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## Consciousness

### What is Consciousness?

- Damn, that's a complicated question
- **Consciousness** = a living thing's capacity to know of things happening outside and inside of the *self*
  - What is *self*?
- **Subconsciousness** = a level of awareness that is not available to the conscious mind
  - Contains thoughts and feelings and ideas *just* like the conscious mind
  - Can be seen, but rather elusively
- **Unconscious** = a region of thought that cannot be known by the conscious mind
  - Ambitions and desires
  - Freud said that it also held unresolved conflicts
    - \* Dreams can be indicative of what is happening in the unconscious

### Fantasy-prone Personality

- **Fantasy-prone Personality** = a personality type that lends it self to fantasizing in excess
  - Can generate vivid imagery on the fly
  - Frequency of fantasy is drastically higher

### Biological Clocks

- **Biological clock** = an internal mechanism that directs body systems on their own cycle
- **Entrainment** = a method of training biological clocks to a different rhythm
- **Circadian Rhythm** = a biological clock that regulates desire to sleep
  - Cycle is generally around 25 hours
    - \* Not congruent with 24-hour light/dark cycle
  - Through **entrainment**, the body can gradually adopt a 24-hour schedule
  - Highs and lows

- \* Most people feel most tired between 3:00AM and 5:00AM
- \* Most people feel most awake between 3:00PM and 5:00PM
- \* Generally based on blood pressure, body temperature, and fatigue

## Sleep and Dreams

- **Rapid Eye Movement(REM) Sleep** = a stage of the sleep cycle that is characterized by darting, random eye movements
  - Typicall happens several times throughout the night
  - Dreams are generally most vivid in this period
  - **Sleep paralysis**
    - \* Also called “paradoxical sleep”
    - \* When falling asleep, a hormone is released to inhibit motor neurons from allowing the brain to move body parts
- **Sleep** = a behavior where organisms lose consciousness at the behest of certain brain systems

## REM vs NREM

REM SLEEP	NREM SLEEP
Rapid eye movement	Non-rapid eye movement
Grow in duration with sleep duration	Grow in duration with sleep duration
Vivid dreams	Vague, dull dreams
Nightmares	Incubus attacks(night terrors)
Sleep paralysis	Sleepwalking & talking in sleep
Essential for body function	Not as essential for body function

## Brain Waves and Sleep

- Different types of brain waves = acronym – **BAD**
  - **Beta** = brain activity indicative of fully awake people
  - **Alpha** = brain activity indicative of relaxed but awake brain
    - \* Slower, less erratic
  - **Delta** = brain activity indicative of deep sleep
    - \* Slower, longer pulses of activity
- **Hallucinations** = false sensory experiences
- **Sleep Spindles** = small bursts of brain activity
  - Occurs in **stage 2** of the sleep cycle
  - Grow in magnitude with duration of sleep

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### Sleep Cycle

- **Sleep cycle** = a biological cycle that regulates sleep
  - Duration is typically around 90min
    - \* Most people go through the cycle at least 4 times
- Order of cycle
  - NREM
    1. Awake
      - \* Beta waves
    2. Stage 1(Alpha waves)
    3. Stage 3(Sleep spindles)
      - \* Also contains what used to be called “Stage 4”
        - Delta waves
  - REM
    - \* Duration of REM periods increase with sleep duration

### Why Do We Sleep?

- **Restoration theory** = theory that posits that sleep serves as a time for the body to restore body strength and condition
- **Adaptive theory** = theory that posits that natural selection caused the emergence of sleep because it preserves energy when there is little danger
- Real danger can come from lack of sleep
  - Symptoms
    - \* Fatigue
    - \* Inability to concentrate
    - \* Lower-performing immune system
    - \* Greater accident frequency

