

TSE M1 – Semester 1

September 2016

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Evolution of Economic Behavior, Week 2:

What makes human beings unusual in the natural world?



The Wason selection tasks

- Each of these tasks requires you to select a combination of groups of experimental subjects to investigate (represented by letters A,B,C and D) that would enable you to answer a particular question.
 - I will read out the question and you will have 30 seconds to write down some combination of the letters A through D that are appropriate groups to investigate.
 - Please record the answers on paper and I will subsequently ask the class who has responded to each group.
 - There are three questions in all.
-

A scientist is investigating a hypothesis that states “people with two X chromosomes have mind recognition skills that score above 25 on the Baron Cohen test”. She has information about the following groups, who are independent samples of the population. In each case she either

- knows the chromosomes of the individuals and can investigate to test their mind recognition skills; or
- knows their mind recognition skills, and can investigate their chromosomes

She wants to find out whether any groups violate this hypothesis

Group A:
Two X
chromosomes

Group B:
One X
chromosome

Group C:
mind
recognition
skills >25

Group D:
Mind
recognition
Skills <25

Which groups should she investigate?

A government passes a law stating that “households that own a television must have a licence”.

It has information about the following groups, who are independent samples of the population. In each case it either

a) knows whether they have a television, and can investigate to see whether they have a licence; or

b) knows whether they have a licence, and can investigate to see whether they have a television

It wants to fine any people who have broken this law

Group A:
own a
television

Group B:
don't own a
television

Group C:
have a
licence

Group D:
don't have
a licence

Which groups should it investigate?

A government is investigating the state of digital connectedness of its population, and specifically wishes to test the hypothesis that television users also have a broadband internet connection.

It has information about the following groups, who are independent samples of the population. In each case it either

a) knows whether they have a television, and can investigate to see whether they have a broadband internet connection; or

b) knows whether they have a broadband internet connection, and can investigate to see whether they have a television

It wants to find out whether any groups violate this hypothesis

Group A:
own a
television

Group B:
don't own a
television

Group C:
have
internet

Group D:
don't have
internet

Which groups should it investigate?

Numbers of respondents on Wason selection task (2013)

	Checked A	Checked B	Checked C	Checked D
Baron-Cohen Test	59	16	38	42
Digital Test	35	7	17	13
TV Test	37	2	5	28

What does this show us?

-
- Human beings have evolved very sophisticated psychological talents for negotiating their social world and not just their natural world
 - They are not alone in this – other social primates keep track of their social world using sophisticated cognitive mechanisms
 - But humans have developed these skills to a very high degree
 - What can we learn from our similarities to and differences from other species?
-

What do we learn from our kinship with primates?

- We are group-living primates for whom cooperation and social intelligence are major determinants of fitness
- Competition is between individuals over resources but also
 - Between groups/coalitions over access to resources
 - Between individuals over access to powerful groups
- This requires a continual tension between our cooperative talents and our competitive ones
- This is sometimes violent, almost always stressful – small status differences can have large fitness consequences

Stress

- In stable dominance hierarchies, low status is typically associated with lack of social control and unpredictability of outcomes, key predictors of stress
- Longitudinal study of British civil servants by Marmot et. al. (2004) shows low rank to be associated with stress and stress-related illness (eg cardiac disease)
- However, Muller & Wrangham (Beh.Ecol. & Sociobiol. 2004) show cortisol levels are *positively* correlated with dominance in wild chimpanzees, suggesting energy costs of maintaining dominance are responsible

Charles Darwin understood the interaction of competition and cooperation in human social life

When two tribes of primeval man, living in the same country, came into competition, if (other circumstances being equal) the one tribe included a great number of courageous, sympathetic and faithful members, who were always ready to warn each other of danger, to aid and defend each other, this tribe would succeed better and conquer the other.

Selfish and contentious people will not cohere, and without coherence nothing can be effected. A tribe rich in the above qualities would spread and be victorious over other tribes... thus the social and moral qualities would tend slowly to advance and be diffused throughout the world. *The*

Descent of Man, ch. 5

What makes human beings unusual in the natural world?

