

Ch 8: Kinship

The Fractional Me:

50%: Parents, children, siblings

25%: Grandparents, grandchildren, Aunts, Uncles, Nieces,
Nephews, Half-siblings

12.5%: First cousins

6.25: Second cousins

H_x : Helping kin in proportion to genetic relatedness
Including 100% (Me) vs. 50%

Heavy on Theory, Light on Data

Buss: The topic has been almost entirely ignored by psychologists

Inclusive Fitness:

Sum of traits effects on survival and reproduction

- On focal individual -- Direct Fitness
- On relatives of index case **weighted by genetic closeness**

Indirect Fitness

Hamilton's Rule:

Conditions for evolved altruism

$$c < r * b:$$

Cost < benefit * degree of common genes

(One of which would be/probability of a gene for altruism)

Altruism

Benefit must exceed twice the cost for Parents/Offspring/Sibs

Benefits must be exceed 4X the cost for Aunts/Uncles/Nieces/Nephews

Selection favors this decision rule:

On Average:

You would sacrifice your life to save 3, but not 1, brother

Not a prediction of (individual) behavior

Condition under which altruism would evolve

R.L.: Is altruism secondary to:

- Complex societies
- Face recognition
- Stable tribes?

Altruism, continued

Evolvability Constraint:

- Genes must code for traits consistent with Hamilton's Rule
Or will be selected against
- Doesn't predict that these genes Will evolve, just How
- Predicts that evolved adaptations will be particular to each type of kin relation

Buss: Hamilton's Rule is single most important theoretical revision of Darwin's theory

Sibships

Ally or Competitor for parents' resources
Per divergent interests of parents & children

Sulloway, 1996:

Divergent interests of parents impose different adaptive problems
on different Sibs

Divergent adaptive problems on Sibs result in different niches

Function of Birth Order (Adler)

- Later born less conservative
Less invested in existing order
- Last born: Greater investment than middle born?
Last change for parents to invest?

Sibship, continued

Data:

Middle born:

- Score lower on family solidarity & identity
- Closest person less likely to be a relative
- Less likely to be family genealogist

(Females more likely to describe self in terms of family

Does this correspond to greater investment?)

Half-Sibs

Ground squirrels:

Full sisters more likely to cooperate in mutual defense of young

Grandparents ($r = 0.25$)

Grandmother Hypothesis:

Menopause evolved to redirect resources from direct reproduction to child and grandchild investment

(Rats aren't menstrual, but they are estrus, and they pause;
ground squirrels, but not rats, are communal)

Universal Kin Relationships

1. Kin terminology is ego-centric
2. Gender & Generation references reflect relative involvement in reproduction
3. Parent child relationships asymmetrical
 - Ascending offspring value
 - Descending parental value
4. Closeness related to genetics
5. Cooperation & Solidarity reflect genetics

Universal Kin Relationships

6. Elder kin encourage members predicted to be more altruistic toward collateral kin than members are inclined to be.
Nephew ($r=0.25$) > Cousin ($r=0.125$)
7. Self defined in terms of kin (Found to be Greater in females)
8. Cultures distinguish between “real” kin and symbolic kin when terms used interchangeably
9. Kinship terms are used to coerce behavior or instill solidarity

Inclusive Fitness Data

Buss: Psychology of kinship relatively ignored!

Ground squirrels vocalize alarm at expense of own safety

1. Uninfluenced by familiarity with other squirrels
2. Uninfluenced by length of association with other squirrels

1 & 2 rule out reciprocal altruism, which requires L-T alliance

Females, not males, remain with natal group

- Females vocalize alarms more than males

Even if without direct offspring, per Inclusive Fitness

- Will ONLY aid relatives in territorial conflicts with invaders

Human Helping

Essock-Vitale & M. T. McGuire, *Ethology & Sociobiology*, 1985:

Sample:

300 women in Los Angeles age 35-47

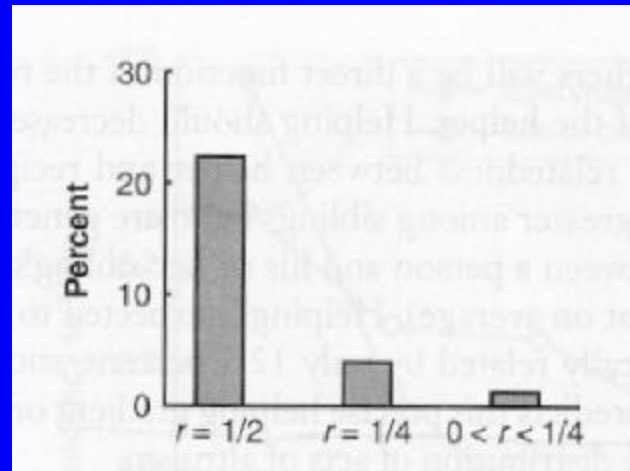
Data: 2,520 instances of received help

2,651 instances of provided help

H_x1: Frequency increases with genetic relatedness

H_x2: Frequency increases with **Reproductive Value**

Human Helping, continued



Total helping towards kin -- 33%

Children, nieces, & nephews more likely to received help than vice versa

Confound #1: Proximity to recipient (children > nephews)

Confound #2: Ability to provide help (mother > child)

Life & Death Decision Rules

Burnstein et al., *Journal of Personality & Social Psychology*, 1994):

Subjects: Americans & Japanese

Data: Which of three people would you help

Condition 1: Non-relative, cost-free task (picking up items at store)

Condition 2: Relatives, costly task (rescuing from house fire)

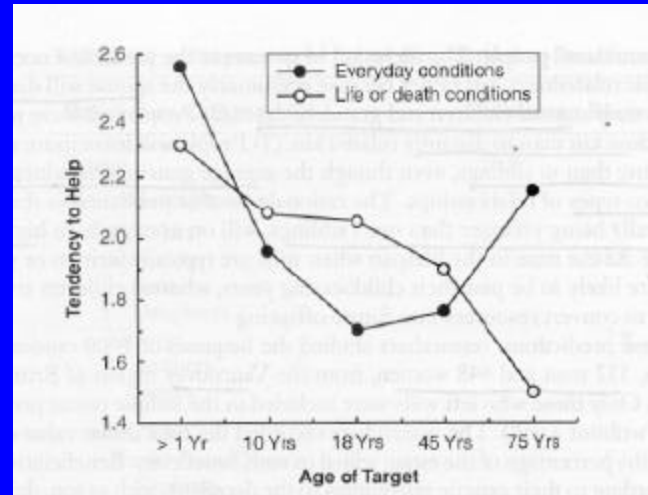
Manipulation: Age of recipient

H_x1: Helping should decrease with recipient's age (reproductive value)

H_x2: Age relationship should be different for non-relatives

Outcome

Outcomes consistent across cultures



Helping decreased with degree of relatedness

Rate of decrease stronger in life/death situation

Helping decreased with age of recipient (relative to other targets)

Age effect stronger in life/death situation

- Situation (L/D vs. trivial) interacts with age effect
- What is “Wrong” with these data?