

Honour, Shame and Climate Change

Lessons from Public Goods Experiments



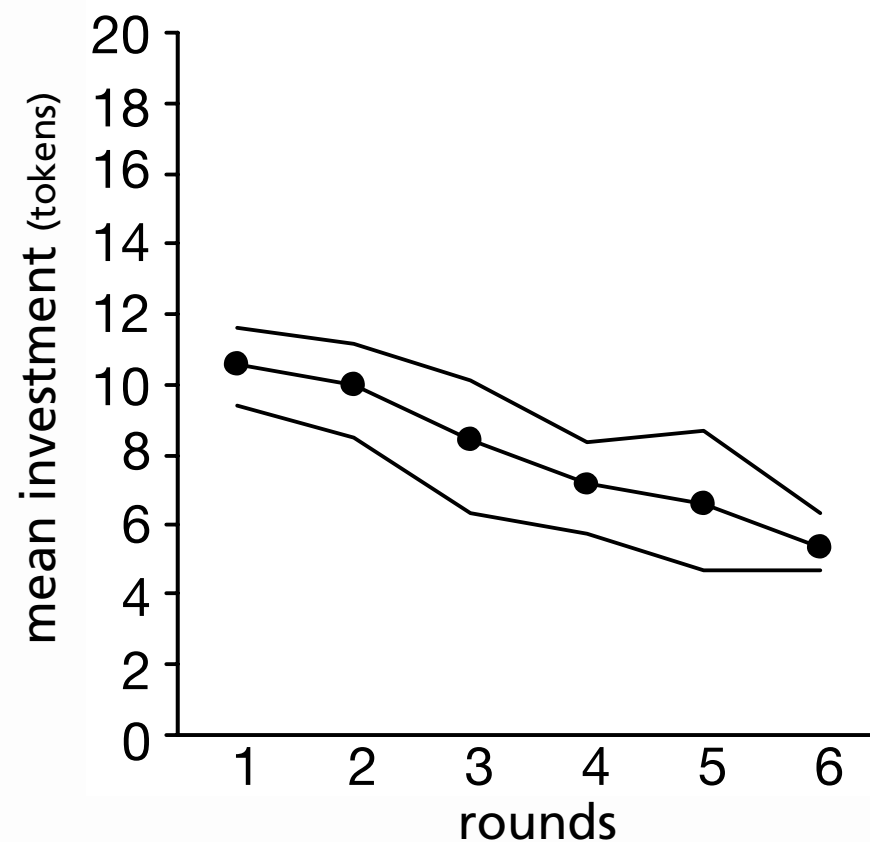
Christoph Hauert, Mathematics UBC, Vancouver

IIASA, November 2015

Public goods games

Experiments

- groups of 4 players, several rounds
 - monetary endowment, tokens (e.g. each gets 20 tokens in every round)
 - invest tokens into common pool
 - experimenter doubles the total amount in pool and divides it equally among all participants (regardless of contributions)
- ↪ each invested token returns only 1/2 token to the investor
- ↪ if everyone invests, each invested token is doubled
- ↪ social dilemma
- ↪ large initial investments
- ↪ contributions decrease over time
- ↪ level off at low contributions



