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Dreams: the phenomenon explored through scientific, spiritual, and subjective perspectives

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DREAMS

Presented by Hayden Mayer
Advised by Dr. Anna Ciao

An abstract watercolor-style background featuring a central splash of dark blue and purple, surrounded by lighter shades of purple, blue, and green. The colors blend and overlap, creating a textured, artistic effect. The word "Motivation" is centered in a bold, white, sans-serif font.

Motivation

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What?

Things happen while we're unconscious every night

02

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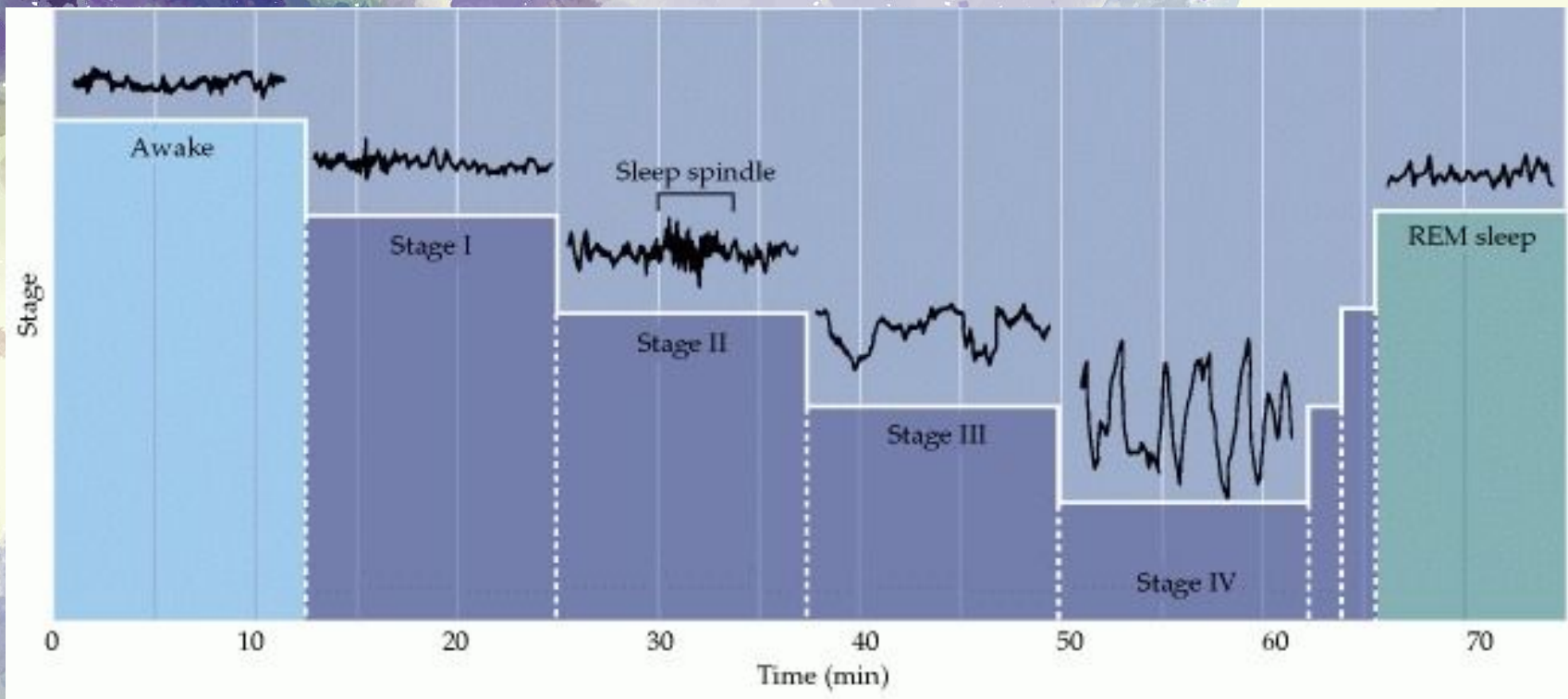
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What...again?

Lucid dreaming and all its glory

What are they?

- NREM
 - N1, N2, N3
 - Cyclical
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History of Dreams

Mesopotamia

- Dream of Dumuzid
- Iškar Zaqīqu

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- Godly predictions
- Oneiromancy



History of Dreams

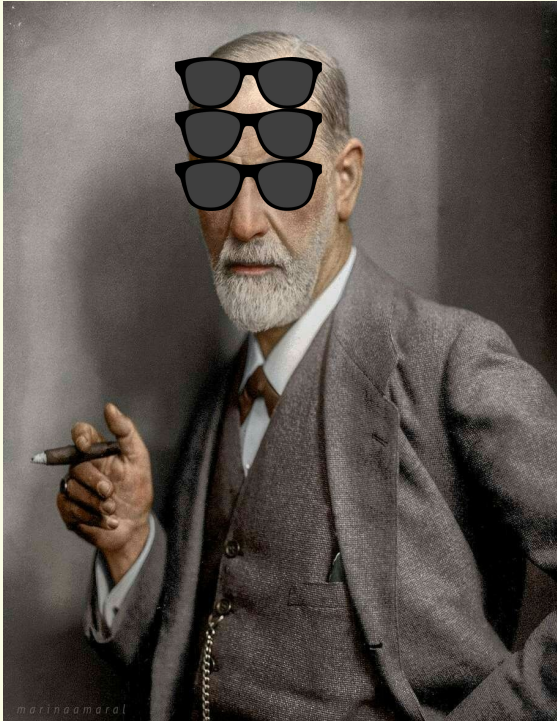
Greece

- Oneirocritica
- Hippocrates

Descartes

- Dream argument
- Lucid dreaming?





