

Aggression & Warfare



Outline

Sex differences in aggression and homicide

Emotional cues to aggression: Anger and vengeance

Coalitions and warfare in non-industrial societies

Sex differences in aggression: Theoretical expectations

Sexual selection argument: Greater variance in reproductive success among males suggests competition among males should be more intense.

The more intense the competition, the more we can expect males to take risky tactics and compete aggressively

Natural selection argument: Greater female parental investment also makes the fitness costs of physical aggression higher for females.

Sex differences in aggression: Theoretical expectations

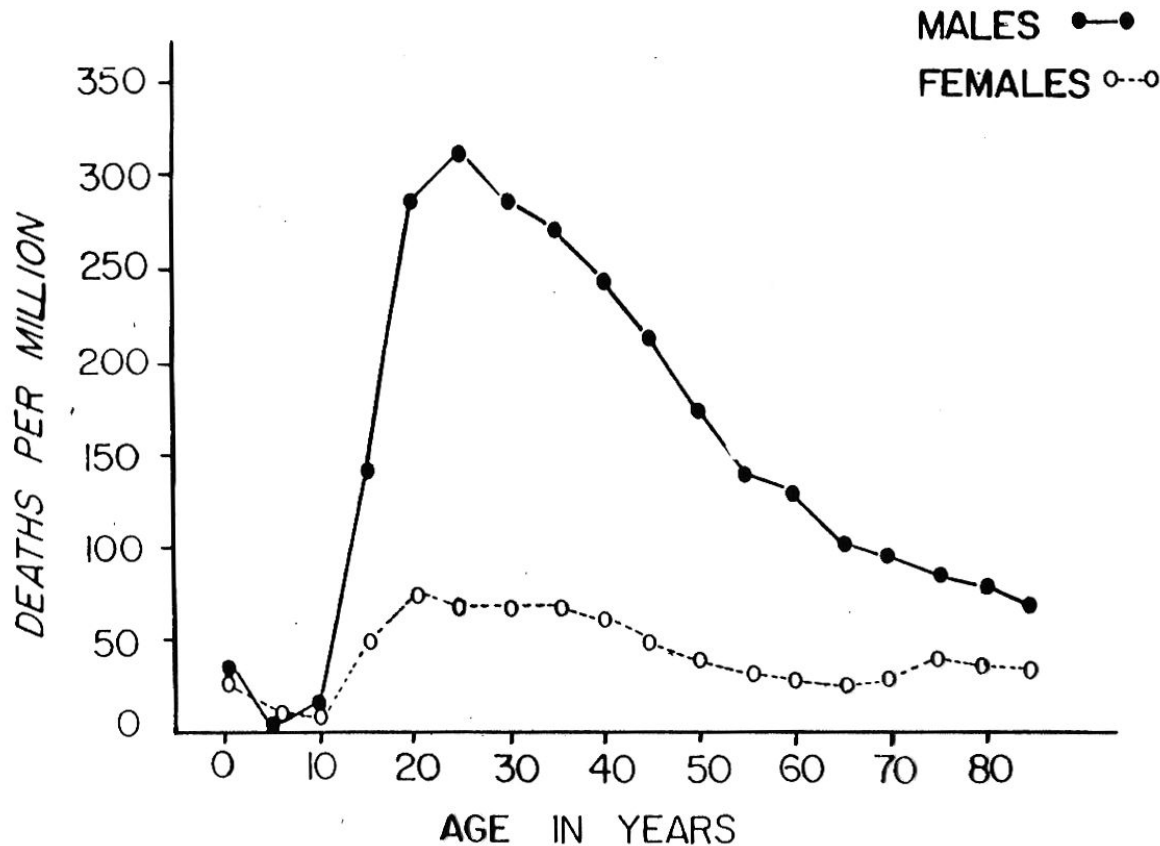
Sexual selection argument: Females compete, but greater variance in reproductive success among males suggests competition among males should be more intense.

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Natural selection argument: Greater female parental investment also makes the fitness costs of physical aggression higher for females.

Data support this: Males are more physically aggressive than females, and their aggression is more likely to result in physical harm.

