
Dream

What are dreams?

Any conscious experience during sleep

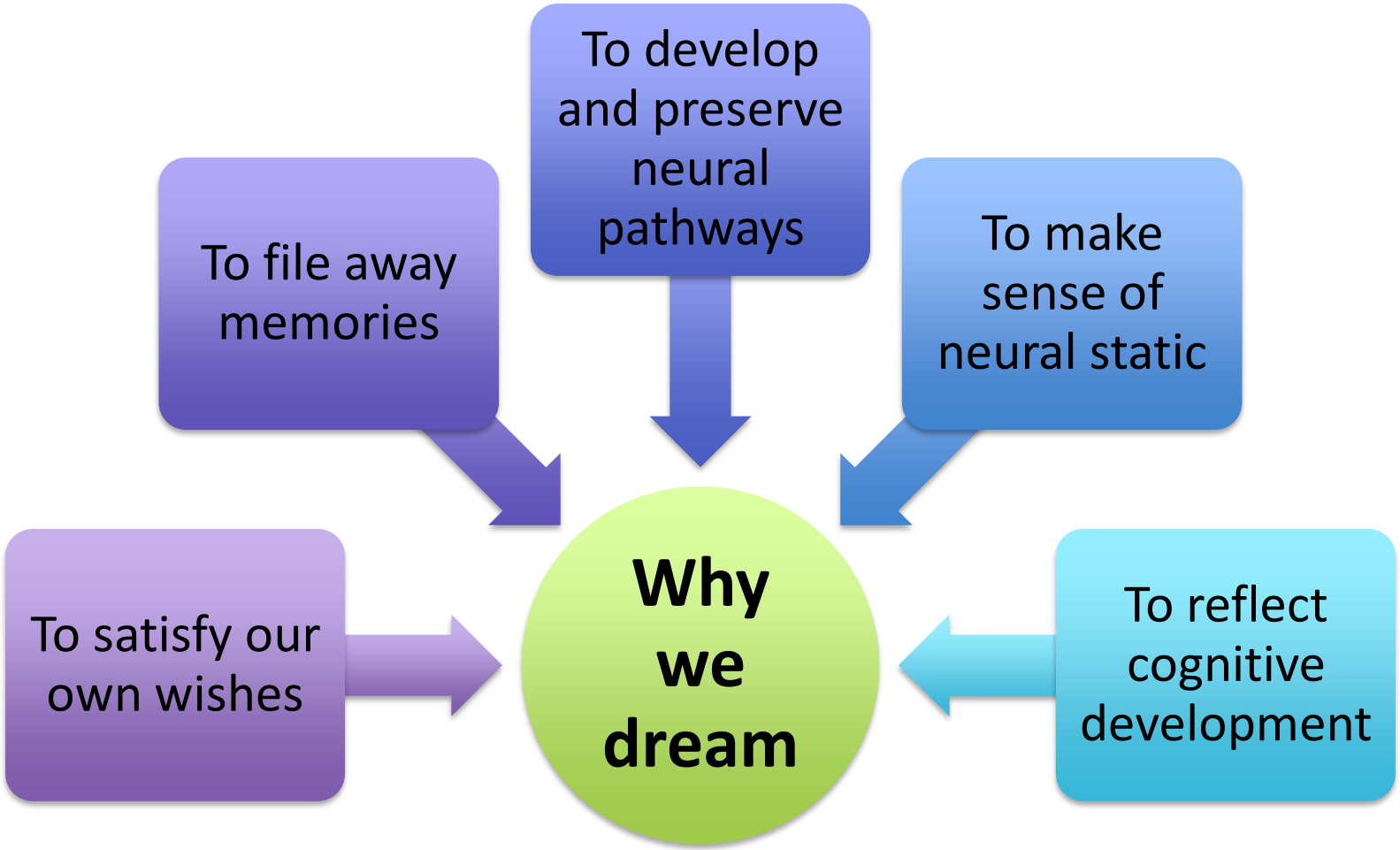
Outdated theory:

- REM = dreaming NREM = non-dreaming

New but debatable theory:

- REM= “dream-like,” emotional load, bizarreness, and vividness
- NREM= “thought-like”, less emotionally intense and the contents are closer to reality and more fragmented

Why do we dream?



What functions have theorists proposed for dreams?

