

# Human Mate Choice

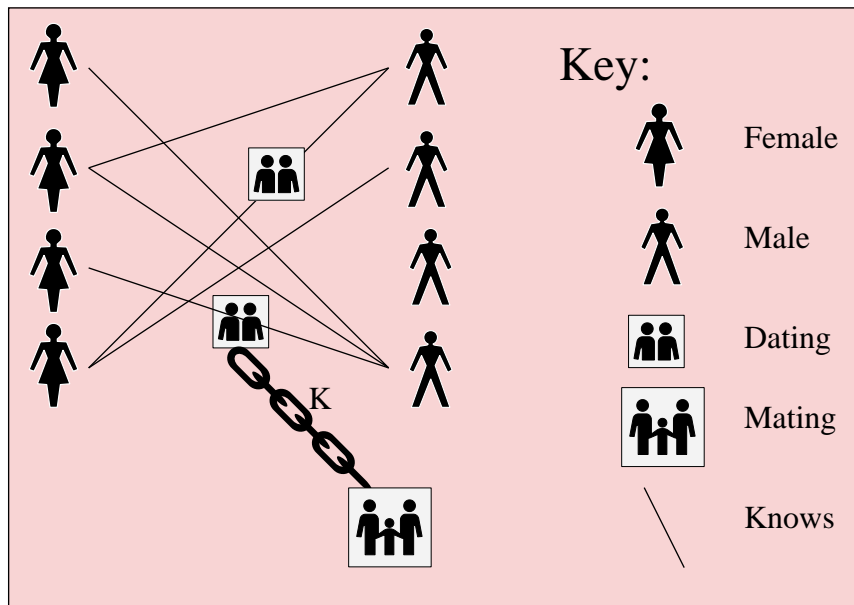
Emergent population-level patterns in human mating systems:

- Assortative Mating
  - Couples highly correlated in attractiveness (0.4 – 0.6)
  - *Matching hypothesis?*
  - (But) Individuals prefer more attractive partners
- Distribution of age at mating (marriage) time
  - Right-skewed bell-curve (robust cross-culturally)
  - Explanation ?

## Previous models of mate choice

- S. Kalick and T. Hamilton's  
*"The Matching Hypothesis Reexamined"*, *Journal of Personality and Social Psychology*, 4:(51), 1986
- P. Todd and G. Miller  
*"From Pride and Prejudice to Persuasion: Satisficing in Mate Search"*, *Simple Heuristics that Make Us Smart*, 1999
- Rufus Johnstone  
*"The tactics of mutual mate choice and competitive search"*, *Behavioral Ecology and Sociobiology*, 1:(40), 1997

# Courtship based model: Social Ecology (1)



| Parameter       | Description           | Value(s) |
|-----------------|-----------------------|----------|
| $P$             | population size/2     | 50       |
| $L$             | reproductive lifetime | 200      |
| $\mu, \sigma^2$ | quality distribution  | 10, 4    |
| $Y$             | meeting rate          | .1 – 1   |
| $K$             | courtship time        | 5 – 50   |

## Courtship based model: Social Ecology (2)

- Fixed population size ( $2 * P$ ) and sex ratio (50%)
- (Quasi) normal distribution of qualities: mean  $\mu$  and variance  $\sigma^2$  ( $0 < Q_{min} \leq q \leq Q_{max}$ ).
- Meeting rate  $Y$  (.1 – 1) — Discrete time steps
- List of alternatives: one as "special status" — the *date*
- (Age depended) Courtship time  $K$  before mating; current time  $c_t$
- Limited reproductive lifetime  $L(> K = 200)$

## Individual mate choice strategies

- Fitness function:  $F(q_m, t) = q_m \times \frac{L-t}{L}$

- Decision Rules:

- Partner switching (risk insensitive):

$$F(q_a, t + K_i) > F(q_d, t + K_i - c_t)$$

- Partner acceptance/Aspiration level setting:

$$q_{i_{new}}^* = q_{i_{old}}^* \cdot (1 - \alpha) + \omega \cdot q_j \cdot \alpha$$

