

STATES OF CONSCIOUSNESS



Consciousness is our awareness of ourselves and our environment.

- William James

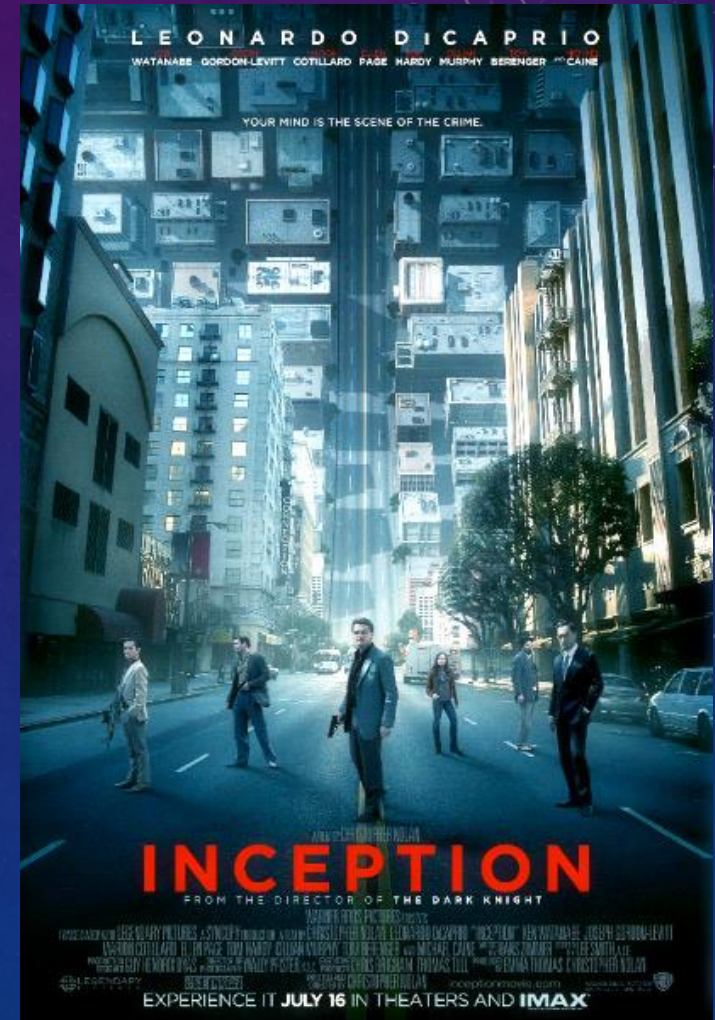


LEVELS OF CONSCIOUS AWARENESS

- **Conscious (Controlled) Processes:** Require full awareness, alertness and concentration
 - Learning to drive a car, studying for an exam, baking from a recipe.
- **Automatic (Non & Pre-conscious) Processes:** Require little awareness, take minimal attention, driving a familiar route.
 - Eating while watching TV, talking to a friend while walking.
- **Subconscious:** Below conscious awareness
 - Subliminal processes (Knowing what was said on the TV even though you were not paying attention to it.)
- **Unconscious:** Total lack of sensory awareness and complete loss of responsiveness to one's environment.
 - Comas resulting from trauma, disease, or injury.

ALTERED STATES OF CONSCIOUSNESS

- **Mental states, other than ordinary waking consciousness.** (Sleep, dreaming, psychoactive drug use, meditation, hypnosis, etc.)
 - *Perceiving our internal and external environments or worlds in ways very different from normal perception.*



BIOLOGICAL RHYTHMS

“Biological rhythms are controlled by internal biological clocks.”



Annual cycles: On an annual cycle, geese migrate, grizzly bears hibernate, and humans experience seasonal variations in appetite, sleep, and mood.

Seasonal Affective Disorder (SAD) is a mood disorder people experience during dark winter months.

Female menstrual cycle: Every 28 days the female reproductive system prepares the uterus for pregnancy

THE RHYTHM OF SLEEP

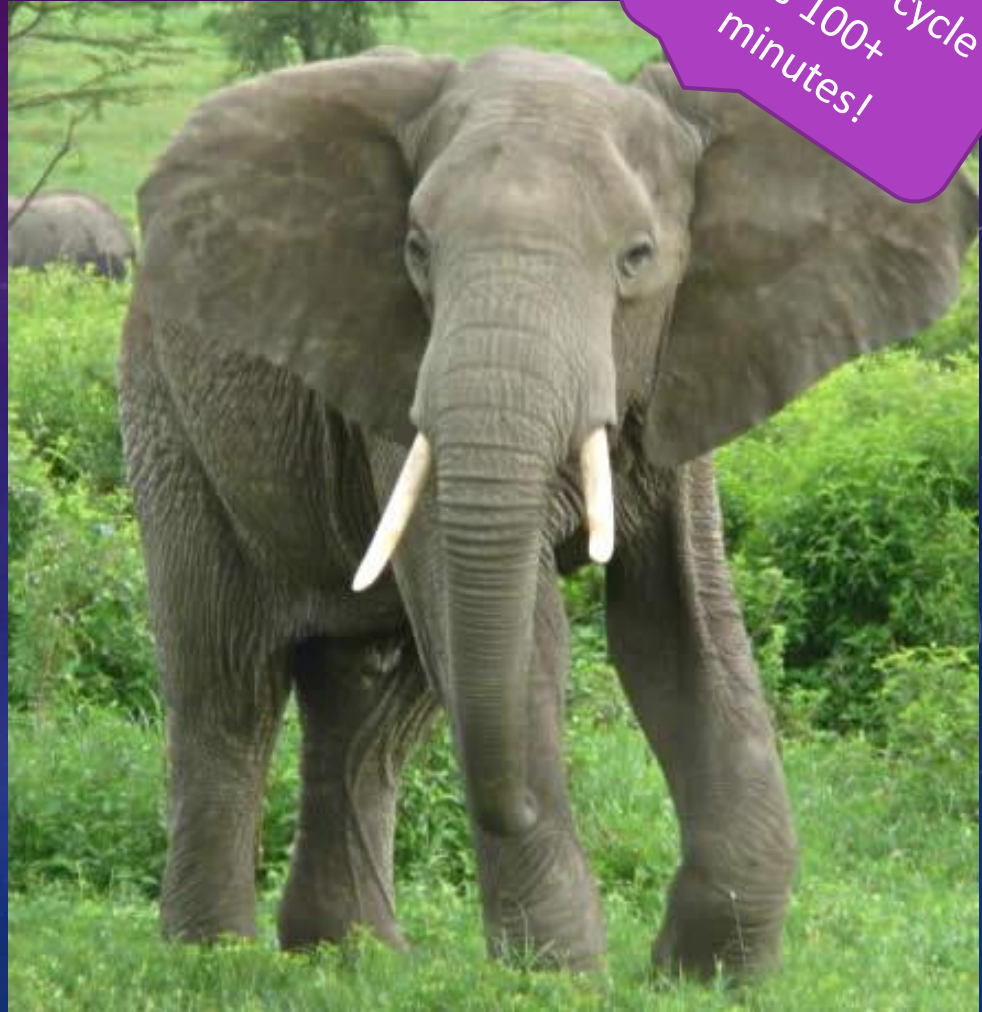
- **The Circadian Rhythm:** a 24- hour cycle that tells our bodies when to sleep, rise, eat-- regulating many physiological processes such as body temperature.
- This internal body clock is affected by environmental cues, like sunlight and temperature. When one's circadian rhythm is disrupted, sleeping and eating patterns can run amok.



