

EXPERIMENTAL ECONOMICS

SOCIAL PREFERENCES AND SOCIAL NORMS

Ernesto Reuben

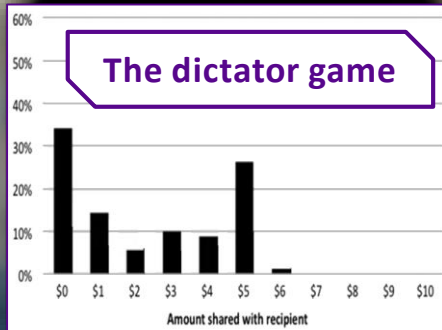
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WHY SOCIAL PREFERENCES?

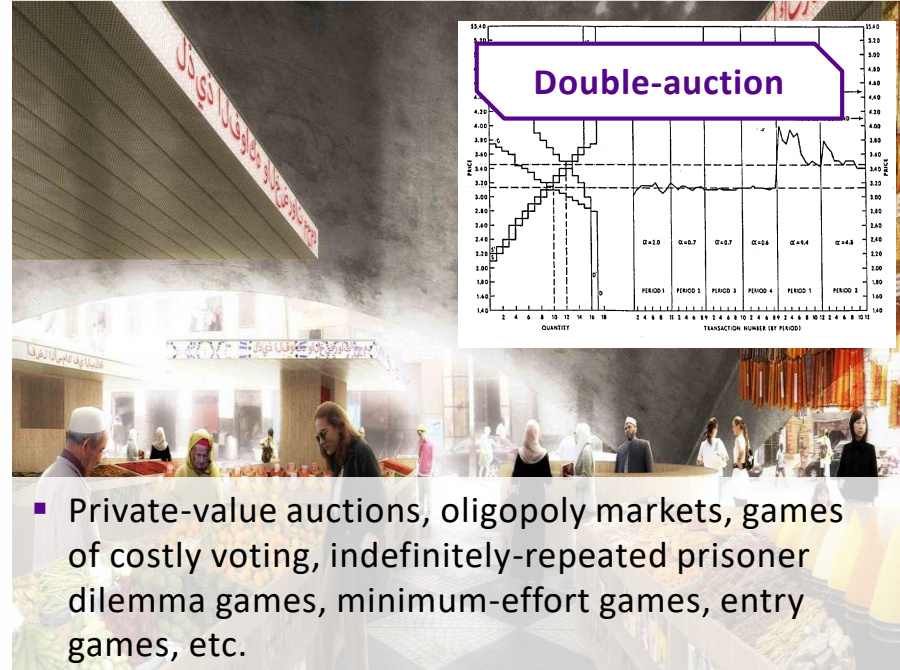


Selfishness is a bad assumption to explain behavior in many games



- Ultimatum game, trust game, moonlighting game, public good games with punishment, gift exchange game, prisoner's dilemma games, rent-seeking games, third-party punishment games, etc.

But selfishness is a very good assumption in many other games



- Private-value auctions, oligopoly markets, games of costly voting, indefinitely-repeated prisoner dilemma games, minimum-effort games, entry games, etc.

Maybe all we need to do is tweak the standard model!

THEORIES OF SOCIAL PREFERENCES



Outcome-based models of social preferences

- Utility depends on own and others' payoffs

$$U_i = U_i(\pi_i, \pi_{-i})$$

- Heterogeneity with regard to the importance given to others' payoffs (e.g., selfish and non-selfish people)

THEORIES OF SOCIAL PREFERENCES



Altruism

$$\partial U_i / \partial \pi_{-i} > 0$$

- Derive utility from the payoff of others (pure altruism) or from personally improving the payoff of others (impure altruism) (**Andreoni 1989**)



Envy / Spite

$$\partial U_i / \partial \pi_{-i} < 0$$

- Derive utility from having a relatively higher payoff compared to that of others (**Bolton 1991, Kirchsteiger 1994**)



THEORIES OF SOCIAL PREFERENCES



Inequity aversion

$$\partial U_i / \partial \pi_{-i} > 0 \text{ if } \pi_i > \pi_{-i}$$

$$\partial U_i / \partial \pi_{-i} < 0 \text{ if } \pi_i < \pi_{-i}$$

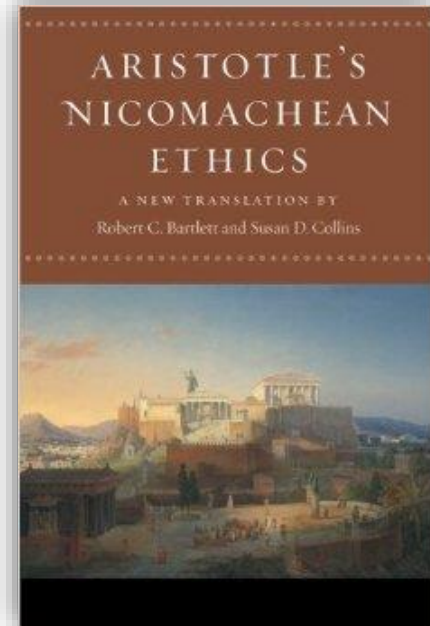
- Dislike differences between my income and the income of others
- **Fehr & Schmidt (1999)**: reference is the individual income of others

$$U_i = \pi_i - [\alpha_i \sum_{j \neq i} \max\{\pi_j - \pi_i, 0\} - \beta_i \sum_{j \neq i} \max\{\pi_i - \pi_j, 0\}] / (N-1)$$

- Dislike of disadvantageous inequality is greater than dislike of advantageous inequality
- **Bolton & Ockenfels (2000)**: reference is the mean income of others

$$U_i = U_i(\pi_i, \pi_i / \sum_j \pi_j)$$

- These models are surprisingly accurate across many games using the same parameters!