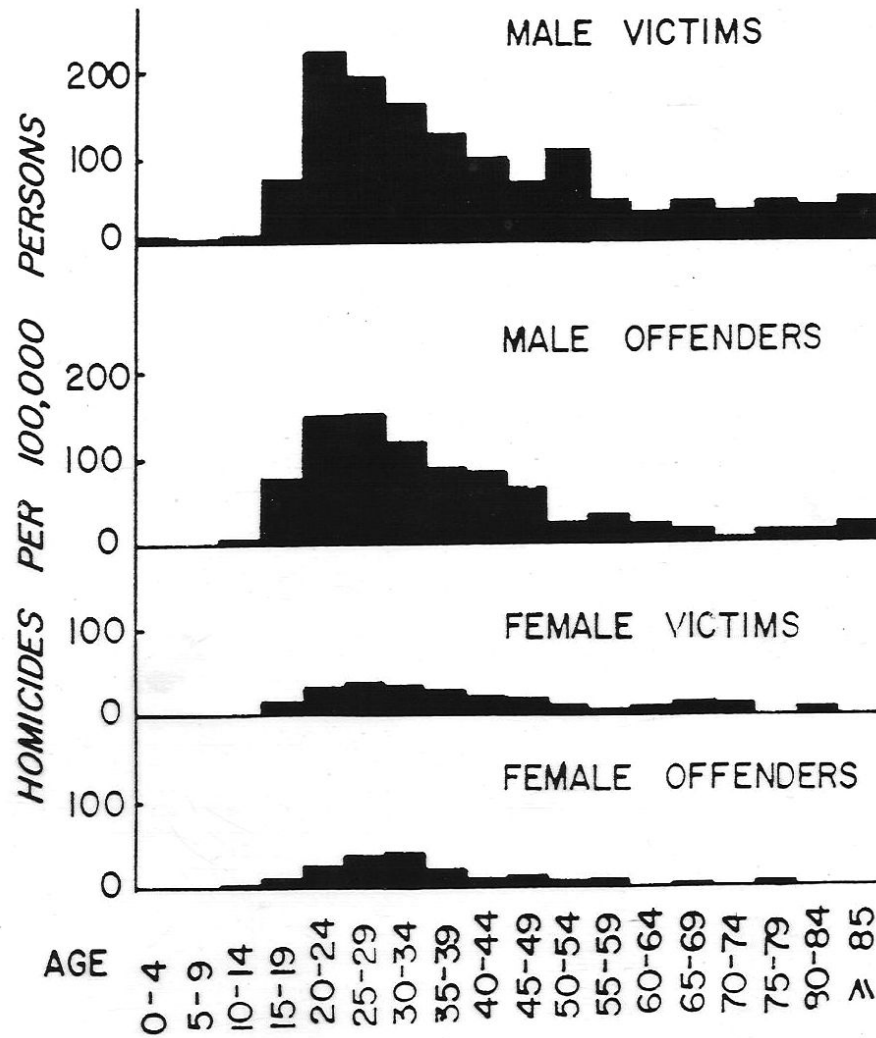
The “young male syndrome” in the U.S.



U.S. Homicide
victimization rates
by age and sex,
1975

(Wilson & Daly, *Ethol & Sociobiol* 1985)

Why a peak in young
male adults?



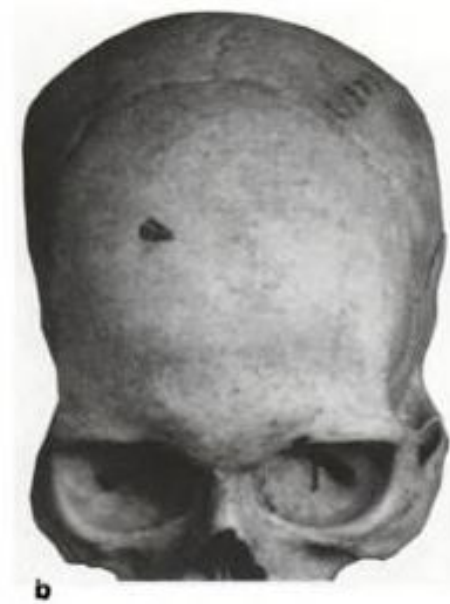
Most violence is
male-male

Males are more like
to kill

and more likely to
be killed.