Freud

- Dream Analysis
 - Unconscious ego
- Dreamwork
 - Condensation
 - Displacement
 - Secondary revision
- Universality

Naysayers

"Not every dream is inherently sexual"

"Dream interpretations are not generalizable"

"Not every dream *means* something"

"There's too much emphasis on the unconscious"

"There's no *real* answer"

"It doesn't meet scientific standards"

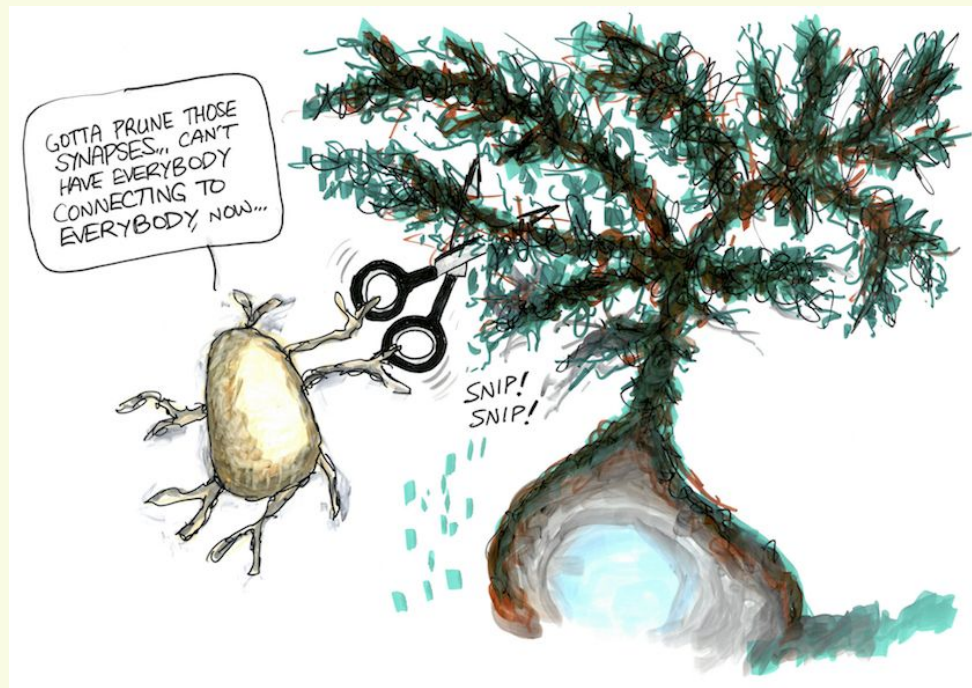
Theories

Activation-Synthesis Model

- Hyperactivity of pons
- No meaning, just signals

Reverse Learning

- Review and prune
- “We dream to forget”



Theories

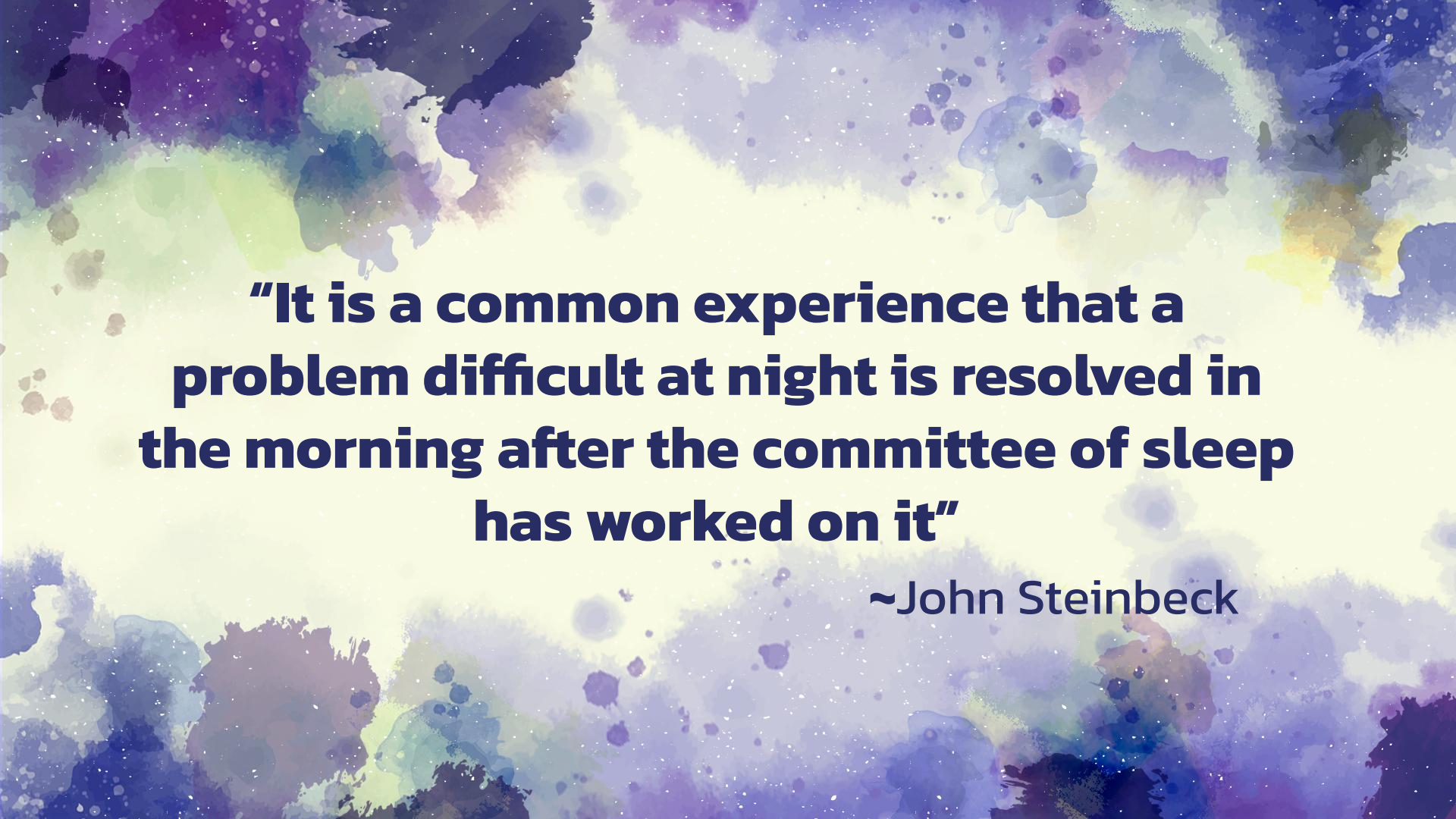
Primitive Instinct Rehearsal Theory

- Four Fs
- “We dream to rehearse”