- Largest habitat range of any species on the planet
 - Environmental flexibility – high returns to learning
 - Infant dependency due to large brains and premature birth
 - Pair-bonding and three-generational resource interdependence
 - Elaborate networks of cooperation involving
 - Long-term trust and deferred gratification
 - Interactions outside close kin
-

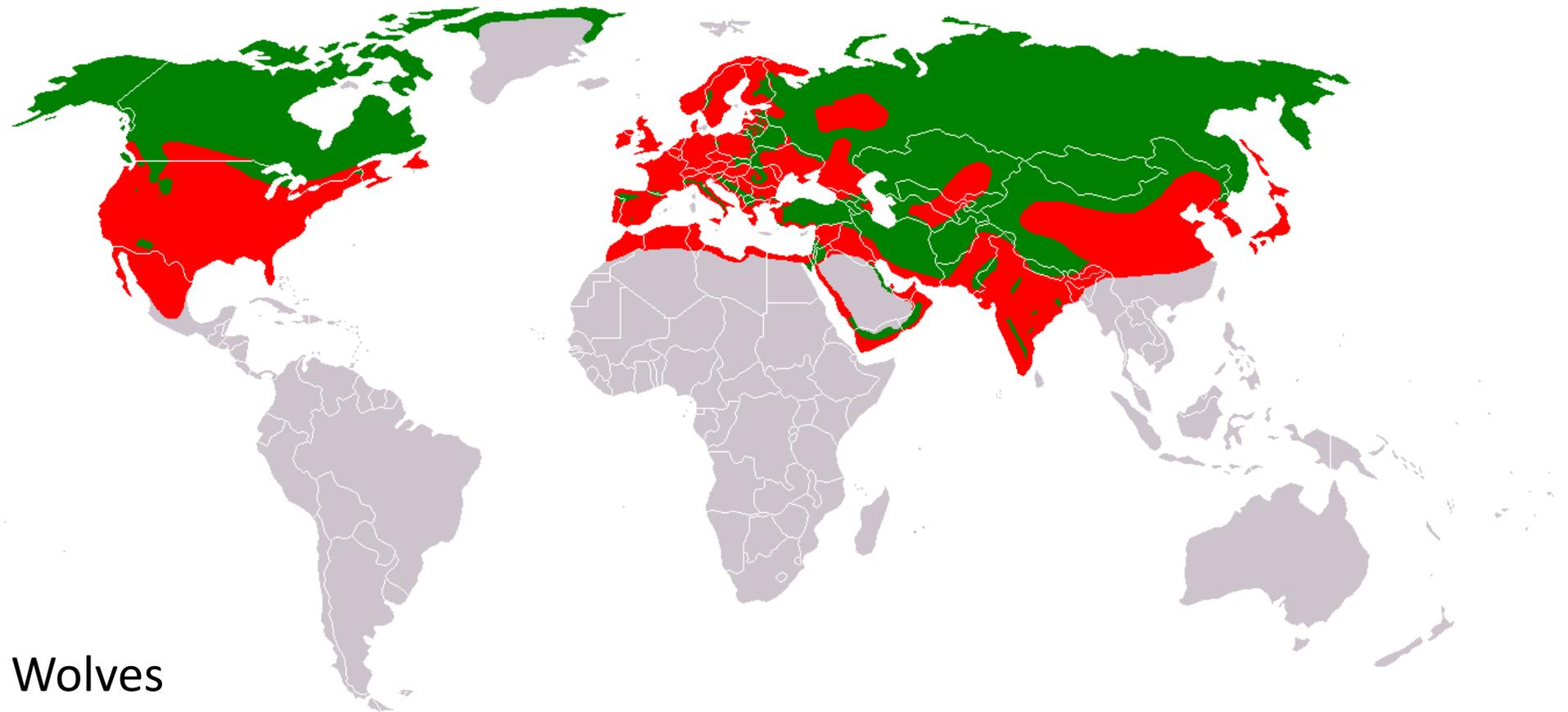
Chimpanzee

Gorilla

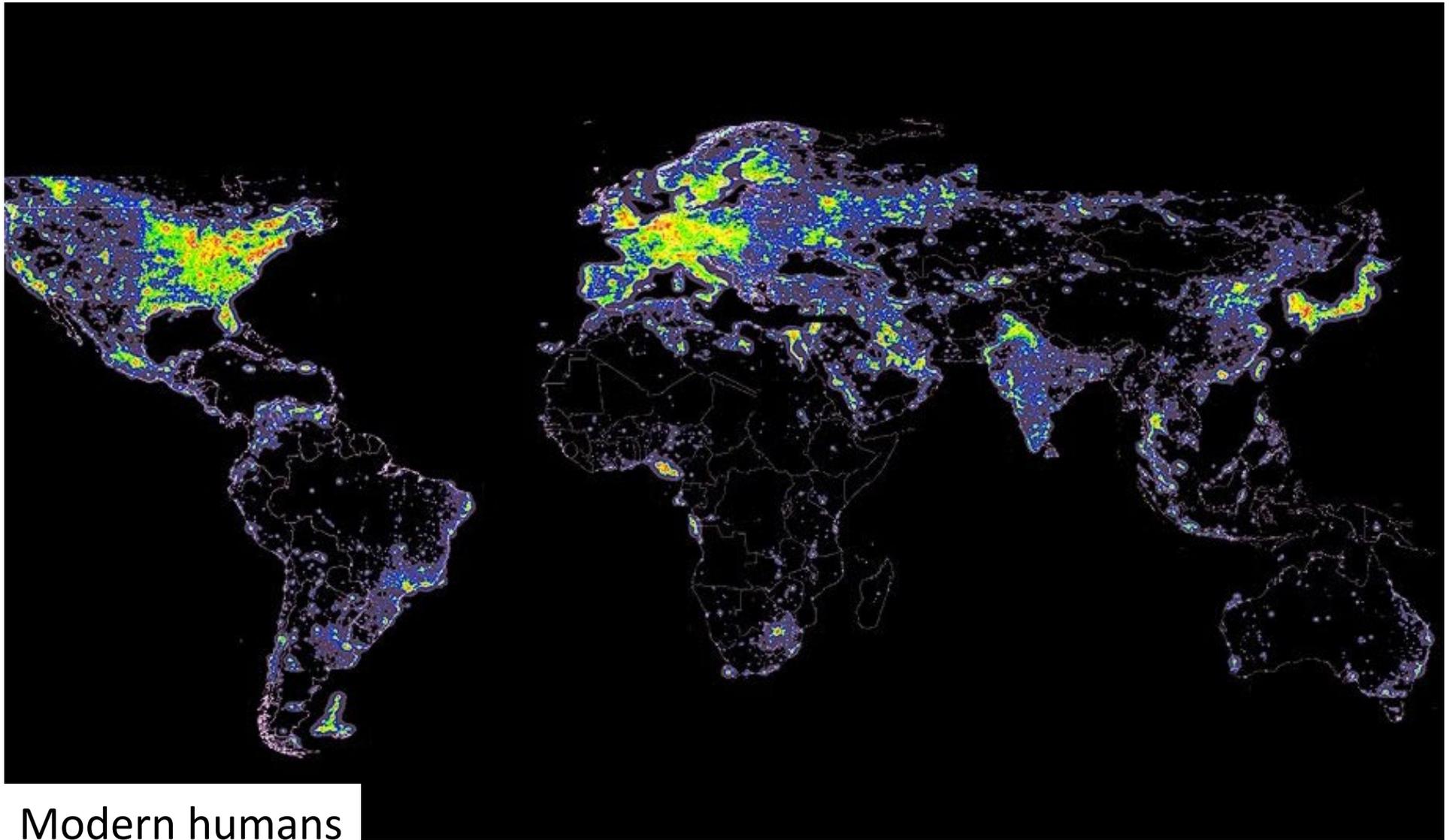
Orangutan

Gibbon





Wolves



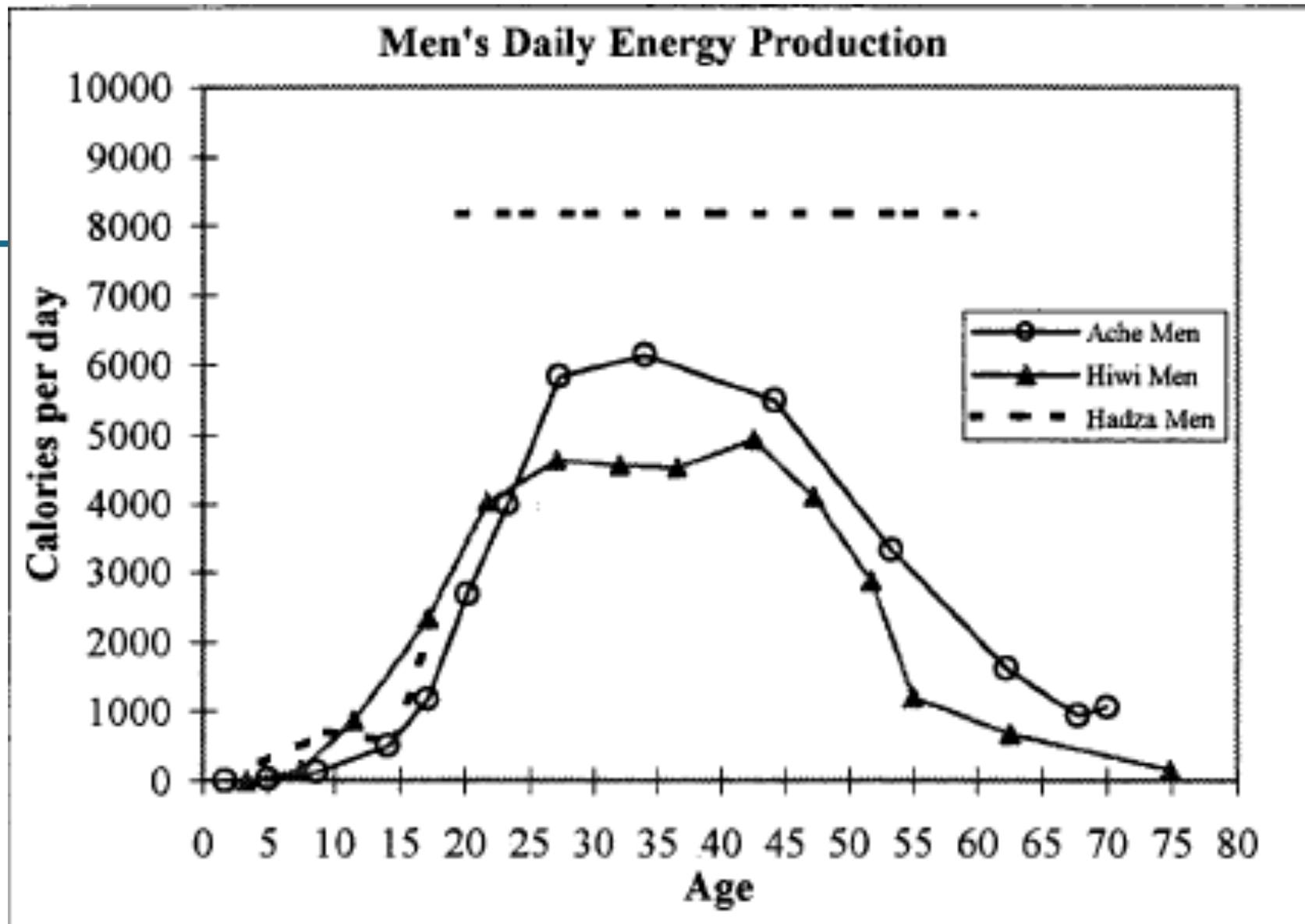
Modern humans