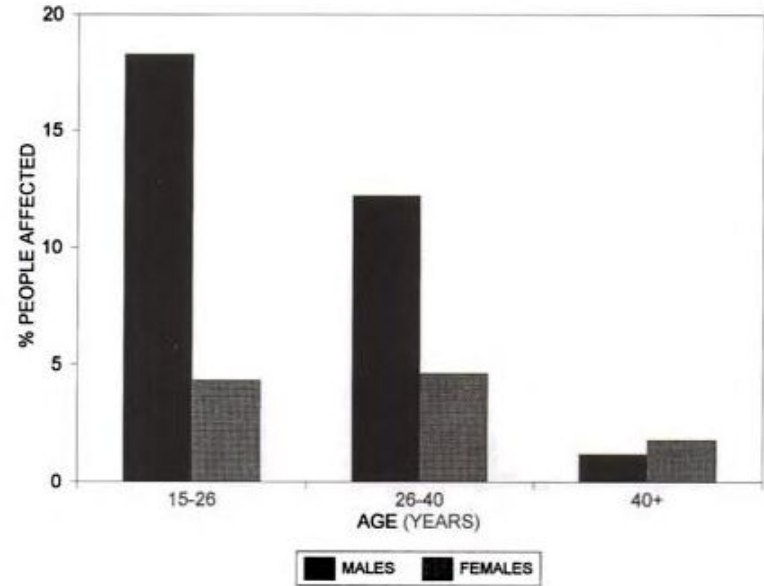
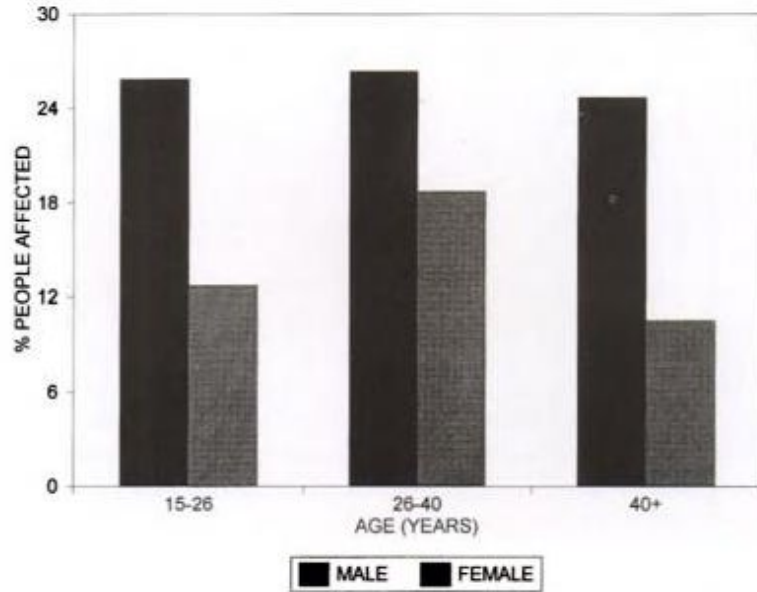
Data from Detroit, 1972
((Wilson & Daly, *Ethol &
Sociobiol* 1985)

Prehistoric violence: Skull injuries



Healed club injury (left) and fatal projectile injury, with chert point tip embedded (right). (Lambert, "Patterns of violence in prehistoric hunter-gatherer societies of southern california" 2014)

The young male syndrome in prehistoric California?



Prehistoric southern California coast mortuary data: Healed cranial fractures (left), and Projectile injuries (right) (Lambert, 2014)

Detroit homicides: Why did they fight?

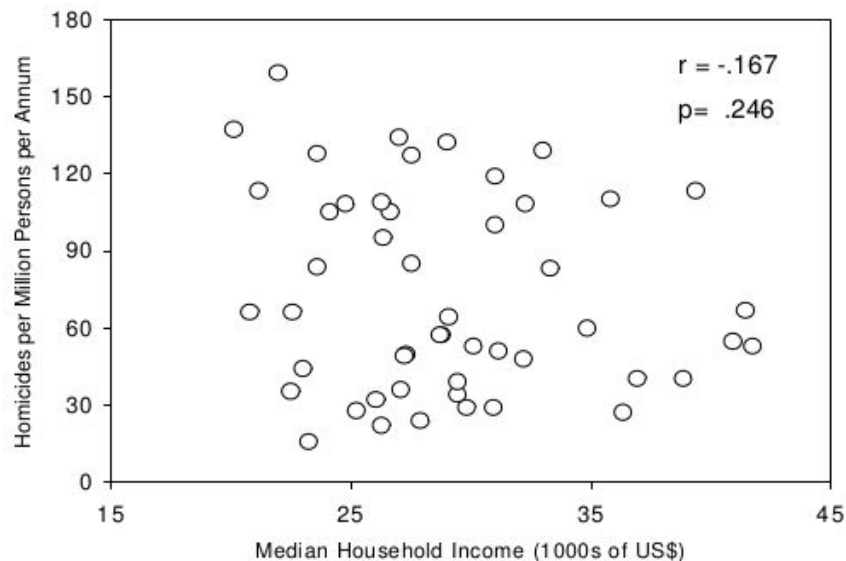
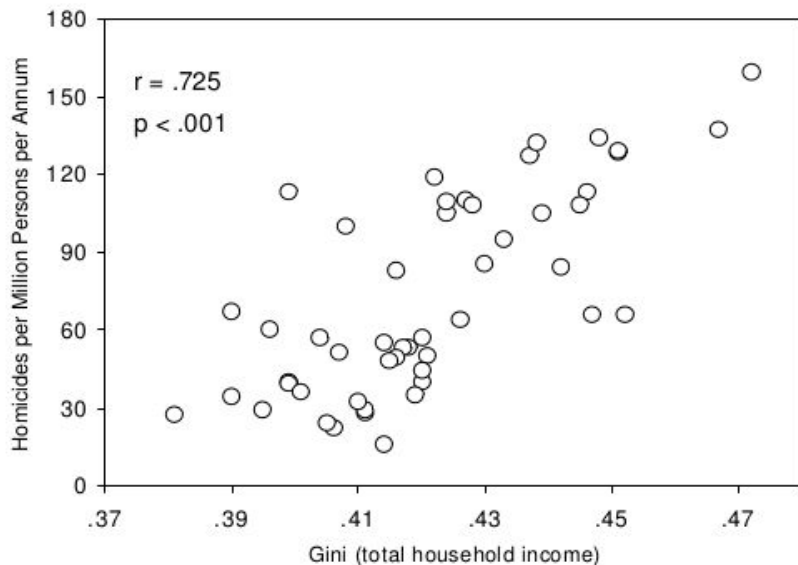
More than half of the 214 Detroit homicides studied were over “trivial altercations” (insult, curse, jostling, etc.), including escalated showing off disputes (Wilson & Daly, *Ethol & Sociobiol* 1985)