THEORIES OF SOCIAL PREFERENCES



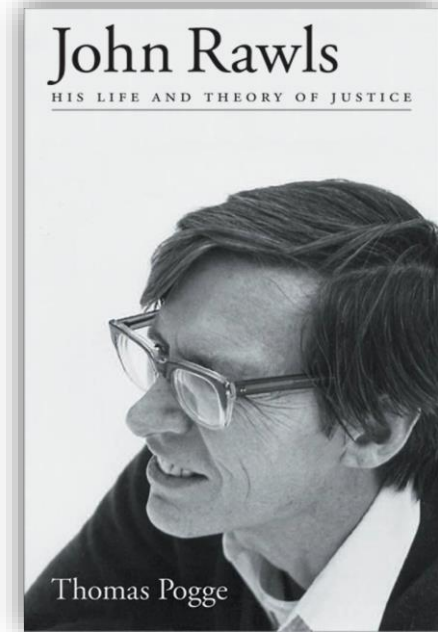
Quasi-maximin preferences

$$\partial U_i / \partial \pi_{-i} > 0$$

$$\partial U_i / \partial \pi_{-i} \gg 0 \text{ if } \pi_{-i} = \min\{\pi_1, \dots, \pi_N\}$$

- People care about the sum of all payoffs (efficiency) and the payoff of the poorest (Rawlsian concerns) (**Charness & Rabin 2002**)

$$U_i = (1 - \gamma)\pi_i + \gamma[\delta \min\{\pi_1, \dots, \pi_N\} + (1 - \delta)(\pi_1 + \dots + \pi_N)]$$



DISENTANGLING THE FAIRNESS MOTIVES



	Choice A	Choice B	Choice C
Receiver 1	17	18	19
Dictator	10	10	10
Receiver 2	9	5	1
Fairness Concept	All		
% Choices	83.8%	10.3%	5.9%

Engelmann & Strobel (2004)

- 120 subjects, one-shot game, between-subjects
- One subject is a dictator and allocates money among the other two subjects

How important are these three “fairness” motives?

- **Equality:** reduce income differences
- **Efficiency:** increase the sum of income
- **Maximin:** increase the income of the worst off

DISENTANGLING THE FAIRNESS MOTIVES



	Choice A	Choice B	Choice C
Receiver 1	17	18	19
Dictator	10	10	10
Receiver 2	9	5	1
Fairness Concept	All		
% Choices	83.8%	10.3%	5.9%

	Choice A	Choice B	Choice C
Receiver 1	11	8	5
Dictator	12	12	12
Receiver 2	2	3	4
Fairness Concept	Efficiency Equality		Maximin
% Choices	26.7%	20.0%	53.3%

	Choice A	Choice B	Choice C
Receiver 1	16	13	10
Dictator	8	8	8
Receiver 2	5	3	1
Fairness Concept	Efficiency Maximin		Equality
% Choices	70.0%	26.7%	3.3%

	Choice A	Choice B	Choice C
Receiver 1	21	17	13
Dictator	9	9	9
Receiver 2	3	4	5
Fairness Concept	Efficiency		Maximin Equality
% Choices	40.0%	23.3%	36.7%

DISENTANGLING THE FAIRNESS MOTIVES



	Choice A	Choice B	Choice C
Receiver 1	14	11	8
Dictator	4	4	4
Receiver 2	5	6	7
Fairness Concept	Efficiency		Equality
% Choices	53.4%	15.5%	31.0%
% Choices	32.7%	15.4%	51.9%

NOT economics & business students

Economics & business students

The economists effect?

- **Engelmann & Strobel (2004)** use only business and economics subjects
- With other subjects (mostly other social sciences) inequity aversion does better (**Fehr et al. 2006**)

STRUCTURAL ESTIMATES OF SOCIAL PREFERENCES



Bruhin et al. (2018)

- A different approach is to make few assumptions about specific types of preferences and estimate them from the data.
- Assume A's utility is given by

$$U_A = (1 - \alpha s - \beta r - \gamma q - \delta v)\Pi_A + (\alpha s + \beta r + \gamma q + \delta v)\Pi_B$$

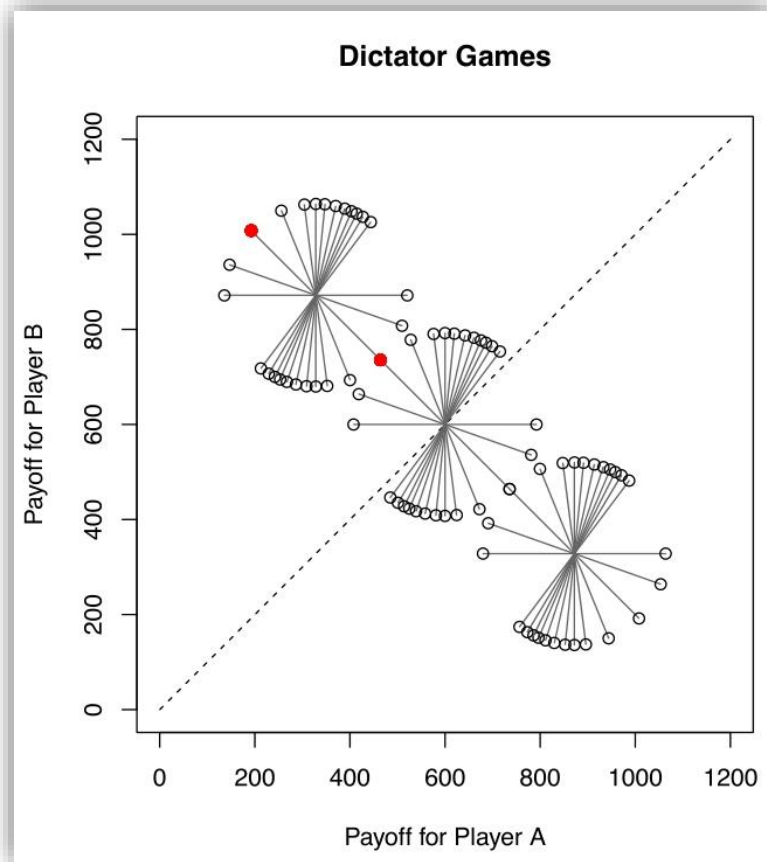
- $s = 1$ if $\Pi_A < \Pi_B \rightarrow$ disadvantageous inequality
- $r = 1$ if $\Pi_A > \Pi_B \rightarrow$ advantageous inequality
- $q = 1$ if B was kind to $A \rightarrow$ positive reciprocity
- $v = 1$ if B was unkind to $A \rightarrow$ negative reciprocity