Continual Activation Theory

- Constant consolidation
- Types of dreams



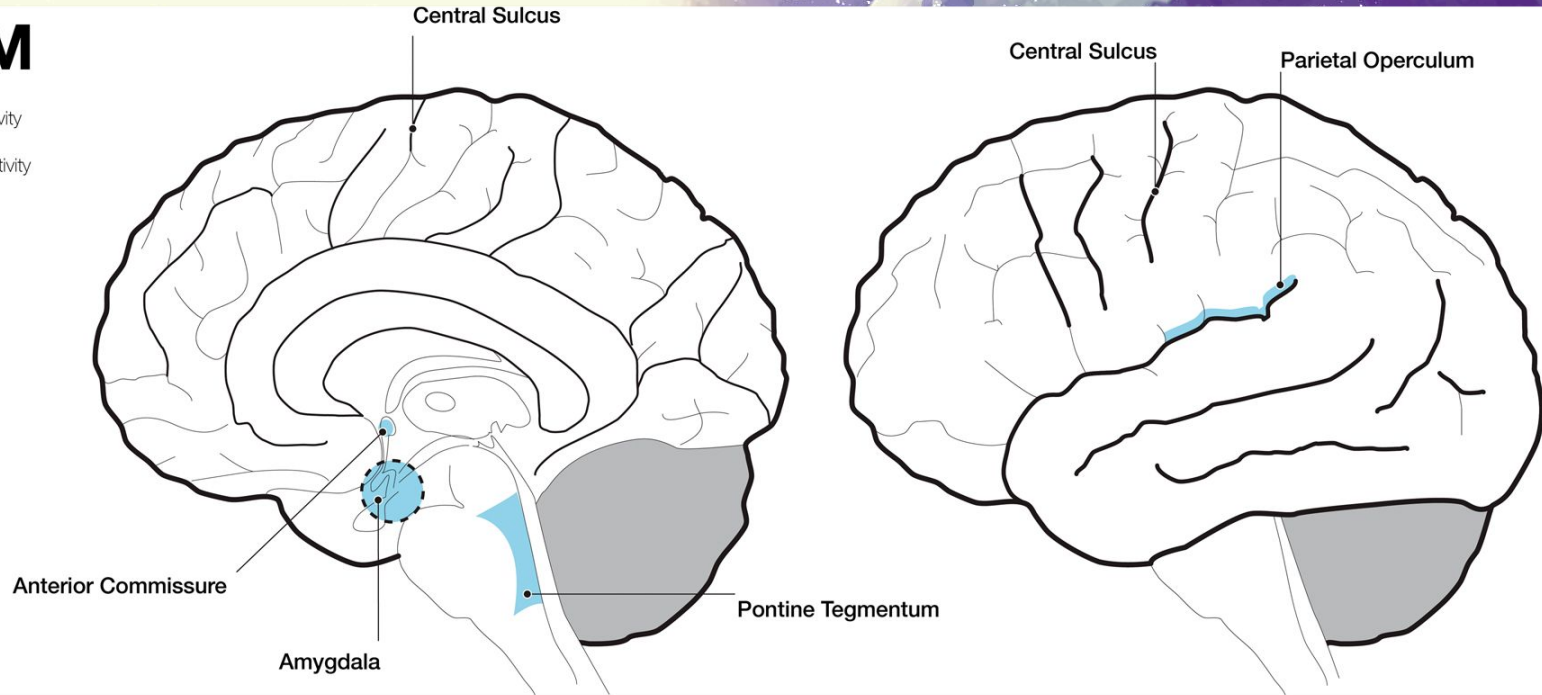


**“It is a common experience that a
problem difficult at night is resolved in
the morning after the committee of sleep
has worked on it”**

