General Psychology

Biological Perspective

Evolutionary Psychology

Agendas

- Evolution and Evolutionary Psychology
- Heredity
- The Nervous System
- The Brain
- The Endocrine System

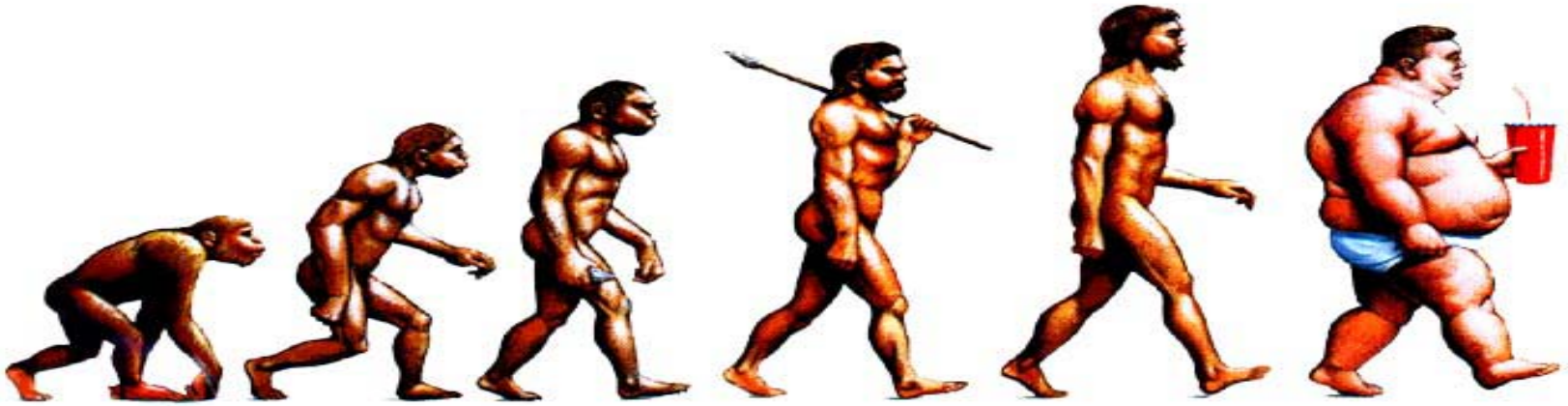
Evolution

- Charles Darwin
- The idea of Natural Selection

A core concept of the theory of evolution that holds that adaptive genetic variations among members of a species enable individuals with those variations to survive and reproduce. As a result, such variations tend to be preserved, whereas nonadaptive variations tend to drop out.

- There are 3 components to Natural Selection
  1. Random variation
  2. That gives rise to differences in survival and reproduction
  3. And gets passed from generation to generation

- Mutations
  - random errors in gene replication that lead to a change in the sequence of nucleotides



why are we talking about evolution in an introduction to psychology class?

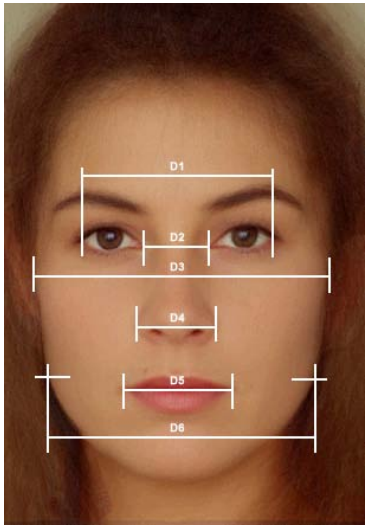
Our cognitive mechanisms were evolved for the purpose of survival and reproduction. They have been shaped by natural selection to solve certain problems.