Dream Theories

Theory	Explanation	Critical Considerations
Freud's wish-fulfillment	Dreams preserve sleep and provide a "psychic safety valve"—expressing otherwise unacceptable feelings; contain manifest (remembered) content and a deeper layer of latent content (a hidden meaning).	Lacks any scientific support; dreams may be interpreted in many different ways.
Information – processing	Dreams help us sort out the day's events and consolidate our memories.	But why do we sometimes dream about things we have not experienced and about past events?
Physiological function	Regular brain stimulation from REM sleep may help develop and preserve neural pathways.	This does not explain why we experience meaningful dreams.
Neural activation	REM sleep triggers neural activity that evokes random visual memories, which our sleeping brain weaves into stories.	The individual's brain is weaving the stories, which still tells us something about the dreamer.
Cognitive development	Dream content reflects dreamers' level of cognitive development—their knowledge and understanding. Dreams simulate our lives, including worst-case scenarios.	Does not propose an adaptive function of dreams.

BIOLOGICAL AND PSYCHOLOGICAL EXPLANATIONS OF BEHAVIOR ARE PARTNERS, NOT COMPETITORS.

What Do Dreams Mean?

Freud: Dreams contain hidden content that represents unconscious conflicts

- **Manifest content:** The plot of a dream; the way the dream is remembered
- **Latent content:** What a dream symbolizes; the material that is disguised in a dream to protect the dreams from confronting direct reality
- **No scientific evidence** that dreams represent hidden conflicts or that objects in dreams have special symbolic meaning

Activation-Synthesis Theory

The theory:

- Random brain activity occurs during sleep
- Neural firing can activate mechanisms that normally interpret sensory input
- The brain tries to make sense of random brain activity by synthesizing the activity with stored memories (Hobson et al., 2000)
- Dreams are the side effects of mental processes produced by random neural firing

Activation-Synthesis Theory

The theory (continued):

- Emotion centers (limbic system) in the brain are active, which explains the intense emotions; frontal cortices are not active, which explains the uncritical acceptance of illogical events

The critics:

- Dreams are not as chaotic as the activation-synthesis theory suggests (Domhoff, 2003)
- Often similar to “everyday life” waking experience

Evolved Threat-Rehearsal Theory

- **Thought question:** Why do people often dream about threatening events?
- **Possible Answer:** Perhaps dreams help us prepare to cope with real waking events.

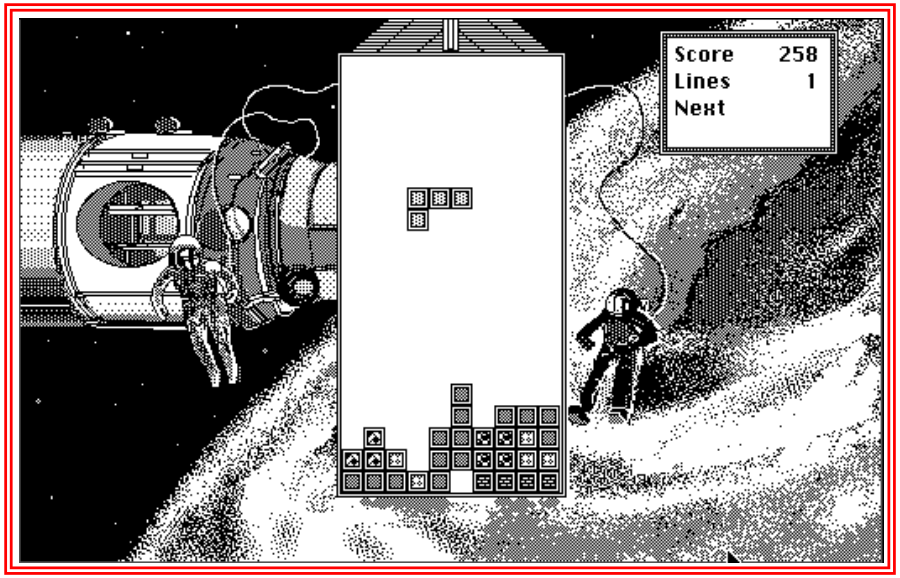
- Dreams sometimes simulate threatening events so that people can rehearse strategies for coping (Revonsuo, 2000)
- Dreams may have adaptive value if rehearsal helps us survive and reproduce

