

- ❖ `Consciousness
  - Awareness of what is going on around you as well as awareness of your own mental processes
  - Mental processes without awareness:
    - Even when we are fully conscious and awake, our brain is processing information we are not aware of
  - Priming: when prior exposure to a stimulus influences our behavior subconsciously
    - Works by activation of associations
  - Subliminal stimuli: fall just beneath the surface of conscious awareness/detection
    - Stimuli that are very weak/brief
    - Effect on behavior: not aware, but can still prime an individual's response
    - Subliminal Persuasion: flashing a word or picture so briefly that the person is unaware of seeing anything at all.
      - People cannot control our minds by using subliminal stimuli
      - Effects are small and short lived
      - Mildly effective
      - What we perceive consciously seems to be much more comfortable.
- ❖ Attention
  - Concentration or focusing of mental activity
  - Selective attention: purposely focusing on one task while trying to ignore everything else.
    - So focused → will not notice surroundings.
    - Cocktail party effect: refers to our ability to pay attention to one conversation when many are going on around us.
  - Divided attention: trying to focus on two or more things at once
    - Difficult because attention is limited.
  - Attention failure:
    - Change blindness: failure to detect large changes
    - A person viewing a scene fails to notice large changes in the scene
    - Changes one would predict
- ❖ Sleep
  - Natural periodic suspension of consciousness
- ❖ Circadian rhythm
  - Cycle of behavior and physiology
  - Repeats approximately every 24 hours
  - Suprachiasmatic Nucleus of the hypothalamus controls.
  - Individual variation (genetics, age) influence whether a person is more alert in the morning or evening.
  - Circadian low points: drop in performance
    - People are the sleepiest between 1-4 am and 1-4 pm.
- ❖ Electroencephalogram measure (EEG)
  - Measures electric activity of the brain through electrodes on the scalp
  - Synchronous activity of neurons
  - Brain waves

- ❖ Stages of sleep
  - Each stage has a particular association with brain waves
    - As going more asleep- amplitude increases, lowering frequency
  - NREM1: lightest stage when you first fall asleep.
    - Easy to be awoken
    - Hallucinations
    - Jolts
  - NREM2: where people spend most of their time asleep
  - NREM3: slow wave sleep
    - Deepest stage
    - Difficult to be woken
    - Heart rate/blood pressure/temperature/breath all very low
    - Low frequency brain waves- "slow wave"
    - Sleep talk/walk or wet the bed
    - Formerly stages 3 & 4
  - REM: dreams
  - Approximately 90 minutes
  - Awake → NREM1 → NREM2 → NREM3 → REM
  - Slow wave sleep: NREM3 (stages 3 and 4)
    - Deepest sleep
    - Alpha waves: the relatively slow brain waves of a relaxed awake state
    - Delta waves: the large, slow brain waves associated with deep sleep (stage 4)
- ❖ REM Sleep
  - Rapid eye movement: eyes moving under eyelids
  - Where most dreaming takes place
    - Story dreams
  - Paradoxical sleep
    - Outwardly → deep sleep, inside → very active
    - Brain activity: brain receives more oxygen than when you are awake
    - Heart/breathing rate → similar to awake
    - Physiology
    - Paralysis → muscles paralyzed
  - Animals exhibit too
- ❖ Time spent in stages change
  - Stages 4 and 3 slowly diminish and stage 2 and 1 increase, REM sleep periods increase in duration until woken up
- ❖ Sleep deprivation
  - Causes fatigue, irritability, inattentiveness, learning is impaired, hallucinations
  - Disrupts immune system, hunger and body fat hormones
  - Microsleeps: start falling asleep for a second at a time without realizing it
  - Sleepiness impairs driving abilities
  - Adapting and functioning: we do not adapt, functioning becomes impaired. We can get used to it, but it troubles behavior rationally.
- ❖ Theories of sleep

- Restorative: restock, repair and reorganize while we sleep
- Learning and memory: we remember new things better after sleep.
  - More able to solve problems
  - Restore/rebuild fading memories of days experience
- ❖ Dreams
  - Perceptual experiences during sleep
  - The brain CAN NOT process sensory stimuli during REM sleep
- ❖ Functions of dreaming
  - REM rebound: if go without REM Sleep → next time, fall into REM quicker and spend more time in REM.
  - Learning/memory: consolidate new learning to memory
    - Reshape to more successful forms
  - Emotional processing: limbic system → more activated and frontal lobes are less activated
- ❖ Activation-Synthesis hypothesis
  - Bursts of activation from brainstem activate somewhat random areas of the cortex and then brain tries to weave story around random activations
    - Cause of dreams
- ❖ Sleep Disorders
  - Parasomnia: undesirable behaviors/experiences related to sleep
  - Insomnia: problem falling and/or staying asleep
    - Induced by stress/anxiety
    - Most common
  - Narcolepsy: periodic overwhelming sleepiness due to insomnia
    - Uncontrollable sleepiness/sleep attacks → can't resist and fall asleep
    - Severe → straight to REM
    - Cataplexy → loss of muscle tone
      - Emotional triggers
    - Hypnagogic (falling asleep) and hypnopompic (awakening) hallucinations
    - Rare
    - Lack of orexin/hypocretin
- ❖ Parasomnias
  - Sleep talking: more common in kids, genetic influence, no memory of it
  - Sleep walking: more common in kids, genetic, stage 4 sleep, no memory/dreaming influence
  - Nightmares: REM sleep
  - Night terrors: more common in kids—wake up screaming
  - REM behavior disorder: person not paralyzed while dreaming → end up acting out their dreams
    - Males over 50- onset of parkinsons
- ❖ Psychoactive drugs
  - Influence functioning of brain and alter psychological processes
    - Alters perception and moods
  - Affect neurotransmitters
    - Agonists: enhance, increase the effect of the drug
    - Antagonists → inhibit, no effect