Social dilemmas

Games in Nature

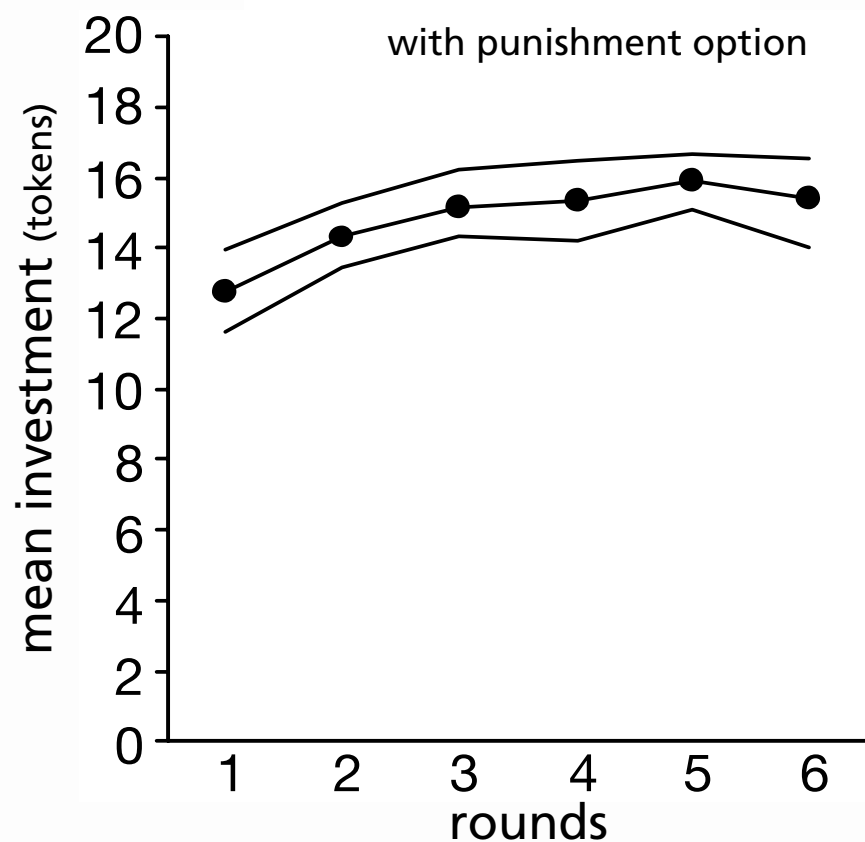
- group defence, collective hunting
 - predator inspection, alarm calls
 - major transitions in the evolution of life.
 - social welfare
 - health care
 - pension plan
 - unemployment
 - infrastructure
 - global sustainability
 - clean air & fresh water
 - fossil fuels
 - fisheries
 - climate
- ↪ prisoner's dilemma
free-rider problem
tragedy of the commons
public goods games
collective risk dilemmas



The problem of cooperation

Overcoming the dilemma

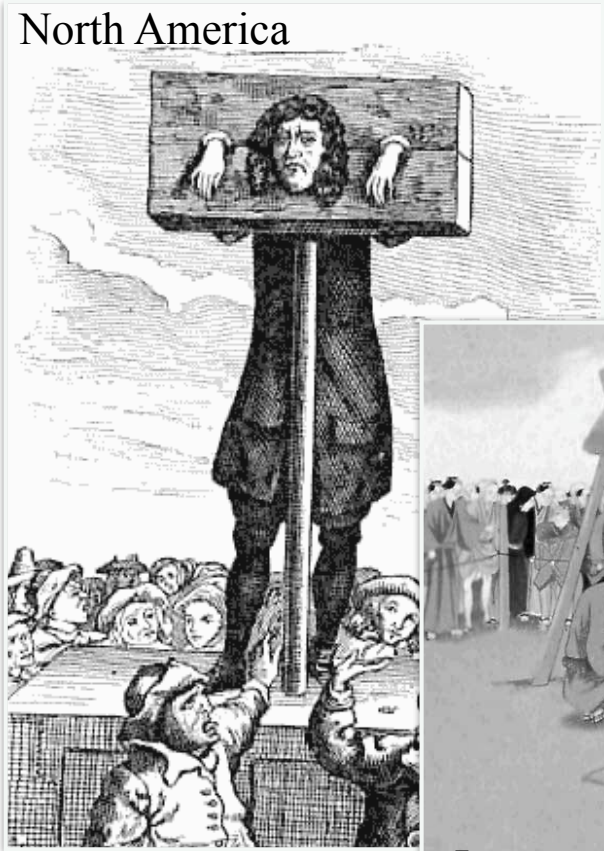
- direct reciprocity
 - ↪ I help you and you help me
- indirect reciprocity
 - ↪ I help you and someone else helps me
- voluntary participation
- structured populations
- reward & punishment
 - ↪ punishment is efficient in promoting cooperation.
 - ↪ punisher pays cost γ to impose fine β
 - ↪ second order social dilemma
 - ↪ selfish players should not punish...
 - ↪ what about non-monetary punishments or rewards?



Shaming as Punishment

Shaming by the state: then...