“Trivial altercations” become affairs of honor, status, and reputation for standing up for oneself.

Image: “Dueling pistols”, State historical museum, Moscow



Income inequality and homicide



US states, 1990s. Gini coefficient is a measure of income inequality)

“greater inequality implies more intense social competition, especially among young men” (Daly, *Killing the Competition: Economic Inequality & Homicide*, 2016)

Females are aggressive too

But they express it differently.

Boys do more direct aggression, girls more indirect aggression, including relational aggression: social manipulation to harm others (e.g. through gossip, exclusion). And girls find it more hurtful.

Young adults: In response to an aggression-provoking scenario (a reputational attack by a classmate): women reported a stronger desire than men to retaliate with gossip (Hess & Hagen, *Evol & Hum Beh* 2006)

Outline

Sex differences in aggression

Emotional cues to aggression: Anger and vengeance

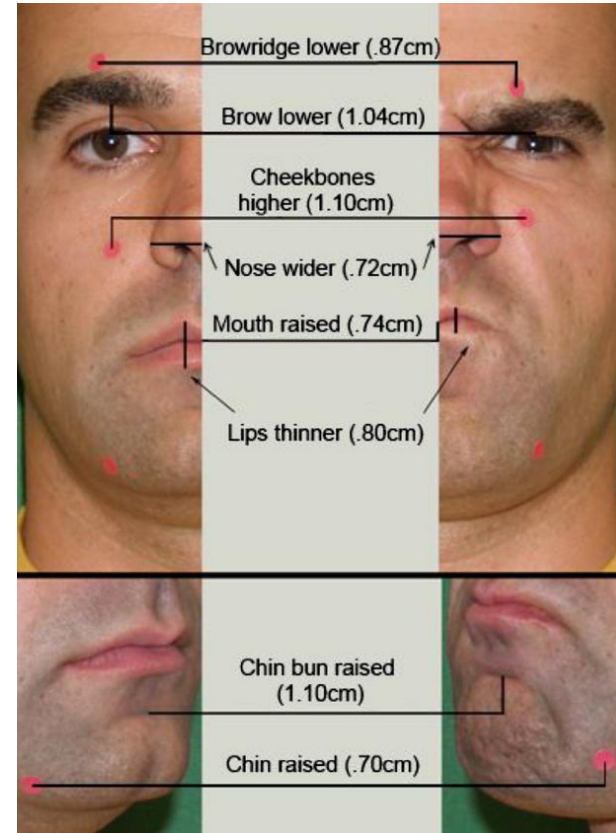
Coalitions and warfare in non-industrial societies

Anger and formidability

Why be angry? Why signal anger?

Facial features of anger signal physical strength

Is it an honest signal?



seven key muscle movements constituting the anger face manipulated one by one; raters assessed faces containing each of them as physically stronger Sell et al. *Evol Hum Beh* 2017

Anger and formidability

Strength in men (not women) correlated with:

- proneness to anger
- history of fighting
- feelings of entitlement to better treatment
- view that fighting is useful and legitimate
- view that political aggression is useful and legitimate
- success in conflict

(Sell, Tooby and Cosmides *PNAS* 2009)

