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Why Do We Sleep and Need for Sleep

- Sleep is a critical survival need, similar to eating, drinking and breathing
- Sleep is a requirement for normal human functioning
- Sleep assists physical growth and brain development in children
- We need sleep to restore and repair various systems in our brains
- A lack of sleep can make us feel weary, irritable, slow our reaction time

Stages of sleep

Alert wakefulness (beta waves)

Quiet wakefulness (alpha waves)

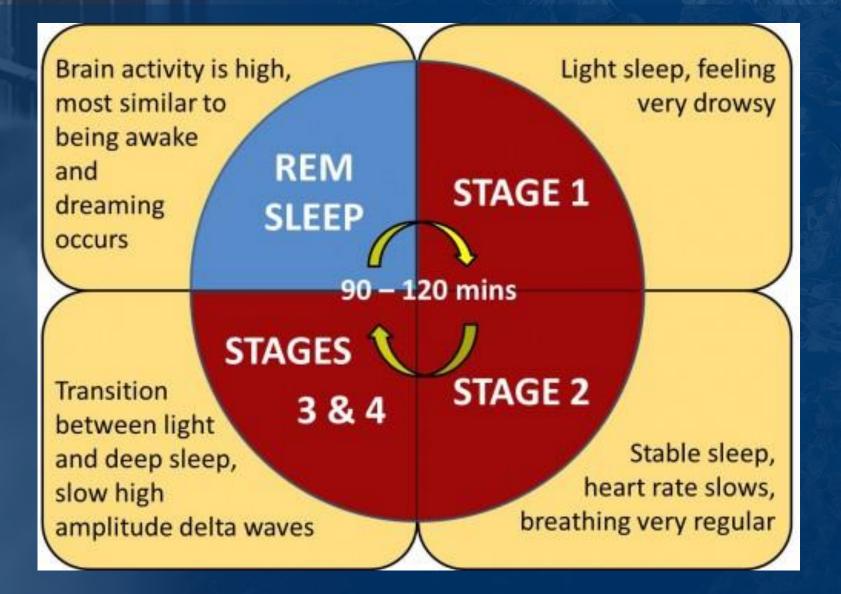
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Stage 1 sleep (low voltage and spindles)

----- 50 µV

Stages 2 and 3 sleep (theta waves)

Stage 4 slow wave sleep (delta waves)



MECHANISM OF SLEEP

There are three theories to explain how sleep is induced. All of them are valid and operating for induction of sleep and controlling the waking/sleeping rhythm.

 THE METABOLIC THEORY
THE PASSIVE THEORY (DEAFFERENTATIONTHEORY)
THE ACTIVE THEORY (SLEEP CENTERS)

