Human Behavior 2

- Natural Selection & Darwin
- The Sociobiology Controversy
- Adaptive Mate Preferences
- Adaptive Parental Care
Social Darwinism

• “Survival of the fittest”

• The “weak” and “unfit” will not survive

• Obvious implications for welfare, colonialism etc

• Assumed many differences between humans are hereditary

• Assumed evolution in humans is a linear process

• Assumed there is an end goal…which seems a lot like upper-class Europeans…

Herbert Spencer (1800s)
Eugenics

• Galton invented term in 1883

• Sterilization of people with low intelligence

• Monetary incentives to encourage early marriage in English families of “high rank”

Francis Galton (1800s)
Sociobiology

- E.O. Wilson (Harvard Univ)
- "the systematic study of the biological basis of all social behavior"
- Applied evolutionary principles to the social behavior of all animals, including humans
- All animal behavior, including human behavior, is influenced by genes
- The “genetic leash”
- Last chapter discussed implications for human behavior
Sociobiology

• These ideas were (and still are) controversial, especially with regard to human behavior

• Critics accuse him of biological determinism and of rehashing old, discredited views of human behavior

• How hereditary are many human behaviors?
  – Prerequisite for natural selection
Criticisms of sociobiology

• Humans don’t do things just because they want to raise their inclusive fitness. Human behaviors arise from accidents of history and human creativity (Arbitrary Culture Theory)
  – Rebuttal: We need not be aware of ultimate reasons for our behavior.

• Not all human behavior is biologically adaptive
  – Stephen Jay Gould & Richard Lewontin (also at Harvard Univ)
  – Rebuttal: Some behavior might be a maladaptive by-product of other processes that are adaptive. E.g., female spotted hyenas

• Sociobiology is based on a politically reactionary doctrine
  – Provides scientific rationale for sexism, racism, inequalities
  – Rebuttal: Sociobiology attempts to explain why a behavior exists, not to justify any given trait.
  – E.g., infanticide in langur monkeys
Discussion question: One of the major criticisms of sociobiology is the idea that not all human behavior is adaptive. The counter-argument is that some behavior might be a maladaptive by-product of other processes that are adaptive.

With a partner, come up with one human behavior that is likely maladaptive. Also, come up with one hypothesis regarding how this maladaptive behavior might be linked to another adaptive process.
Outline

• Natural Selection & Darwin

• The Sociobiology Controversy

• Adaptive Mate Preferences
  – Sexual selection & mate preferences
  – Human mating systems
  – Sexual conflict

• Adaptive Parental Care
Human reproductive behavior

- Diverse!
- Monogamy, polygyny, polyandry
- Various incest taboos
- Various acceptable ages to marry
- Dowry (male gets resource) vs bride price (female gets resource)

- Nonetheless...
- In humans, as in all mammals...eggs are much larger than sperm, eggs are much fewer in number than sperm, only women nurture the embryos, and only women lactate.
Human sexual selection

- What are the adaptive mate preferences of men and women?
- Certain traits are found attractive across many cultures

Universals of Attractiveness:

1) Facial symmetry and body shape
2) Look-alikes
3) Parental ability and fidelity

http://www.youtube.com/watch?v=ZYUtVsA-wi4
Body shape

- Psychologist Devendra Singh of the University of Texas has studied people's waist-to-hip ratio, or WHR

- Men find women with a WHR of ~0.7 most attractive (waist significantly narrower than the hips)

- Women find men with a WHR of ~0.9 most attractive, but the breadth of the shoulders is more important to women than WHR
Optimal Waist-to-Hip Ratios in Women Activate Neural Reward Centers in Men

Steven M. Platek¹⁺, Devendra Singh²

• Subjects: 14 men
• Stimuli: Pictures of 7 women prior to and after recovery from elective cosmetic surgery to alter WHR
• Used fMRI to measure neural activity in male subjects

• Males show activation in brain reward centers in response to female bodies when surgically altered to express an optimal (~0.7) WHR with redistributed body fat, but relatively unaffected body mass index (BMI)
• Relative to presurgical bodies, brain activation to postsurgical bodies was observed in orbital frontal cortex & anterior cingulate cortex: areas associated with reward processing and decision-making
• “These findings suggest that an hourglass figure (i.e., an optimal WHR) activates brain centers that drive appetitive sociality/attention toward females that represent the highest-quality reproductive partners.”

