-six percent of characters were identified by their social role (for example, policeman) or relationship to dreamer (such as a friend).
- Sixteen percent were not recognized

NIGHTMARES

Nightmares are distressing dreams that cause the dreamer to feel a number of disturbing emotions. Common reactions to a nightmare include fear and anxiety. During a nightmare, the dreamer may experience a range of disturbing emotions, such as anger, guilt, sadness or depression. However, the most common feelings are fear and anxiety. The person usually wakes up at least once during the dream.

LUCID DREAMS

Lucid dreaming is a rare state of sleep in which the dreamer knows they are dreaming and they gain insight into their state of mind during the dream .The may also have some control over their dream. This measure of control can vary between lucid dreams. Lucid dreams usually occur while a person is in the middle of a regular dream and suddenly realizes that he is dreaming. Research has shown that during lucid dreaming, parts of the brain like certain cortical areas are active that are normally suppressed during sleep. Findings have also suggested that that lucid dreaming is a unique state of consciousness separate from any other mental state.

WET DREAMS

A wet dream is when an ejaculation occurs during sleep, usually during a sexual dream. The person may not remember the dream, and it can happen without touching the penis. They may or may not wake up. They usually affect boys during puberty, when the body starts to produce the male hormone testosterone. Wet dreams are a normal part of growing up and cannot be prevented. Some boys may have several dreams a week, while other never experience one. This, too, is normal.

OVERACTIVE DREAMS

Although we may not remember every dream in vivid detail, some dream experiences are so vivid that people remember them several years later. Overactive or vivid dreams can result from:

- Sleep deprivation, especially a lack of REM sleep
- Alcohol use
- Frequent or chronic emotional stress
- Hormonal fluctuations, especially those that occur during pregnancy
- Mental health conditions, such as anxiety, depression, and schizophrenia
- Sleep disorders, such as narcolepsy and REM sleep behavior disorder

Vivid or disturbing dreams may be easier to recall than dreams that mimic the events of everyday life.

DREAMS AND MEMORIES

Freud maintained that undesirable memories could become suppressed in the mind. Dreams ease repression by allowing these memories to be reinstated.

Two types of temporal effects characterize the incorporation of memories into dreams:

- the day-residue effect, involving immediate incorporations of events from the preceding day
- the dream-lag effect, involving incorporations delayed by about a week. Dream-lag is when the images, experiences, or people that emerge in dreams are images, experiences, or people you have seen recently, perhaps a week or before.

Memory types as basis of dreaming:

- autobiographical memories, or long-lasting memories about the self
- episodic memories, which are memories about specific episodes or events

THEMES

The themes of dreams can be linked to the suppression of unwanted thoughts and, as a result, an increased occurrence of that suppressed thought in dreams. Some themes are familiar to many people, such as flying, falling, and arriving late.

DREAMS, SENSES, MUSIC AND COLOUR Etc

- Dreams were evaluated in people experiencing different types of headache. Results showed people with migraine had increased frequency of dreams involving taste and smell. This may suggest that the role of some cerebral structures, such as Amygdala and Hypothalamus, are involved in migraine mechanisms as well as in the biology of sleep and dreaming.
- About 80 percent of participants younger than 30 years old dreamed in colour. At 60 years old, only 20 percent said they dreamed in color. Older adults had more black and white dreams than the younger participants. Older people reported that both their color dreams and black and white dreams were equally vivid. However, younger participants said that their black and white dreams were of poorer quality.
- People with complete vision loss have fewer visual dream impressions compared with sighted participants. Blind people dream more with other sensory components compared with sighted people. People who have been unable to see from birth report more auditory, tactile, gustatory, and olfactory dream components, compared with sighted participants. The ability to see does not appear to affect emotional and thematic dream content.
- Music in dreams is rarely studied in scientific literature. However, in a study of 35 professional musicians and 30 non-musicians, the musicians experienced twice as many dreams featuring music, when compared with

non-musicians. Musical dream frequency was related to the age of commencement of musical instruction but not to the daily load of musical activity.

LAUGHING DURING SLEEP

Laughing during sleep is a common occurrence. Laughing while asleep is usually normal and harmless. In most cases, laughing while asleep is a natural response to something that occurs during a dream. Most people will experience sleep laughing in the second half of the night, and it may wake them up. The most common cause of laughing while asleep is having a strange dream. In some cases, sleep laughing has links to sleep disorders. In rare cases, it can be a symptom of a neurological disorder. A specialist doctor will diagnose RBD (Rapid Behavior Disorder) during an overnight sleep study called a polysomnogram. The most common treatment is anticonvulsant medications. In rare cases, it might signal a neurological condition that causes bouts of uncontrollable laughter throughout the day. In the absence of any other unusual behavior, however, laughing while asleep is perfectly normal.

