

# Individual Differences

1. How do life history theory, costly signaling theory, balancing selection, and contingent shifts according to the environment predict individual differences? Give an example of each.
2. What aspects of our evolutionary past were likely to select for sex differences?
3. What is the evidence for sex differences in risk taking?

# Birth Order

- Firstborns, middleborns and lastborns have different *niches* in a family.
- Salmon & Daly (1998) surveyed undergrads about who they were closest to.



FIGURE 1. Percentage of respondents of a particular birth order and sex who nominated a mother, other relative, or non-relative as the person they feel closest to in Study 1.

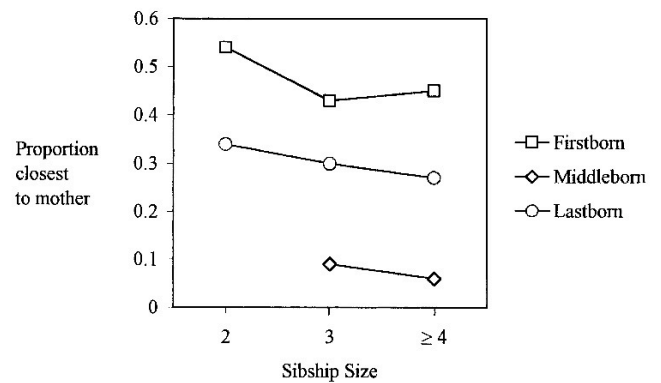
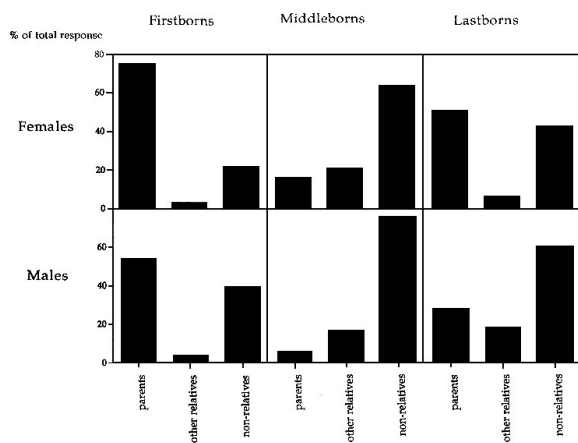
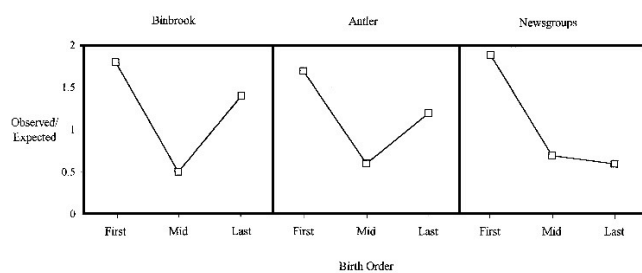


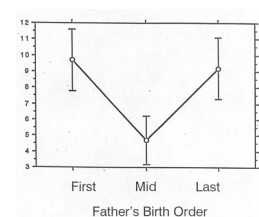
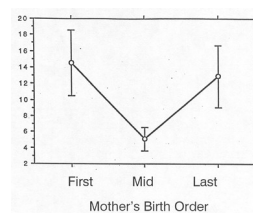
FIGURE 2. Proportions of undergraduate subjects of a particular birth order naming their mothers as their closest intimate in relation to family size in Study 1.

FIGURE 4. The ratio of observed to expected numbers of each birth order submitting family histories or responding to the e-mail questionnaire.



# Extended Family Involvement

Salmon (1999) hypothesized that the time spent with extended family (grandparents) would be a function of your parents' birth order.



## Multiple Mating Strategies

- Short-term strategy
  - Women - indirect benefits
  - Men - quantity of mates/offspring
- Long-term
  - Women - direct benefits
  - Men - quality of mates/offspring
- Mixed
- Conditional

(Gangestad & Simpson 2000)

## Properties of Conditional Strategies

- Different behavioural tactics are consciously or unconsciously “chosen” by individuals.
- Choices are made in response to environmental cues, often relative mate value.
- Individuals are genetically monomorphic and can utilize the same set of possible tactics.
- A chosen tactic yields higher fitness given a current environment in situations like the EEA.

## Good Genes Sexual Selection

- More symmetrical men (low FA) are chosen as extra-pair partners more often.
- Women report more orgasms with low FA partners.
- Women engage in more extra-pair sex during ovulation.
- Women emphasize attractiveness more in short-term mates.
- Ovulating women prefer the scent of low FA men.

## Individual Differences

- Men with low FA report more extra-pair partners.
- Low FA men report less investment in their partners.
- Women with a less restricted sociosexual orientation prefer more symmetrical men and place more emphasis on attractiveness.
- What strategy would you expect high mate value women to pursue?

## Population-Level Differences

- Men and women from high-pathogen areas place more importance on attractiveness.
- Pathogen prevalence correlates negatively with women's rated desire for male characteristics signaling investment.
- High pathogen areas also have a higher probability of polygyny.
- Polygyny is more common where women have more control over resources.