NINETY-MINUTE CYCLES

We go through various stages of sleep in 90 minute cycles

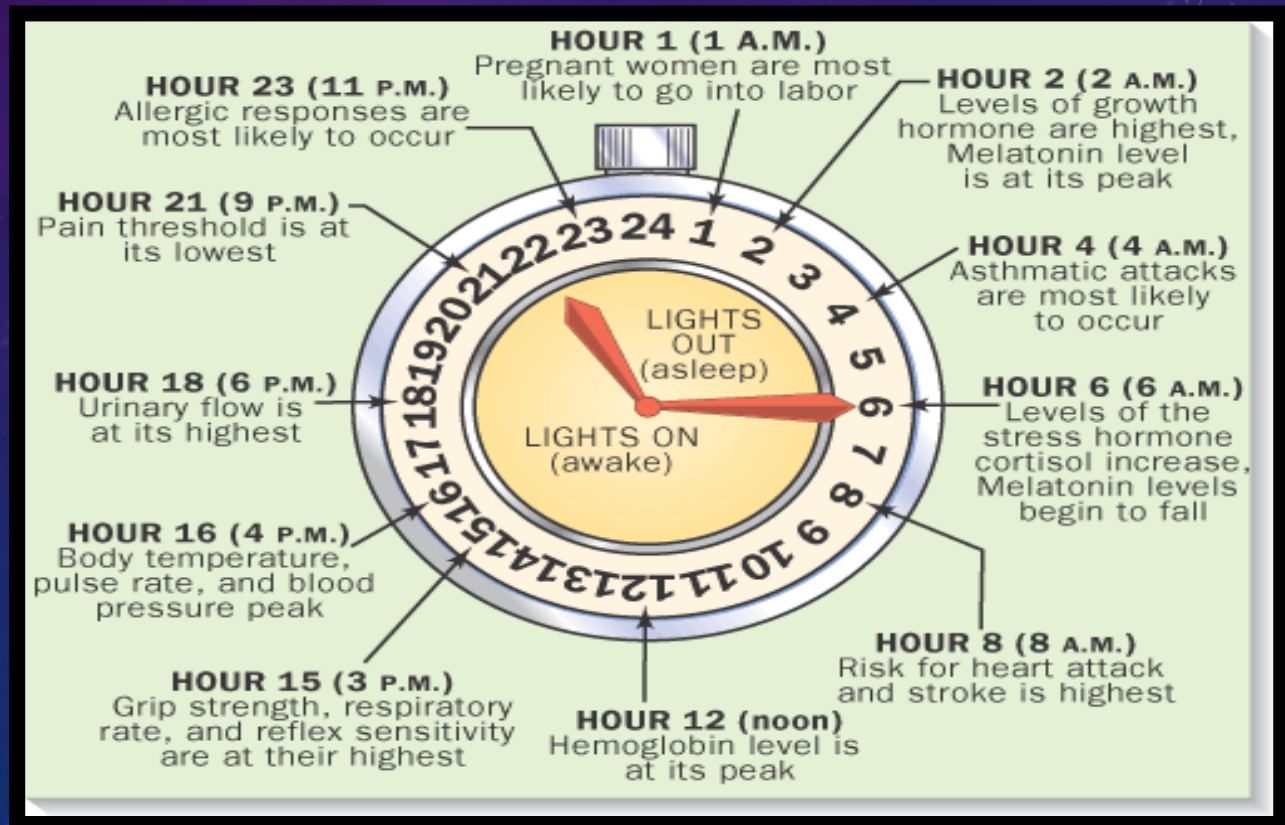
My sleep cycle is only 9 minutes!



My sleep cycle is 100+ minutes!

