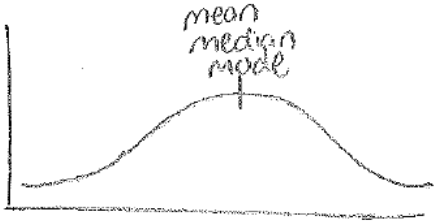
AP Psychology Study Guide

History and Approaches (2-4%)

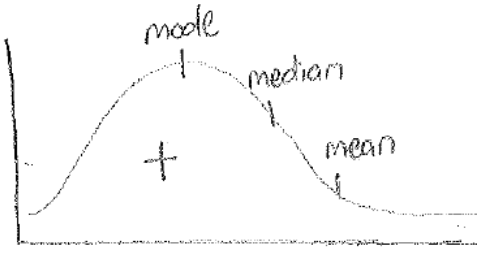
- **Psychology is derived from physiology (biology) and philosophy**
- **EARLY APPROACHES**
  - ***Structuralism*** – used **INTROSPECTION** (act of looking inward to examine mental experience) to determine the underlying STRUCTURES of the mind
  - ***Functionalism*** – need to analyze the PURPOSE of behavior
- **APPROACHES KEY WORDS**
  - ***Evolutionary*** – Genes
  - ***Humanistic*** – free will, choice, ideal, actualization
  - ***Biological*** – Brain, NTs
  - ***Cognitive*** – Perceptions, thoughts
  - ***Behavioral*** – learned, reinforced
  - ***Psychoanalytic/dynamic*** – unconscious, childhood
  - ***Sociocultural*** – society
  - ***Biopsychosocial*** – combo of above
- **PEOPLE:**
  - ***Mary Calkins:*** First Fem. Pres. of APA
  - ***Charles Darwin:*** Natural selection & evolution
  - ***Dorothea Dix:*** Reformed mental institutions in U.S.
  - ***Stanley Hall:*** 1st pres. of APA1st journal
  - ***William James:*** Father of *American* Psychology – functionalist
  - ***Wilhem Wundt:*** Father of Modern Psychology – structuralist
  - ***Margaret Floy Washburn***–1st fem. PhD
  - ***Christine Ladd Franklin*** – 1st fem.

Research Methods (8-10%)

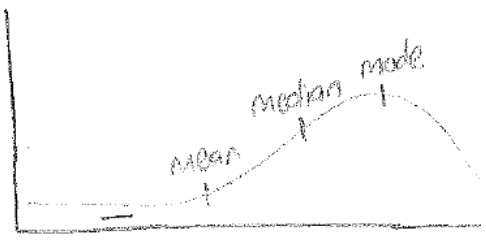
- **EXPERIMENT** : Adv: researcher controls variables to establish **cause and effect** Disadv: difficult to generalize
  - ***Independent Variable***: manipulated by the researcher
    - ***Experimental Group:*** received the treatment (part of the IV)
    - ***Control Group:*** placebo, baseline (part of the IV)
    - ***Placebo Effect:*** show behaviors associated with the exp. group when having received placebo
    - ***Double-Blind:*** Exp. where neither the participant or the experimenter are aware of which condition people are assigned to
  - ***Dependent Variable:*** measured variable (is DEPENDENT on the independent variable)
- ***Operational Definition:*** clear, precise, typically quantifiable definition of your variables – allows **replication**
- ***Confound:*** error/ flaw in study
- ***Random Assignment:*** assigns participants to either control or experimental group at random – minimizes bias, increase chance of equal representation
- ***Random Sample:*** method for choosing participants – minimizes bias
- ***Validity:*** accurate results
- ***Reliability:*** same results every time
- **NATURALISTIC OBSERVATION:** Adv: real world validity (observe people in their own setting) Disadv: No cause and effect
- **CORRELATION**: Adv: identify relationship between two variables Disadv: No cause and effect ***(CORRELATION DOES NOT EQUAL CAUSATION)***
  - ***Positive Correlation –*** Variables vary in the same direction
  - ***Negative Correlation –*** variables vary in opposite directions
  - ***The stronger the # the stronger the relationship REGARDLESS of the pos/neg sign***
- **CASE STUDY**: Adv. Studies ONE person (usually) in great detail – lots of info Disadv: No cause and effect
- ***DESCRIPTIVE STATS:***shape of the data
  - **Measures of Central Tendency:**
    - **Mean:** Average (use in normal distribution)
    - **Median:** Middle # (use in skewed distribution)
    - **Mode:** occurs most often
  - **Normal Distribution:**