## Sex Differences in Homicide

- In 35 studies of homicide, between 85% and 100% of same-sex homicides occurred between men. (Most of the female-female homicides were infanticides.)
- Mass murderers and those who run *amok* are invariably men.
- The cause of male-male homicide is frequently intrasexual competition for resources or status.

## Social Conflict Homicides

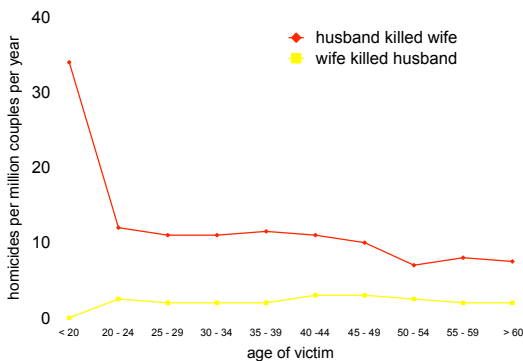
	male killed male	male killed female	female killed male	female killed female
Escalated Showing off	26	0	2	1
Retaliation	75	9	6	5
Jealousy	20	5	6	3
Business	10	1	2	0
Family dispute	5	0	0	0
Other disputes	2	0	1	1
Insufficient Information	26	4	1	1
<b>Total</b>	<b>164</b>	<b>19</b>	<b>18</b>	<b>11</b>

## Spousal Homicide

Data are from homicides recorded in Detroit, 1972; Miami, 1980; Houston, 1969; and Canada 1974-1983.

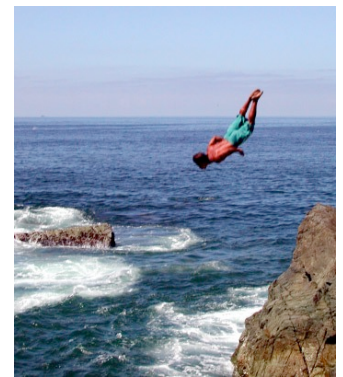
	males	females
N cases	711	238
Suicides	29.3%	3.4%
Convicted	56.3%	47.9%
Scot-free	8.7%	45.4%
Insane	5.8%	2.5%

## Age and Sex



## Sex Differences in Risk Taking

- Infant survival is more dependant upon maternal than paternal survival
- Men can more readily translate status and resources gained in risky activities to increased mating success
- Thus, we expect men to be riskier



## Future Discounting

Organisms are expected to discount the future more or less steeply in response to cues of the utility of current *versus* future consumption.

Future discounting is likely to vary by sex and age, as well as in response to cues of the probability of surviving to reap future benefits and cues of social status or competitive position.

## Calculating the K Parameter

\$ tomorrow	\$ future	Delay (days)	K parameter	Interest rate
\$34	\$35	186	.000158	5.9 %
\$54	\$55	117	.000158	5.9 %
\$78	\$80	162	.000158	5.9 %
...				
\$11	\$30	7	.246753	4.55 x 10 <sup>24</sup>
\$20	\$55	7	.248848	4.55 x 10 <sup>24</sup>
\$31	\$85	7	.250000	4.55 x 10 <sup>24</sup>

$$\text{K parameter} = \frac{(\text{future \$} - \text{tomorrow \$})}{(\text{delay} * \text{tomorrow \$})}$$

## K Parameter

In this task, individuals tend to make consistent choices, as if operating on some implicit personal interest rate (often astonishingly high!).

The individual's estimated discount parameter is the geometric mean of the two boundary k values marking the switch from preference for money tomorrow to money in the future. The higher the k parameter the more steeply the future is being discounted.

K Kirby (1997) *J exp Psychol: General* 126 : 54-70.

## Average ( $\pm$ SE) k parameter value

Delayed Reward	Men (N=66; 148)	Women (N=41; 171)
\$30	.026+.004 .030+.003	.027+.005 .025+.002
\$55	.018+.004 .020+.002	.018+.004 .017+.002
\$80	.013+.002 .012+.002	.010+.002 .010+.002

In 2 replications in 1998, McMaster students discounted smaller rewards more steeply than larger ones ( $P < .001$ ).

## Experimental Hypothesis

Experimental "induction" of a mindset analagous to courtship or mating effort will activate future discounting inclinations in men.

Recall . . .

Men are expected to discount the future more steeply than women, both because men are less likely to live to see the future, and because immediate, even total, resource expenditure is more likely to pay off for a man (as mating effort) than for a woman.

## Will discounting increase after viewing pictures of attractive persons of the opposite sex?

### Protocol:

9 pairs of monetary choices before seeing pictures

12 pictures of opposite-sex persons were rated on a 7-point scale according to their appeal.

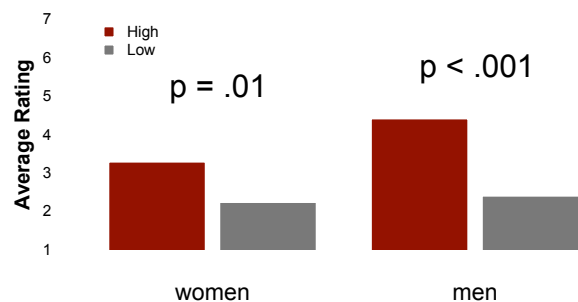
9 pairs of monetary choices.