Evolution of the Brain

- Perceiving the world
- Communicating with other members of our species
- Getting nutrition & rest
- Selecting and attracting mates
- Learning about our physical and social environment
- Making decisions
- Choosing our allies and enemies
- Figuring out the beliefs and desires of others

Evolutionary psychology:

- Studies the ways in which adaptation and natural selection are connected with mental processes and behavior.
- * major concept* - adaptive patterns of behavior are transmitted genetically generation after generation. These behavior patterns are called *'instinctive'*



Instinct

- Much of animal behavior is instinctive
- Instinctive Behaviour
  1. Behaviour occurs in all members of species (Species-Typical Behaviour)
  2. No learning required – behavior can develop without animal ever experiencing other members of the species
  3. Stereotyped behaviour

Evolutionary psychology:

Looks at changes in behavior within the species in which it appears. And, it appears even when not taught.

- e.g. dogs walk in circles before they lie down.
- Birds raised in isolation still sing species specific songs.
- Spider webs
- Humans? emotions, helping & altruism, the need to belong

The Need to belong

- The most basic human motivators are status and acceptance
- Social Anxiety – species typical adaptation to prevent social exclusion
- Being part of a group has survival value

Instincts and Genes

- Survey research found that people reported that they would be more likely to help genetic relatives than nonrelatives in life-and-death situations, such as a house fire.
- Anecdotal evidence from real emergencies is consistent with these results.

Instincts and Genes

Kin Selection

The idea that behaviors that help a genetic relative are favored by natural selection.

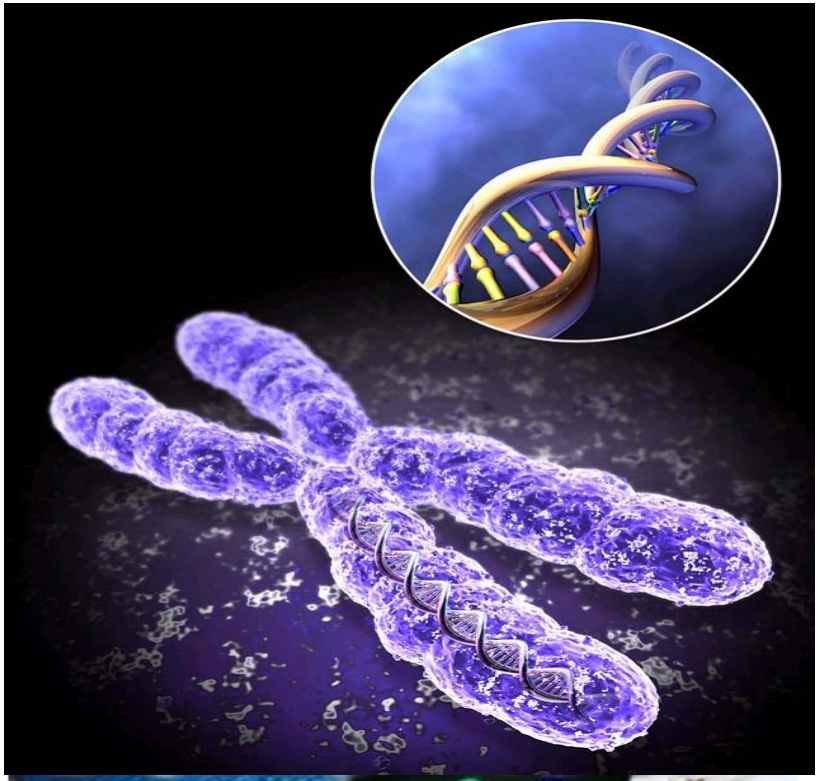
- People can increase the chances their genes will be passed along not only by having children but also by ensuring that their genetic relatives have children.
- Because a person's blood relatives share some of his or her genes, the more that person ensures their survival, the greater the chance that his or her genes will flourish in future generations.
- Thus natural selection should favor altruistic acts directed toward genetic relatives.