CIRCADIAN RHYTHMS

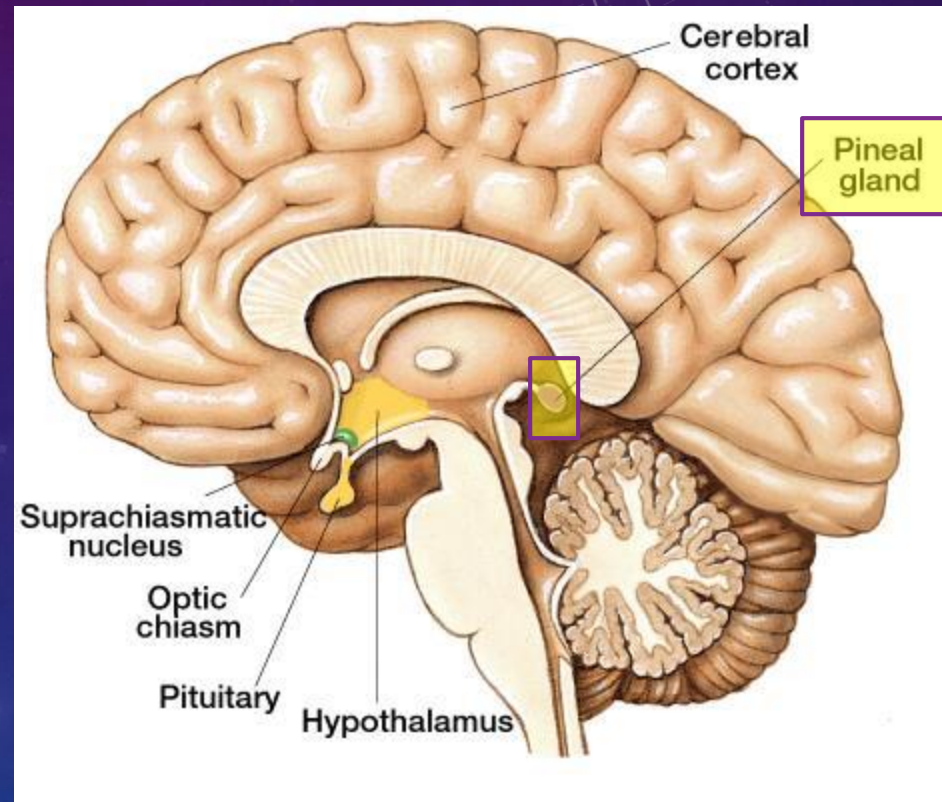
- Many of our behaviors display rhythmic variation.
- Circadian rhythms
 - Light is an external cue that can set the circadian rhythm.



PINEAL GLAND

Participates in setting the body's clock

- Melatonin hormone
 - Assists in regulating timing of sleep, body temperature, appetite.
- Melatonin secreted during darkness
- Melatonin is high when young and is reduced as we age

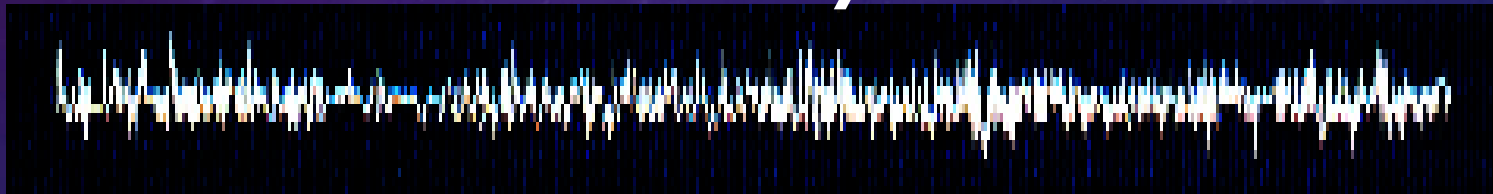


SLEEP PATTERNS



Awake & Alert

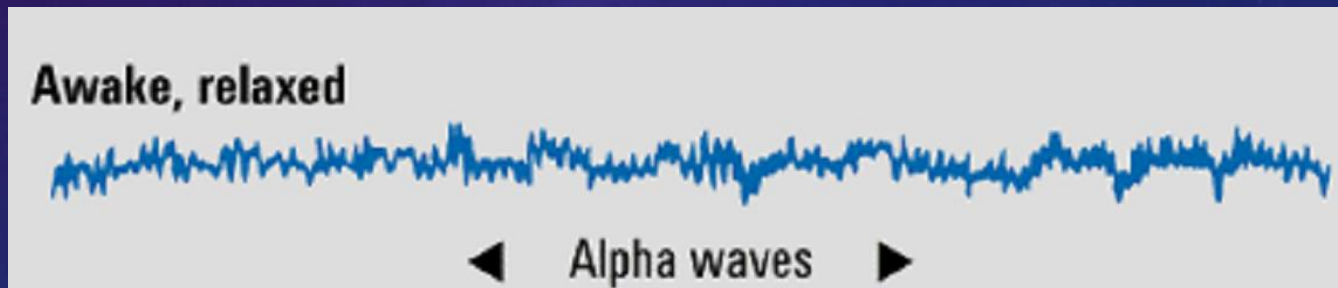
During strong mental engagement, the brain exhibits low amplitude and fast, irregular beta waves (15-30 cps). An awake person involved in a conversation shows beta activity.