~John Steinbeck

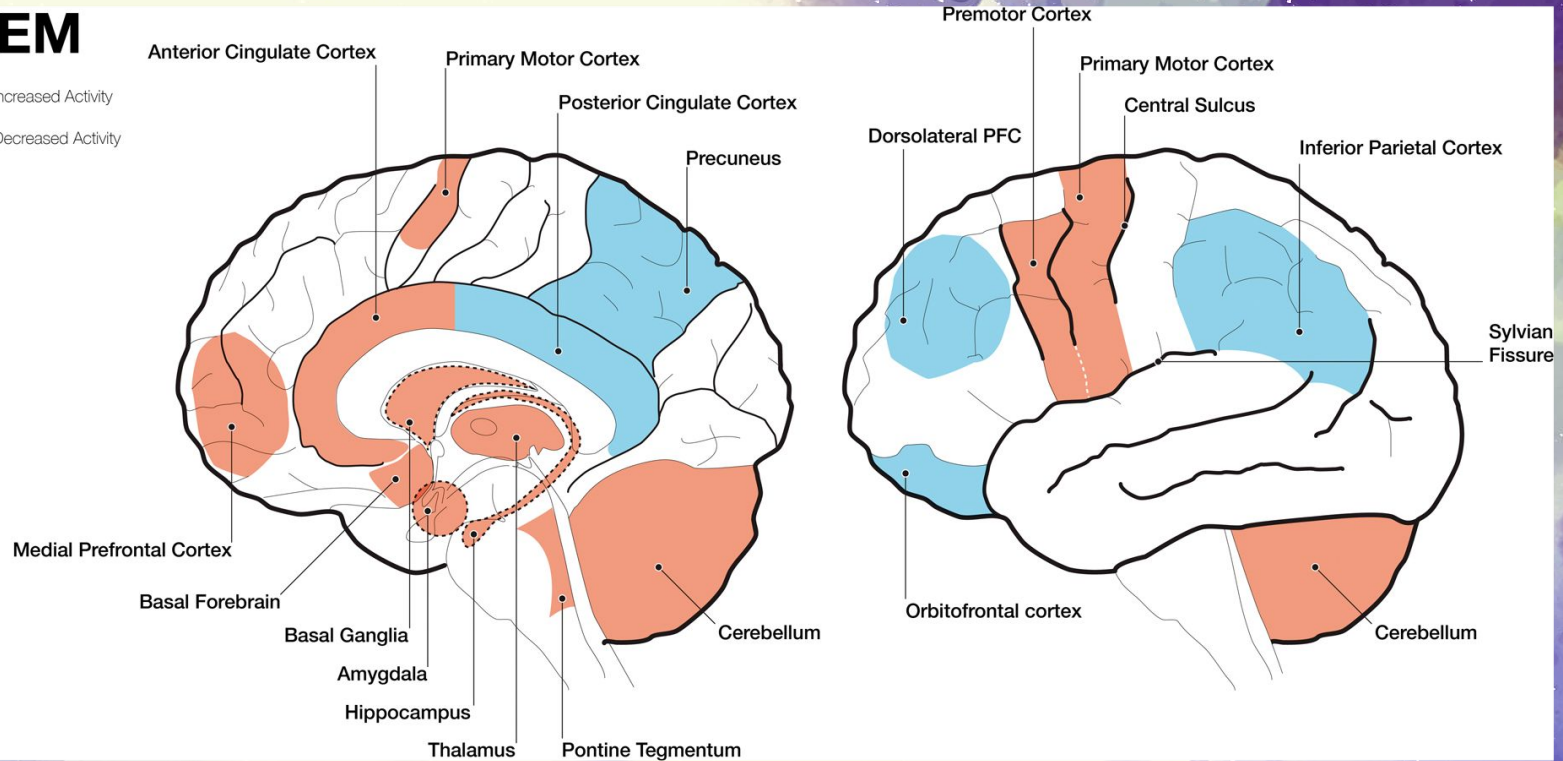
Neuroscience: NREM

NREM



Neuroscience: REM

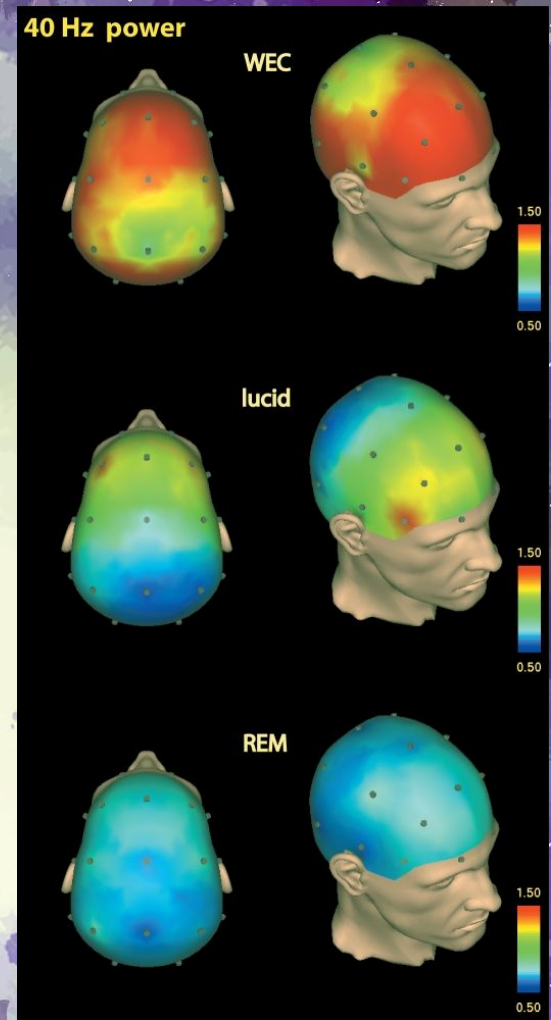
REM



Lucid Dreaming

Physiology

- Voss *et al.* (2009)
- Findings:
 - Similar REM Delta and Theta waves
 - Similar to waking state Gamma waves
 - Coherence similar to waking state
 - Frontolateral and Frontal areas



The background is a vibrant, abstract watercolor composition. It features large, overlapping splashes of color, primarily in shades of purple, blue, and green, set against a light, off-white background. The colors are blended and layered, creating a sense of depth and movement. The overall effect is artistic and dynamic.

Back Story

Lucid Dreaming

Benefits

- Awareness
- Dispel nightmares
- Discover your unconscious

DIY

- Reality testing
- Wake back to bed
- Dream Journals



Recap

01

**What happens
while we are
asleep**

02

**The history and
significance of
dreams**

03

**Skepticism of
dream research**

04

**Theories
surrounding why
we dream**

05

**Neuroscientific
and physiological
explanations of
dreaming**

06

Lucid dreaming



Thank You!

Resources

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Thanks!

Do you have any questions?

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SLIDE 1: INTRO

- Hi all! For the past 7 months, I have been compiling research on both the scientific and spiritual aspects surrounding dreams. The day has finally arrived where I can share what I've found with you all! Before we dive into the meat of the project, I want to tell you how this all started

SLIDE 2: MOTIVATION

- In 7th grade, I started a dream journal. I initially started it as a class project, but soon found that I actually enjoyed the routine of waking up and writing down the dreams from the night before. Plus I actually started to remember my dreams for longer.
- The more I documented my own dreaming, the more aware of my dreams I became. Although those sound similar, they're slightly different. The former was me recording my dreams after the fact, the latter was me actively participating in my dreamstate. That's right, I started lucid dreaming for those of you that know the term. We'll get into exactly what that means a bit later, but for now, we'll just say I was aware that I was dreaming while I was dreaming.
- In my endeavor to find out more about lucid dreaming, I found myself spiraling down a spiritual rabbit hole. I found stuff on healing repressed wounds, communicating with entities, and basically taking full advantage of this altered state. Suffice to say, what happens while we're unconscious for 8 hours every night consumed me
- Thankfully, this drive for knowledge has allowed me to develop a capstone project I truly care about

SLIDE 3: TABLE OF CONTENTS

- Just to give you all an outline of what we're going to be talking about today, here's our agenda:
- First, we'll talk about what dreaming is at its most basic level
- Next, we'll dive into the history of dreaming, how its been interpreted, and what it meant throughout time
- Then, we'll talk about why some people disregard dream research as silly or meaningless
- Including critiques on prominent theories in dream research
- We'll also dive in to the neuroscience of dreaming, which modern technology has allowed us to pursue. We'll touch on the physiological differences between a dreaming mind and a conscious mind
- Finally, we'll wrap up with by talking a bit about lucid dreaming- personally my favorite part

SLIDE 4: WHAT ARE DREAMS?