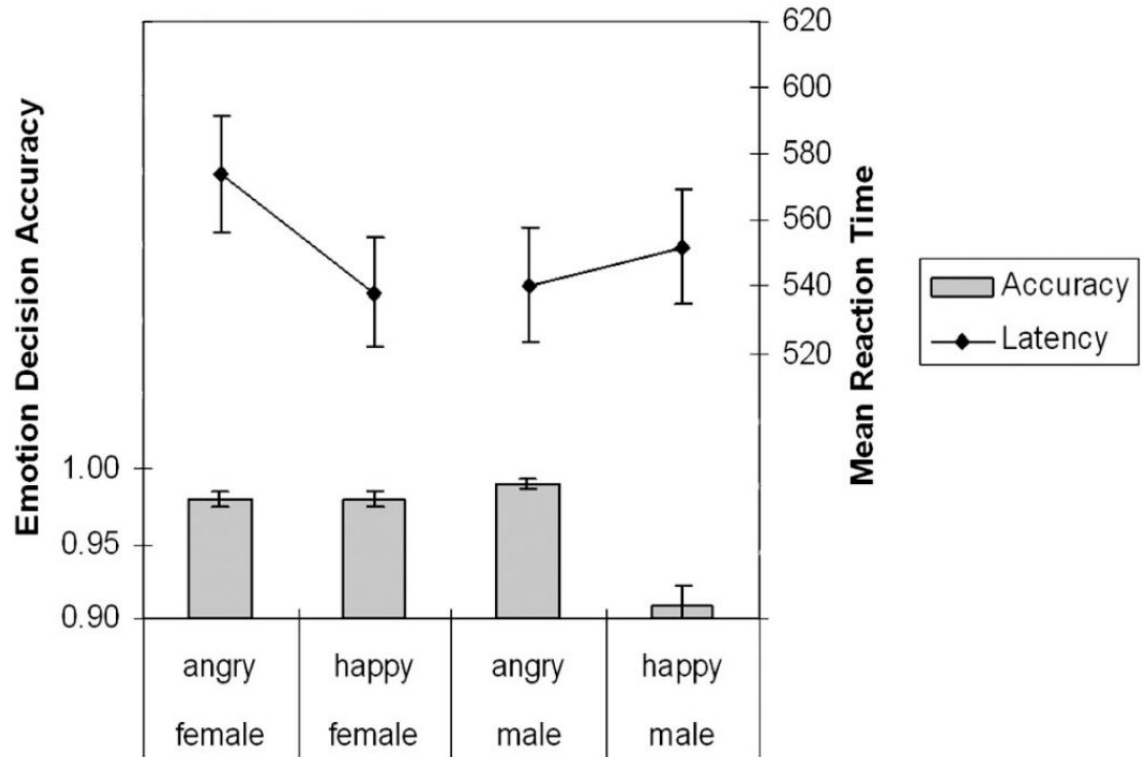


Angry male faces are especially salient cues

Observers are quicker to see anger on men's faces and happiness on women's.

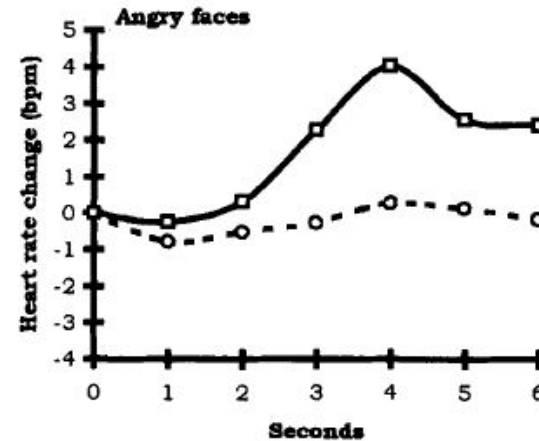
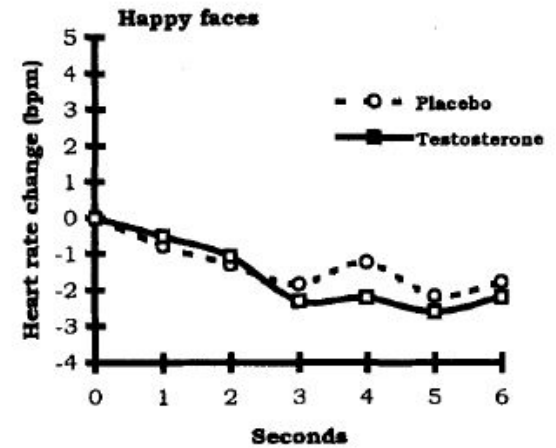
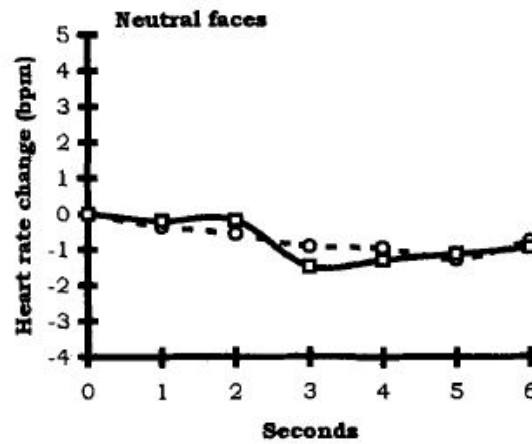
Neutral male faces are more likely to be judged as angry, female faces as happy.

Becker et al. *J Pers Soc Psych* 2007



Testosterone increases arousal to angry faces

In this experiment, women given testosterone showed an increase in heart rate in response to angry faces, but not neutral or happy faces, compared to placebo



Vengeance

We saw that people are willing to punish people who make “unfair” offers in both the ultimatum game and in public goods games.