  - **Positive Skew:**



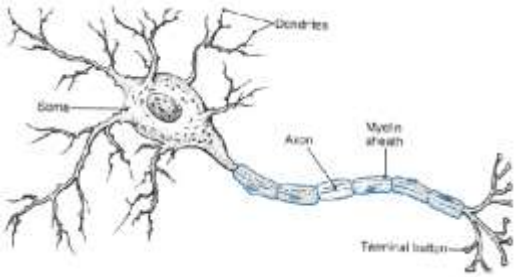
  - **Negative Skew:**



- **INFERENTIAL STATISTICS:** establishes significance (meaningfulness) Significant results = **NOT** due to chance
- **ETHICAL GUIDELINES (APA)**
  - Confidentiality
  - Informed Consent
  - Debriefing
  - Deception must be warranted

Biological Basis (8-10%)

- **NEURON:** Basic cell of the NS
  - ***Dendrites:*** Receive incoming signal
  - ***Soma:*** Cell body (includes nucleus)
  - ***Axon:*** AP travels down this
  - ***Myelin Sheath:*** speeds up signal down axon
  - ***Terminals:*** release NTs – send signal onto next neuron
  - ***Synapse:*** gap b/w neurons



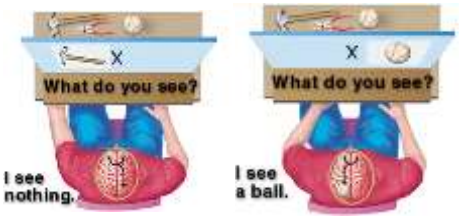
- ***Action Potential***: movement of sodium and potassium ions across a membrane sends an electrical charge down the axon
  - ***All or none law***: stimulus must trigger the AP past its threshold, but does not increase the intensity of the response (flush the toilet)
  - ***Refractory period***: neuron must rest and reset before it can send another AP (toilet resets)

- ***Sensory neurons – receive signals***
- ***Afferent neurons – Accept signals***
- ***Motor neurons – send signals***
- ***Efferent neurons – signal Exits***

- **CENTRAL NS:** Brain and spinal cord
- **PERIPHERAL NS:** Rest of the NS
  - ***Somatic NS:*** Voluntary movement
  - ***Autonomic NS:*** Involuntary (heart, lungs, etc)
    - ***Sympathetic NS:*** Arouses the body for fight/flight (generally activates)
    - ***Parasympathetic NS:*** established homeostasis after a sympathetic response (generally inhibits)
- **NEUROTRANSMITTERS (NTS):** Chemicals released in synaptic gap, received by neurons
  - ***GABA:*** Major inhibitory NT
  - ***GlutamatE:*** Major **E**xcitatory NT
  - ***Dopamine:*** Reward & movement
  - ***Serotonin:*** Moods and emotion

- ***Acetylcholine (ACh):*** Memory
- ***Epinephrine & Norepinephrine:*** sympathetic NS arousal
- ***Endorphins:*** pain control, happiness
- ***Oxytocin:*** love and bonding

