

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

# UNIT 21: 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
  - 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
- The extent to which a characteristic is determined by heredity: heritability
  - Twin method: MZ vs. DZ twins, concordance
  - Adoption methods
- Even physical characteristics are rarely 100% hereditary
- Psychological characteristics probably no more than 50% hereditary
- Very few specific genes/alleles yet identified

# Genetics and Heredity

- Emotional psychopathology
  - Acute and posttraumatic stress disorders: influence of heredity not strong, perhaps some connection to negative affectivity
  - Fear, anxiety, and obsession: 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 and OCD
  - Depression and mania: fairly strong for unipolar depression, quite strong for bipolar

# Genetics and Heredity

- Behavioral psychopathology
  - Alcohol use disorder: heritability perhaps 30-50% of risk, more 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

# 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
  - 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