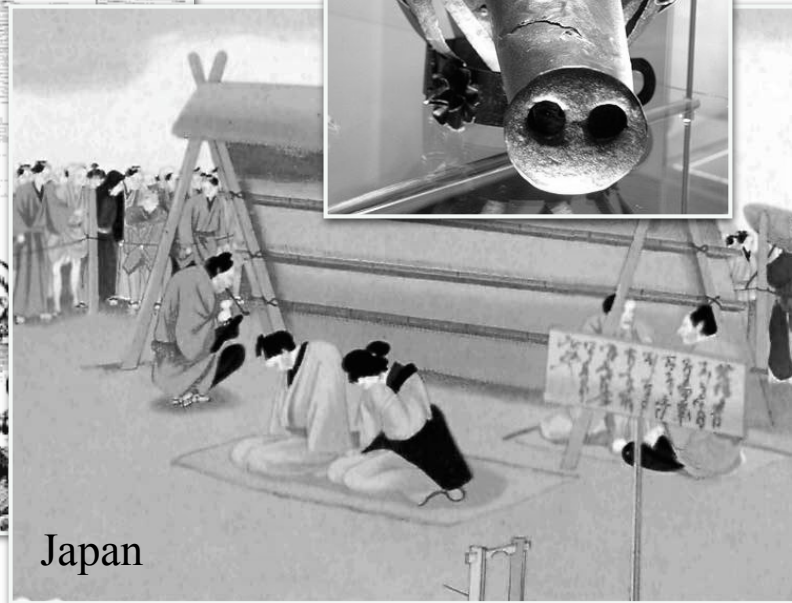
North America



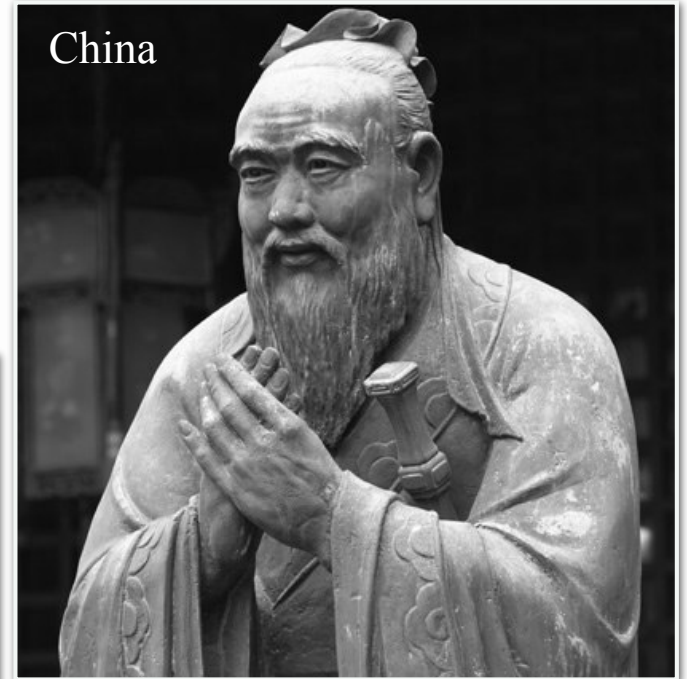
Europe



Japan



China

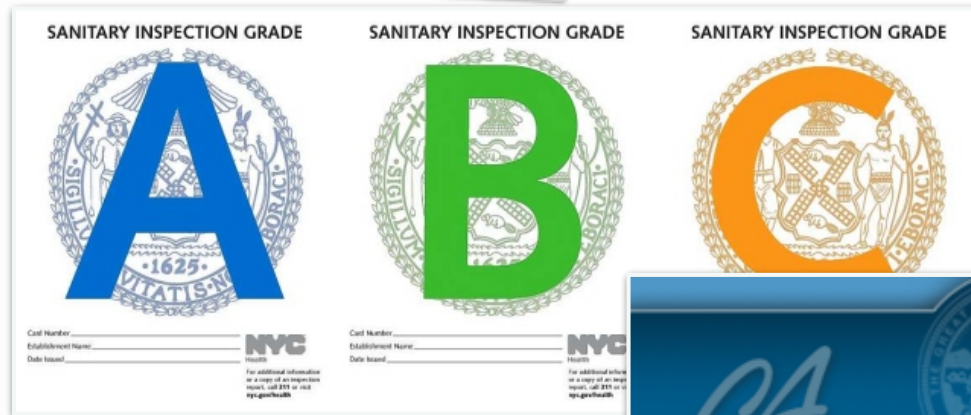


Lead them through moral force [...] and they will have a sense of shame and will also correct themselves.

Analects 論語, Confucius 551-479BC

Shaming as Punishment

Shaming by the state: ...and now...