STRUCTURAL ESTIMATES OF SOCIAL PREFERENCES



Bruhin et al. (2018)

- Subjects play 39 dictator games with two allocations (X_A, X_B) and (Y_A, Y_B) and 78 reciprocity games where B makes a prior decision between allocation (Z_A, Z_B) or letting A play a subsequent dictator game
- Estimate parameters using a random utility model with either **population** level parameters, parameters based on a **finite mixture** model, and **individual** level parameters



STRUCTURAL ESTIMATES OF SOCIAL PREFERENCES



Bruhin et al. (2018)

- **Population:** Evidence of altruism but stronger when in the advantageous position, and of both positive and negative reciprocity
- **Finite mixture:** Three types with a strongly altruistic and reciprocal, a moderately altruistic and negatively reciprocal, and an envious type

	Strongly altruistic	Moderately altruistic	Behindness averse
α	0.193***	0.061***	-0.328***
β	0.494***	0.095***	-0.048
γ	0.099***	-0.005	-0.028
δ	-0.082***	-0.019***	-0.015

	Population estimate
α	0.098***
β	0.245***
γ	0.029***
δ	-0.043***

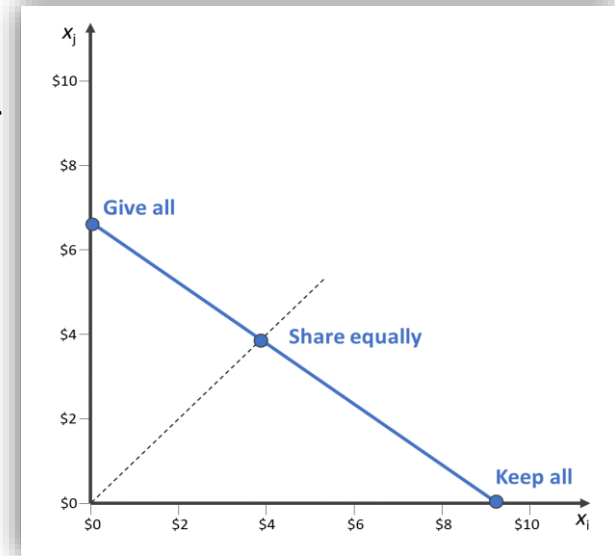
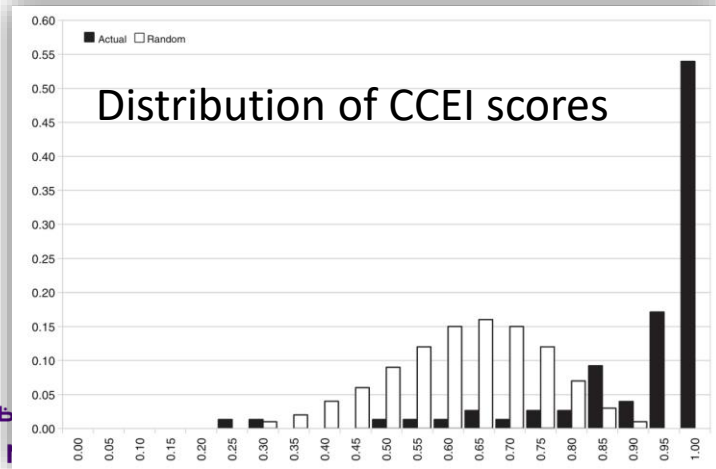
- **Individual:** Mean individual parameters are consistent with aggregate estimates
- Finite mixture model does as well as the individual parameters in predicting future behavior

CONSISTENCY OF SOCIAL PREFERENCES



Fisman et al. (2007)

- Subjects play many **two-person** or **three-person** dictator games with varying prices of giving (budget sets) and using a graphical interphase
- High levels of consistency: 70% of two-person dictators and 75% of three-person dictators have a CCEI > 0.95



But some caution ...

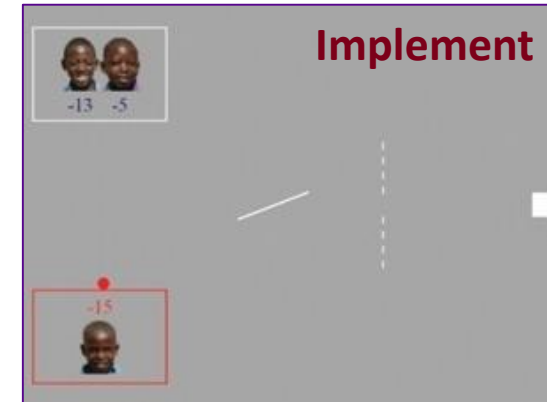
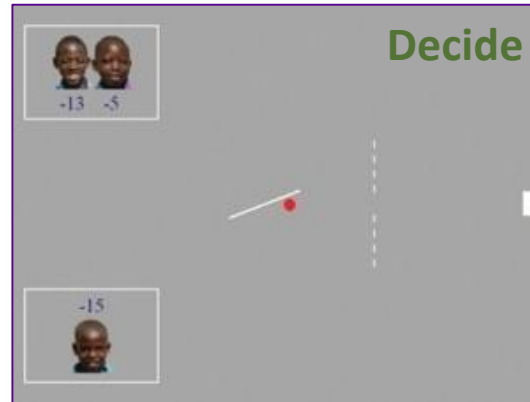
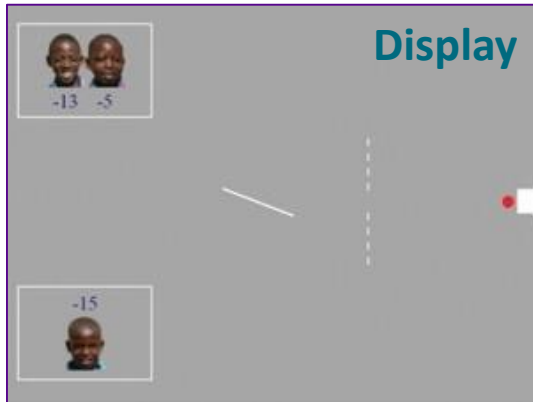
- Erkut (2017)** finds a significantly positive correlation between generosity and GARP violations:
 - Dictators with a CCEI smaller than 0.95 gave away 41% while dictators with a CCEI greater than 0.95 gave away only 12%