PLoS ONE, 2010
Figure 1. Activation associated with pre-surgical minus post-surgical contrast. (a) Statistical parametric map for contrast post-surgical versus pre-surgical bodies showing activation in anterior cingulate cortex and (c) right orbital frontal cortex at cluster corrected threshold of 3.0, p<.01.
Body shape

- Is body shape an honest signal of fertility in women?
- Is body shape correlated with fertility or estradiol levels?
- Estradiol is critical for ovulation
- Healthy Polish women 24-37 years old
Large breasts and narrow waists indicate high reproductive potential in women

Grażyna Jasieńska, Anna Ziomkiewicz, Peter T. Ellison, Susan F. Lipson and Inger Thune

Physical characteristics, such as breast size and waist-to-hip ratio (WHR), function as important features used by human males to assess female attractiveness. Males supposedly pay attention to these features because they serve as cues to fecundity and health. Here, we document that women with higher breast-to-underbreast ratio (large breasts) and women with relatively low WHR (narrow waists) have higher fecundity as assessed by precise measurements of daily levels of 17-β-oestradiol (E2) and progesterone. Furthermore, women who are characterized by both narrow waists and large breasts have 26% higher mean E2 and 37% higher mean mid-cycle E2 levels than women from three groups with other combinations of body-shape variables, i.e. low WHR with small breasts and high WHR with either large or small breasts. Such gains in hormone levels among the preferred mates may lead to a substantial rise in the probability of conception, thus providing a significant fitness benefit.
“Modern male preferences for physical traits in females may be an evolutionary adaptation rooted in biology or a cultural effect resulting from the impact of Western media propagating a particular model of female beauty.”

“To argue that male preferences are adaptive, it is necessary to show that preferred traits serve as cues to fecundity or health (Singh, 2002) and may contribute to higher reproductive success.”

- N=119 Polish women, 24-37 years old (mean=29.9)
- no birth control pill, no hormonal medications
- not pregnant
- not lactating
“Women with low WHRs had higher levels of both estradiol (E2) and progesterone (P) than women with high WHRs.”
“In our study, mid-cycle E2 in the ‘narrow waist, large breasts’ group was 37% higher than in the other groups, suggesting an approximate 300% increase in the probability of conception.”
Human sexual selection

Universals of Attractiveness:

1. Facial symmetry and body shape
2. “Look-alikes”
3. Parental ability and fidelity

• Humans are attracted to others of similar attractiveness
“Look-alikes”

- Buston & Emlen
- ~1000 men & women (18 to 24) rated themselves as a long-term mate
- “On a scale of 1 (worst) to 9 (best), how physically attractive are you?” “…how good a parent?” “…how healthy?” etc
- Took the average of all these scores

- Long-term mate preference survey
- E.g., “On a scale of 1 to 9, how important is it that your partner be physically attractive? a good parent?” etc
- Took the average of all these scores
Self-perception of attractiveness affects mate preferences in both sexes.
Human sexual selection

Universals of Attractiveness:
1) Facial symmetry and body shape
2) Look-alikes
3) Fidelity and parental ability
Fidelity

- Buston & Emlen asked subjects to rate attributes of long-term mate: physical attractiveness, family commitment, health, wealth, social status, ambition, and fidelity

- Fidelity (loyalty or faithfulness) was the most important attribute for both sexes

- Next most important attributes were: physical appearance, family commitment, wealth, and status
Parental ability

- Women rate “masculine-faced males” as poorer parents but rate them as having higher quality genes.

- Women rate “feminine-faced males” as better parents.

- “Masculine-faced males” were rated as less attractive long-term partners, but more attractive in the short-term.