Beta Waves

Before you sleep: Awake but Relaxed

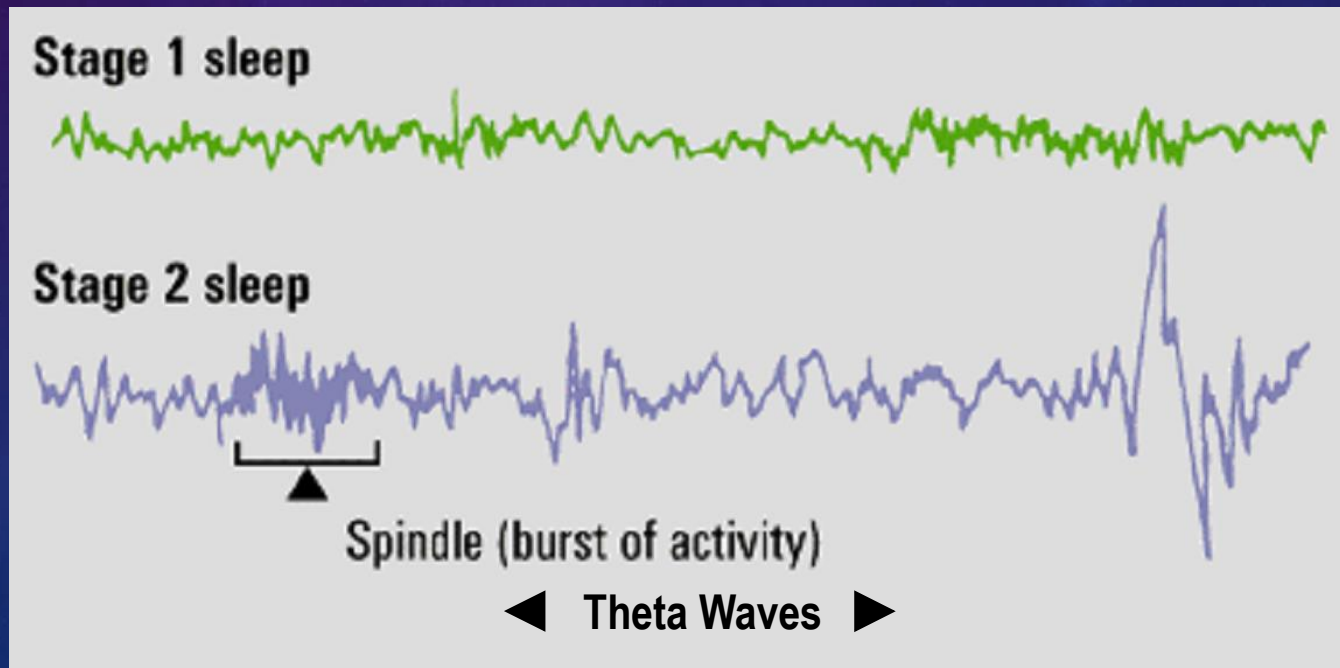
When an individual closes his eyes but remains awake, his brain activity slows down to a large amplitude and slow, regular alpha waves (9-14 cps). A meditating person exhibits an alpha brain activity.



Sleep Stages 1-2

During early, light sleep (stages 1-2) the brain enters a high-amplitude, slow, regular wave form called theta waves (5-8 cps). A person who is daydreaming shows theta activity.

Stage 1 - Hypnic / Hynagogic Jerk: Reflex muscle twitch throughout body that may occur



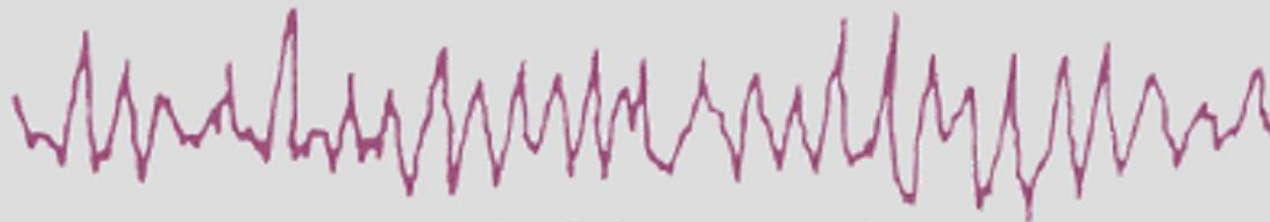
Sleep Stages 3-4

During deepest sleep (stages 3-4), brain activity slows down. There are large-amplitude, slow delta waves (1.5-4 cps).

Stage 3 sleep



Stage 4 sleep



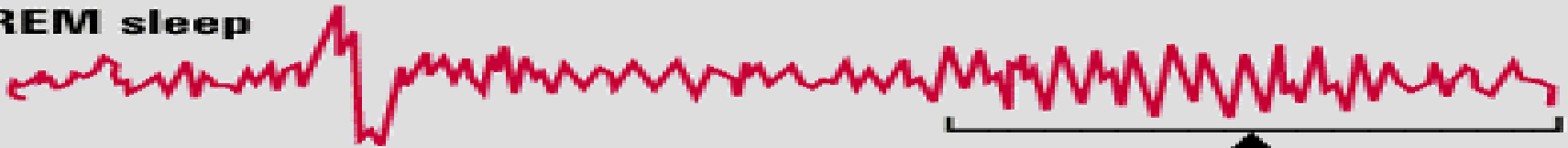
◀ Delta waves ▶



REM Sleep

After reaching the deepest sleep stage (4), the sleep cycle starts moving backward towards stage 1. Although still asleep, the brain engages in low- amplitude, fast and regular waves very similar to beta waves (15-40 cps) much like awake-aroused state.