(a) NREM SLEEP CENTER

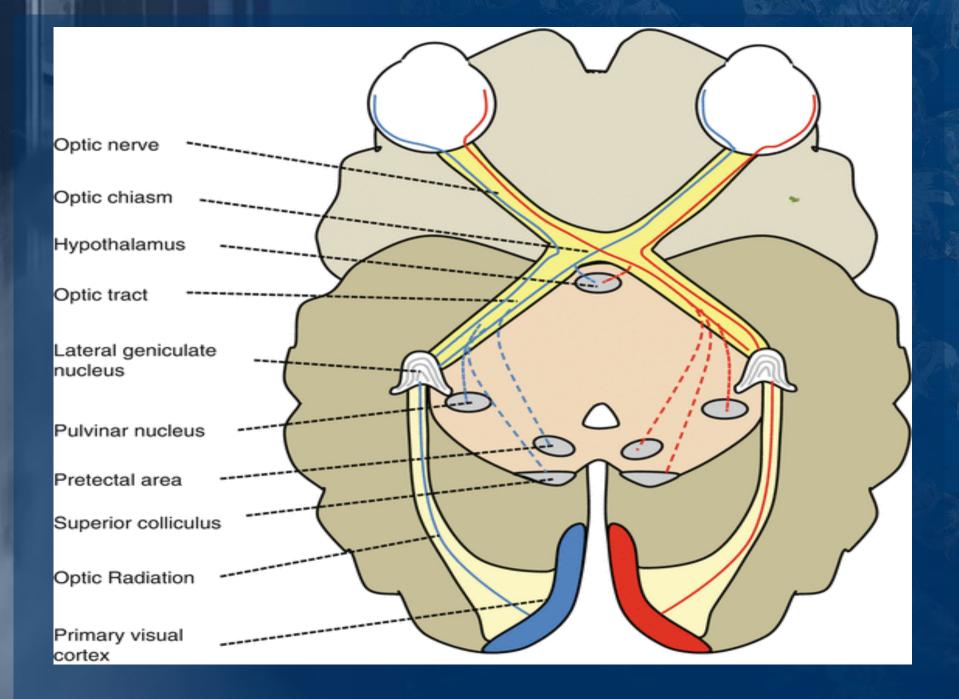
The raphe magnus nuclei of the upper medulla and lower pons are considered as a NREM sleeping center. Their stimulation induces NREM sleep. Their damage leads to prolonged insomnia. Inhibitory fibers from the raphe nuclei project to the ARAS and the cerebral cortex. These fibers are serotonergic so drugs that block the synthesis of serotonin, as chlorphenylalanin, produce prolonged insomnia. This insomnia can be treated by 5hydroxtrytophan. This is a precursor of serotonin, but unlike serotonin, it can easily cross the blood-brain barrier.

(b) REM SLEEP CENTER

The nucleus ceruleus of the pons is considered as a REM sleep center. Its stimulation converts NREM to REM sleep. It stimulates the cerebral cortex and inhibits the raphe nuclei. The EEG shows the waking desynchronized β -rhythm although the subject is asleep. It inhibits the facilitatory reticular formation leading to marked decrease in the skeletal muscle tone. A lesion in the nucleus ceruleus abolishes REM sleep, but NREM sleep can still occur.

(c) WAKING/SLEEPING OSCILLATOR CENTER

The suprachiasmatic nucleus of the anterior hypothalamus is responsible for synchronizing the waking/sleeping rhythm with the 24-hr light/dark cycle. It is considered as the waking/sleeping oscillator center. The suprachiasmatic nucleus acts by stimulating the raphe nuclei which in turn induce sleep. Damage of this nucleus leads to intense wakefulness. This eventually leads to severe exhaustion which could be fatal.

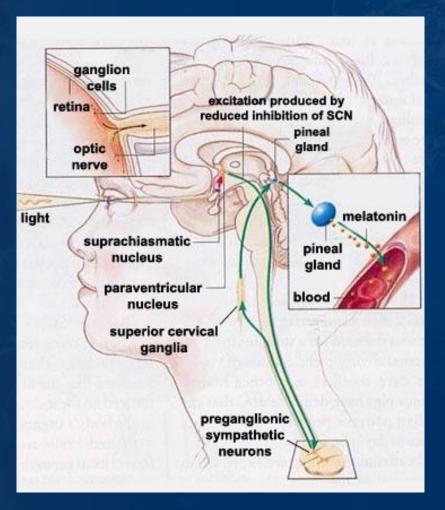


Circadian Rhythms

Biological processes that occur regularly on approximately a twentyfour-hour cycle.