NEURAL CORRELATES OF OTHER-REGARDING CONCERNS



Hsu et al. (2008)

- Are there differences in how we take into account different other-regarding concerns?
 - 26 subjects make many decisions where they have a tradeoff between **equality** (allocating a large food shortage among 2 children) and **efficiency** (allocating a smaller food shortage to 1 child)

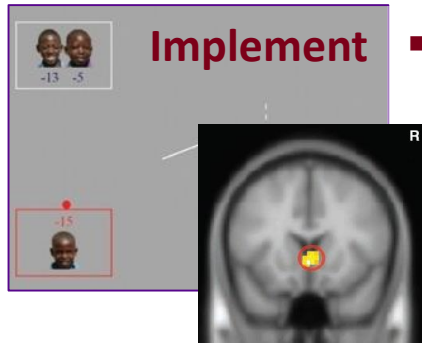


NEURAL CORRELATES OF OTHER-REGARDING CONCERNS

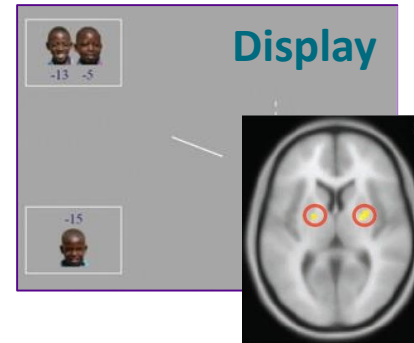


Hsu et al. (2008)

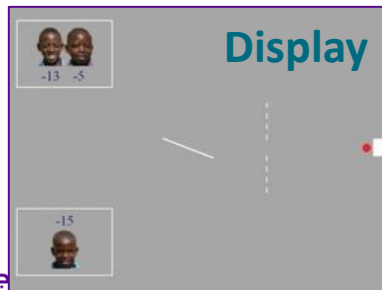
- Are there differences in how we take into account different other-regarding concerns?



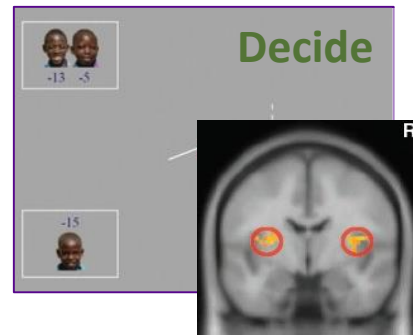
- Activation in the caudate-septal region correlates with both concerns