- Let's lay down the foundation before we dive deeper. What happens while we're sleeping? What are dreams?

- There are two basic ways sleep can be divided: Non Rapid Eye Movement, which I'll refer to as NREM, and Rapid Eye Movement, also known as REM.
- In NREM, there's 3 stages known as N1, N2, and N3
 - N1 is the first couple of minutes when you initially fall asleep where you're very susceptible to being woken up
 - If you've ever experienced a startling feeling almost as if you're falling that jerks you awake, this is when that occurs- that's called the hypnic jerk and its causes are heavily debated: it could be that the neurotransmitters are unstable in the transition from wakefulness to rest OR there's been an exposure to an excess of anxiety, sleep deprivation, or an abundance of caffeine
 - So take it easy on those correttos!
 - N2 is about half an hour to an hour long, your muscles become relaxed and you begin to have slow brainwave activity also called theta waves
 - N3 is deep sleep that lasts for about 40-60 minutes, this is where the delta wave activity increases and you can start to twitch or have other body movements
 - This is where sleepwalking or sleep talking occurs
- Then we hit REM sleep. REM sleep is when we are at our deepest sleep, this is where dreaming occurs
 - our eyelids can flutter while our eyes move rapidly- hence the name: Rapid eye movement
 - Breathing becomes irregular, and those prone to sleep apnea struggle the most with it in this stage
 - The most terrifying part of REM sleep is that we are actually paralyzed, our brain freezes our muscles so we don't act out the dreams- yeah kinda scary
- We tend to go through full cycles of NREM and REM sleep about 3-4 times a night, where one full cycle can last anywhere from 1-2 hours
- As we cycle through these stages, we also emit different EEG signals called waves

SLIDE 5: WAVES

- The waking stage is characterized by high frequency, low amplitude waves called Beta Waves as you can see on the far left
- In stage 1 of sleep, which is correlated to N1 of the sleep cycle, we have Alpha waves. These waves are characterized by decreased frequency and increased amplitude from the waking state.
- You know you've hit Stage 2, or N2, when you start to see the "spindles", or a rapid burst of high frequency waves that may be vital to learning and memory. This stage is known as having Theta waves. Stage 3 is often grouped with Stage 2 because we tend to cycle between the sleep spindles and theta waves as depicted in the stage 3 bar.

- Stage 4 is when we finally hit those delta waves. This is a deep sleep that we know begins when the waves become even slower, have an even lower frequency, and even higher amplitude.
- After we go through these 4 stages, we hit that precious REM stage that we discussed earlier. This is where low-voltage, high frequency EEG waves appear, and as you can see they are quite similar to the waking stage. These waves don't have a specific name, but are often referred to as sleep-onset REM period or SOREMP
- Okay, now that we've laid the foundation, let's see how these hours of unconsciousness have been framed in the past

SLIDE 6: HISTORY OF DREAMS

- Mesopotamia
 - The oldest surviving account of dream interpretation is from 3100 BCE by the Sumerians in Mesopotamia. A poem called The Dream of Dumuzid has survived 5,000 years, allowing us to gain an insight on the Sumerian's perspectives of dreams. In Dumuzid's Dream, Dumuzid is depicted as having a visceral dream, he sees "a man carried aloft by an eagle while his sheep and goats watch from below". He asks his sister, Geshtin-anna, to interpret this dream and she basically says, "everything and everyone is going to turn on you and you will no longer be yourself" - kinda ominous.
 - Ironically enough, when the demons come to drag Dumuzid to the underworld he hides. It's only because an unnamed friend turns on him and reveals his location that the demons find him and, you guessed it, drag him into to the underworld.
 - This is the first documentation we have of dream interpretation
 - The *Iškar Zaqqīqu*, also known as the Assyrian dream book, is a compilation of texts regarding dream interpretation from the Mesopotamian library of a long past king
 - One of the interpretations was: if you are running from something in your dream, then you will lose everything in your waking hours
 - Dumuzid was technically flying away from something, but other than that, they were pretty spot on
- Ancient Egypt
 - Sumerians were not the only civilization to place high regard on dreams.
 - Ancient Egyptians thought the soul travelled from the body to collect the dream and that dreams were divine predictions of the future that came from the Gods. With how ingrained their Gods were in their society, it's without question how deeply they worshipped dreams and the interpretations. They used the messages

they found in their dreams to cure illnesses, make political decisions, and even wage war.

- Bes, the God of dreams and protector from nightmares, is pictured on the right. Ancient Egyptians carved Bes into their headboard to protect them from an ill-fated future and bad dreams. They even erected temples for the God of dreams. This is where professional interpreters did their job. The interpreters interpreted dreams but they did more than just that. They practiced Oneiromancy, which is the “interpretation of dreams *in order to tell the future*”.

SLIDE 7: HISTORY OF DREAMS

- Greece
 - Oneiromancy didn't end with ancient Egypt. In the 2nd century CE, Artemidorus, a Greek scholar, documented dreams and their significance from the people of Greece. The *Oneirocritica* is a collection of 5 books documenting the difference between dreams and visions, the symbolism, and recurrent dreams. Within the *Oneirocritica* it's shown that the people of Greece often dreamt about flying, drowning, sex, significant numbers, and more- signally just how similar we are to those who lived centuries ago.
 - Hippocrates, which many of us know as the father of Greek medicine, was also invested in Dreams. In fact, he wrote a text called *On Dreams*, that details how dreams can be used in medicine. Mainly, dreams were framed as “diagnostic”. They were used to diagnose somatic or psychological dysfunction. Hippocrates thought of this correlation because he also thought dreams came from the soul taking over the sense organs in the night time.
 - Dream utilization was not stopped in the medical field, philosophy also took great intrigue on the dream state
- Descartes
 - Descartes famously asked himself: “How can I know that I am not now dreaming?”. Referring to the deceptive sensory experience in dreaming state, Descartes used this information to question the reliance on our senses. He uses an analogy of fire to explain this: he sits next to a fire in a dream and can feel the heat as he would in his waking state, only there is no fire. From the observation that our waking and dreaming moments can have the same content and sensory experience, the dream argument was formed.
 - Although, rebuttal experiments from Stephen LaBerge on the awareness of being in a dreaming state, AKA lucid dreaming, throws a wrench in Descartes' argument because LaBerge postulated that you can be aware that these sensations are coming from a dream state if you are lucid during it.
 - But even with critique, dreams were still a point of focus