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- Environmental flexibility – high returns to learning





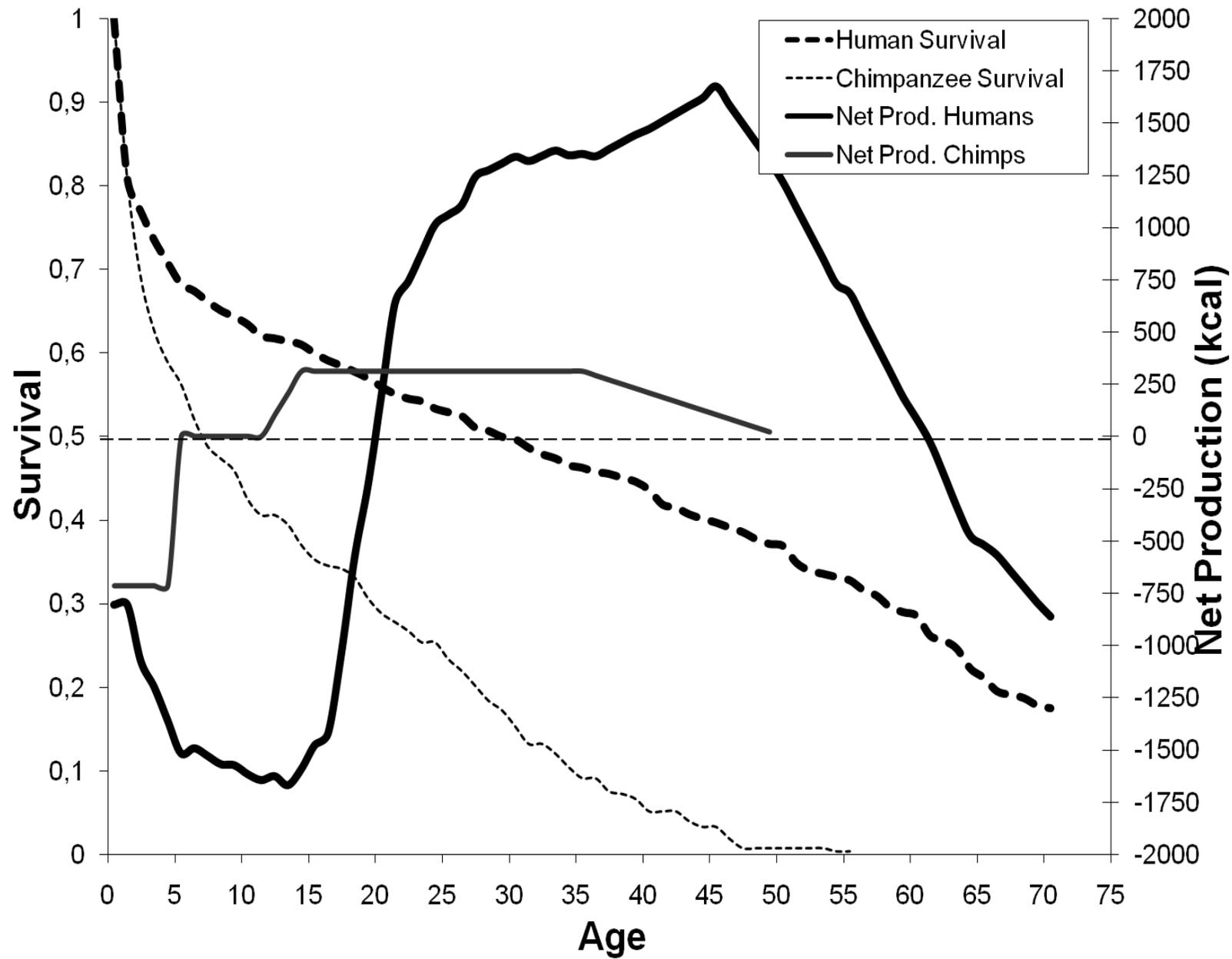
Source: Kaplan et al (2000)