Mate Preferences

- Evolutionary psychology predicts:
  - Men value women's physical appearance which provides cues to her fertility
  - Women value men's financial resources which help in raising the family

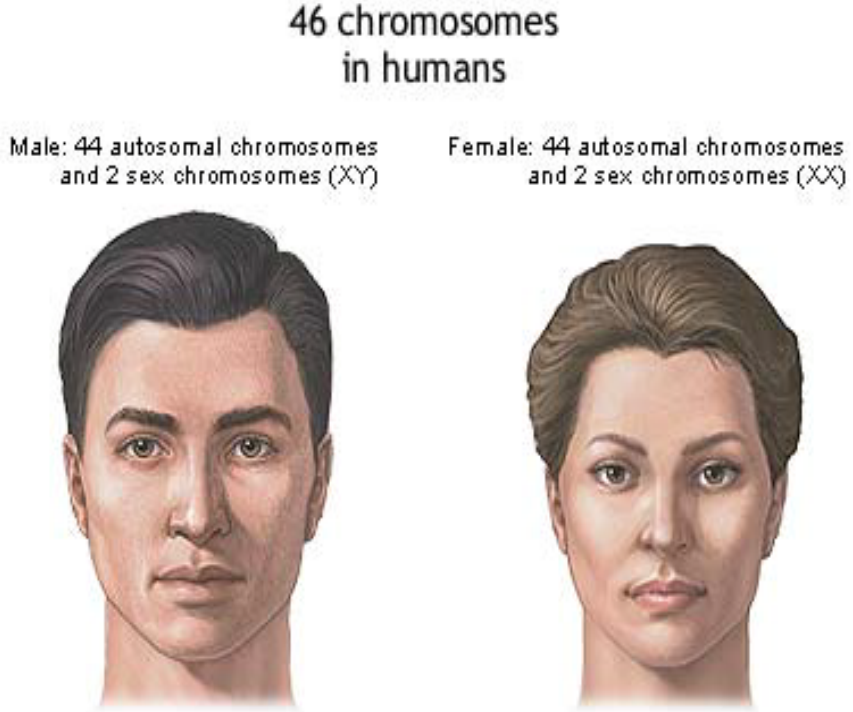
Heredity

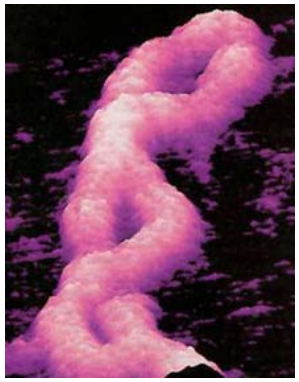
- How are traits passed on to the next generation?
- *Heredity* – the transmission of traits from parent to offspring by means of genes.
- *Genetics* – the study of heredity. *Behavioral genetics* – the study of the transmission of traits that cause behavior.
- *Gene* – basic unit of heredity found on chromosomes; they regulate the development of specific traits, e.g. blood type, intelligence.

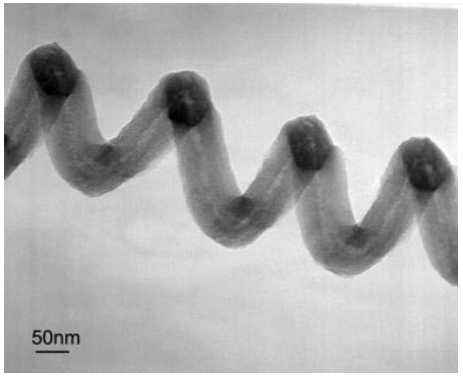


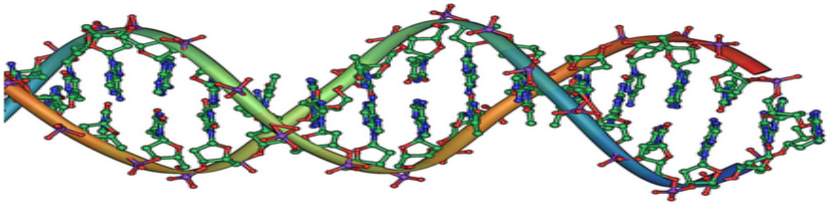
Heredity

- *Chromosome* – the part of a cell that carries genes that transmit hereditary traits from generation to generation. There are normally 23 pairs (23 from each parent), and they are made up of DNA.
- *DNA* – the basic material of chromosomes and contains the genetic code.