- Activation in putamen/striatum correlates only with efficiency



+

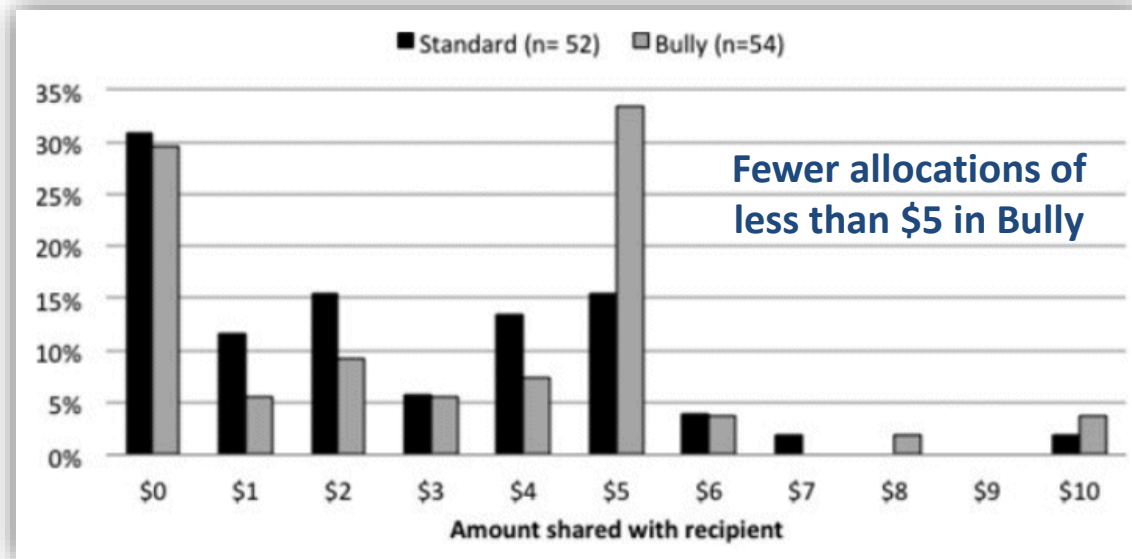


- Activation in the insula correlates only with equality

LIMITATIONS OF THE OUTCOME-BASED APPROACH



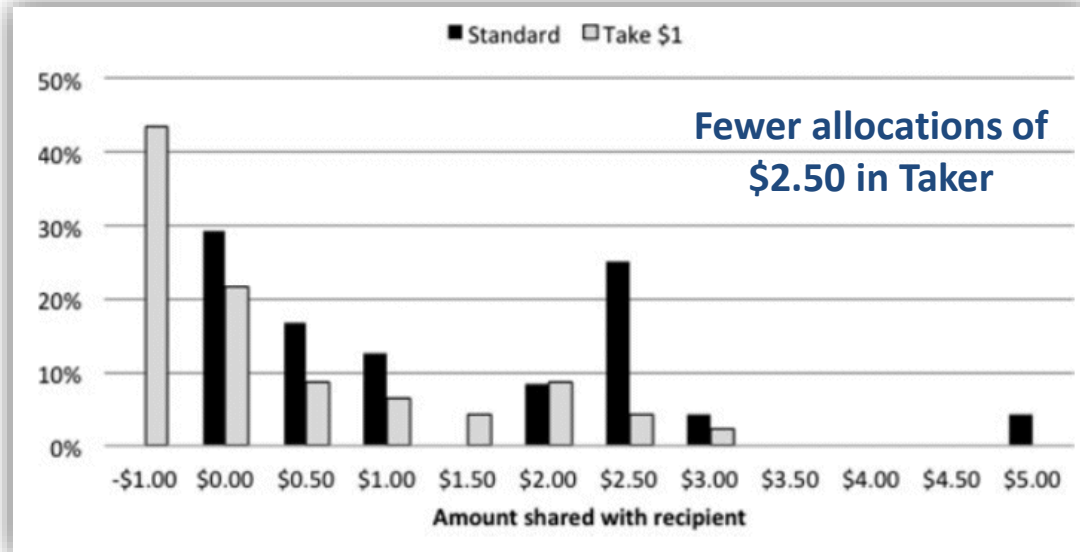
- **Dictator** starts with \$10 and the receiver with \$0. The dictator chooses $g_i \in [\$0, \$10]$ to give to the receiver
- **Bully** starts with \$5 and the receiver with \$5. The bully decides how much $g_i \in [-\$5, \$5]$ to give to/take from the receiver (**Krupka & Weber 2013**)



LIMITATIONS OF THE OUTCOME-BASED APPROACH



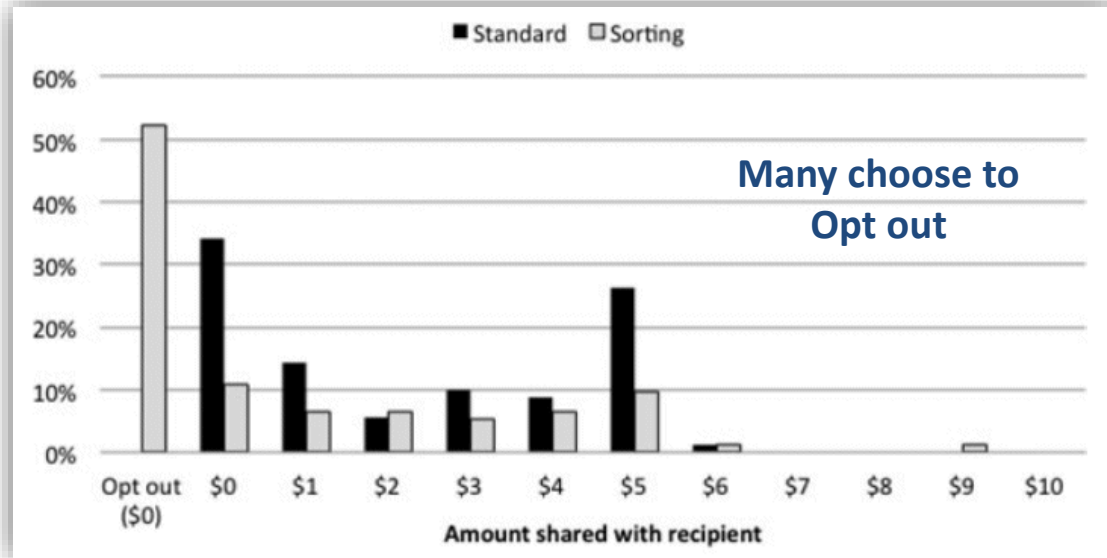
- **Dictator** chooses $g_i \in [\$0, \$5]$ to give to the receiver
- **Taker** chooses between taking \$1 or giving an amount $g_i \in [\$0, \$5]$ to the receiver (**List 2007, Bardsley 2008**)



LIMITATIONS OF THE OUTCOME-BASED APPROACH



- **Dictator** chooses $g_i \in [\$0, \$10]$ to give to the receiver
- **Sorting** dictator chooses between **opting out** (receiver doesn't know a game was played) or giving an amount $g_i \in [\$0, \$10]$ to the receiver (**Lazear et al. 2012**)



FAIR BEHAVIOR AS AN INTERNALIZED SOCIAL NORM



Do we behave fairly to comply with a social norm? What is the difference between social norms and social preferences?

Defining social norms (Bicchieri 2006)

- An **internalized social norm** is a preference to comply with the prescribed behavior if:
 - You expect sufficiently many others will also comply → **empirical expectations**
 - You expect sufficiently many others think one **should** comply → **normative expectations**
- Note that:
 - Norms prescribe **conditional actions**, not outcomes
 - A preference to comply with a norm does not mean the norm is always followed → there is still scope for cost-benefit analysis

MEASURING SOCIAL NORMS



Krupka & Weber (2013)