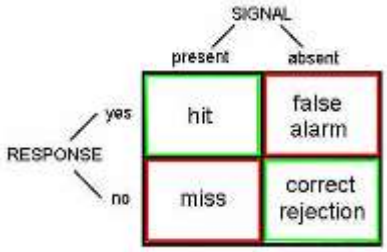
- ***Agonist:*** drug that mimics a NT
- ***Antagonist:*** drug that blocks a NT
- ***Reuptake:*** Unused NTs are taken back up into the sending neuron. SSRIs (selective serotonin reuptake inhibitors) block reuptake – treatment for depression
- **AREAS OF THE BRAIN:**
  - Hindbrain: oldest part of the brain
    - Cere**bell**um – movement (what does it take to ring a **bell**)
    - Medulla – vital organs (HR, BP)
    - Pons – sleep/arousal (Pon**zzzzzz**)
  - Midbrain
    - **R**eticular **f**ormation: attention (if you can't pay attention, **You R F'd**)
  - Forebrain: higher thought processes
    - Limbic System
      - Amygdala: emotions, fear (Amy, da! You're so emotional!)
      - Hippocampus: memory (if you saw a hippo on campus you'd remember it!)
    - Thalamus: relay center
    - Hypothalamus: Reward/pleasure center, eating behaviors
    - Broca's Area: Inability to produce speech (Broca – Broken speech)
    - Wernicke's Area: Inability to comprehend speech (Wernicke's what?)
    - Cerebral Cortex: outer portion of the brain – higher order thought processes
      - Occipital Lobe: located in the back of the head - vision
      - Frontal Lobe: decision making, planning, judgment, movement, personality
      - Parietal Lobe: located on the top of the head - sensations
      - Temporal Lobe: located on the sides of the head (temples) – hearing and face recognition
      - Somatosensory Cortex: map of our sensory receptors –in parietal lobe
      - Motor Cortex: map of our motor receptors – located in frontal lobe
    - Corpus Callosum: bundle of nerves that connects the 2 hemispheres – sometimes severed in patients with severe seizures – leads to "split-brain patients"
      - Lateralization: the brain has some specialized features – language is processed in the L Hemisphere
      - Split-brain experiments: done by Sperry & Gazzanaga.
        - Images shown to the right hemisphere will be processed in the left (& vice versa), patient can verbally identify what they saw



- ***BRAIN PLASTICITY:*** Brain can "heal" itself
- **NATURE VS. NURTURE: ANSWER IS BOTH**
  - Twin Studies:
    - Identical twins – Monozygotic (MZ)
    - Fraternal twins – Dizygotics (DZ)
  - Genetics: MZ twins will have a higher percentage of also developing a disease
  - Environment: MZ twins raised in different environments show differences
- **ENDOCRINE SYSTEM:** sends hormones throughout the body
  - *Pituitary Gland:* Controlled by hypothalamus. release growth hormones
  - *Adrenal Glands:* related to sympathetic NS: releases adrenaline

Sensation & Perception (6 – 8%)

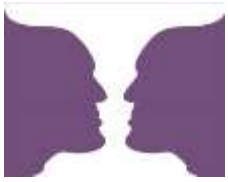
- ***ABSOLUTE THRESHOLD:*** detection of signal 50% of time (is it there)
- ***DIFFERENCE THRESHOLD (also called a just noticeable difference (JND) and follows WEBER'S LAW:*** two stimuli must differ by a constant minimum proportion. (Can you tell a change?)
- ***SIGNAL DETECTION THEORY***