New York



Ohio



California



Texas

Public Goods Experiments

Setup

- groups of 6 players, 12 rounds
- \$12 endowment
- invest \$1 in each round (or not)
 - ↳ individuals are anonymous
- total investments are doubled and equally distributed.
 - ↳ each invested \$1 returns 33 cents to the investor
 - ↳ if everyone always invests, all participants earn \$24.
- three treatments: after 10 rounds
 - ↳ honour: reveal identity of two highest contributing individuals
 - ↳ shame: reveal identity of two least contributing individuals
 - ↳ control: no revelations
- ↳ individuals recruited from same class to ensure they meet again.

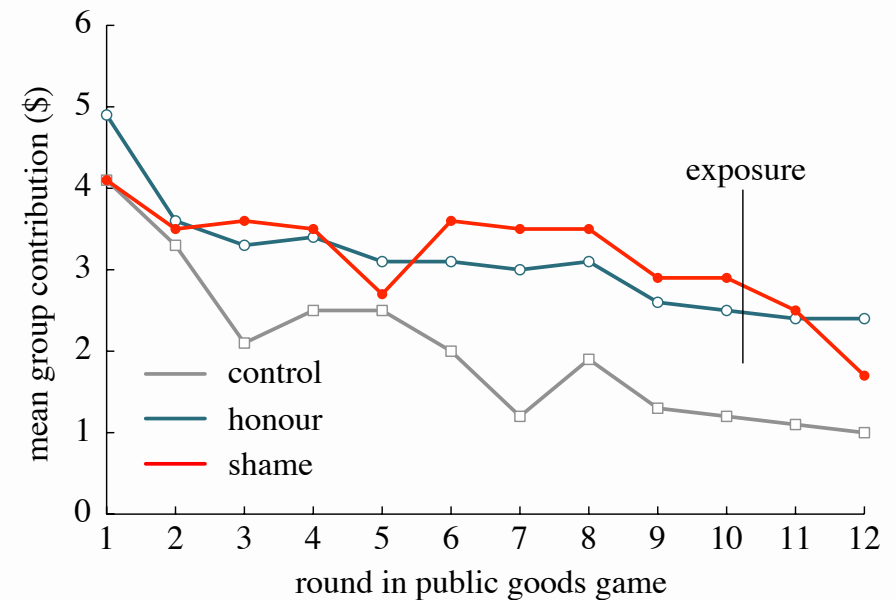


Experimental setup in UBC Fisheries

Honour & Shame in Public Goods Experiments

Results

- control: expected decline of contributions
- honour: decline is less steep and contributions consistently higher
- shame: similar to honour treatment but more variation
- ↪ honour & shame both trigger a significant increase in cooperation (~50%, $P_{\text{honour}}=0.010$, $P_{\text{shame}}=0.038$)
- ↪ after exposure significant decline for shame
- ↪ average investments in last round:
 - ↪ anonymous: \$0.33 (honour and shame)
 - ↪ honoured: \$0.55
 - ↪ shamed: \$0.15
- ↪ individuals live up to expectations



Honour & Shame in Public Goods Experiments

Feedback

What was your strategy when you decided to give or not in each round?

Didn't give in at all because humans are selfish to begin with. I disagree upon that "working towards the common goal." Hence my theory was right, the more self-centered you are the more money you get (advantage is greater)

The top Contributor.

What was your strategy when you decided to give or not in each round?

Give only in even numbers, plus the lucky number 7.

I kept \$5 for dinner tonight and just randomly put the coins in the envelopes in the beginning before the game started.

Don't want to have my name exposed, so

I did not want to be one of "the least generous players", so my only aim was to stay out of the bottom 2, other than that I tried to maximize profit.

Eventually I just wanted to be known as "Gave at first."

Stopped giving bc other people are stupid/
Selfish + don't know how to do math.

Honour & Shame in Public Goods Experiments

Feedback

What was your strategy when you decided to give or not in each round?

Didn't give in at all because humans are selfish to begin with. I disagree upon that "working towards the common goal." Hence my theory was right, the more self-centered you are the more money you get (advantage is greater)

Don't want to have my ^{reputation} exposed, so I did not want generous plan of ^{it} handing in ^{at least} to stay out ^{of that} - I tried to

What was your strategy in each round?

Give only in

- Make sounds with coins & envelope
- Contribute nothing.

I kept \$1 and just randomly put the coins in the envelope at the beginning before the game started.

just wanted to be known as Gave at first.

Stopped giving bc other people are stupid/ selfish + don't know how to do math.

Honour & Shame in Public Goods Experiments

Feedback

But we were all in the same class! For the

What was your strategy when you decided to give or not in each round?