REM sleep



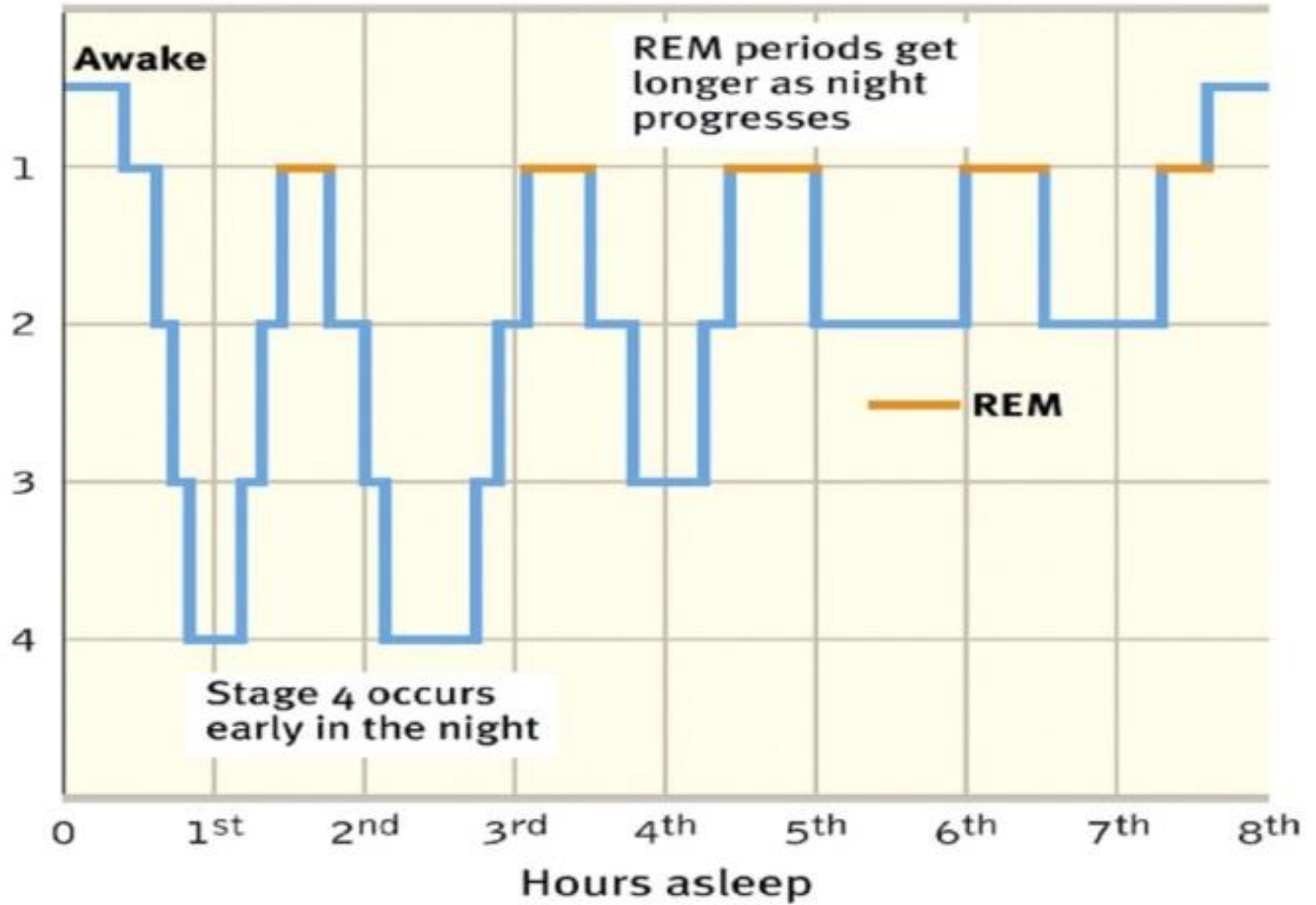
Eye movement phase

REM: Rapid Eye Movement

- This is a very active stage of sleep.
- Composes 20-25 % of a normal nights sleep.
- Breathing, heart rate and brain wave activity quicken.
- Vivid Dreams can occur.
- From REM, you go back to Stage 2

Your brain's motor cortex is active during REM sleep but your brainstem blocks its messages. This leaves your muscles relaxed, so much so that, except for an occasional finger, toe, or facial twitch, you are essentially paralyzed. Sometimes this last even when you wake up producing sleep paralysis.

Sleep stages



BRAIN WAVES

Beta β
13+ cps



Mind and body active and busy
Short-term memory being used

Alpha α
8-12 cps



Mind and body calm and relaxed
Long-term memory activated
Learning is easy and rapid

Theta θ
4-7 cps



A state of deep relaxation
High creativity and insight
Sub-conscious mind accessible

Delta δ
0.5-3 cps



Sleeping
Minimum brain activity



SLEEP THEORIES

Sleep Protects: Sleeping in the darkness when predators loomed about kept our ancestors out of harm's way.

Sleep Recuperates: Sleep helps restore and repair brain tissue.

Sleep Helps Remembering: Sleep restores and rebuilds our fading memories.

Sleep and Growth: During sleep, the pituitary gland releases growth hormone. Older people release less of this hormone and sleep less.

Sleep helps creative thinking: REM is highly conducive to fluid reasoning and flexible thought.

WHY DO WE SLEEP?

- **We will spend roughly one-third of our lives sleeping**
 - **The claim that everyone needs eight hours of sleep a night is a myth.**
 - **Newborns spend two-thirds of their day sleeping, while adults spend only one third**
 - **Some people thrive on fewer than six hours of sleep per night; Others need nine or more hours**
- **If a person remains awake for several days, they deteriorate in terms of immune function and concentration. They are more likely to make mistakes in judgment and decision making that could lead to accidents.**

What is *R.E.M. Rebound*?

When a person finally gets to sleep after not sleeping for an extended period of time, *R.E.M. rebound* often occurs.

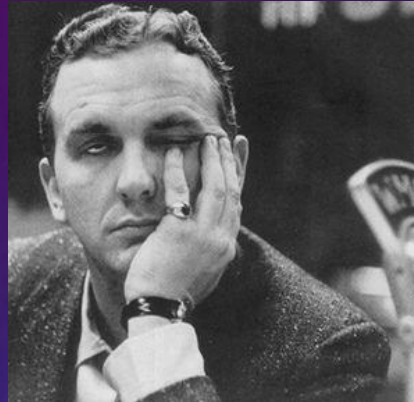
In these instances, the depth and frequency of *R.E.M.* sleep increases, as a way for the body to catch up on the deep, restorative sleep of the *R.E.M.* cycle.

SLEEP DEPRIVATION

(Seen in videos watched at home)

Effects

- **Fatigue and subsequent death**
- **Impaired concentration**
- **Emotional irritability**
- **Depressed immune system**
- **Greater vulnerability to a host of disorders**



PETER TRIPP - PART 1



PETER TRIPP - PART 2



SLEEP DISORDERS



INSOMNIA

- **Persistent problems falling asleep**
- **Effects 10% of the population**
- **Primary insomnia:** refers to insomnia that is not caused by any known physical or mental condition.
- **Secondary insomnia** is caused by a medical condition.