Why Do We have Nightmares? The Psychology Behind Nightmares

Sleep, Memory and Dreams

New Experiences are Replayed at Sleep Onset

Hypnagogic dreams



- Bob Stickgold

Hypnagogic Images of Tetris

Group (n)	Nights	% Ss	% Rpts
Novices	2	75%	10.4%
Experts	2 or 3	50%	4.7%

Reports of Tetris Imagery

NOVICE

"Just seeing Tetris shapes floating around in my head like they could in the game, falling down, sort of putting them together in my mind" (JEG - Day 2)

EXPERT

"…seeing in my mind how the game pieces kind of float down and fit into the other pieces and am also rotating them" (TRP - Day 2)

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Amnesiacs	3	60%	7.4%

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AMNESIAC

"I see images that are turned on their side. I don't know what they are from, I wish I could remember, but they're like blocks" (JEG - Day 2)

Dream Content Predicts Sleep-Dependent Consolidation

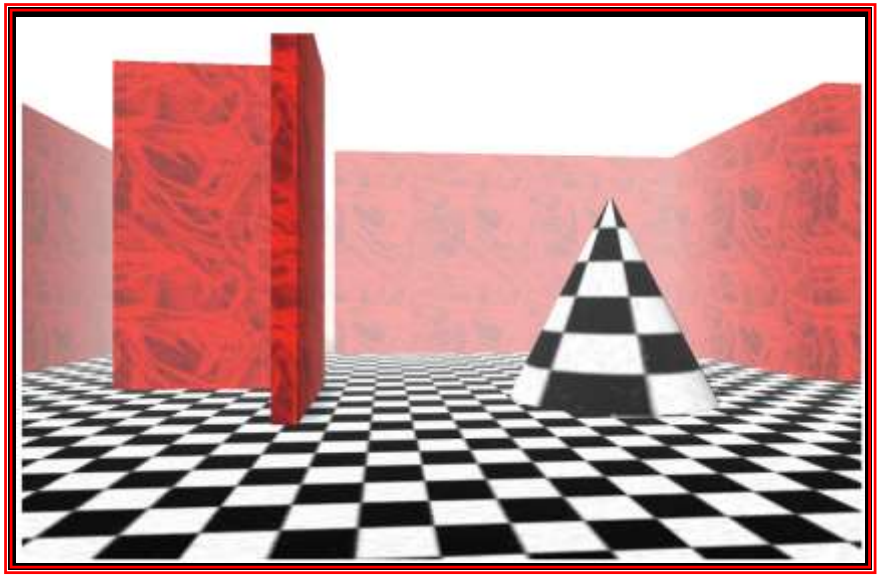
NREM Napping

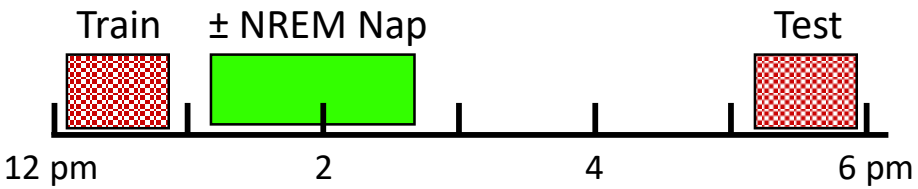
