Neurotransmitter Chart (from Ms. Katherine Duggan)

Neurotransmitter	Affected Functions	Associated Problems
Acetylcholine ACH	• Attention • Arousal • Muscle action/ movement • Memory	- Alzheimer's
Dopamine	• Mood/emotion • Arousal • Learning	- Parkinson's + schizophrenia cocaine & amphetamines
Norepinephrine	• Mood • Arousal • Learning	- Depression
Serotonin	• Sleep • Hunger • Aggression • Arousal	- Depression + Anxiety, inhibit dreaming
GABA	• Inhibitory effect on axons • Sleep • Movement	- Anxiety, Huntington's Disease, epilepsy
Endorphins	• Natural opiates • Pain relief • Pleasurable emotions	No established problems

Review Sheet #2
Modules 3 and 4
Neural and Hormonal Systems and the Brain

Neurobiology

- Neurotransmissions and the nervous systems: (neurotransmission is often nicknamed the "all-or-nothing response" to explain the electrical firing of neurons and the chemical release of neurotransmitters)
    - Axons, dendrites, synaptic gap and myelin sheath
    - Action potential-depolarization, repolarization, refractory period, threshold, reuptake
    - Specific neurotransmitters: Acetylcholine, endorphins, serotonin, dopamine), inhibitory vs. excitatory
    - Types of neurons: Sensory (afferent), Motor (efferent) [remember SAME], and Interneurons
    - Agonists and antagonists
    - Structure of the nervous systems: central, peripheral, autonomic, somatic, sympathetic (fight or flight) and the parasympathetic (calming) [remember SYMpathy for one in crisis; PARAchute to calm down slowly]

- The endocrine system: Involves our major glands such as the adrenal and pituitary glands and hormones such as adrenaline, testosterone, estrogen and norepinephrine.

- **The Brain:** The three general region are the Brainstem (lizard brain), the Limbic System (leopard brain), and the Cerebral Cortex (learning brain).
    - The brainstem includes the medulla (heartbeat and breathing), the reticular formation (arousal center), the cerebellum (balance) and the thalamus (the "sensory switchboard")
    - The limbic system includes the hippocampus (memory), the hypothalamus (directs the endocrine system/"pleasure center"/the four fs), and the amygdala (emotions such as anger and aggression)
    - The cerebral cortex is the brain's neural covering and the brain's information processing center where neurons communicate
    - plasticity

- The four lobes include the: occipital (vision), parietal (sensory cortex), temporal (hearing) and frontal (personality and judgments – ex. Phinneas Gage)
- The two hemispheres include the:
    - Right: spatial and creative
    - Left: language and logical math reasoning

    - Broca's area – making speech (left frontal)
    - Wernicke's areas – comprehending speech (left temporal)
    - Motor Cortex in the Frontal lobe (the motor is in the front)
    - Sensory Cortex in the Parietal lobe

- Brain imaging techniques:
    - Some show brain anatomy: CAT scans (x-ray pictures), MRIs (measures magnetic activity)
    - Some show brain activity: EEGs (measures electrical impulses), PET scans (measures glucose consumption)
    - Some show both: fMRI (uses magnetic field and measures oxygen levels)

AP Psychology Exam Review Sheet
"Confusing Pairs"

Independent Variable (what is tested) v. Dependent Variable (what is measured)

Experimental Group (group that is tested) v. Control Group (compared to the experimental, receives the placebo in a drug experiment.

Left brain (language and logic) v. Right brain (creative and spatial).

Corpus Callosum (divides the brain) v. Cerebral Cortex (covers the brain)

Sympathetic Nervous System ("fight or flight") v. Parasympathetic (calming – parachute)

Neurotransmitters (in the nervous system) v. Hormones (in the endocrine system)

Lateral Hypothalamus (stimulates hunger) v. Ventromedial Hypothalamus (suppresses hunger)

Broca's Area (makes words) v. Wernicke's Area (comprehends words)

Identical Twins (same fertilized egg) v. Fraternal Twins (two separate eggs)

Afferent neurons (sensory, body to brain) v. Efferent neurons (motor, brain to body)

Assimilation (all four-legged animals are "doggies") v. Accommodation ("doggies" are different than "kitties")

Concrete operations (logical thinking) v. Formal operations (philosophical thinking)

Sensation (bottom-up processing) v. Perception (top-down processing)

Rods (night vision) v. Cones (color vision)

Classical conditioning (involuntary) v. operant conditioning (voluntary)

Primacy effect (first items remembered) v. Recency effect (last items remembered)

Proactive interference (loss of the new info) v. retroactive (loss of the old info)

Implicit memory (non-declarative; skills) v. Explicit memory (declarative, facts)

Recall memory (no cues) v. Recognition memory (some hints)

Algorithms (step-by-step) v. Heuristics (rule-of-thumb)

Representative heuristics (stereotypes) v. Availability heuristics (based on available info)

Phonemes (basic sound units) v. Morphemes (basic units of meaning)

Fluid Intelligence (processing speed) v. Crystallized Intelligence (acquired knowledge)

Validity (test measures what it should) v. Reliability (same scores on a retest)

Achievement test (what you've learned) v. Aptitude test (potential)

Intrinsic motivation (for personal satisfaction) v. Extrinsic motivation (for rewards)

Theory Y (democratic/intrinsic) v. Theory X (rewards or punishment/extrinsic)

Internal locus (you control the environment) v. External locus (environment controls you)

Lithium (treats bi-polar) v. Librium (treats anxiety)

Type A (high stress) v. Type B (low stress)

Therapy Approach	Cause of Behavior	Goal of Treatment	Key Terms
Psychoanalytic Freud Jung Adler Horney	Unconscious internal conflict, possibly stemming from, early childhood trauma.	Help patients gain insight into their unconscious conflicts. To strengthen the ego. Does not offer a cure.	Psychoanalysis Free Association Dream interpretation Transference Catharsis
Humanistic A. Maslow Carl Rogers Fritz Perls: Gestalt Therapy	Poor self-concept as a result of conditions of worth.	To reduce the discrepancy between the ideal and real self To help clients get in touch with parts of themselves they have "disowned"	Client-centered Therapy Unconditional Positive regard Active listening
Behavioral B.F. Skinner	Learned maladaptive behavior through faulty contingencies of reinforcement	Unlearn maladaptive behavior and replace it with more adaptive behavior	Systematic Desensitization Modeling Conditioning Aversive
Cognitive Albert Ellis Aaron Beck	Irrational and faulty thought processes and perceptions	Cognitive restructuring by changing the thoughts and replacing irrational with rational perceptions and changing negative thinking to more positive ideas	Rational Emotive Therapy (RET or REBT (B for Behavioral)
Biological	Imbalance of neurotransmitters, hormones; genetic predisposition and other brain abnormalities	Through the use of antianxiety, antidepressant, and antipsychotic drugs, attempting to restore balance. Electroconvulsive shock treatment and psychosurgery used minimally as well.	Antidepressants Antipsychotics ECT Psychosurgery Prefrontal lobotomy