FATAL FAMILIAL INSOMNIA



NARCOLEPSY



- Suffer from sleeplessness and sudden attacks of uncontrollable sleep, often at unpredictable or inappropriate times.
- Due to lack of hypocretin
- Fall directly into REM sleep
- Less than .001 % of population.
- May include cataplexy: the sudden loss of muscle tone that is triggered by the experience of an intense emotion

NARCOLEPSY



POOR RUSTY...

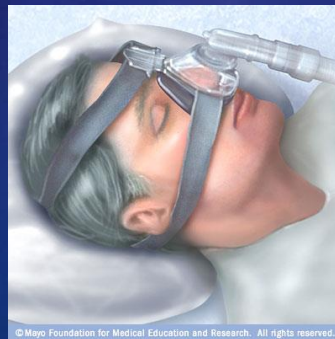
Unit 3: States of Consciousness

Chapter 18

**Sleep
Disorders**

SLEEP APNEA

- A person stops breathing during their sleep.
- Wake up momentarily, gasps for air, then falls back asleep.
- Very loud snoring.
- Very common, especially in heavy males.
- Can be fatal.



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PARASOMNIAS



- **Parasomnias are disruptive sleep-related disorders that can occur during arousals from REM sleep or partial arousals from Non-REM sleep.**
- **Parasomnias include nightmares, night terrors, sleepwalking, teeth grinding and many others.**

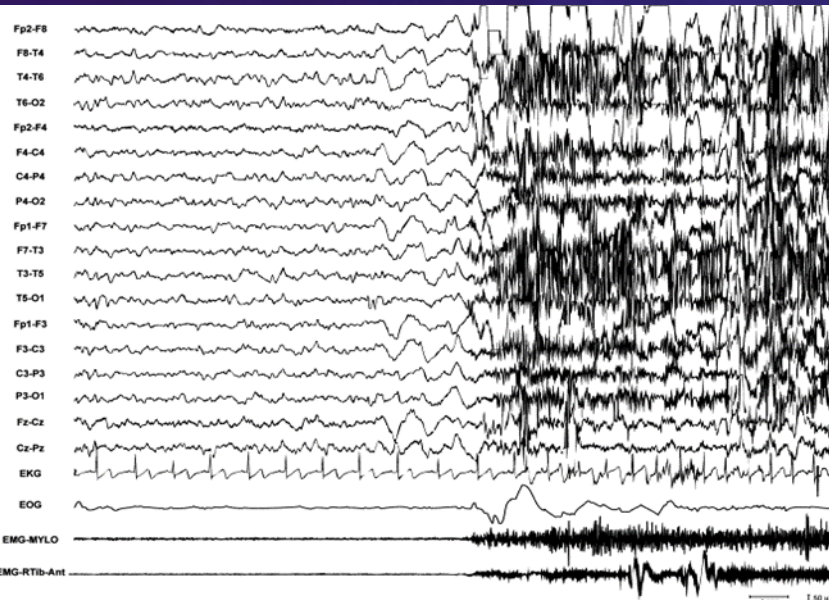
NIGHT TERRORS

A spontaneous attack during NREM₃ was recorded. Patient sat up suddenly in bed, looked around with terrified expression, screamed and embraced the nurse. After 10 minutes, she laid down and fell asleep again.



- A sleep disorder characterized by high arousal, hallucinations, and an appearance of being terrified.
- Occur in NREM, Stage 4, and are not often remembered.

This EKG shows the increased heart rate the patient experienced.



NIGHT TERRORS



Nightmare or Night Terror? (American Academy of Pediatrics, 1998)	
Nightmare	Night Terror
Scary dream awakens child.	Child awakes only partially, if at all.
Occurs in last hours of the night.	Occurs one to four hours after child falls asleep.
Child cries and is afraid.	Child sits up, thrashes, and may struggle with caregiver. Child may scream, cry or talk aloud. Eyes may be staring ahead, with heart racing.
Child is aware of caregiver.	Child is not very aware of caregiver.
Child may have trouble going back to sleep.	Child often goes back to sleep without fully awakening.
Child often remembers dream and may want to talk about it.	Child has no memory of a dream, or of waking up, screaming, or thrashing.

THE EFFECT OF NIGHTMARES

- **Nightmares are often correlated with emotional distress and stressful life events**
- **Most clinical disorders are linked with nightmares, especially those with trauma exposure and post-traumatic stress syndrome (PTSD)**
- **Depending on the individual's capacity to regulate emotion and the amount of heightened distress in response to emotional stimuli, nightmares can range from an annoyance to a chronic disorder of fear and anxiety that has connection with psychopathology in waking consciousness.**