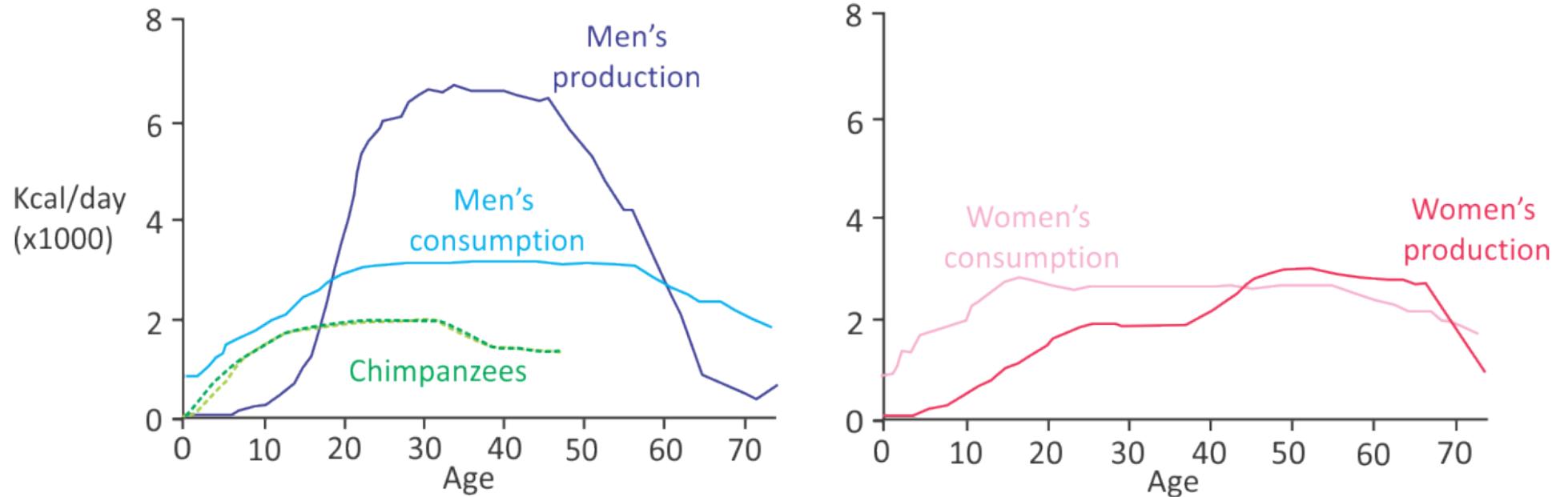
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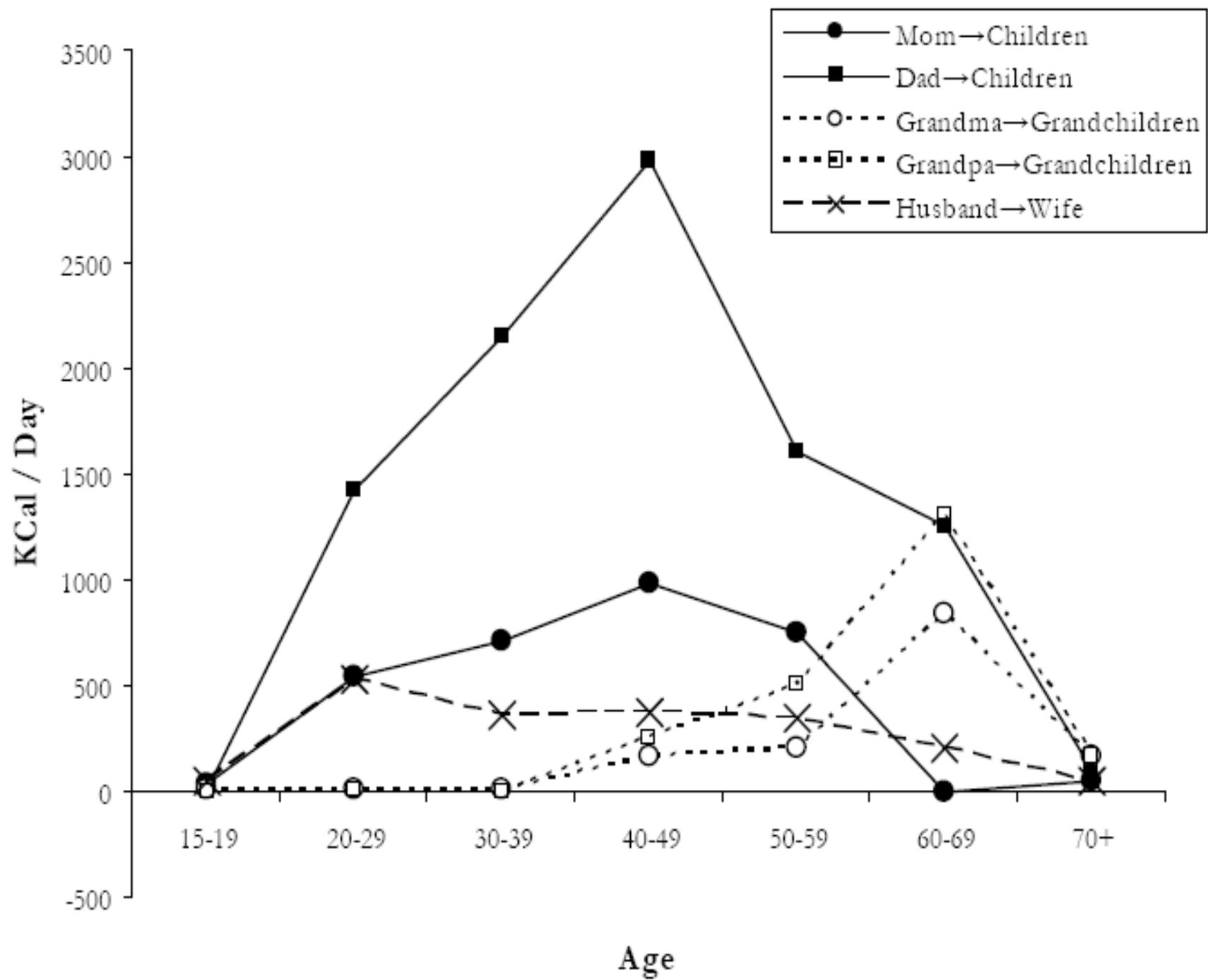
True also for women among Ache & Hiwi foragers