THE SUPRACHIASMATIC NUCLEI AND THE PINEAL GLAND



Sleep Disorders

- Insomnia
- Sleep apnea
- Night terrors
- Narcolepsy
- Sleepwalking and sleeptalking









A series of thoughts, images, and sensations occurring in a person's mind during sleep

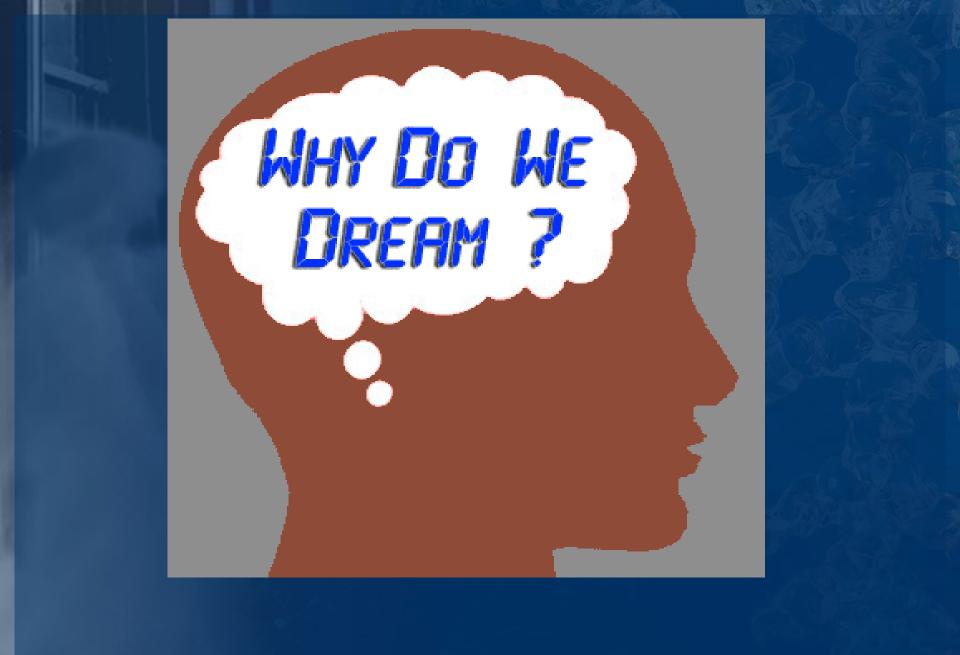
Sleep and Dreams: Why Do We *Dream*?



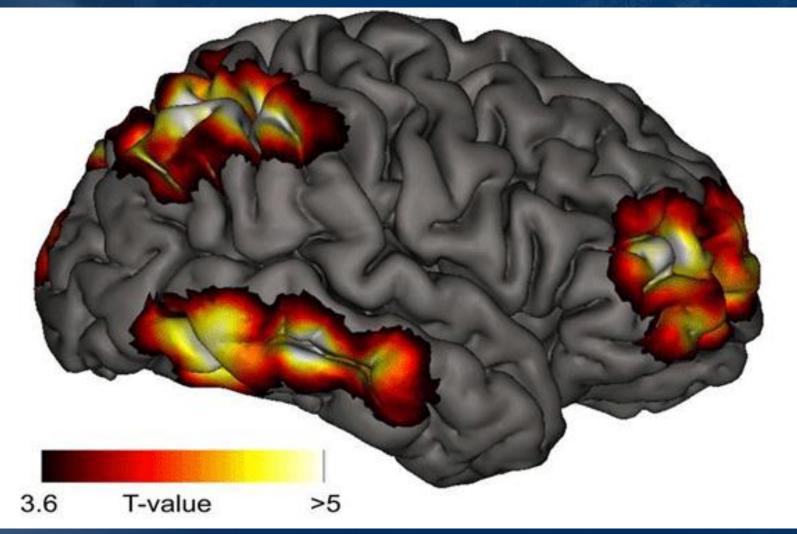
 Scientists are still trying to find out why we dream. There are many theories, but none have actually been scientifically proven.