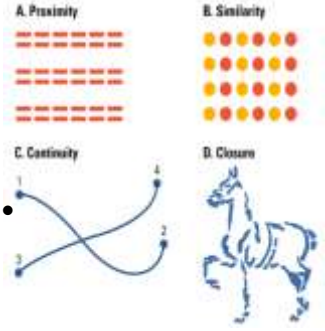


- ***Sensory Adaptation:*** diminished sensitivity as a result of constant stimulation (can you feel your underwear?)
- ***Perceptual Set:*** tendency to see something as part of a group – speeds up signal processing
- ***Inattentional Blindness:*** failure to notice something b/c you're so focused on another task (gorilla video)
- ***Cocktail party effect:*** notice your name across the room when its spoken, when you weren't previously paying attention
- **VISUAL SYSTEM:**
  - **Pathway of vision: light → cornea →pupil/iris → lens → retina → rods/cones → bipolar cells → ganglion cells → optic nerve → optic chiasm → occipital lobe**
  - **Cornea –** protects the eye
  - **Pupil/iris –** controls amount of light entering eye
  - **Lens –** focuses light on retina
  - **Fovea–**area of best vision(cones here)
  - **Rods –** black/white, dim light
  - **Cones –** color, bright light
  - **Bipolar cells –** connect rods/cones and ganglion cells
  - **Ganglion cells –** opponent-processing occurs here
  - **Blind spot –** occurs where the optic nerve leaves the eye
  - **Feature detectors –** specialized cells that see motion, shapes, lines, etc. (experiments by Hubel & Weisel)
- **THEORIES OF COLOR VISION:**
  - **Trichromatic –** three cones for receiving color (blue, red, green)
    - Explains color blindness - they are missing a cone type
  - **Opponent Process –** complementary colors are processed in ganglion cells – explains why we see an after image
- ***Visual Capture:*** Visual system overwhelms all others (nauseous in an IMAX theater – vision trumps vestibular)
- ***Constancies:*** recognize that objects do not physically change despite changes in sensory input (size, shape, brightness)
- ***Phi Phenomenon:*** adjacent lights blink on/off in succession – looks like movement (traffic signs with arrows)
- ***Stroboscopic movement:*** motion produced by a rapid succession of slightly varying images (animations)
- **MONOCULAR CUES** *(how we form a 3D image from a 2D image)*
  - Interposition: overlapping images appear closer
  - Relative Size: 2 objects that are usually similar in size, the smaller one is further away
  - Relative Clarity: hazy objects appear further away
  - Texture Gradient: coarser objects are closer
  - Relative Height: things higher in our field of vision look further away
  - Linear Perspective: parallel lines converge with distance (think railroad tracks)
- **BINOCULAR CUES**: (how both eyes make up a 3D image)
  Retinal Disparity: Image is cast slightly different on each retinal, location of image helps us determine depth
  Convergence: Eyes strain more (looking inward) as objects draw nearer
- **TOP-DOWN PROCESSING:** Whole → smaller parts
- **BOTTOM-UP PROCESSING:** Smaller Parts → Whole

- **AUDITORY SYSTEM:**
  - **Pathway of sound: sound → pinna → auditory canal →ear drum (tympanic membrane) → hammer, anvil, stirrup (HAS) → oval window → cochlea → auditory nerve → temporal lobes**
  - **Outer Ear:** pinna (ear), auditory canal
  - **Middle Ear:** ear drum , HAS (bones vibrate to send signal)
  - **Inner Ear:** cochlea – like COCHELLA (sounds 1st processed here)
- **THEORIES OF HEARING:** both occur in the cochlea
  - **Place theory –** location where hair cells bends determines sound (high pitches)
  - **Frequency theory –** rate at which action potentials are sent determines sound (low pitches)
- **OTHER SENSES:**
  - Touch: Mechanoreceptors → spinal cord → thalamus → somatosensory cortex
  - Pain: Gate-control theory: we have a "gate" to control how much pain ix experienced
  - Kinesthetic: Sense of body position
  - Vestibular: Sense of balance (semicircular canals in the inner ear effect this)
  - Taste (gustation): 5 taste receptors: bitter, salty, sweet, sour, umami (savory)
  - Smell (olfaction): Only sense that does NOT route through the thalamus 1st. Goes to temporal lobe and amygdala
- **GESTALT PSYCHOLOGY:** Whole is greater than the sum of its parts

Gestalt Principles:

- Figure/ground: organize information into figures objects (figures) that stand apart from surrounds (back ground)
- 
- Closure: tendency to mentally fill in gaps
- Proximity: tendency to group things together that appear near each other
- Similarity: tendency to group things together based off of looks
- Continuity: tendency to mentally form a continuous line