Human Behaviour

Nature of Nurture?

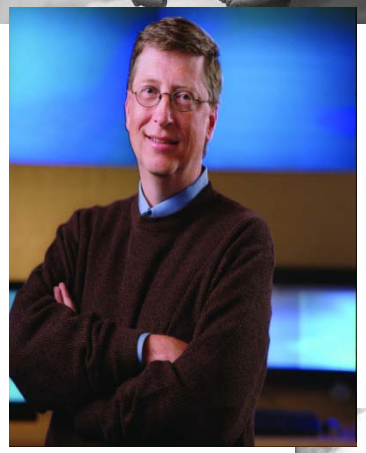
What is the relationship between *nature* (the influence of heredity) and *nurture* (the influence of the environment)?

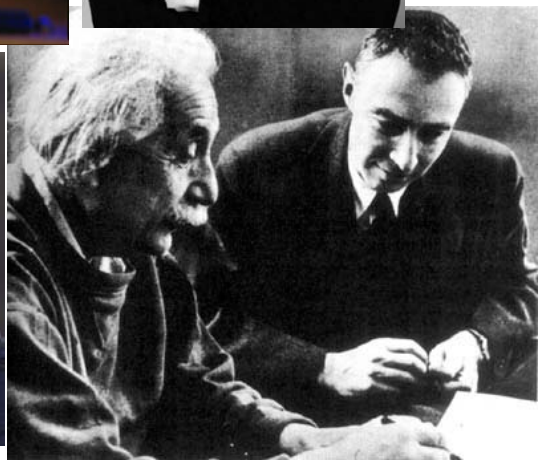
- Heredity influences our thoughts and behavior by setting the stage for potential certain behaviors; it controls what is possible.
- But the environment also influences our thoughts and behavior; nutrition, learning opportunities, cultural influences, exercise, accident/illness.

Nature and Nurture

- *The combination of the 2 creates our behavior.*
- A hereditarily gifted singer in Saudi will not likely develop this ability.
- A hereditarily shy personality raised in a very social environment will likely overcome shyness.





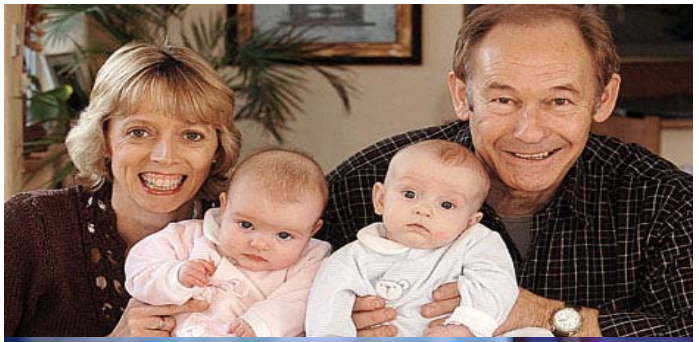



How do psychologists study the nature/nurture relationship?

- *Identical twins (monozygotic)* are genetically identical. One fertilized egg splits into 2 cells that become 2 genetically identical people. Any differences between them is due to nurture (the environment)

How do psychologists study the nature/nurture relationship?

- Because they may have been treated the same while growing up, we can't always tell if their similarities come from heredity or environment, unless they were separated at birth and raised separately.
- (Minnesota Study of Twins Reared Apart) – they were studying 56 pairs of identical twins who were raised in different homes.
- They found that intelligence, personality, temperament, job and leisure interests, and social attitudes appear to have a genetic influence.



How do psychologists study the nature/nurture relationship?

- *Fraternal twins (dizygotic)* are not genetically identical. 2 eggs = 2 genetically different people (they share 50% of their genes, like you and your siblings).
- *Adoption studies* are useful. Psychologists look for similarities and differences between children and their adoptive and natural parents. If an adopted child is more similar to their natural parents in a certain trait, there is evidence of a genetic role