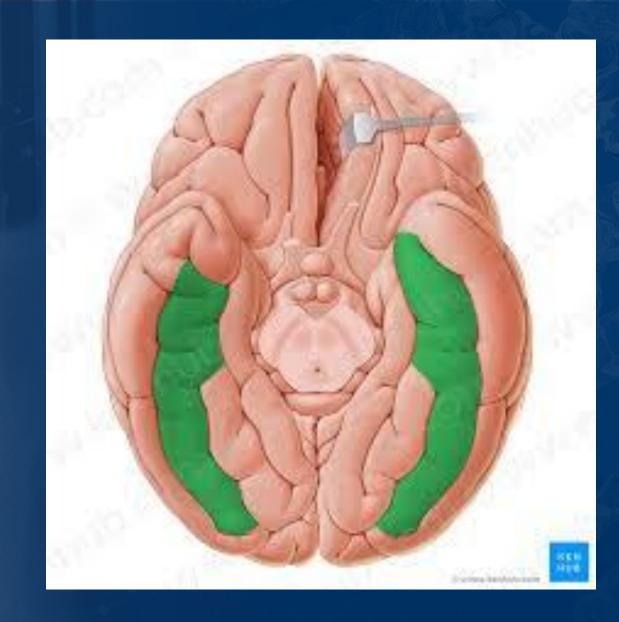
Two main Theories

- psychological theory: dreams are disguised symbols of repressed desires and anxieties
- physiological theory: dreams are simple byproducts of random stimulation of brain cells



