

# Key Dates

- TH Mar 30 Unit 19; **Term Paper Step 2**
- TU Apr 4 Begin Biological Perspectives, Unit IIIA and 20; Step 2 Assignment
- TH Apr 6 Unit 21
- TU Apr 11 Unit 22; Biological Perspective Assignment
- TH Apr 13 Begin Psychological Perspectives, Unit IIIB and 23; **Term Paper Step 3** (*only if Step 2 approved*)

# Learning Outcomes

- By the end of this class, you should be able to:
  - List several reasons why researchers have a hard time pinning down specific genetic explanations for mental disorders
  - Explain how the results of twin and adoption studies can be used to assess heritability
  - Identify at least one mediating factor that might link genetic influences with mental disorders
  - Describe the conclusions that can be drawn about heritability when research shows different mental disorders occurring within the same family
  - Summarize the areas of psychopathology that research suggests are most likely to be significantly influenced by inborn genetic factors

Goal: To identify the extent to which different aspects of psychopathology might be in some way inherited

# UNIT 20: GENETICS AND HEREDITY

# Genetics and Heredity

- Behavioral genetics looks at the extent to which certain behaviors are “hard-wired” into the human genome:
  - Chromosomes contain genes (DNA and RNA): humans have 23 pairs, with 20-25 thousand genes
  - Genes contain all the codes for formation of basic proteins: the genome
  - Genes have multiple variations: alleles
  - The uniqueness of one’s genetic makeup: genotypes
  - How/whether genotypes are expressed is very complicated: phenotypes

# Genetics and Heredity

- Transmission of genetic information from parents to offspring: heredity
- But genetic flaws can also be mutations, not inherited or heritable
- Many traits are polygenetic (i.e., influenced by multiple genes)
- Gene-environment interaction: a gene can exist at a biological level but not be expressed
- Genes can turn on and off

# Genetics and Heredity

- ⦿ The extent to which a characteristic is determined by heredity: heritability
  - “Family tree”
  - Twin method: MZ vs. DZ twins, concordance
  - Adoption methods
- ⦿ Even physical characteristics are rarely 100% hereditary
- ⦿ Psychological characteristics probably no more than 50% hereditary at most
- ⦿ Very few specific genes/alleles yet identified

# Genetics and Heredity

- Emotional psychopathology
  - Acute and posttraumatic stress disorders: influence of heredity not strong
  - Fear and anxiety: moderate influence
    - Genetic variations in hypothalamic-pituitary-adrenal axis activity that connects to stress reactions
    - Possible evolutionary explanation for greater incidence of fear/anxiety disorders in females
    - Twin studies and studies of relatives suggest modest degree of heritability for panic disorder

# Genetics and Heredity

- ① Emotional psychopathology
  - Obsession-related disorders:
    - Twin studies and studies of relatives suggest modest degree of heritability for OCD
    - BDD and hoarding also seem to have strong familial aspect (but “family tree” is not very conclusive)
  - Depression and mania: fairly strong for unipolar depression, quite strong for bipolar



# Genetics and Heredity

- Emotional psychopathology
  - Mental disorders are not inherited directly
  - So what links genetic influences to emotional disorders?
  - Some research indicates that different qualities of *temperament* seem to show up very early in life and persist across the lifespan, suggesting possible inborn influences
  - Perhaps all these connect to what researchers have termed *negative affectivity*

# Genetics and Heredity

- Behavioral psychopathology
  - Alcohol use disorder: heritability perhaps 30-50% of risk, especially for males
  - Evidence for other drug use disorders less clear
  - General genetic factor for “addiction-proneness” (including gambling disorder) or specific to specific substances?
  - Evidence also exists for heritability of eating disorders, especially anorexia
  - Possibly related to a different aspect of temperament: *disinhibition/impulsivity*

# Genetics and Heredity

- Cognitive psychopathology
  - Schizophrenia spectrum has been extensively studied, and role of inheritance widely accepted
  - More recent studies suggest lesser degree of influence than reported in earlier studies
  - Some see possible common link between schizophrenia, schizoaffective disorder, and schizotypal disorder (Cluster A); hence, the “spectrum”

# Genetics and Heredity

- ◎ Cognitive psychopathology
  - Minimal evidence for dissociative disorders
  - Many forms of intellectual disability have known genetic basis (PKU, Down's, fragile X), but most of these are not heritable (i.e., will not be passed on)
  - Evidence also accumulating for some heritability for autism spectrum and for ADHD

# Genetics and Heredity

- Physical health-related psychopathology
  - Difficulty in separating co-morbid problems involving anxiety and depression from those involving physical health problems
  - Some suggestion of antisocial personality disorder in males sharing some genetic factor with somatic symptom disorder in females
  - Minimal evidence for heritability in sexual dysfunctions or elimination or sleep-wake disorders
  - Some forms of dementia (e.g., Alzheimer's) appear to be heritable