Didn't give in at all because I disagree upon that "working to ward the common goal." Hence my theory was right, the more self-centered you are the more money you get (advantage is greater)

Greater good

Don't want to have my generous idea before handing in. I do not want to stay out that I tried to

What was your strategy in each round?

Give only in

- Make sounds with coins & envelope
- Contribute nothing.

each round?

every number 7.

I kept \$1 in the envelope.

just randomly put the coins the beginning before the game started.

just wanted to be known as give at first.

Stopped giving bc other people are stupid! Selfish + don't know how to do math

a disillusioned participant (feedback, control treatment)

Climate is a Public Good

Collective risks and public goods

- climate change is collective risk
- ↪ joint efforts required to reduce impact
- challenges:
 - only one game - no second chances
 - mandatory participation
 - significant investments required
 - inequalities (economical, cultural, consequences)
 - ↪ winners and losers (Canada vs Bangladesh)
 - delayed rewards of current actions
 - ↪ benefits future generations
- discounting:
 - ↪ future benefits are worth less
 - ↪ risk of benefits not being realized or beneficiary may not live to enjoy them



Climate Game Experiments

Setup

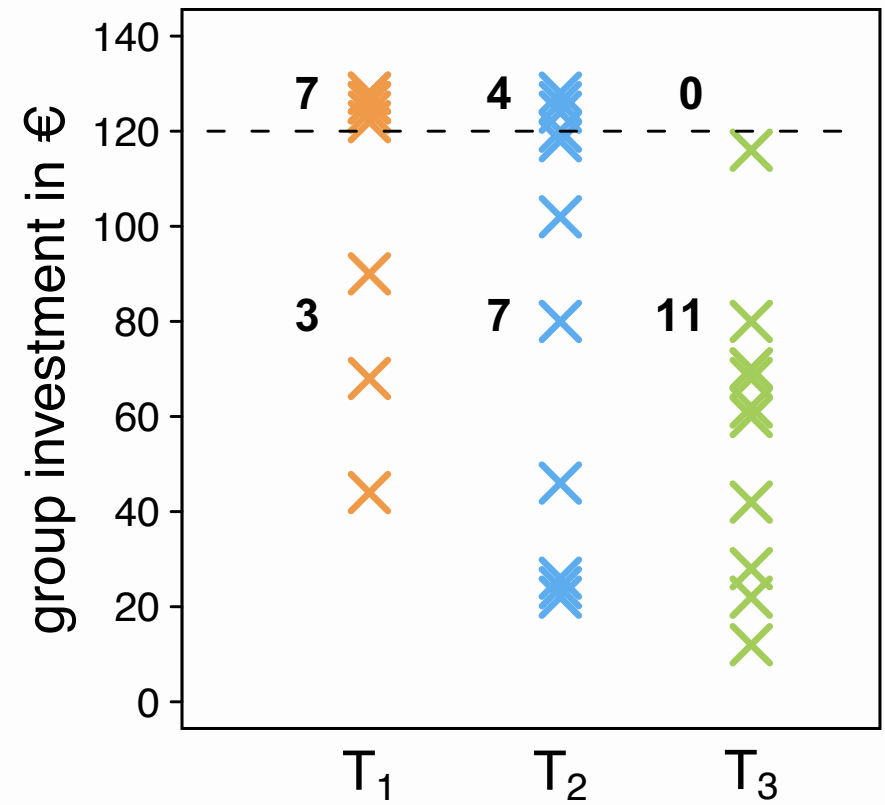
- 6 players, 10 rounds
- €40 endowment
- in each round invest €2, €4 or nothing into 'climate account'
 - ↪ total investments used to run ad in newspaper, *Hamburger Abendblatt*
 - ↪ uninvested endowment is property of participant
- target is to collect total of €120 to avert 'dangerous climate change'
 - ↪ if reached, €45 reward
 - ↪ if not reached, €45 forfeited with 90% probability
- Three treatments - payout of reward:
 - next day, T_1
 - after seven weeks, T_2
 - invested in planting oak trees, T_3
- ↪ effects of discounting on collective risk