fMRI and Dreams

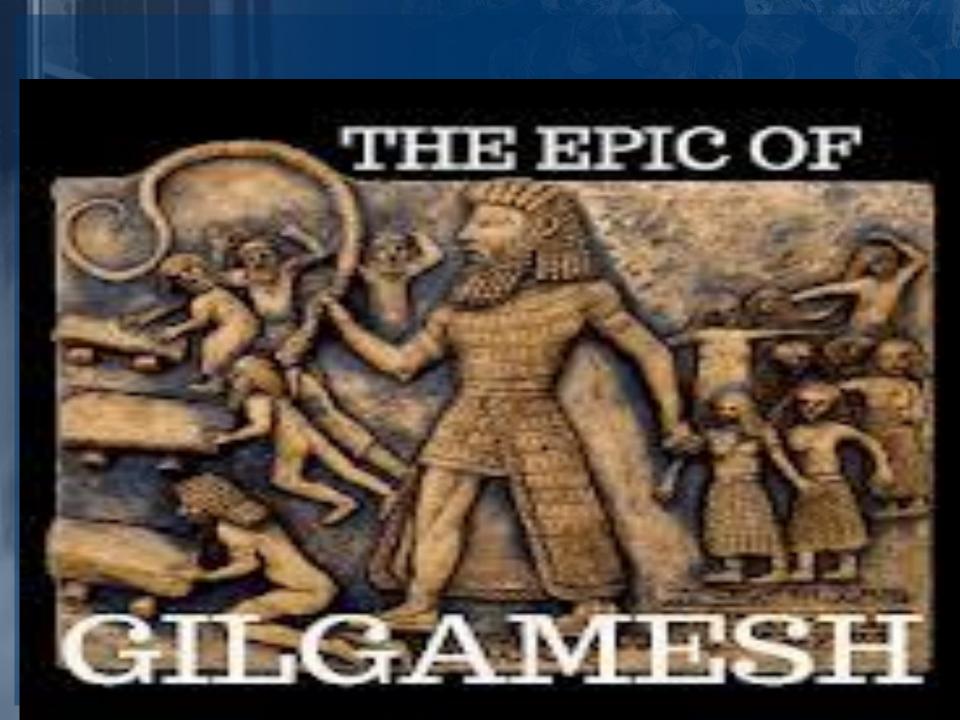




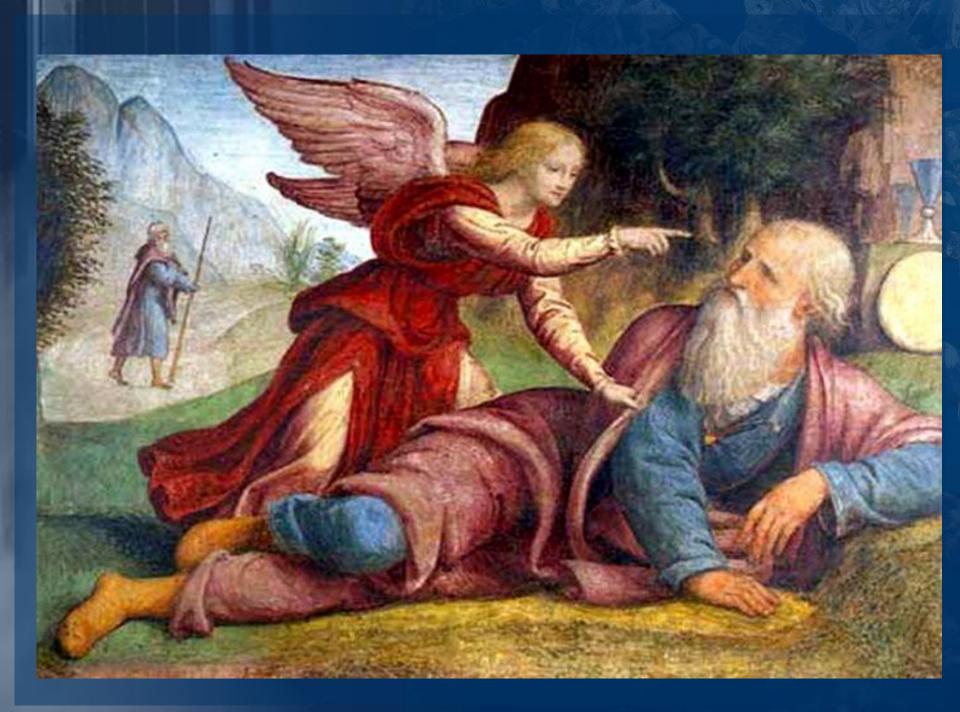


The history of dreams

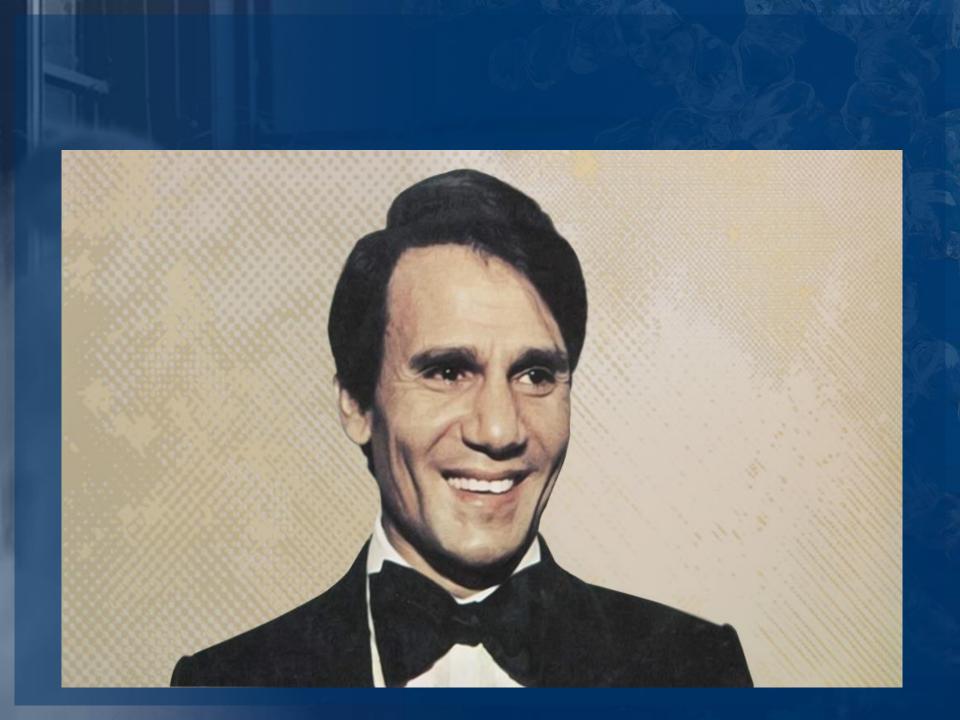














History of Dreams

Dream interpretations date back to 3000-4000 B.C. People have always been fascinated by dreams and have always wanted to understand them completely. In the ancient Greek and Roman times, dreams were thought of as messages from gods or the death. They looked to their dreams as warnings and advice on what they should do. Back then people believed that dreams tell the future. Their belief in dreams was so strong that they even depended on their dreams to find out what actions the political and military leaders should make.During the Hellenistic period, dreams were believed to be able to heal. It was believed that sick people who slept in special temples (called Asclepieions) would be sent cures through their dreams. In Ancient Egypt, priests were also thought to be dream interpreters. They recorded their dreams in hieroglyphics, and people who had significant and vivid dreams were considered special people.