Is there a sex difference in vengeance? From newspaper polls:

Reasons for the death penalty: Men more likely than women to agree that the killer deserved it as an “eye for an eye”

Reasons against the death penalty: Men more likely than women to agree that some innocent people are being put to death

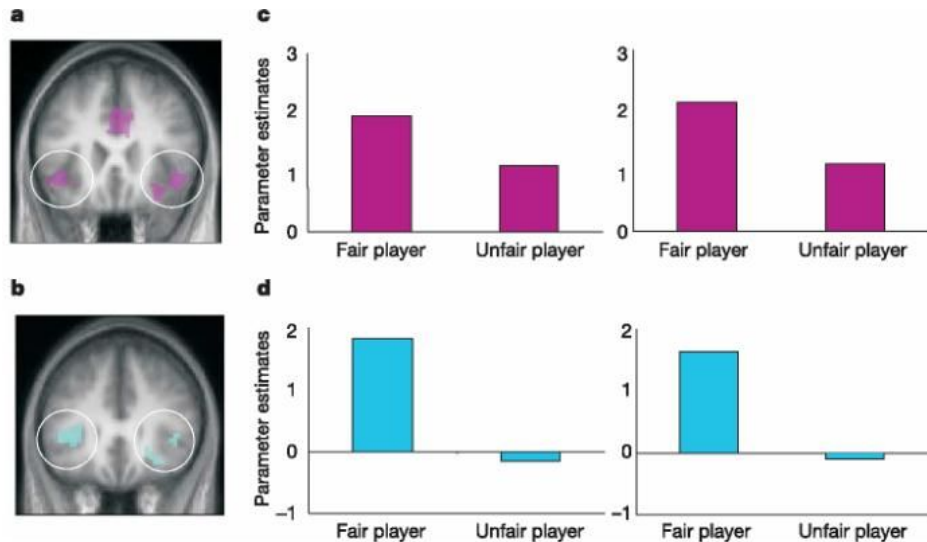
Perhaps men are more concerned with perceived fairness, women with harm?

Less empathy for unfair partners (in males)

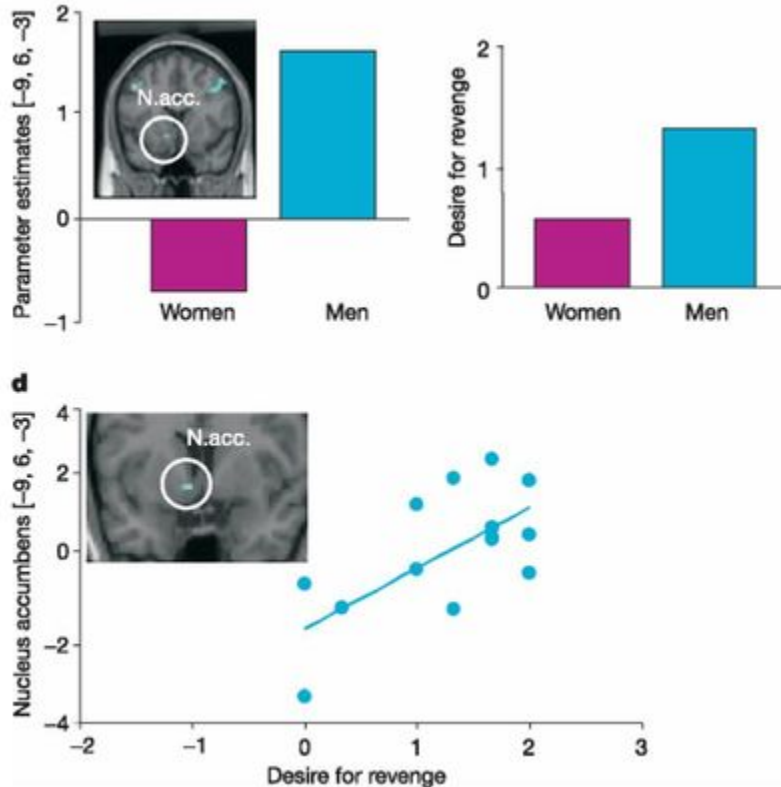
Responses of participants in an iterated PD game to watching fair and unfair players (actors) given electric shocks.

Both showed "empathy-related activation in pain-related brain areas" to actors who played fairly.

But to actors who played unfairly, men (blue) showed reduced activation in these areas



Vengeance is rewarding (to males)



To actors who played unfairly, men showed more desire for revenge and greater activation in reward-related areas (nucleus accumbens).

(Singer et al. *Nature* 2006)

Would this differ with social pain from relational aggression?

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Coalitions and warfare

Thus far, we have been talking about aggression between individuals.