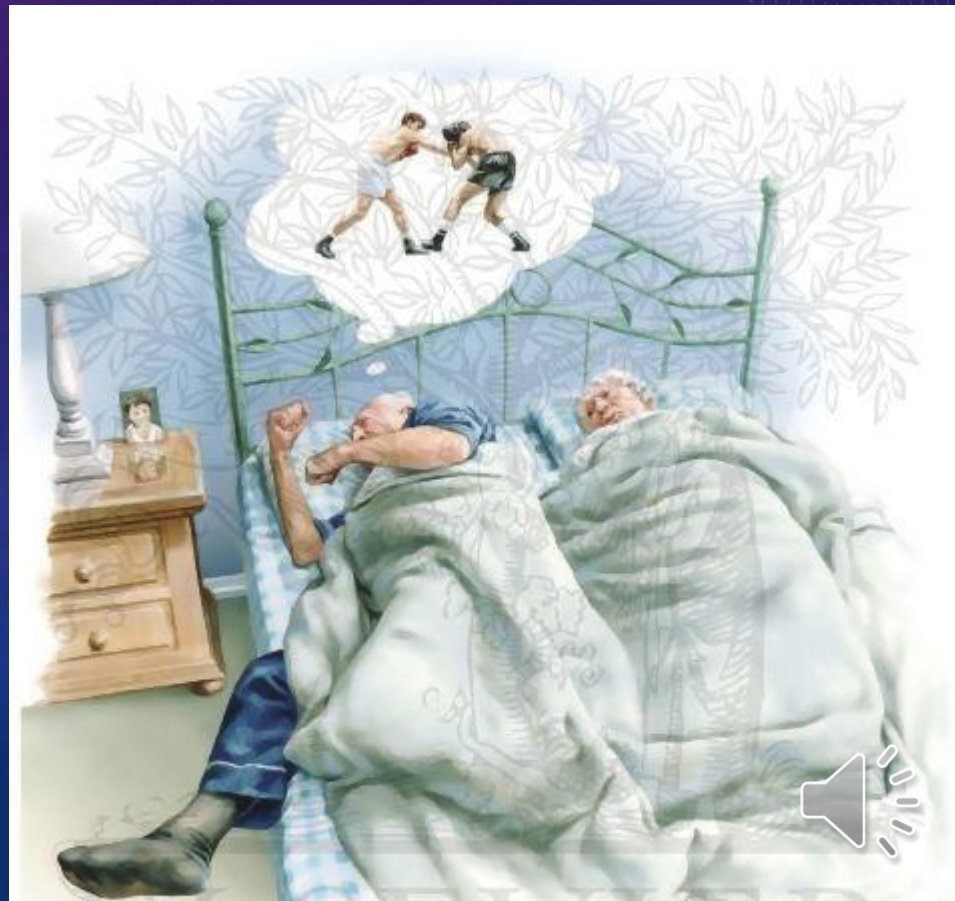
SLEEP PARALYSIS

- **A feeling of being conscious but unable to move.**
- **Occurs when a person passes between stages of wakefulness and sleep. (Falling asleep or waking up.)**
- **A person may be unable to move or speak for a few seconds up to a few minutes.**
- **Some people may also feel pressure or a sense of choking.**



REM Behavior Disorder - (RBD)

- **Temporary REM stage sleep paralysis is partial or does not occur at all.**
- **The person acts out his or her dreams, sometimes in dramatic or violent ways.**
- **Of all cases studied and observed, 90% occur in males, and the average age is 60 years.**





SOMNAMBULISM

- **Sleep Walking**
- **Most often occurs during the first few hours of sleeping and in NREM, stage 3/4. (deep sleep).**
- **If you have had night terrors, you are more likely to sleep walk when older.**
- **The brain is active enough for you to move, but not so active that you wake up**



Causes:

- **Hereditary**
 - **Identical twins are more likely to sleepwalk.**
 - **If you have a parent, brother, or sister who sleepwalks, you're 10 times more likely to do so than someone from a family with no sleepwalkers.**

You might also have the disorder if you're:

- **Sleep deprived**
- **On a chaotic sleep schedule**
- **Stressed**
- **Drunk**
- **Taking drugs**

Sleepwalking - Myth vs. Reality

That one time that my step-brother and I put the sofa cushions in the oven... Wait a minute, that wasn't me...

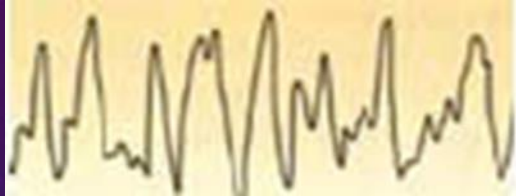
- **It is a myth that people walk with their arms out straight ahead like a zombie, but they do tend to have a glazed expression, as though the eyes are unseeing, and it is very hard to get their attention. People do not tend to switch the light on, but navigate around their homes from memory.**
- **It is also a myth that you cannot hurt yourself while sleepwalking – you can still trip up and it is when sleepwalkers stray somewhere unfamiliar that they can find themselves in danger, with a good example being if they wander out of the front door and on to the street.**
- **You are always told not to wake a sleepwalker, but is there any truth in that?**
 - **Waking a sleepwalker will not cause them to have a heart attack or put them into a coma.**
 - **The kindest thing to do is not to try to wake them at all. Lead them gently back to bed so that they do not hurt themselves.**
 - **They will remain deeply asleep, and it is likely that they will not remember a thing in the morning.**

DREAMS



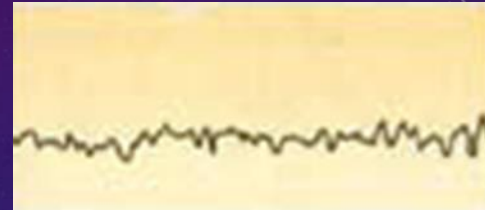
NREM SLEEP VS. REM SLEEP

Non-Rapid Eye Movement (NREM) Sleep



- In NREM sleep the brain is "off-line"
- Brain functions deactivate or decrease in function
- Dreams may occur but are shorter, less vivid, and harder to remember when woken from NREM sleep

Rapid Eye Movement (REM) Sleep (paradoxical sleep)



- In REM sleep the brain reactivates and functions almost as in waking consciousness
- From these activations dreams in REM sleep are longer, more vivid and hallucinogenic, and has more scene changes within the dream sequence

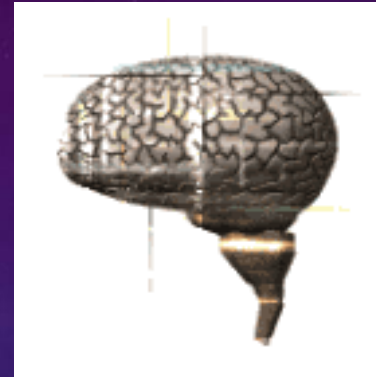
FREUD'S THEORY OF DREAMS

- **Dreams are a roadway into our unconscious, disguised symbols of repressed desires and anxieties.**
- **Wish fulfillment**
- **Manifest Content (storyline)**
- **Latent Content (underlying meaning)**



ACTIVATION-SYNTHESIS THEORY

- **Our Cerebral Cortex is trying to interpret random electrical activity we have while sleeping.**
- **That is why dreams sometimes make no sense.**
- **Biological Theory.**



INFORMATION-PROCESSING THEORY



- Dreams are a way to deal with the stresses of everyday life.
- Dreams play a role in filing away memories, by sifting and sorting the events of the day.
- We tend to dream more when we are more stressed.