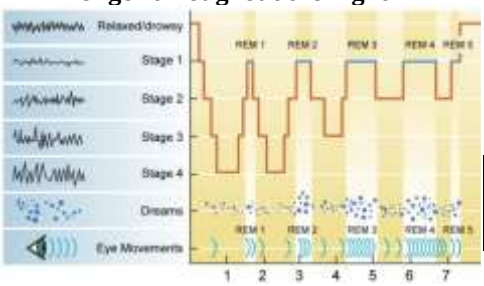


States of Consciousness (2 – 4%)

- **STATES of CONSCIOUSNESS:**
  - **Higher-Level:** controlled processes – totally aware
  - **Lower-Level:** automatic processing (daydreaming, phone numbers)
  - **Altered States:** produced through drugs, fatigue, hypnosis
  - **Subconscious:** Sleeping and dreaming
  - **No awareness:** Knocked out
- ***METACOGNITION:*** Thinking about thinking
- **SLEEP:**

Beta Waves: awake
Alpha Waves: high amp., drowsy
Stage 1: light sleep
Stage 2: bursts of sleep spindles
Stage 3 (delta waves: Deep sleep
Stage 4: extremely deep sleep
Rapid Eye Movement (REM): dreaming

Entire cycle takes 90 minutes, REM occurs inb/w each cycle. REM lasts longer throughout the night



- **CIRCADIAN RHYTHM:** 24 hour biological clock
  - Body temp and awareness change due to this
  - Controlled by the Suprachiasmatic nucleus (SCN) in the brain
  - Explains jet lag
- **SLEEP DISORDERS**
  - ***Insomnia:*** Inability to fall asleep (due to stress/anxiety)
  - ***Sleep walking:*** (due to fatigue, drugs, alcohol)
  - ***Night terrors:*** extreme nightmares – NOT in REM sleep – typical in children
  - ***Narcolepsy:*** fall asleep out of nowhere (due to deficiency in orexin)
  - ***Sleep Apnea:*** stop breathing suddenly while asleep (due to obesity usually)
- **DREAM THEORIES:**
  - ***Freud's Unconscious Wish Fulfillment:*** Dreaming is gratification of unconscious desires and needs
    - *Latent Content:* hidden meaning of dreams
    - *Manifest Content:* obvious storyline of dream
  - ***Activation Synthesis:*** Brain produces random bursts of energy – stimulating lodged memories. Dreams start random then develop meaning
- **HYPNOSIS**
  - **It Can:** Reduce pain, help you relax
  - **It CANNOT:** give you superhuman strength, make you regress, make you do things against your will
- **PSYCHOACTIVE DRUGS:**
  - ***Triggers dopamine release in the brain***
  - ***Depressants:*** Alcohol, barbiturates, tranquilizers, opiates (narcotics)
    - Decrease sympathetic NS activation, highly addictive
  - ***Stimulants:*** Amphetamines, Cocaine, MDMA (ecstasy), Caffeine, Nicotine
    - Increase sympathetic NS activation, highly addictive
  - ***Hallucinogens:*** LSD, Marijuana
    - Causes hallucinations, not very addictive
  - ***Tolerance:*** Needing more of a drug to achieve the same effects
  - ***Dependence:*** Become addicted to the drug – must have it to avoid withdrawal symptoms
  - ***Withdrawal:*** Psychological and physiological symptoms associated with sudden stoppage. Unpleasant – can kill you.