But warfare at any scale involves cooperation within the group to fight outsiders. Often the benefits accrue to the group.

In a non-industrial society where people cannot be required or forced to fight, why fight?

We will discuss three societies where warfare was prevalent & mortality risks were high. They do not typify all non-industrial societies.

Warfare is not an evolutionary novelty

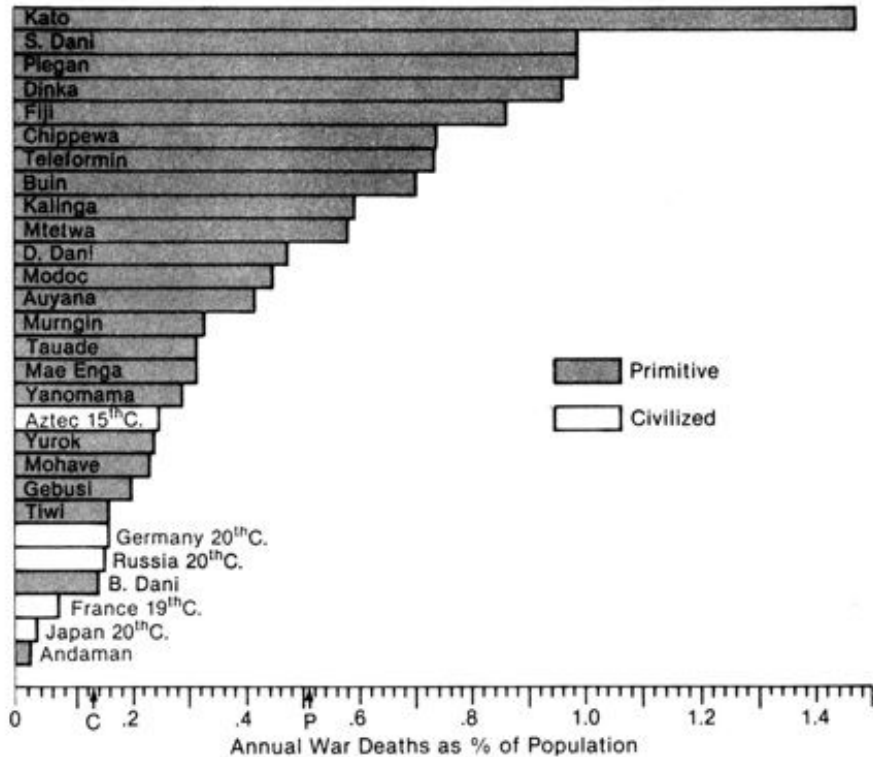


Figure 6.1 War fatality rates (percentage of population killed per annum) for various prestate and civilized societies (see Appendix, Table 6.1).

Warfare is described in many kin-based, non-industrial societies. Mortality in those fights was high.

Figure from Keeley, *War Before Civilization*. 1996

Warfare and resource threats

Cross-cultural study of 186 mostly preindustrial societies found warfare associated with “fear of nature and fear of others”:

- More war strongly correlated with unpredictable natural disasters (not chronic scarcity)
- More war correlated with socialization for mistrust

(Ember and Ember 1992)

But selection acts on individuals. So why do they fight as part of a group?

Why fight? Yanomami

30% adult male deaths from warfare.

Do warriors gain respect, higher reproductive success?

Among the Yanomami, maybe. Hard to verify Chagnon's original claims of fitness benefits.

Yanomami fighting partners are usually from other lineages & communities; develop alliances through marriage (Macfarlan et al. PNAS 2014).