LUCID DREAMS

- ▣ **Lucid dreaming occurs when dreamers realize that they are dreaming (lucid dreaming can occur with varying levels of awareness and dream control)**
- ▣ **The dreamers are sometimes capable of changing their dream environment and controlling various aspects of their dream.**
- ▣ **The dream environment is often much more realistic in a lucid dream, and the senses heightened**
- ▣ **The realization is usually triggered by the dreamer noticing some impossible or unlikely occurrence in the dream**

LUCID DREAMING AS A THERAPY TOOL

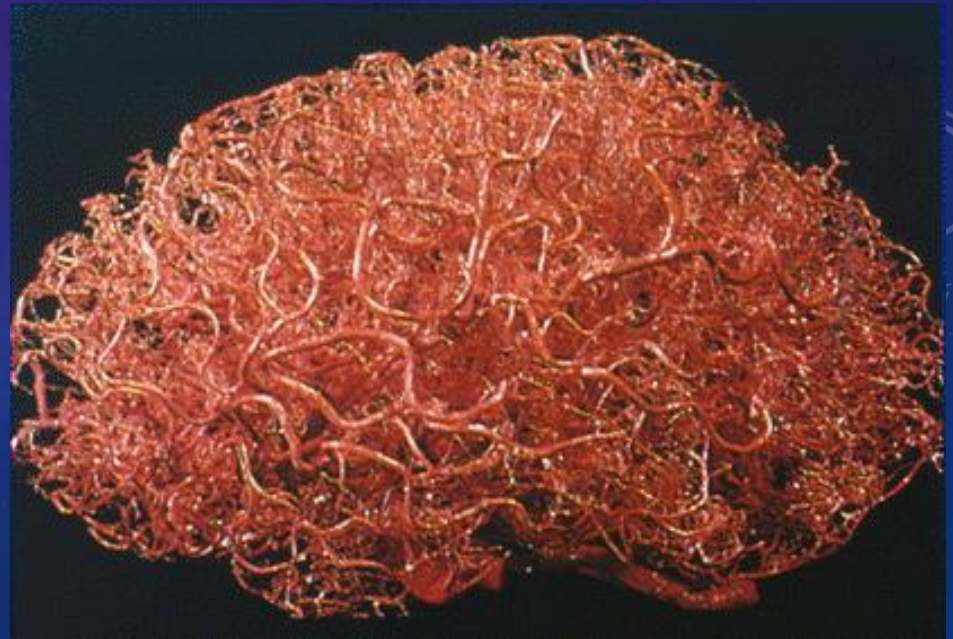
- **Used to help clients feel empowered by gaining control of their dreams**
- **Therapists can use the client's self-reported dreams to access the mental state of the client based on the dream's images, quality, and whether the client had a dream, bad dream, or a nightmare**
- **Clients can ensure healthier sleep patterns by decreasing fear of nightmares**
- **Lucid dreaming has not shown to decrease nightmare frequency, though it does decrease nightmare suffering**

DRUGS



DRUGS

- **Our brain is protected by a layer of capillaries called the blood-brain barrier.**
- **The drugs that are small enough to pass through are called psychoactive drugs.**



DRUGS ARE EITHER....

- **Agonists**
 - **Antagonists**
 - **Reuptake inhibitors**
- If a drug is used often, a tolerance is created for the drug.**
- Thus you need more of the drug to feel the same effect.**
- If you stop using a drug you can develop withdrawal symptoms.**



DRUG TOLERANCE

- The diminishing effect with regular dose of the same dose.



Addiction:
compulsive
drug craving
and use

Psychological v. Physical dependence

WITHDRAWAL: THE DISCOMFORT AND DISTRESS THAT FOLLOW DISCONTINUING THE USE OF AN ADDICTIVE DRUG



PSYCHOACTIVE DRUGS

- **Depressants:** slow down body functions.
- **Stimulants:** arouse body functions.
- **Hallucinogens:** distort perceptions or evoke sensation without sensory input.
- **Opiates:** Has depressive and hallucinogenic elements

DEPRESSANTS

Alcohol

- Slows down sympathetic nervous system.
- Disrupts memory processing.
- Reduces self-awareness.
- Involved in up to 60% of all crimes.
- Involved in over 70% of sexually related crimes.
- The worst drug from a macro perspective out there.



DEPRESSANTS



Barbiturates

- “Tranquilizers”
- Taken to sleep (but reduce REM sleep).
- Taken with other drugs- you can get a synergistic effect.



STIMULANTS

- Amphetamines (Speed)
- Meth
- Cocaine
- Crack
- “the crash” is pronounced



HALLUCINOGENS

LSD (Acid)

- Can cause PTSD and schizophrenia.
- Hallucinations - Geometric patterns, frightening images.



Marijuana

- THC (Tetrahydrocannabinol)
- Difficult to classify
- Can amplify senses
- Is it addictive?



OPIATES

- Can combine effects of depressants and hallucinogens.
- Agonist for endorphins.
- Derived from poppy plant.
- Morphine, heroin, methadone and codeine.
- All these drugs cross the placental barrier to cause birth defects.