- 199 subjects rate the extent to which each action in the various dictator games is **socially appropriate** and **consistent with moral or proper social behavior**
very socially inappropriate ○ ○ ○ ○ ○ ○ **very socially appropriate**
- Subjects earn \$10 if their response matches the modal response → coordination game
- Use the elicited social norms to predict behavior out of sample assuming that the utility one derives from each action k is given by

$$u(a_k) = \beta\pi(a_k) + \gamma N(a_k)$$

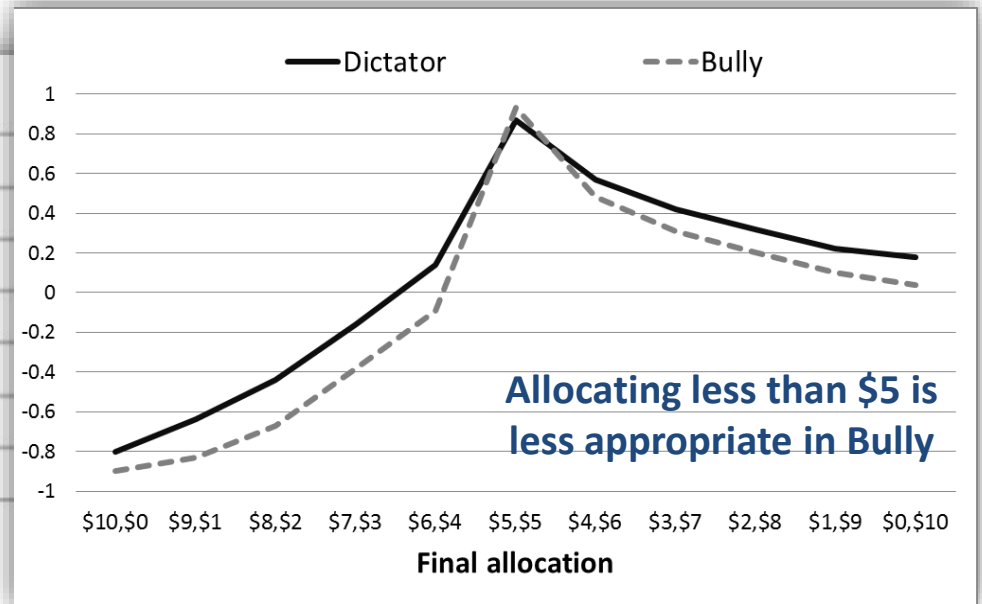
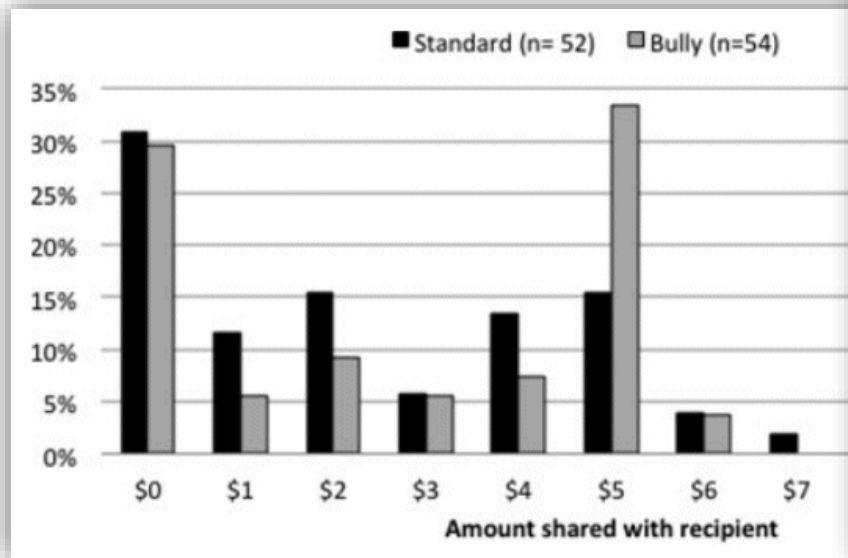
- where $N(a_k)$ is the mean appropriateness rating given to action k

LIMITATIONS OF THE OUTCOME-BASED APPROACH



Krupka & Weber (2013)

- **Bully** starts with \$5 and the receiver with \$5. The bully decides how much $g_i \in [-\$5, \$5]$ to give to/take from the receiver

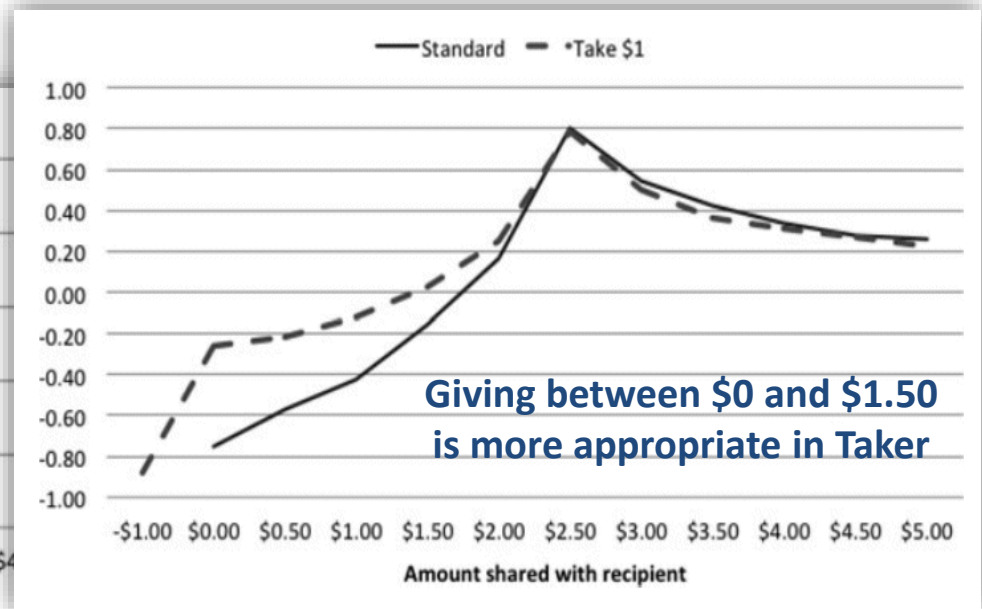
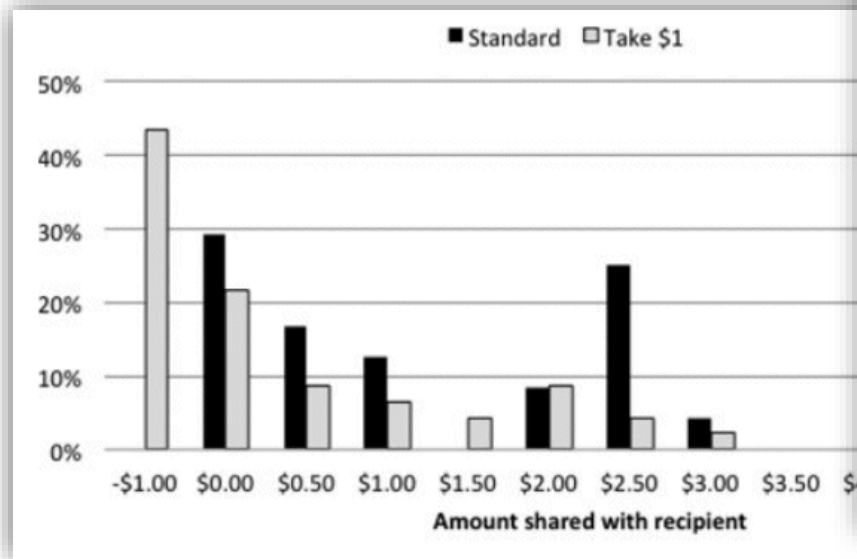