Why fight? Waorani

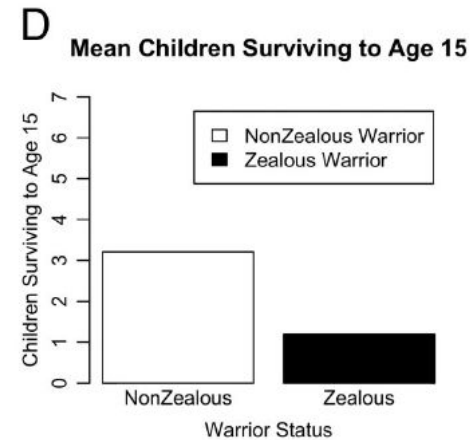
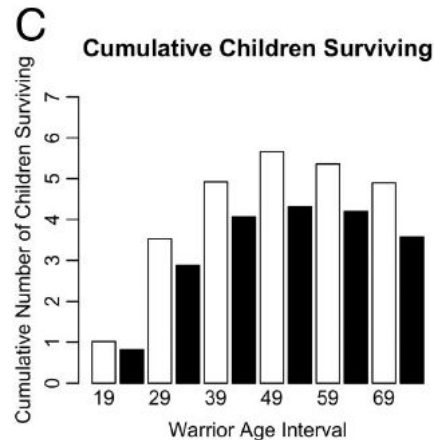
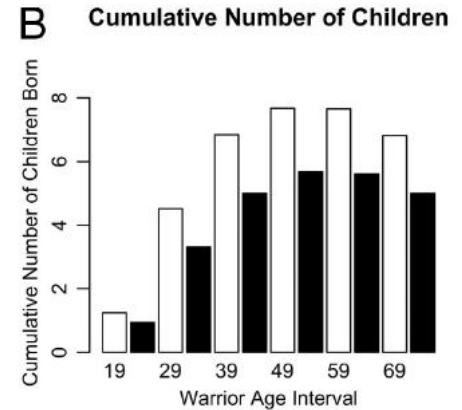
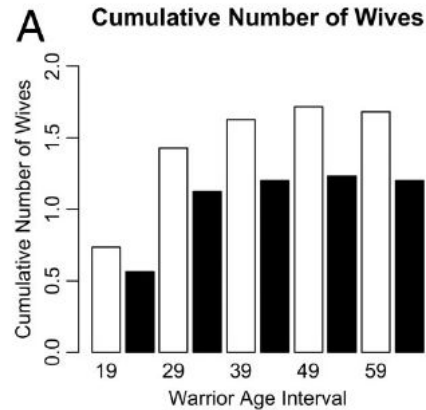
Historically, homicide accounted for 54% of male and 39% of female deaths at all ages, plus 8% by neighboring ethnic groups.

Do Waorani warriors gain higher reproductive success? No.

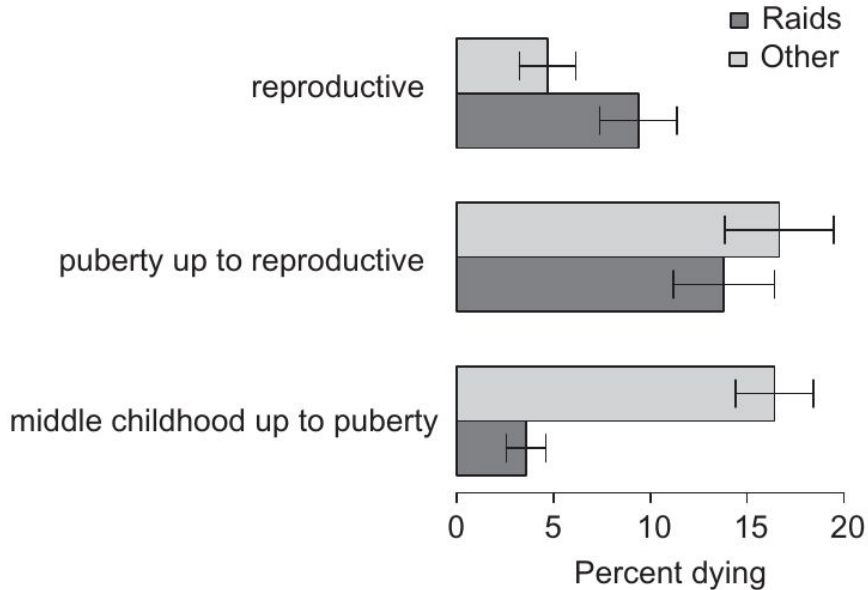
So why do the Waorani fight?

Revenge. “their grandfathers had killed our grandfathers”

(Beckerman et al. *PNAS* 2009)



Why fight? Turkana, mortality costs



Percent of male population dying from raids vs other causes (chiefly disease). 20% of male deaths due to warfare. (Mathew & Boyd, *PNAS* 2011)

Why fight? Turkana, collective benefits

Turkana offensive raids:

- acquire cattle from neighboring ethnic groups, which are then shared among the raiding party,
- Increase access to grazing areas
- deter retaliatory (revenge) raids.

Raids also conducted for revenge

Large raids can have over 300 people, so benefits not due to kinship, or reciprocity, or marriage-based alliances. No chiefs to enforce it.

Why fight? Turkana punish free-riders

Free-riding occurs: Many leave en route with excuses (ill, worried about cattle, etc), others lag behind, retreat too quickly, etc.

Free-riders are sanctioned: Informal verbal sanctions, fines (cattle), and, for severe violations, corporal punishment

Violator's behavior is discussed, others are informed, he is chastised for endangering others, reminded about others who died that day. Decision to mete corporal punishment discussed collectively.

Summary

Sex differences in aggression: Most violence, especially lethal violence, is male-male (esp. young adult males)

Emotional cues: Anger and vengeance

- Angry faces signal physical strength, and strong men are more likely to fight, to feel justified in fighting, & to win when they do.
- Angry male faces are salient cues, & testosterone mediates that response
- Neurological data indicates that for males, revenge is rewarding

Warfare (coalitionary violence) in non-industrial societies was often motivated by revenge. Mortality was high, but participation was maintained by social punishment and rewards.