### Sleep Drive

- **Sleep drive** = an individuals regular desire and need to sleep
- **Nonsomniacs** = people that have a much lower sleep drive and don't feel tired
- **Insomniacs** = people that have a desire to sleep but can't
- **Narcolepsy** = a condition in which people can almost instantly fall asleep
  - Sometimes dangerous if you're standing or doing some important activity(*ie* driving)
- **Sleep Apnea** = a condition in which breathing patterns are irregular during sleep

## Sleeping Disorders

- **REM Sleep Disorder** = a condition in which sleep paralysis doesn't properly engage
  - People act out their dreams physically
- **Night Terrors** = a condition in which sleep is interrupted often because of feelings of intense fear
  - Physiology actually changes
    - \* Rapid heart rate
    - \* Perspiration
  - Typically involves movement and verbalizing too
- **Nightmares** = a vivid dream that invokes anxiety or fear
  - Different from **night terrors**, which involve motion and verbalizing
- **Somnambulism** = a condition in which people get out of bed and walk around
  - Also called “sleepwalking”
  - Typically happens to 25% of people

## Dreams and Psychoanalysis

- Dreams typically involve everyday events
    - But also convey ideas about fear and insecurity
  - **Sigmund Freud** = an important psychologist that established **psychoanalysis**
    - Published *The Interpretation of Dreams* in 1900
      - \* Posited that dreams involve deep wishes and coping with emotions
    - **Manifest content** = the narrative events that underpin a dream
    - **Latent content** = the symbolic meaning that the **manifest content** is meant to encode
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## Purpose of Dreams

- In REM sleep, the brain sorts through information

- Things that are learned through the day are reinforced
    - \* One reason why the sleep deprivation in students is bad
  - REM sleep periods become longer when one is sleep deprived
  - Three hypotheses about the purpose of dreams
    1. Dreaming is a maintenance time for the brain to replenish neurotransmitters and other substances and process information
    2. Dreaming is a time for the brain to work out solutions to problems faced in the days
    3. Dreaming is an attempt to organize information faced in the day into a coherent narrative
      - Almost like a computer defragmenting a spinning hard drive
        - \* SSD master race
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## Hypnosis

- **Hypnosis** = a state of intense relaxation where attention is directed on very particular things
  - Psychologists believe its power is related to the power of *suggestion* to direct focus in certain way
  - **Trances** = periods of time that the subject focuses on becoming more relaxed
    - \* *Go down, down into the rabbit hole*
  - **Posthypnotic amnesia** = thought to be the inability to retrieve memories of what occurred during hypnosis
  - **Orne & Evans** = a group of researchers that studied hypnotic states in 1965
    - \* Control group was to “pretend” to be hypnotized
    - \* Experimental group received actual hypnosis
    - \* Result: no substantial difference
  - **Posthypnotic suggestion** = something that a hypno-therapist embeds in the subconscious to be done after the hypnotic state ends

## Two Theories of Hypnosis

- **Divided Consciousness Theory** = a theory that explains hypnotic behavior as a split in what different conscious elements of the brain are doing at any given time

- If things are happening in parallel, the idea is that not all sensations will get through to the conscious mind
  - **Hidden observer** = a kind of third person perspective that subjects take on when hypnotized
    - \* Can explain how subjects don't feel pain
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## Drugs

- Important question: is the drug an **agonist** or **antagonist**?
  - **Agonist** = a substance that imitates a neurotransmitter and falsely activates receptors
  - **Antagonist** = a substance that interferes with a particular neurotransmitter—often by blocking the receptor from being activated
- **Tolerance** = a propensity to obtain decreased response to a recurring stimulus or substance
- Four types of drug
  1. **Depressants** = a class of drugs that lowers inhibitions and limits long-distance neural communication
    - Essential, all signals have a hard time getting around

## Hallucinogens

**Hallucinogens** = a class of drugs that alters perception in some noticeable way + Perhaps the most notable example is **LSD** - Lysergic Acid Di-ethylamide###  
 How Can Hypnosis Help? - Pain management \* Childbirth \* Dentist work \* Arthritis \* Back pain \* Substitute for pain meds + *e.g.* morphine