SLIDE 8: HISTORY OF DREAMS

- Of course I can't talk about a psychological phenomenon without mentioning Sigmund Freud. SUNGLASSES!! Briefly, his key theories pertinent to dreams are of the id, ego, and superego. The id is representative of instincts and primal desires operating outside of awareness, in the unconscious mind. The ego is based in reality and was developed throughout life and operated in both the conscious and unconscious mind. The superego is our learned morality and socially acceptable behavior. The superego also operates in both the conscious and unconscious mind.
- That being said, Freud was hyper fixated on the unconscious mind as being the road to understanding the human mind, behavior, psychopathology, and more. Many of his theories were based off of this assumption, including his psychoanalytic dream theory.
- Freud believed that the dream state was without the ego's defenses, and therefore vulnerable enough to let the unconscious mind run its course. If we were just able to analyze it, we would be able to understand our deepest desires. Of course, Freud believes that these deepest desires were inherently sexual in nature, representing a repressed sexuality that we were not able to fulfill in our youth. Looking past the sexual origin of Freud's interpretations we find the structure of what a modern Oneirocritica might look like.
- Freud separated the dream content into two main categories: manifest and latent. Manifest content was what explicitly appeared in the dream. Teeth falling out. Flying. A man. Any sensory component in the dream. Latent content was the implicit interpretation, or what the dream symbolizes. My teeth falling out means a great personal loss is impacting me. The man represents my father. Any assumptions that you make about what it means, Freud considered latent content
- The process by which our unconscious moves the latent content to the more neutral manifest content is referred to as 'dreamwork'- possibly where the studio got its name. These strategies may have been the subtle defense mechanisms from our ego to protect us from our unconscious. Freud thought we moved this content in 3 main ways. Condensation was when we joined multiple ideas into one symbol, muddying the waters to find the actual meaning. A man could symbolize my father, my brother, the hefty weight of being constantly under the male gaze. We may never really know which is "correct"
- Displacement, which I believe to be heavily relied on, was where we transfer thoughts and feelings of one thing onto another. Such as feelings of loss about a pet dying being translated as your teeth falling out. Or a deep hatred of an enemy being represented as Cruella de Vil or another villain.. Basically any transference of emotions unto an object that is not the original source.

- And secondary elaboration, or sometimes called secondary revision, in which we create a coherent sequence of events by including “extra details” or “fluff” that actually has no meaning whatsoever besides making the dream flow better. This could be adding trees, antelope, and your childhood house to the valley that you’re flying over. What is the focus? Your childhood home? Flying? The antelope? Secondary elaboration leads to the true unconscious desire being obscured, making it harder to pinpoint the root.
- These are all ways in which our ego may be trying to defend our conscious mind from uncovering our repressed desires. Freud also had thoughts on the universality of dream interpretation.
- Unfortunately for many people who tend to succumb to clickbait regarding dream interpretation, much symbolism in people’s dreams is not necessarily universal. Freud actually hated the ‘dream dictionaries’ that suggested a symbol meant the same thing for everyone. According to Freud, if you want to interpret a dream, you must do it the hard way and tease out meaning for yourself whether that be with the guidance from a therapist or on your own.
- As much as Freud’s theories got the ball rolling, his name does not come without some criticism

SLIDE 9: THEORIES

- Activation synthesis model
 - In 1977, two researchers from Harvard university put forth a theory which takes the mysticism out of dreaming. John Allan Hobson and Robert McCarley suggested that dreams are merely the result of ongoing processes within the brain. While asleep, the pons is in a state of hyperactivation, which plays a vital role in the REM sleep stage, and our forebrain simply doesn’t know how to compute this newfound chaos.
 - Our brain makes sense of this activation by placing conscious elements over the static. In Hobson’s words, “dreaming is the subjective awareness of brain activation in sleep and ... the sleep activation of the brain results in the synthesis of conscious elements (e.g., emotion, perception, and thinking)”
 - This theory also covers the observation of randomness, or lawlessness, of dreams by attributing it to the, quote, “unavailability of the real world space-time continuum and the chaotic nature of the REM sleep brain activation process” unquote
 - Basically, our brain combines a number of activation points into a coherent whole: the dream state.
 - The main critique of this theory is that dreams don’t just occur in REM sleep as first thought, we daydream and even have dreams in NREM sleep. This theory also doesn’t account for lucid dreaming

- But maybe reverse learning theory will withstand the test of time..
- Reverse learning
 - Francis Crick and Graeme Mitchison proposed this neurobiological model of dream theory in 1983. It suggests that we have a threshold for memory storage so our brain organizes this storage space during our REM sleep in order to prune the unnecessary neural networks.
 - This process is hypothesized to happen to clear the clutter from our minds and allow room for new memories to be formed in the coming days
 - In other words, “we dream to forget”
 - Unfortunately, valid criticisms of reverse learning have been made in the form of questions. Why would our dreams be organized in a systematic way if these thoughts are only going to be disposed of? Why do babies sleep so much when they barely have anything to forget?
- As reverse learning theory has been discredited, we turn to another theory.