LIMITATIONS OF THE OUTCOME-BASED APPROACH



Krupka & Weber (2013)

- **Taker** chooses between taking \$1 or giving an amount $g_i \in [\$0, \$5]$ to the receiver

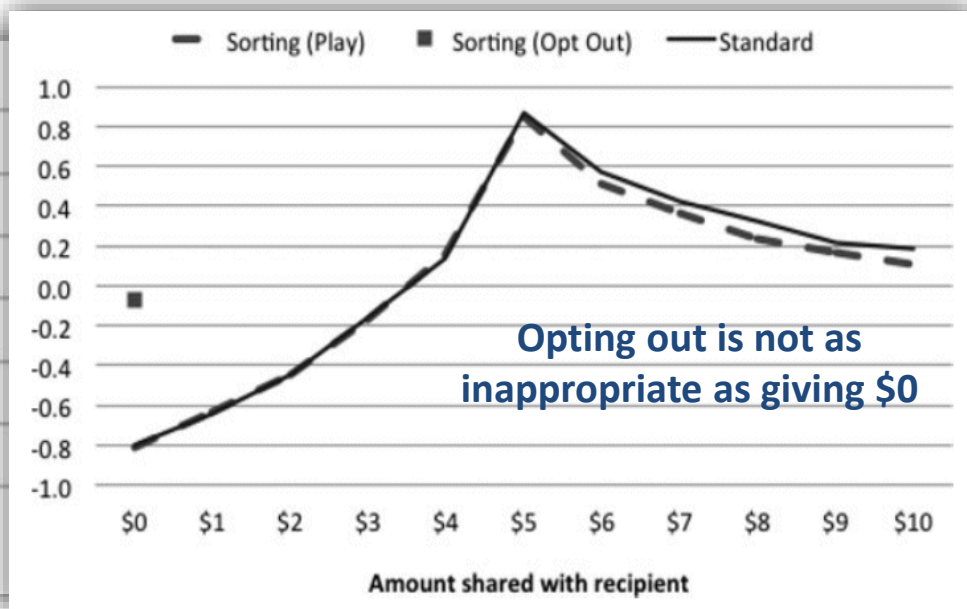
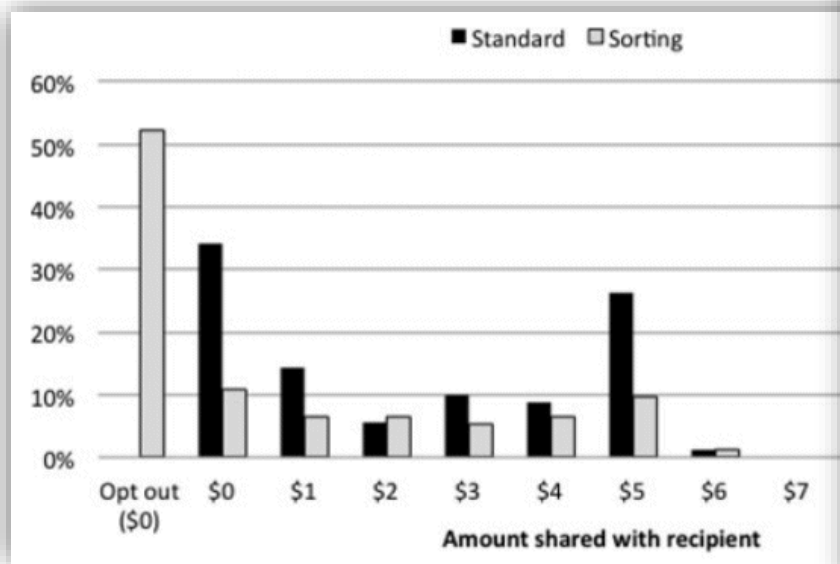


LIMITATIONS OF THE OUTCOME-BASED APPROACH



Krupka & Weber (2013)

- **Sorting** dictator chooses between **opting out** (receiver doesn't know a game was played) or giving an amount $g_i \in [\$0, \$10]$ to the receiver



MEASURING SOCIAL NORMS



- **Krupka & Weber (2013)** is great because it is an incentivized method but:
 - Assumes subjects will use their second-order normative expectations as a focal point to solve the coordination game but it is hard to know if this is true
 - Does not capture well situations where there is normative disagreement