What are Dreams?

- Dreams are experiences of imaginary images, sounds, voices, words, thoughts or sensations during sleep. They usually seem real while your dream is taking place. When you wake up, you either don't remember it, or you realize it never happened.
- Dreaming usually occurs during the REM (Rapid Eye Movement) stage of sleep, which is when brain activity is high and signalled by quick horizontal movements of the eye. Dreams can occur during other stages of sleep, but these are much less memorable and clear. They can sometimes last for a few minutes, or up to twenty minutes.
- Dreams are a link to the inner core of the human subconscious. They can be normal and realistic, or even bizarre and surreal.

THE INTERPRETATION OF DREAMS

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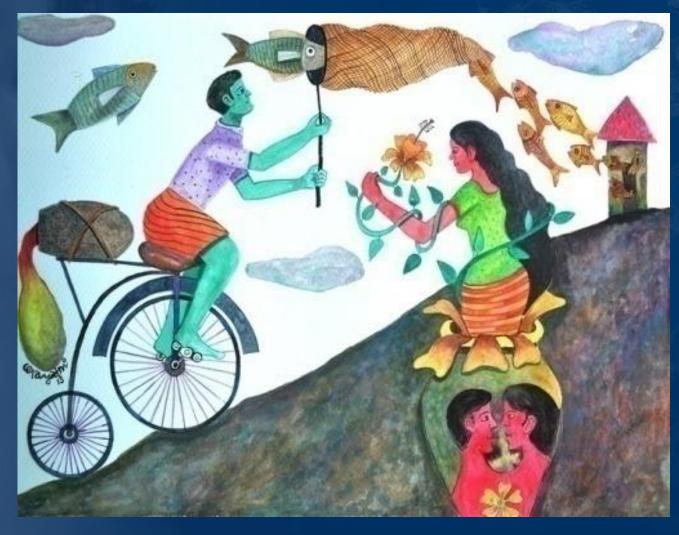
anslated by DR. A. A. BRILL

Symbolism

Dreams say what they mean, but they don't say it in daytime language. - Gail Godwin