Climate Game Experiments

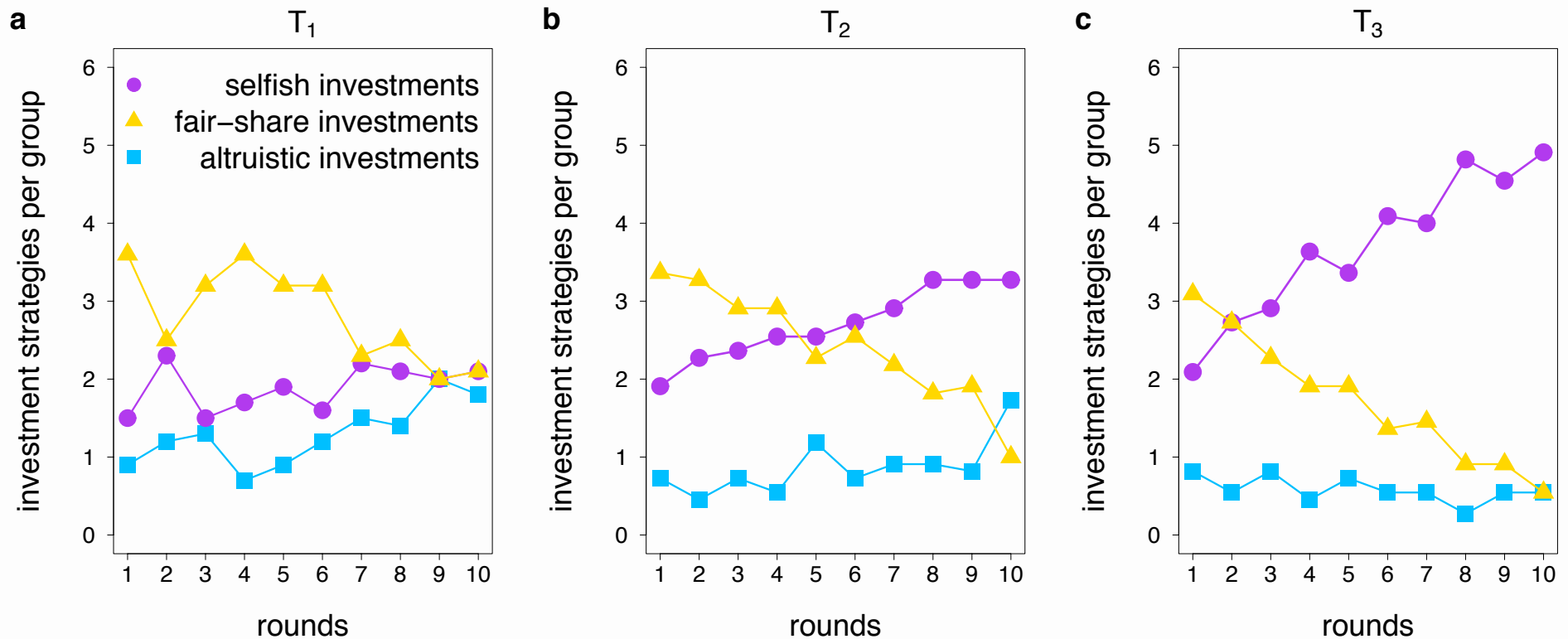
Results

- T₁ short term benefits
 - ↪ no discounting
 - ↪ 7 out of 10 groups achieved target
- T₂ longer term benefits
 - ↪ *intra*-generational discounting
 - ↪ 4 out of 11 groups achieved target
- T₃ long term benefits
 - ↪ *inter*-generational discounting
 - ↪ 0 out of 11 groups achieved target
- ↪ intra-generational discounting weak (T₁ vs T₂, P=0.1938)
- ↪ inter-generational discounting significant (T₁ + T₂ vs T₃, P=0.0005)
- ↪ even in T₃ significant investments



Climate Game Experiments

Altruists, egoists and fair players



↗ significant increase in selfish investments (€0) from T₁ to T₂ and T₃

↘ significant decrease in altruistic investments (€4) from T₁ to T₂ and T₃

↔ no significant differences in fair investments (€2)

Climate Game Experiments

Conclusions

“to invest resources now in reduced greenhouse emissions is to transfer consumption from ourselves - whoever ‘we’ are who are making these sacrifices - for the benefit of people distant in the future”

Thomas C. Schelling, 1995

- ↪ discounting and inter-generational discounting, in particular, undermine cooperation
- ↪ short term gains can arise only from defection
- ↪ short term incentives required for successful international negotiations to mitigate climate change
- ↪ punishment, reward, honour and shame may serve as promoters



Major oak, Robin Hoods dwelling



260 oak trees were planted in the “Dodauer Forst”

Thank you

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