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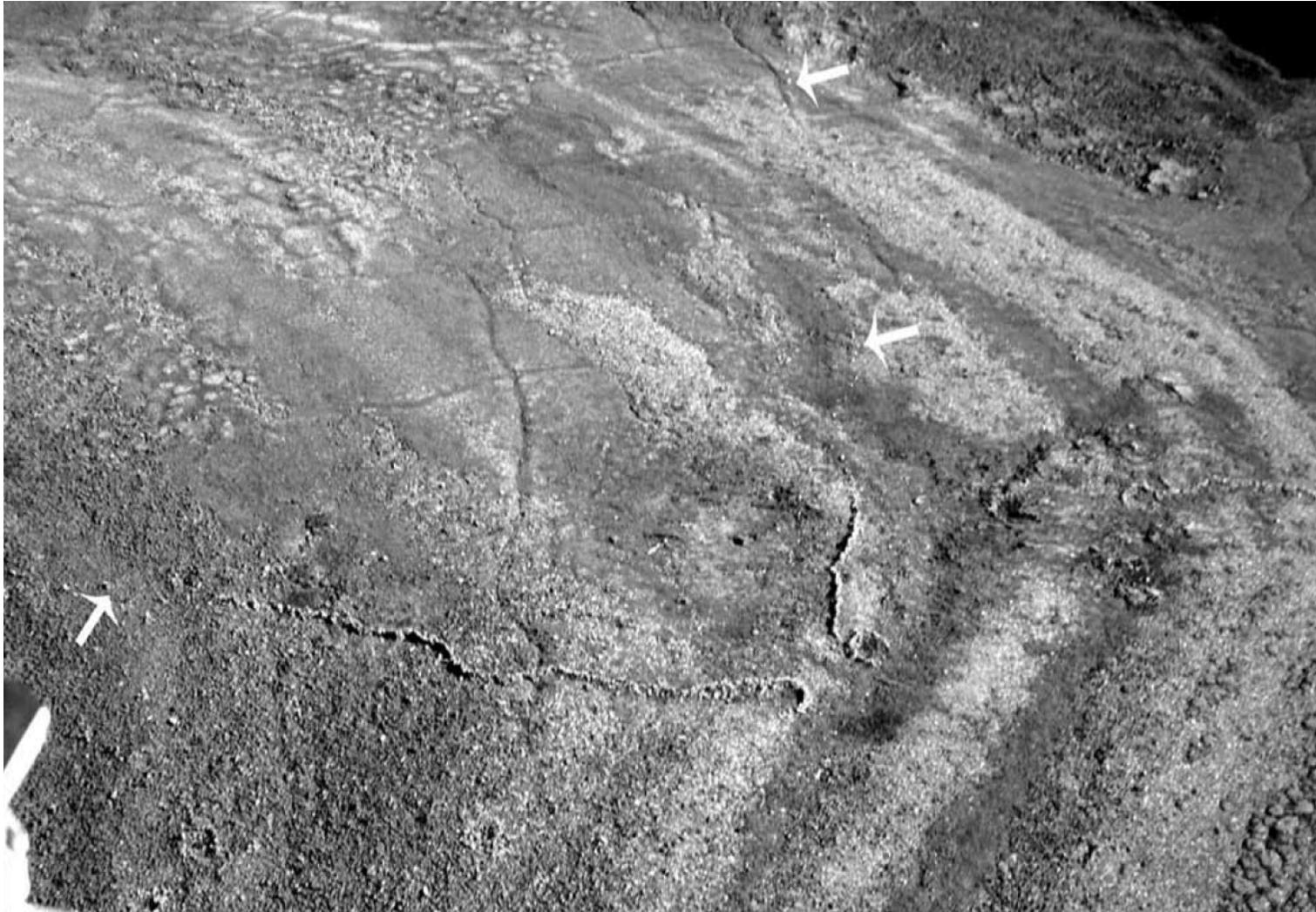