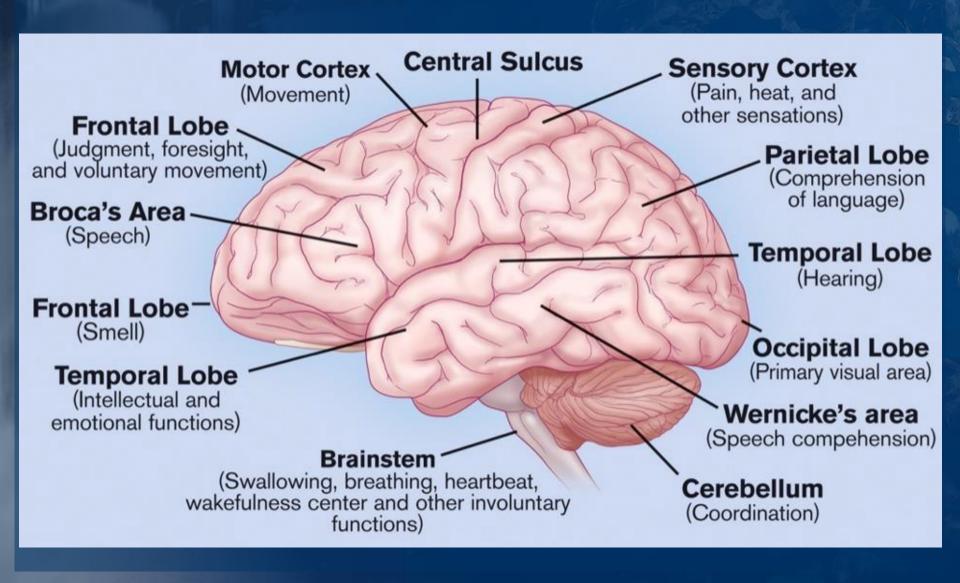
REMEMBER YOUR DREAMS

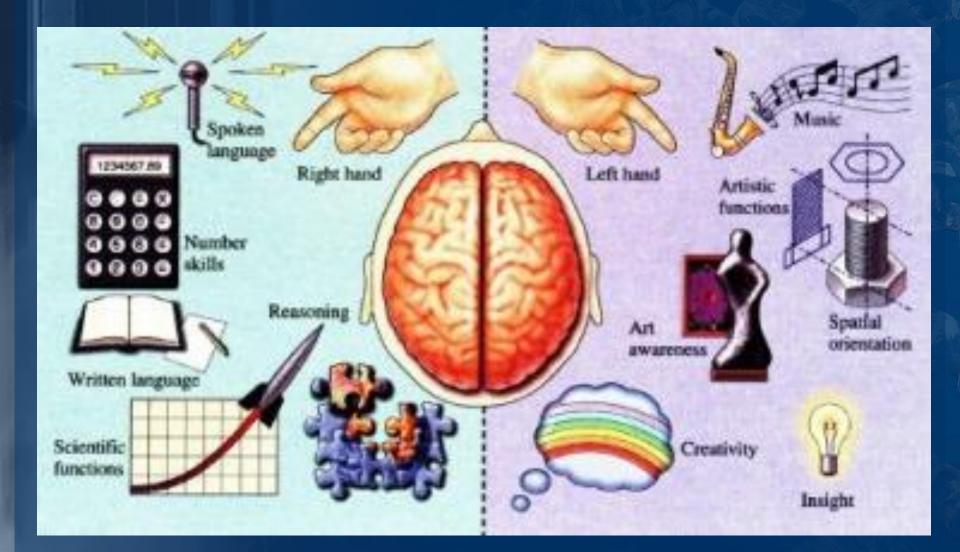
Colors of dreams



Daydreams







LEFT SIDE

- Speaking
- Reading
- Writing
- Listening
- Grammar
- Number skills
- Computation skills
- Analyzing information
- Reasoning
- Logic
- Sequential thinking
- Time awareness
- Controls right side of body

Injuries on the left side of the brain can cause:

- Difficulty understanding spoken & written language
- Difficulty expressing spoken & written language
- Changes in speech
- Verbal memory issues
- Impaired logic
- Sequencing difficulties



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RIGHT SIDE

- Organizing information
- Abstract meaning
- Context
- Spatial relationships (like map reading or shape recognition)
- Visual information
- Face recognition
- Intuition
- Emotion
- Imagination
- Detecting motion
- Music & art awareness
- Controls left side of body

Injuries on the right side of the brain can cause:

- Impairments in attention
- Left neglect
- Memory issues
- Decreased awareness of deficits
- Loss of "big picture" thinking
- Altered creative or music perception

How Brain Injury Impacts Daily Life

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Daydreams and Fantasies

Everyone daydreams. We all like to think and

imagine what it would be like to have something we want or to be someone else. We find ourselves daydreaming all the time-in the classroom, at home, walking down the street etc.. This allows us to imagine what is possible. They can help and motivate us to make new and exciting things happen. But this can distracting as they take our minds off what we are doing in serious situations such as driving and studying. Some people fantasize more than others.

