STUDY SHEET FOR EXAM 2: PSYCH 2210

FORMAT: - 45 Multiple Choice and True/False Questions (3 pts each)
- Exam is during class time
- **Best way to study:** try to define/identify terms below without looking at notes or text. Then go back and check.

TEXT MATERIAL:
*Addiction:* Chap 5: p 142-153

*MDMA:* Chap 5 p139

*Methods:* You are responsible for material in Chap 4: p 99-111. Focus on techniques we covered in class.

*Sexual Orientation:* Chap 7: 207-225

LECTURE MATERIAL:

**Addiction**

*Definition*

Interaction of biology & environment

*Brain Reward Circuit*

Know anatomy of the circuit

Ventral Tegmental Area

Nucleus Accumbens

Dopamine

*Evidence*

Receptor Binding Studies

Microdialysis studies measuring neurotransmitter release

Intracranial Self-Stimulation studies

Drug Self-administration studies

Effects of requip (e.g., used in treatment for Parkinson’s)

*Risk factors*

Age at first use

Genetics

Relationship to mental illness

**MDMA: Drug, Brain & Behavior**

Pure MDMA vs."Molly"

Psychological & Physical effects of MDMA

Role of serotonin, norepinephrine, dopamine on specific effects

MDMA effects on brain activity & connectivity

MDMA effects on negative vs. positive memories
Methods

Measuring Electrical Activity
- Single cell recordings: definition, what is recorded
- Stereotaxic Surgery
- EEG: definition, what is recorded
- ERP: definition, what is recorded
- Advantages and disadvantages of ERP/EEG vs. single cell recording

Examples of Recording Techniques
Mapping Visual Cortex: Hubel & Weisel Nobel Prize Studies
- Hierarchical organization
- Face cells

- Hippocampus & Memory
- Fried Expt: video clips and brain activity

Imaging Techniques
Structural Imaging
- CT scans: definition, what they measure
- MRI Scans: definition, what they measure
- Comparisons of CT to MRI: pros & cons of each

Functional Imaging
- PET: definition, what it measures
- fMRI: definition, what it measures; BOLD response
- what does brain “activity” mean
- Problems with imaging designs

Experimental Manipulations of Brain Activity
- Lesions
- Transcranial Magnetic Stimulation (TMS)
- Intracranial brain stimulation

- Optogenetics

The Sexual Brain

Prevalence rates; gender differences; change across time

Sexual Differentiation
Biological Sex
Gender Identity
Sexual Orientation
  Hormones: organizational vs activational effects
Sex determination
Genotype vs. phenotype
Syr gene
Indifferent gonads
Genital Tuberde
Wolffian Ducts
Mullerian Ducts
Steps in male phenotype
Steps in female phenotype

Clinical Cases: phenotype vs. genotype
Congenital Adrenal Hyperplasia (CAH)
Androgen Insensitivity Syndrome (AIS)
Turner’s Syndrome
5-Alpha-reductase deficiency

Organizational Effects of Hormones
Sensitive period
Sexual Dimorphism
Sexually Dimorphic Nucleus (SDN)-POA
Role of Testosterone
Organizational Effects and Sexual differentiation

Fetal Hormones and Sexual Orientation
Theories about sexual orientation: Nature vs. Nurture
  Freud
  Social Constructivism
  Prenatal Hormones: Ellis & Ames Hypothesis

Evidence for Prenatal Hormone Hypothesis
Prenatal hormones produce sexually differentiated effects on body, brain, behavior
Prenatal hormones & partner preference in animals
Sexual Dimorphism in humans: markers of prenatal testosterone; pattern in gay and lesbian individuals
  2D-4D ratio
  otoacoustic emissions
  INAH-3 (LeVay Study)

Clinical Studies:
  CAH females
  AIS individuals
  5-alpha reductase individuals
  John/Joan case study

Genetic & Immunological Factors
Twin studies: rates in identical vs. fraternal twins
Hamer Studies: gay gene?
Fraternal Birth order effects
Epigenetic Effects-impacts prenatal environmental factors (stress; testosterone sensitivity)
Gender Identity
Bed Nucleus of the Stria Terminalis
Simon Baron-Cohen studies
- prenatal testosterone and eye contact, play behavior, and corpus callosum asymmetry
Gender Differences and cognition
- male vs. female pattern on spatial and language tasks
- relationship to prenatal testosterone
- pattern in gay and lesbian individuals