DREAMS AND FUTURE PREDICTIONS

Some dreams may seem to predict future events. Some researchers claim to have evidence that this is possible, but there is not enough evidence to prove it. Most often, this seems to be due to coincidence, a false memory, or the unconscious mind connecting together known information. Dreams may help people learn more about their feelings, beliefs, and values. Images and symbols that appear in dreams will have meanings and connections that are specific to each person.

DREAMS AND DRUGS

- People both with and without depression experienced a decrease in dream recall frequency when using antidepressants.
- More positive dream emotions were linked to tricyclic antidepressant use.
- Nightmares occurred after discontinuing tricyclic antidepressants and the Mono Amine Oxidase Inhibitors (MAOIs) phenelzine and tranylcypromine.
- Both starting and discontinuing the use of SSRIs (Selective Serotonin Reuptake Inhibitors) or SNRIs (Serotonin & Norepinephrine Reuptake Inhibitors) seem to intensify dreaming.
- Dreams and hallucinations have long been linked to sedation under anesthesia.

DREAMS AND DISEASES

Some health conditions can change a person's sleep and dream quality.

- Psychotic major depression People with affective and non-affective psychoses have been found to have higher levels of unusual thinking, or cognitive bizarreness, both when dreaming and awake.
- Narcolepsy with Cataplexy (NC) is a neurological disorder that features excessive daytime sleepiness and changes in sleep patterns.
- Parkinson's sleep disturbances and bad dreams have been linked to Parkinson's disease.

REMEMBERING DREAMS:

The reasons that we dream and the function (or functions) of dreams remain unclear. However, we do know that everyone dreams and that most people can recall at least some dream elements. Various factors contribute to a person's ability to remember their dreams. However, it is difficult to say exactly why one person can remember their dreams and another person cannot. Dreams may arise when the brain sorts information into short- and long-term memory. A person may not remember the events of their dreams because they cannot access that information once they are awake. There is something about the phenomenon of sleep that makes it difficult to remember what has occurred. Most dreams are forgotten unless they are written down. It is often said that 5 minutes after the end of a dream, we have forgotten 50 percent of its content, and 10 minutes later, we have forgotten 90 percent. Dream researchers estimate that around 95 percent of all dreams are forgotten entirely upon awakening. Some people have no difficulty remembering several dreams rightly, while others rarely or never recall dreams. Some aspect of sleep appears to make it difficult for dreamers to remember what happened. Most dreams are forgotten, but sometimes a dream is suddenly remembered later in the day or on another day.. This suggests that the memory is not totally lost, but for some reason it is hard to retrieve.

DREAMS, BRAIN AND HARMONES

One study has proposed that the hormone cortisol plays an important role in controlling memory systems during sleep. High cortisol levels have been observed late at night and during REM sleep. Cortisol affects the interaction between the Hippocampus and the Neocortex. This interaction appears to have an impact on a specific type of memory consolidation. These could affect the content of dreams. In NREM sleep, the interaction between the Neocortex and the Hippocampus is not disrupted, and typical episodic memories occur. However, in REM sleep, dream content reflects only neocortical activation. Dreams are more likely to be fragmented and bizarre.

The findings suggest that the dorsolateral prefrontal cortex, associated with short-term memory, is less active in the dreaming brain than during waking life, while the paleo cortical and subcortical limbic areas are more active. Researchers of one study that the left hemisphere seems to provide dream origin while the right hemisphere provides dream vividness, figurativeness and affective activation level.

Brain lesion and neuroimaging studies have indicated that the temporo-parieto-occipital junction and ventromedial prefrontal cortex play crucial roles in dream recall. Another study using MRI techniques found that vivid, bizarre, and emotionally intense dreams — the dreams people usually remember — are linked to parts of brain areas known as the Amygdala and Hippocampus. The Amygdala plays a primary role in the processing and memory of emotional reactions. The Hippocampus has been implicated in important memory functions, such as consolidating information from short-term to long-term memory. The brain matter density of the Amygdala and Hippocampus did not significantly differ between the high&low dream recall groups. However, the participants who reported high dream recall had higher white matter density in their MPFC (Medial Pre Frontal Cortex) than the low dream recall group. In a 2016 article in the journal behavioral, researchers posit that people forget their dreams due to changing levels of acetylcholine and norepinephrine during sleep.

TO SUM UP:

The nature and function of dreams remain a mystery. Although researchers can observe, record, and analyze brain activity during sleep, they cannot identify exactly when a person is dreaming or determine the contents of a person's dreams. Currently, dream research relies on anecdotal evidence and people's ability to recall and then explain their dreams in an interview. Several factors can influence a person's ability to remember their dreams. These include lifestyle factors, sleep hygiene practices, and differences in brain physiology.

People have speculated about dreams for thousands of years, but only recently have advances in technology makes it possible to study brain activity in ways that may help us understand what really happens when we dream. However, much about the life of dreams remains a mystery.

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