SLIDE 10: THEORIES

- Primitive instinct rehearsal theory
 - In the year 2000, Professor Antti Revonsuo put forth the Primitive Instinct Rehearsal Theory, and it is exactly as it sounds. It frames dreams as opportunities to hone our natural instincts, specifically “threat rehearsal”. Whether it be fighting a bear or fleeing from the same bear, having these experiences in the safety of the dreaming state allows for us to gain knowledge of how we might respond to threats in the waking world.
 - Although it seems as though it may just be fight, flight or freeze, Keith Stevens extends this theory to encompass all human instincts, including the fourth F instinct. I’ll let you figure out what the word is. Our sexual impulses can also be acted upon in our dream state. We see the attractive neighbor in our dreams, allowing for a release of pent up emotions and impulses in a way that doesn’t have real world consequences. Our biological instinct to reproduce can also be rehearsed alongside our other instincts.
 - Back in the days where we slept outside the comfort of 4-inch thick memory foam mattresses and on the floor of a damp, dark cave, these instincts were vital to our survival. Spending hours every night rehearsing new scenarios gave us a leg up on our predators.
 - This theory has withstood the test of time with no lasting criticisms. As has the Continual activation theory.
- Continual activation theory
 - Jie Zhang formulated this theory in 2004, stating that our brains can never fully be resting, we must always have some brain activity. This theory assumes that

REM sleep is a key time in which our unconscious can synthesize and consolidate information and experiences from different memory centers. So, dreams are just a projection of the memories being processed in order for our brain to stay above a certain activity threshold

- Zhang also proposed different types of dreaming to include dreaming in different states: type 1 dreams are daydreams, or thought-like dreams that happen during NREM sleep. This dreaming is thought to happen when the declarative memory, aka facts or events, are being moved from temporary memory to long-term memory.
- Type 2 dreams are the type of dreaming we usually consider, that happen during REM sleep. This type of dreaming is hypothesized to occur when procedural memories, aka experiences that help a person remember skills, are moved from temporary to the long term.
- This theory can be compounded alongside the reverse learning theory because as we consolidate, we choose to prune certain memories that aren't helpful to us in the long run.
- This is another currently held theory.
- There are also some creative theories that may help explain the phenomenon of dreaming

SLIDE 11: THEORIES

- John Steinbeck, a renowned author, had a creative pondering about the meaning of sleep. Steinbeck's quote "It is a common experience that a problem difficult at night is resolved in the morning after the committee of sleep has worked on it" has been labelled the "Committee of Sleep" theory and is now being analyzed by Dr. Deidre Barrett, a Harvard professor, as a theory suggesting that inspirations, answers, and ideas come to us during sleep.
- I look forward to reading more of their research. Now, moving back to a scientific perspective..

SLIDE 12: NEUROSCIENCE: NREM

- Thanks to modern scientific developments of the EEG and fMRIs, we have been able to cross boundaries into physical science in the theorizing of dreams
- As you can see in this image there is very little brain activity, and a decrease from a waking state activation. This is NOT to say that our brain isn't active during this period. This schematic brain image is focusing on the areas that may produce dream-like states in the NREM, N1 and N2 stages of sleep. The left side of the image is showing the right hemisphere of the brain at the midline- basically imagine a brain cut in half. The right side is showing the lateral surface of the brain's left hemisphere.
- All areas highlighted show decreased activity. This includes:

- The pontine tegmentum, involved with perception, movement, vigilance, respiration, and the sleep-wake regulation
- The amygdala, which is associated with processing fearful or threatening stimuli is decreased to potentially allow for a state of deep relaxation
- The anterior commissure is thought to be responsible for emotions, memory, speech and hearing. This decreased activity could be in order to dismiss noises and emotional stimuli that would prevent sleep
- The parietal operculum is a secondary somatosensory cortex that is probably decreasing in activity in order to take attention away from the sensory world
- When transitioning from NREM to REM sleep, our brain makes some changes.

SLIDE 13: NEUROSCIENCE: REM

- I know this seems like a sudden activation of many brain structures, but keep in mind the previous image was only focusing on brain regions associated with NREM's dreamlike states which is less than with REM dreamstates.
- This is going to be a lot of neuroscientific jargon, so please bear with me.
- As you can see here the salmon color is displaying an increased activity while the blue is showing decreased activity
- The areas with hyperactivity such as the occipito-temporal visual association area, basically areas associated with vision, may contribute to the vivid visuals we have in our dreams.
 - The premotor and primary motor cortices, cerebellum, pontine tegmentum, and basal ganglia all involved in motor control and movement may contribute to the movement in dreams, such as running away or flailing while falling.
 - Brain regions associated with emotional processing such as the thalamus, amygdala, anterior cingulate cortex and more, are also highly active during REM which could contribute to the degree of emotionality we feel while dreaming
 - Supporting the memory consolidation and processing theories, the posterior cingulate cortex, hippocampus, and medial prefrontal cortex areas associated with memory, are hyperactive
- As many regions of the brain are firing at full speed, others show decreased activity
 - The inferior parietal cortex is involved in the separation of self and environment, or first person versus third person perspectives. With this region showing decreased activity, it may explain the ability to see the self in different perspectives during the dream state
 - The center for understanding rewards and emotion, the orbitofrontal cortex, is also hypoactive leading us to believe that we have less regulation and understanding of rewards and our emotions during REM dream states.

- As you can see decreased activity in the posterior cingulate cortex, the precuneus, and the inferior parietal cortex as well as the dorsolateral prefrontal cortex. These areas are related to executive function such as regulating cognitions and behaviors, perceiving reality, and our placement in time and space. With decreased functioning in the parts that base us in reality, there's no wonder our dreams are seemingly limitless and lawless.
- As a scientific explanation for this phenomenon is in the works with the EEGs and fMRIs, we can only hope that our understanding of how dreaming takes place in the brain can grow. Maybe some theories will even be backed through quantitative methods sooner rather than later..
- Now we move on to our last section: lucidity in the dream state.