NYTimes.com April 22, 2010

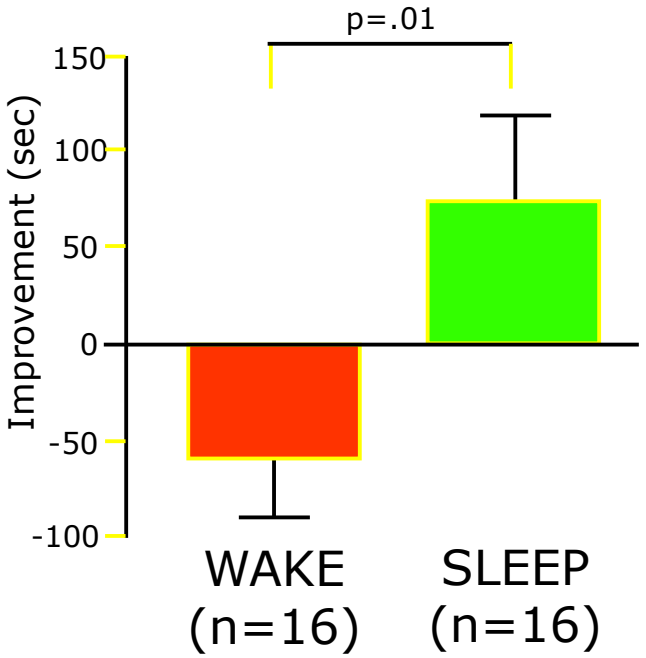
Learning While You Dream

By TARA PARKER-POPE

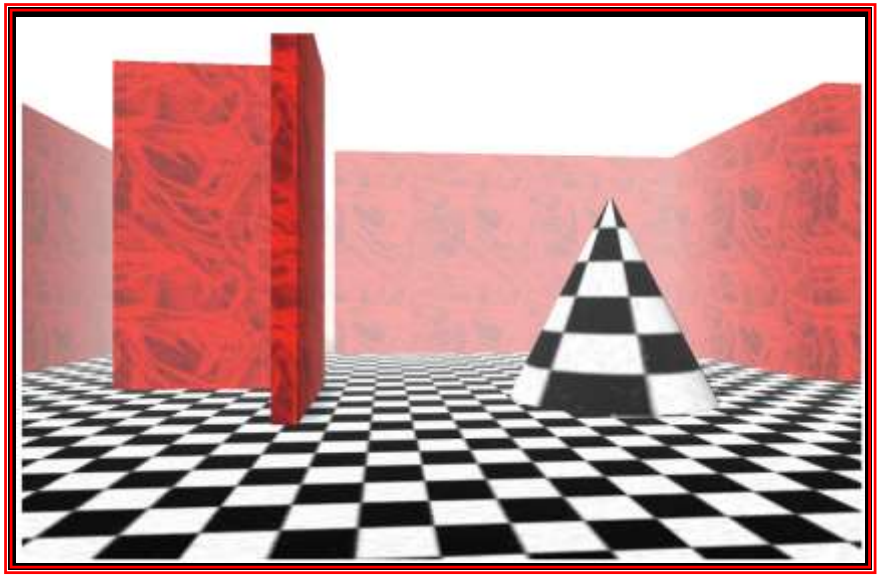
- Erin Wamsley
- Matt Tucker

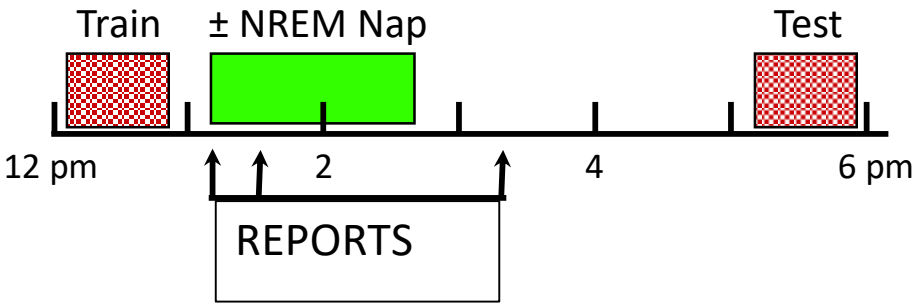


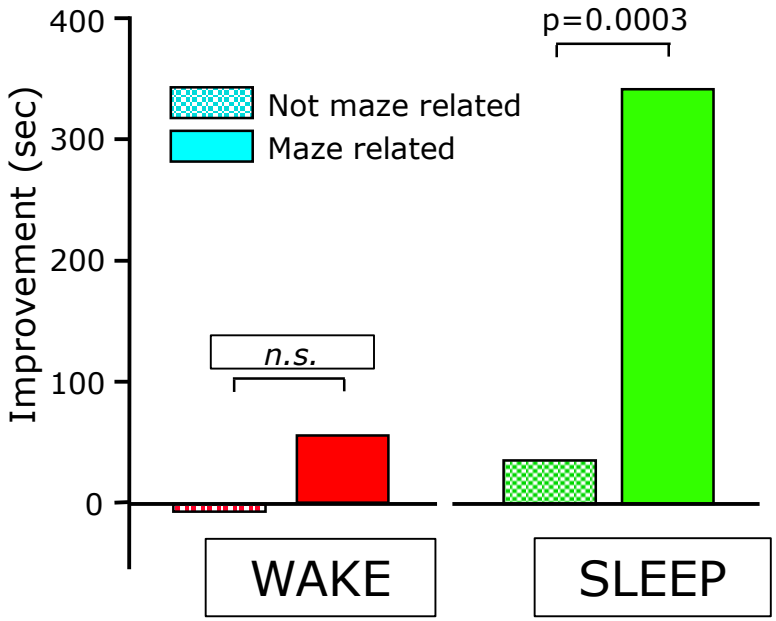


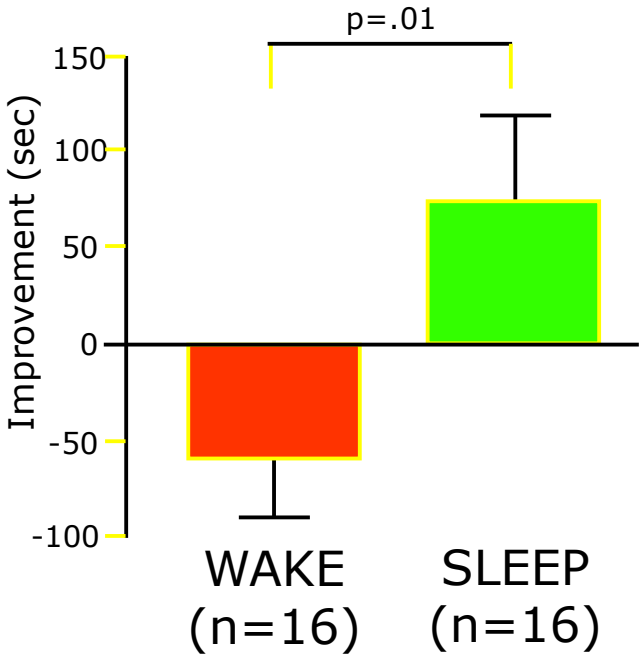


Wamsley et al. Curr Biol 20, 850 (2010)









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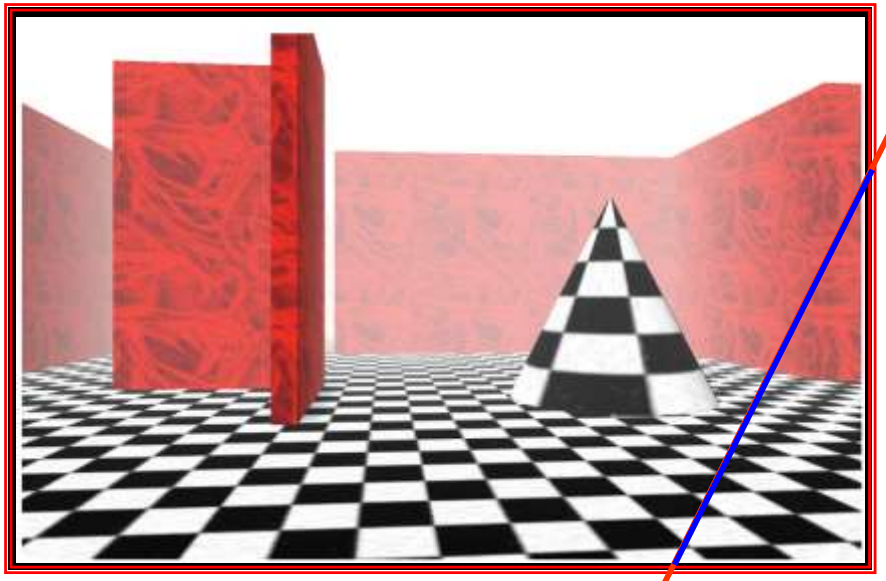
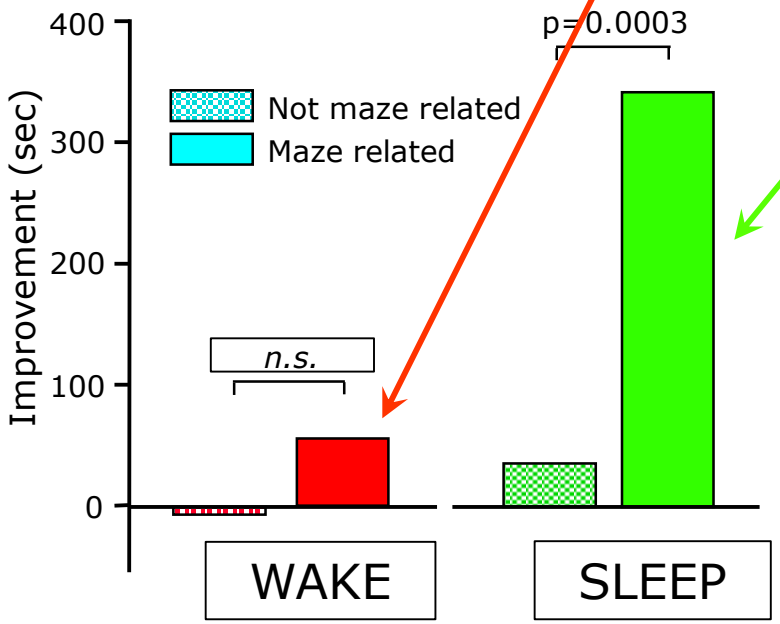