The content in our daydreams are helpful in understanding your true feelings and help in fulfilling your goals. Day dreaming occurs when you are half awake, and it is the imagining or remembering of images or experiences in the past or future. You let your imagination run

away from you. When you daydream, you are using the right side of your brain. This side is the creative and more feminine side of your personality.

The worrying of things can also be called daydreaming, because when you worry you are visualising the negative and unwanted outcome of a situation. If you keep on visualising those negative images, you are more likely to make it happen. Next time you worry, think about the positive outcomes. You can use this as a tool to make positive things happen. You can use daydreams as a technique to imagine all the positive you want to happen. It is believed that many athletes, musicians and business leaders use this technique to gain success. Positive daydreaming is healthy.

Lucid dreaming



Lucid Dreaming

In some dreams, the dreamer recognises the dream that they are dreaming. This is called Lucid Dreaming Dreamers say that this is a very satisfying type of dreaming. If the dream involves fear or negative things happening, the dreamer can reassure him/herself that it is only a dream and that he or she will soon awaken. It is believed that some people can lead themselves to wake up from a frightening dream.

Nightmares



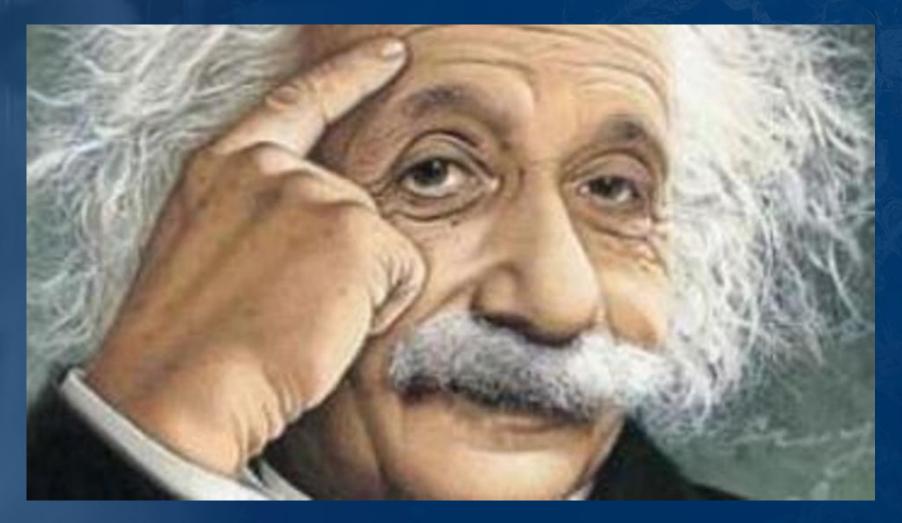
Nightmares

We have all had nightmares at some point of our lives. These dreams are quite normal. Nightmares are a subcategory of dreams. A nightmare is a dream including frightening and/or emotional content. When having a nightmare, it is possible to wake up in fear. You tend to remember nightmares and its details because of it being frightening. Sometimes, the images from a nightmare might stay with you throughout the day. One reason for nightmares may be a way of our unconscious to get our attention about a problem that you have been avoiding.

Nightmares serve an important purpose in showing you what is troubling and causing you problems. Discussing, analyzing, and understanding your nightmares can lead to a solution for some problems.



Prophetic dreams



Epic Dreams

Epic dreams, also known as Great Dreams or Cosmic Dreams, are dreams that are so memorable and vivid, that we simply cannot ignore them. The details of these dreams remain in your memory for years, as if you've dreamt it last night. These dreams contain much beauty and archetypal symbology. When you wake up from these dreams, you feel as if you have just discovered something amazing about yourself or about the world. This sometimes feels like a lifechanging experience









Dreams of the patients





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