Pair of dice rolled: double 1's wins dollar value of one randomly drawn choice. Post-dated cheque written.

## 9 paired choices before the pictures

tomorrow	future	Delay (days)	k
11	30	7	.2467532
25	60	14	.1000000
14	25	19	.0413534
34	50	30	.0156863
19	25	53	.0059583
49	60	89	.0025224
22	25	236	.0010027
47	50	160	.0003989
34	35	186	.0001581

## Both men and women rated the High and Low Stimulus Sets differently



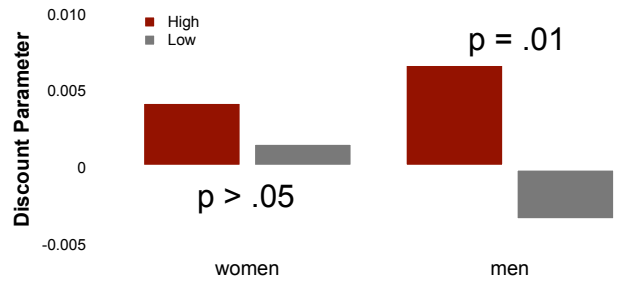
1= unappealing & 7=very appealing

9 additional money choices matched with pre-image choices on k values

tomorrow	future	Delay (days)	k
20	55	7	.2500000
15	35	15	.1025641
27	50	21	.0405644
24	35	29	.0158046
55	75	61	.0059613
25	30	80	.0025000
54	60	111	.0010010
28	30	179	.0003990
54	55	117	.0001583

For men, the discount parameter was significantly higher after viewing attractive faces than unattractive faces.

For women, there was no significant change.



Discount parameter  $K = (\text{future } \$ - \text{tomorrow } \$) / (\text{delay} * \text{tomorrow } \$)$   
 Change in discount parameter = (Post-image  $K - \text{Pre-image } K$ )

### Individual Differences

- Birth order
- Niche
- Conditional strategies
- Direct benefits
- Indirect benefits
- Good-genes sexual selection
- Future discounting
- K parameter

### Infanticide may be expected when:

- The infant shows signs of being unrelated (men only)
- The infant is of poor quality
- The parent(s) would do better raising a child in a different circumstance
  - Too-short birth spacing
  - Lack of paternal support
  - Harsh circumstances (that have the potential to change for the better)

### Evidence from the HRAF

Daly & Wilson (1984) collected 112 examples from 60 “independent” societies of circumstances in which infanticide was said to occur.

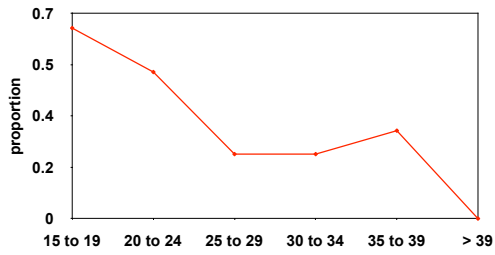
- 20 (18%) in case of non-paternity
  - 15 adulterous conception
  - 3 infant features were suspicious
  - 2 new step-fathers demanded infanticide
- 21 (19%) deformed or very ill infant

### Evidence from the HRAF

- 56 (50%) Poor circumstances
  - 14 twins
  - 14 mother unwed
  - 11 short birth interval, too many children
  - 6 no male support
  - 1 quarrel with husband
  - 6 mother died
  - 3 economic hardship
  - 1 wrong season

## Mother's Age and Infanticide

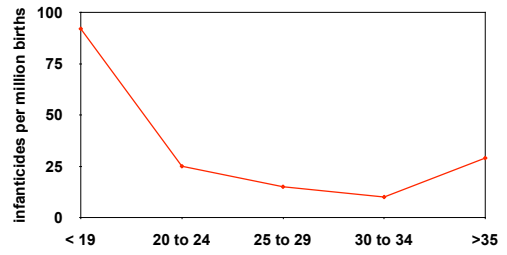
Older mothers are not as likely to commit infanticide, as they have fewer future chances to invest. These data are from 54 infanticides out of 141 births for the Ayoreo.



(Bugos & McCarthy 1984)

## Mother's Age and Infanticide

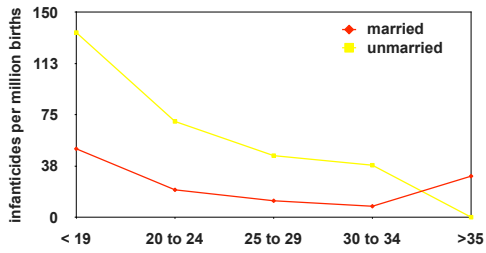
Canada 1974-1983.



(Daly & Wilson)

## Marital Status and Infanticide

Canada 1974-1983.



(Daly & Wilson)