- Aspiration level dropping with time:

$$t_{max} = \tau \cdot \frac{L - t}{L} \cdot \left(1 - \frac{q_b}{q^*}\right)$$

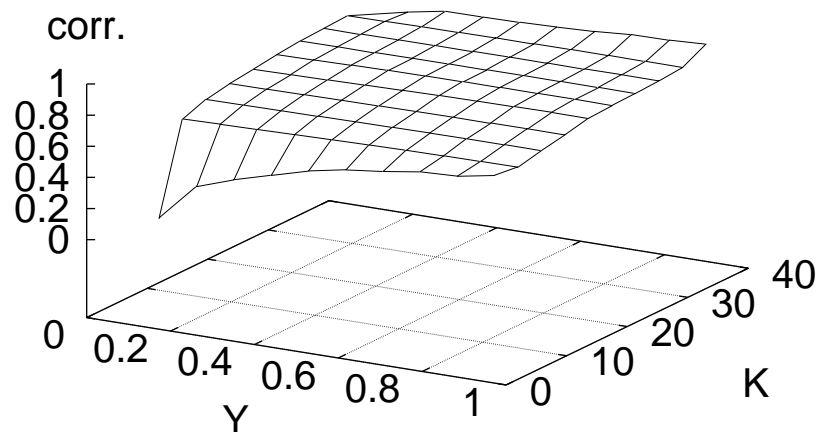
- Age dependent minimum courtship time:

$$K_i = K \cdot \left(1 - \frac{t_i}{L}\right)$$

## Simulation results (1)

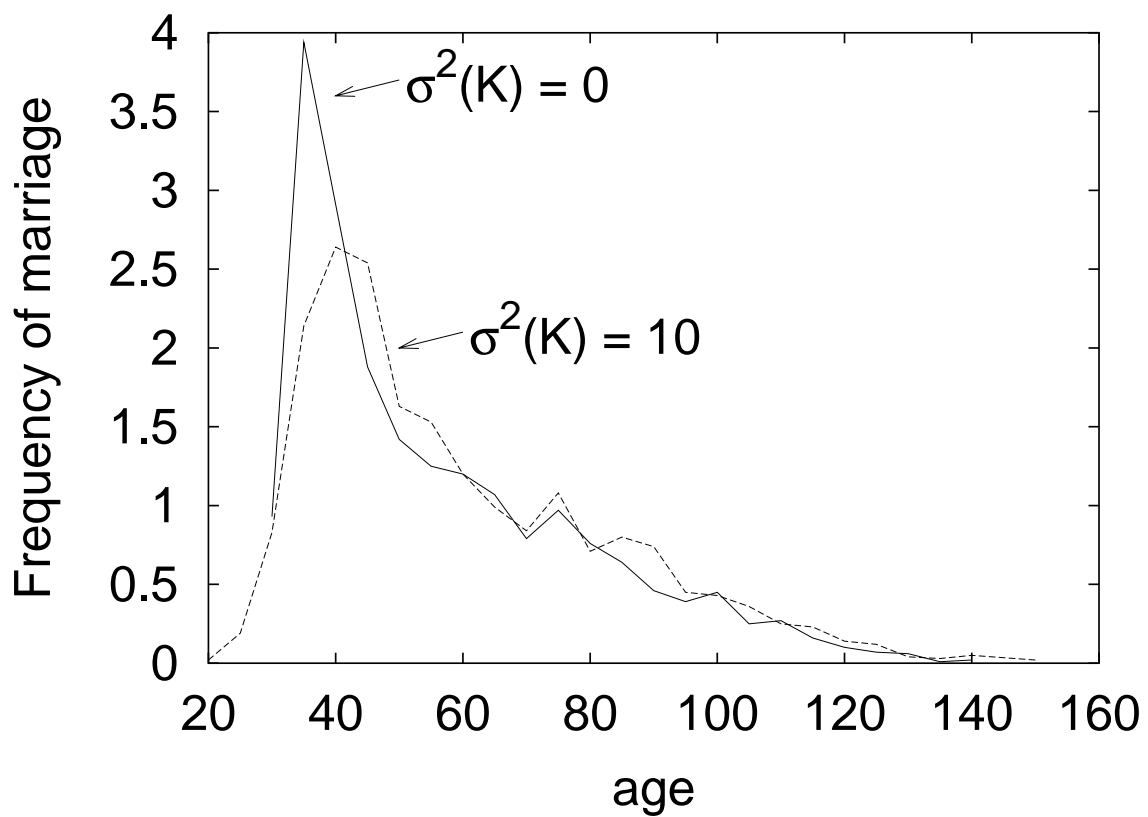
Robust Empirically Validated Results:

- Mean correlation of qualities in mated pairs (.6 – .8)
- Mean number of alternatives seen before settling with the last date (2 – 10)
- Percentage of individuals in the population that are able to mate ( $\geq 90\%$ )



## Simulation results (2)

- (!) Distribution of age at mating (marriage) time (right-skewed bell-curve)



## Conclusions from Model

- More realistic results than previous models
- Model assumptions more psychologically plausible and more relevant to humans
- Future work:
  - Other mating systems: Serial Monogamy and Divorce
  - More complex preferences: structure and dynamics