SLIDE 14: LUCID DREAMING

- So, what is lucid dreaming?
 - Lucid dreaming is when you are conscious during a dream, or conscious while you're unconscious. You are aware that you are in a dream without waking from that dream. This typically happens during the REM stage.
- Since we just discussed the neuroscience of dreaming, let's start with the physiology of lucid dreaming
 - Voss, Holzmann, Tuin, and Hobson conducted a study in 2009 to see the correlation between brain activation and lucidity in the dream state.
 - They had 6 participants, a very small sample size, that reported lucid dreaming 3 or more times within a week of sleep in a laboratory, hooked up to EEG electrodes.
 - To have the participants tell the researchers that they were lucid within REM, they were to move their eyes in a rhythmic pattern (left-right-left-pause, left-right-left-pause)- which is kind of hard to do even while i'm awake.
 - But, despite that, they found that the lucid dreaming state mirrored the REM state in delta and theta waves BUT had higher than REM state Gamma Waves, which are involved in actively processing information or learning and are typically only present while we're awake
 - The coherence levels of the lucid state were more similar to that of a waking state, showing more activity in the frontolateral and frontal areas as you can see in the figure to the right.
- Although the methodology has its drawbacks, the findings spark a desire for further research. And all studies have to begin somewhere!
- Moving on to the spiritual side of lucid dreaming. And a little back story

SLIDE 15: LUCID DREAMING: BACKSTORY

- Backstory:

- When I was first beginning to lucid dream, I would simply be aware that I was in a dream. I didn't so much control the dream or my actions as just experienced them. It was almost as if I was in the passenger seat, instead of the driver seat, of a car that is my mind. When I started to become more accustomed to being present in my dreamstate, I began to experiment. First, I would just walk around in different directions, seeing what else my dreamscape had to offer. Then, I would make myself fly just because it was a magical feeling. If you've ever read the Maximum Ride series by James Patterson, then you know exactly what I'm talking about. My skills while lucid dreaming progressed to a point where I would stop nightmares. I recognized I was in a dream and made it so the antagonist disappeared or was no longer threatening by turning them into a rabbit or something harmless.
- One time, I was a bit overzealous and tried to change the entire dreamscape all at once. Instead of changing into a different scene the entire dreamscape went white. It was like that episode of Spongebob where Squidward was stuck in the nowhere dimension where he can finally be alone. I wasn't necessarily scared of what I had done, but I couldn't revert the dreamscape back. I ended up having to force myself to wake up in order to escape my mistake.
- Now that I've gotten weirdly personal, let's dive into more generalizable content of lucid dreaming..

SLIDE 16: LUCID DREAMING: SPIRITUALITY

- Benefits
 - Although lucid dreaming is often dismissed because of its roots in the abstract and spirituality, there are health benefits:
 - You gain more awareness over different states of being. People who tend to lucid dream also tend to have an increased awareness of physiological, emotional, and physical states of their body. Although this correlation may be bidirectional- the more you are aware, the more you lucid dream or vice versa- gaining more awareness of yourself doesn't seem like a bad thing in either regard
 - Learning to lucid dream can help you dispel nightmares. I use lucid dreaming to do just this. I don't usually want my hours of rest to be filled with terror or fears so I use lucid dreaming to regain control of my night time activities. If I notice I'm having a nightmare, I can either get rid of the antagonist or give myself superpowers to overcome them, or turn them into a bunny. The power of creativity is on your side!
 - I think Freud would actually appreciate lucid dreaming, despite him being an initial skeptic.

- Because some say that when you're lucid you can explore the dreamscape that your unconscious mind has created. You can find clues about internal states and desires as well as where your focus may be.
 - Some spiritual denominations even believe that there are suppressed selves within your dreamscape that if you interact with it in certain ways you can reveal more about your "true self", "hidden self", or whatever you want to call it.
 - In total, "They reflect what you expect"- if you go into a dream with the expectation of learning deeper meanings, internal processings, or even just entertaining a fantasy. The dreams will reflect those intentions. I'm sure you heard about thinking of a certain topic before you fall asleep will cause you to dream about it, this is similar. The way the dreams unfold is reflecting what you are expecting. This borders the psychoanalytic theory of dream interpretation.
- If I've bored you to death or gone too far into the "oowoo" then sorry you're going to have to zone out for a bit longer. BUT if i've peaked your interest on lucid dreaming then listen closely for ways to increase your chances of doing it
- But before I tell you how to lucid dream, I do just want to give a warning about practicing it:
 - 1. Some people can get stuck in the dreamstate and find it hard to come back to reality. This can be very traumatizing and can actually impede one's ability to differentiate between dreaming and waking states. Especially for people who are predisposed to psychotic mental health disorders such as schizophrenia or severe dissociation.
 - 2. Trying to lucid dream can trigger sleep paralysis. Where you cannot move your body despite being fully conscious. Sometimes you can still have auditory or visual hallucinations that are projected into the real world. it's happened to me and it's terrifying.
 - 3. A more debated warning, but also worth including: you may meet spiritual entities that have projected onto the astral plane. Not all of the spirits are benign and some truly may want to cause you harm. Be wary of the personal information you share with the things you encounter in the dream state. With the spiritual foundation of lucid dreaming, I felt I had to include this disclaimer no matter how controversial.
- NOW i'll tell you just how you can increase your chances of lucid dreaming
 - You can do what's called a "Reality check", where you test the bounds of reality in the dreamscape because they will not always be the same as the waking state.

- You can push hands together, in a dream your hands will go through each other
 - You can pinch nostrils to stop breathing – in a dream your breathing will be unaffected
 - If you look at a book, the words will change or be indecipherable if you're dreaming
 - You could even try to count – in a dream, easy brain functions like math and numbers just don't compute
- If you don't want to do a reality check, you could try "Wake back to bed"
 - Set an alarm about 2 hours before you have to actually get up. Stay awake in a calmspace for about 15 minutes (or as long as you can, but no longer than 20 minutes) so you can gently go back to sleep. This will give you a chance to be more aware of the dream states to come when you fall back asleep.
- Another method that I also use is keeping a dream journal. By writing your dreams down you are remembering them more. You're basically telling your brain that dreams are things that deserve attention because they are going to be recorded in a waking state.
- Have fun with your journey, but remember to be careful!

SLIDE 17: RECAP

- And Just in case you've forgotten what we've been discussing for the past 45 minutes, here's a brief recap! We talked about what happens while we are asleep, the history and significance of dreams, the skepticism surrounding dream research, theories surrounding why we dream, neuroscientific and physiological explanations of dreams, and lucid dreaming

SLIDE 18: THANKS

- I want to give a special thank you to my advisor Dr. Ciao, who so kindly listened to my ramblings and constant indecision about what the finished product may actually look like- thank you for bearing with me all this time!
- Thank you all so much for being here and listening to my ramblings on dreams. I hope you learned a thing or two.
- If you have any questions, feel free to ask them now!