

**Evolutionary Explanations of Contemporary Human Behavior**  
**Controversy Caused by Nature-Nurture Debate**  
**3 Evolutionary Approaches to Human Behavior**  
**Case Study: Inbreeding Avoidance**

- **Evolutionary explanations of contemporary human behavior have been controversial**
  - o 2 misperceptions
    - Behavior is entirely genetically determined
    - Natural selection cannot lead to adaptations unless behavioral differences are caused by genetic differences
  - o Misunderstanding comes out of nature-nurture debate
    - **nature:** phenotypic traits that are genetically determined and unchangeable (genotype=phenotype)
    - **nurture:** phenotypic traits are shaped by environment, experience, and learning (environment=phenotype)
    - this "debate" reflects a general misunderstanding of phenotype
      - Genotype + environment = phenotype
  - o The nature-nurture debate is misguided because the vast majority of traits reflect interaction between genes AND environment
    - Example 1: stature
      - Heritability of adult stature is ~50%
    - Example 2: language
      - Genes affect development of mechanical and cognitive machinery to process sounds and symbols
      - Environment affects what language will be acquired, what information will be exchanged, etc.

- o Evolutionary basis for behavior does not imply that behavior is immutable or that humans are slaves to their genes
  - Behavior is more plastic than morphology or physiology
  - Natural selection often favors behavioral flexibility:
    - Hamilton's rule ( $rb > c$ ) requires animals to adjust behavior in different contexts
    - Sexually-selected infanticide predicts males will protect infants in some circumstances but kill them in others
    - One's behavioral strategy is sometimes based on what others do
  
- **3 evolutionary approaches to human behavior**
  - o Evolutionary psychology
    - How has selection shaped human psychological mechanisms (what we use to take decisions)?
    - Assumes that modern conditions are different than those in which the human mind evolved
    - The human mind was shaped by challenges faced by our hunter-gatherer ancestors during the Pliocene and Pleistocene
      - 2 crucial assumptions
        - Complex behavioral adaptations evolve slowly
        - The details of past conditions are known as Environment of Evolutionary Adaptedness (EEA)
  - o Human behavioral ecology
    - How has natural selection shaped human behavioral strategies?
    - **Focus:** fitness outcomes of behavioral strategies in different conditions
    - HBE research focuses on strategies of recent hunter-gatherers
      - Behaving optimally: how long to hunt? What to hunt? Where to hunt?
      - Simple mathematical models provide precise predictions that can be tested against empirical data

- Common critiques of HBE
      - It is implausible that people make “optimal” decisions
        - o Calculations are complex, and require perfect knowledge on the part of foragers
      - HBE ignores mechanisms for decision-making
        - o Knowledge of psychological mechanisms (ignored by HBE) is needed to explain departures from optimal predictions
    - o Cultural evolution
      - How does cultural transmission affect frequencies of behavioral strategies in a population?
      - Does not assume that observed behaviors are “mistakes” held over from the EEA (Evolutionary psych) or that all behaviors are adaptive (HBE)
  - Evolution & human behavior case study: inbreeding avoidance
    - o In general, primates avoid mating with close kin
    - o But how can we explain this behavior? Is it learned or instinctive?
    - o Many deadly diseases are caused by being homozygous recessive (sickle-cell anemia)
    - o Inbreeding increases chance of offspring with 2 copies of deleterious recessive allele
    - o EX: In human societies, matings among close kin are strongly avoided, even outlawed
      - There are no known human societies with regular matings between siblings or between parents and offspring.
    - o Several different mechanisms may explain inbreeding avoidance in humans
      - Phenotypic cues about genetic similarity/kinship
      - Age class (people your age are not your parents)
      - Sexual aversion to people one grows up with
        - Westermarck effect: childhood association stifles sexual attraction