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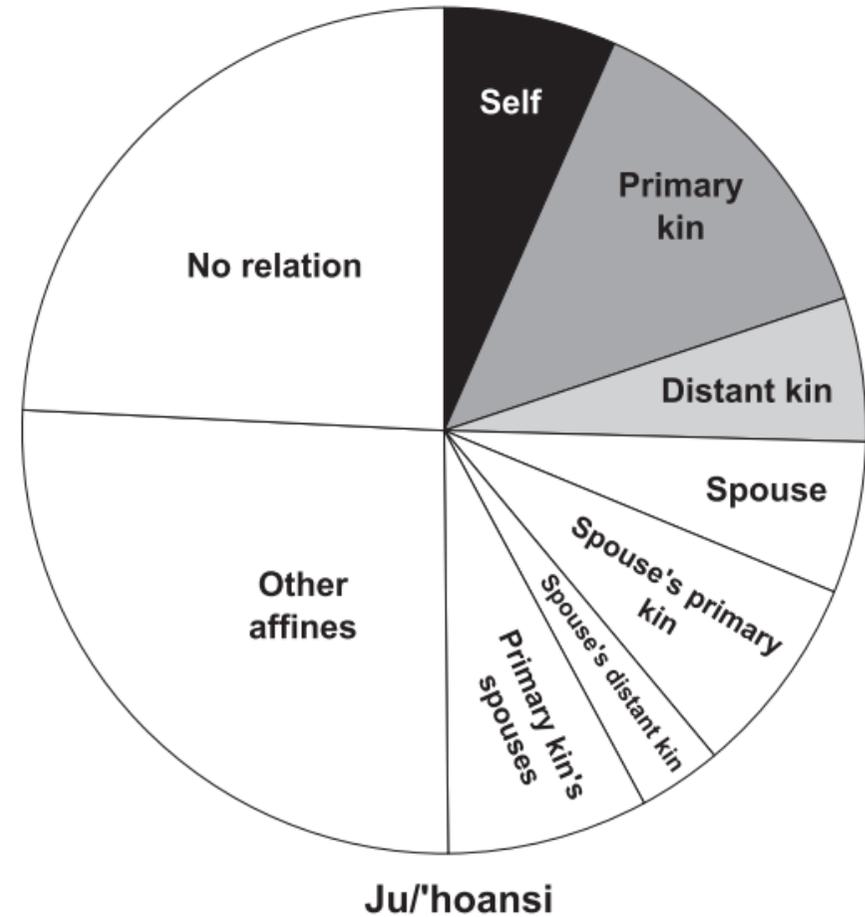
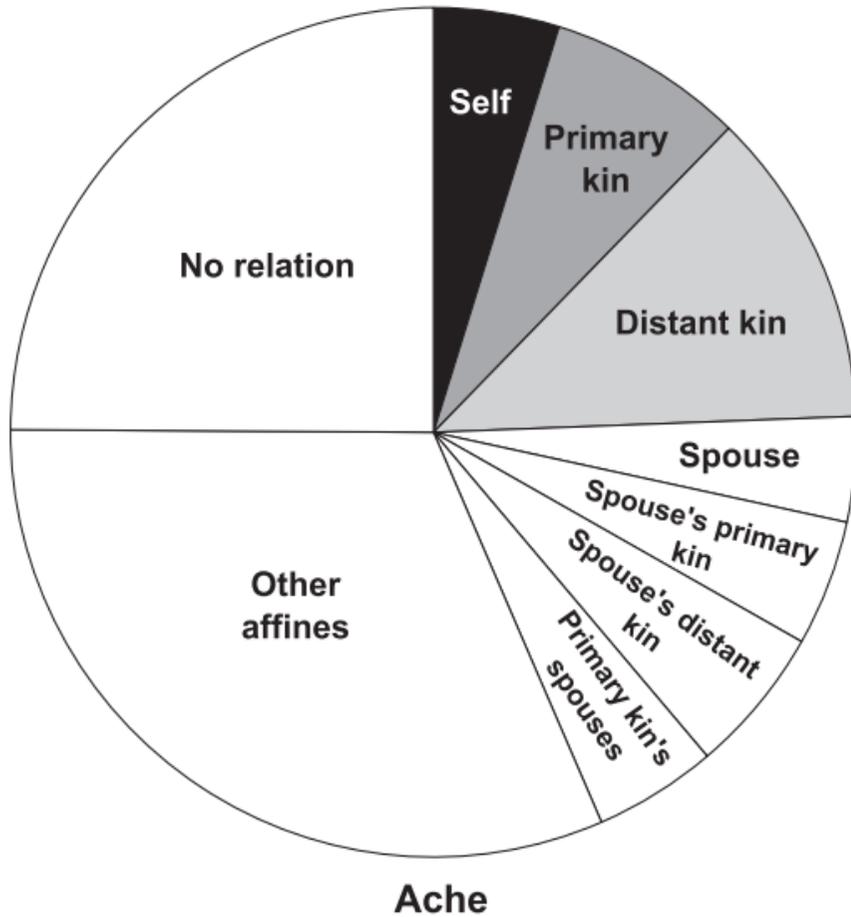
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Foragers have often engaged in large-scale cooperation
(these are Inuit drive lines for caribou)



Picture credit: Robert Boyd

Yet forager groups are not as closely related as we used to think...



An important feature of human learning

- It is cumulative
- It is driven by imitation (including over-imitation, especially in young children)
- It enables humans to use knowledge that they could not work out for themselves
- See Boyd (*Tanner Lectures on Human Values* 2016) and Henrich (*The Secret of our Success*, 2016)

Hierarchy and egalitarianism in human societies

- Boehm (1999) addresses the puzzle that modern humans live in hierarchies and are descended from very hierarchical primates, but hunter gatherer societies appear to have been remarkably egalitarian

Hierarchy and egalitarianism in human societies

- Boehm (1999) addresses the puzzle that modern humans live in hierarchies and are descended from very hierarchical primates, but hunter gatherer societies appear to have been remarkably egalitarian
- The answer: not an « egalitarian instinct » but a strong tendency to competition OFFSET by the power of coalitions of the weak against the overweening strong

What makes human beings unusual? A summary

- A massively greater habitat range than any other species
- Made possible by cooperation on a scale unknown in any other species
- Requiring an ability for learning and cumulative cultural transmission
- An ability to assess the reliability of other unrelated individuals as cooperation partners
- And an ability to induce others to trust us too



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