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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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How Can Hypnosis Help?

- Pain management
 - Childbirth
 - Dentist work
 - Arthritis
 - Back pain
 - Substitute for pain meds
 - * *e.g.* morphine

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
- **Psychoactive** = a term that describes any drug that has an effect on the brain
- **Psychotropic** = a term that describes drugs *designed* to have a therapeutic effect

Depressants

- **Depressants** = a class of drugs that lowers inhibitions and limits long-distance neural communication
 - Essential, all signals have a hard time getting around
 - Most popular example is **alcohol**

- * Responsible for the most deaths worldwide
- **Barbiturates** = a class of drugs that limit **CNS** activity
 - * Can impair judgement and memory
 - * Can be *especially* strong if paired with other depressants, like alcohol
- **Opiates** = a class of drugs that is characterized by limiting pain and anxiety
 - * **Opium** = a plant that naturally occurs this kind of drug
 - **Morphine** and **heroin** are derivatives of **opium**
 - * **Opioids** = synthetically procured opiates

Hallucinogens

- **Hallucinogens** = a class of drugs that alters perception in some noticeable way
 - Perhaps the most notable example is **LSD**
 - * Lysergic Acid Di-ethylamide
 - Other examples
 - * **Tetra-hydro cannibanol(THC)** = psychoactive element in marijuana
 - * **Peyote**
 - * **Amanita Muscaria** = active component in mushrooms
 - * **Ecstasy(MDMA)** = considered a *mild* hallucinogen
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Stimulants

- **Stimulants** = a class of drug that increases neural activity
 - Most notable examples are **amphetamines**
 - * Especially associated with mood changes and changes in body chemistry
 - Examples
 - * **Ecstasy(MDMA)** is primarily thought of as a **stimulant**

Near-Death Experiences(NDE)

- **Near-Death Experience(NDE)** = a phenomenon that involves accounts of visions and sights seen when technically dead
- Interpretation
 - **Dualism** = a philosophical view that the mind and body exist independently in distinct *substances*
 - * Descarte espoused this view: **substance dualism**
 - * Religion is founded on this principle
 - **Monism** = a philosophical view that the mind and body are tied by the physical world only