Quiet wakefulness

"I was thinking about the game that I used to play in high school, "Counter-Strike", because of the same layout . . . and also I was just planning, and trying to remember the maze and trying to figure out the route"

" . . . thinking [about] what we have to do in the second maze test . . . wondered if it was going to be, like, the same . . ."



Dream reports

"I was thinking about the maze and kinda having people as check points, I guess, and then that led me to think about when I went on this trip few years ago and we went to see these bat caves, and they're kind of like, maze-like"

"Looking for something" in a maze

"Just hearing the music" from the task

(n=16) (n=16)

Wamsley et al. Curr Biol 20, 850 (2010)

Sleep paralysis

Historical Background ..

- Throughout the centuries, symptoms of sleep paralysis have been described in many ways and often attributed to shadowy evil creatures (or demons) that terrify helpless humans at night (Succubus: Medieval Europe, Pesanta: Spain, Old Hag: Canada, Pisa Deira: Brazil)
- This creature was considered to sit upon one's chest at night, in an attempt to suffocate the person and paralyze him.

Real Frightening Experience !!

- Have you ever felt like you were awake but unable to move?
- You might have even felt afraid but could not call for help?
- This condition is called: isolated recurrent sleep paralysis.
- Sleep paralysis may leave you feeling frightened, especially if you also see or hear things that aren't really there.

Mechanism

- **6.2% of population, Increased prevalence in families**
- During these transitions, the sufferer may be unable to move or speak for a few seconds up to a few minutes (REM Paralysis dysfunction)
- Some people may also feel pressure or a sense of choking.

What Prevents You From Acting Out Your Dream??

- During REM state the brain sends signals which paralyze the body to keep it from acting out dreams, thereby reducing any chances of physical harm during sleep.
- This effect will usually wear off before the dream ends and the person will then wake up with full use of all body voluntary movements.

What Prevents You From Acting Your Dream?? (con't)

- But for someone who suffers from sleep paralysis, the body's neuronal signals are still actively restraining the motor functions and muscle groups of the body and so the person wakes up to find that he/she is temporarily paralyzed and does not know why.

Diagnostic Criteria

- 1) Inability to move the trunk and all limbs at sleep onset or on waking from sleep.
- 2) Each episode lasts seconds to a few minutes.
- 3) The sleep disturbance is not better explained by another sleep disorder (particularly narcolepsy), a medical or neurologic disorder, mental disorder, medication use, or substance use disorder.
- ***Note:***

  Hallucinatory experiences may be present *but are not essential to the diagnosis.*

Factors Linked to Sleep Paralysis

- a lack of sleep
- a sleep schedule that changes
- mental conditions such as stress or bipolar disorder
- sleeping on the back
- other sleep problems such as narcolepsy or nighttime leg cramps
- use of certain medications
- substance abuse

Treatment?

- Most people need no treatment for sleep paralysis.
- Treating any underlying conditions such as narcolepsy may help.
- improving sleep habits -- such as making sure you get 6 to 8 hours of sleep each night
- using antidepressant medication (to help regulate sleep cycles)
- treating any mental health problems that may contribute to sleep paralysis
- treating any other sleep disorders, such as narcolepsy or leg cramps.

Summary & Conclusions

- There are many hypotheses about why people dream. From very meaningful… to random brain activity…
  - Which do you think is correct?
- Dreams may function to help us learn…
- Sleep paralysis is a universal phenomenon that has terrorized people with waking nightmares throughout history.
  - Stress related, with no clear treatment.