Learning (7-9 %)

- **CLASSICAL CONDITIONING: *PAVLOV!***
  - **Unconditioned Stimulus (US):** brings about response w/o needing to be learned (food)
  - **Unconditioned Response (UR):** response that naturally occurs w/o training (salivate)
  - **Neutral Response (NS):** stimulus that normally doesn't evoke a response (bell)
  - **Conditioned Stimulus (CS):** once neutral stimulus that now brings about a response (bell)
  - **Conditioned Response (CR):** response that, after conditioning, follows a CS (salivate)
  - **Contiguity:** Timing of the pairing, NS/CS must be presented immediately BEFORE the US
  - **Acquisition:** process of learning the response pairing
  - **Extinction:** previously conditioned response dies out over time
  - **Spontaneous Recovery:** After a period of time the CR comes back out of nowhere
  - **Generalization:** CR to like stimuli (similar sounding bell)
  - **Discrimination:** CR to ONLY the CS

- **CONTINGENCY MODEL: Rescorla & Wagner –** classical conditioning involves cognitive processes
- **CONDITIONED TASTE AVERSION (ONE-TRIAL LEARNING): John Garcia –** Innate predispositions can allow classical conditioning to occur in one trial (food poisoning)
- **COUNTERCONDITIONING: Little Albert and John Watson (father of behaviorism) –** conditioned a fear in a baby (only to countercondition – remove it- later on)
    - **OPERANT CONDITIONING: *SKINNER!***
    - **LAW OF EFFECT (Thorndike):** Behaviors followed by pos. outcomes are strengthened, neg. outcomes weaken a behavior (cat in the puzzle box)
- **PRINCIPLES OF OPERANT COND:**
    - **Pos. Reinforcement:** *Add* something *nice* to *increase* a behavior (gold star for turning in HW)
    - **Neg. Reinforcement:** *Take away* something *bad/annoying* to *increase* a behavior (put on seatbelt to take away annoying car signal)
    - **Pos. Punishment:** *Add* something *bad* to *decrease* a behavior (spanking)
    - **Neg. Punishment:** *Take away* something *good* to *decrease* a behavior (take away car keys)
    - **Primary Reinforcers:** innately satisfying (food and water)
    - **Secondary Reinforcers:** everything else (stickers, high-fives)
        - **Token Reinforcer:** type of secondary- can be exchanged for other stuff (game tokens or money)
    - **Generalization:** respond to similar stimulus for reward
    - **Discrimination:** stimulus signals when behavior will or will not be reinforced (light on means response are accepted)
    - **Extinction / Spontaneous Recovery:** same as classical conditioning
    - **Premack Principle:** high probability activities reinforce low probability activities (get extra min at recess if you everyone turns in their HW)
    - **Overjustification Effect:** reinforcing behaviors that are intrinsically motivating causes you to stop doing them (give a child 5$ for reading when they already like to read – they stop reading)
    - **Shaping:** use *successive approximations* to train behavior (reward desired behaviors to teach a response – rat basketball)
    - **Chaining:** tie together several behaviors
    - **Continuous Reinforcement schedule:** Receive reward for every response
    - **Fixed Ratio schedule:** Reward every X number of response (every 10 envelopes stuffed get $$)
    - **Fixed Interval schedule:** Reward every X amount of time passed (every 2 weeks get a paycheck)
    - **Variable Ratio schedule:** Rewarded after a random number of responses (slot machine
    - **Variable Interval schedule:** Rewarded after a random amount of time has passed (fishing)
    - ***Variable schedules are most resistant to extinction* (**how long will keep playing a slot machine before you think its broken?)
        - **SOCIAL (OBSERVATIONAL) LEARNING: *BANDURA!***
- **Modeling Behaviors:** Children model (imitate) behaviors. Study used BoBo dolls to demonstrate the following
    - **Prosocial –** helping behaviors
    - **Antisocial –** mean behaviors
        - **MISC LEARNING TYPES**
    - **Latent learning (*Tolman!*) –** learning is hidden until useful (rats in maze get reinforced half way through, performance improved
        - **Cognitive maps –** mental representation of an area, allows navigation if blocked
    - **Insight learning (Kohler!) –** some learning is through simple intuition (chimps with crates to get bananas)
    - **Learned Helplessness (Seligman!)** – no matter what you do you never get a positive outcome so you just give up (word scrambles)

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