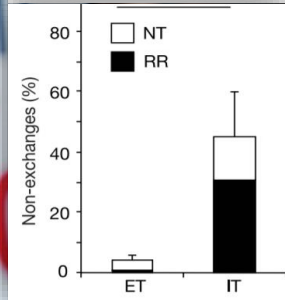
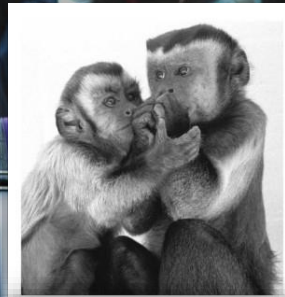
Other methods to elicit social norms

- **Bicchieri & Xiao (2009)**
 - Subjects rate how socially appropriate actions are [**non-incentivized**]
 - Ask subjects to predict the ratings others made in 1. [**incentivized**]
- **Reuben et al. (2018)**
 - Ask subjects to make third-party dictator decisions according to what they think is most socially appropriate [**incentivized?**]
 - Ask subjects to predict the choices others made in 1. [**incentivized**]

PUNISHMENT



It is also obvious that we are willing to incur costs to protest unfairness



How do we model this willingness to punish?

Approaches to punishment

- Outcome-based models of **envy** or **inequity aversion** can explain punishment
 - but no punishment of actions, only outcomes
- Punishment of selfish/spiteful **preferences**
- Punishment of intentionally unkind **actions**
- Punishment of deviations from **social norms**

MORE THEORIES OF SOCIAL PREFERENCES



Type-based models of social preferences (Levine 1998)

- Individuals have a desire to reward people who have altruistic preferences and punish those who have selfish/spiteful preferences
- Utility depends on own payoff, others' payoff because of own altruism/spite, and expectations of the others' degree of altruism/spite

$$U_i = U_i(\pi_i, \pi_{-i}(\theta_i, E_i[\theta_{-i}]))$$

- Individuals do not know others' preferences but make inferences based on their actions
→ **signaling game**



MORE THEORIES OF SOCIAL PREFERENCES



Intention-based models of social preferences

- Models of kind/unkind intentions that trigger a desire to reward/punish others
 - Kindness depends on how nice I think you treated me depending on (my beliefs about) what you thought your alternatives were (**Rabin 1993, Dufwenberg & Kirchsteiger 2004**) and the resulting income differences (**Falk & Fischbacher 2006**)
- Utility depends on own, others' payoffs, an evaluation of what could have been done (strategies), and expectations of behavior (first- and second-order)



$$U_i = U_i(\pi_i, \pi_{-i}, s_i, s_{-i}, E_i[s_{-i}], E_i[E_{-i}[s_i]])$$

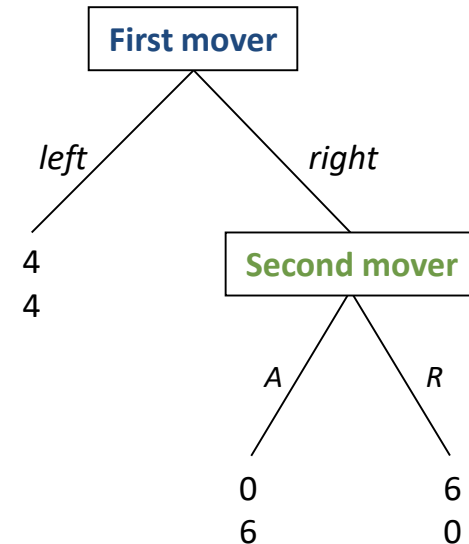
INTENTIONS AND THE IMPORTANCE OF BELIEFS



Dufwenberg and Kirchsteiger (2004)

- If the first mover chooses **right**, is he being kind to the second mover?
 - Depends on his **belief of what the second mover will do!**
- Since kindness affects your preferences → **beliefs have a direct effect on utility**
- Requires the use of psychological game theory (**Geanakoplos et al. 1989**)

The game



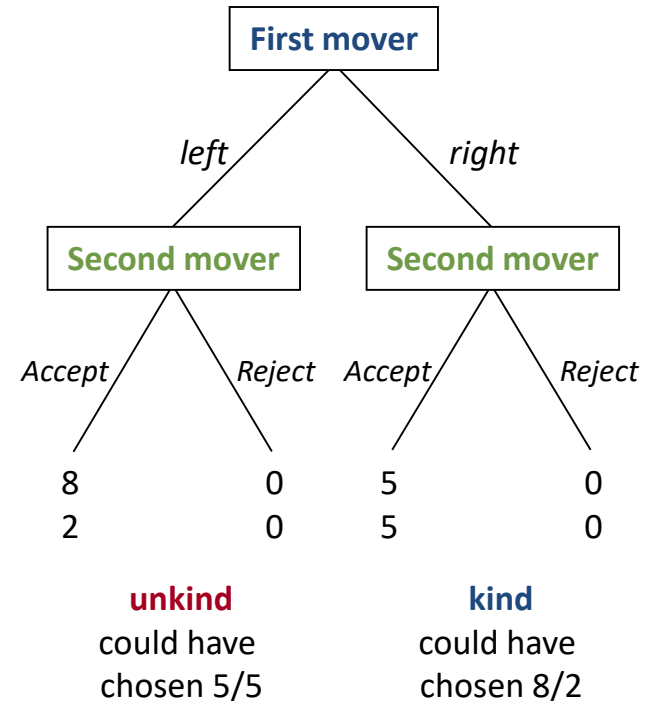
PUNISHMENT AND INTENTIONS



Falk & Fischbacher (2006)

- Kindness depends on how the first mover's action affects **relative payoffs** ($\pi_i - \pi_j$) and the first mover's **intentions**
- Right: intentionally kind**
 - not an advantageous position and had an alternative to be less generous
- Left: intentionally unkind**
 - advantageous position and had a reasonable alternative to be more generous

The mini-ultimatum game



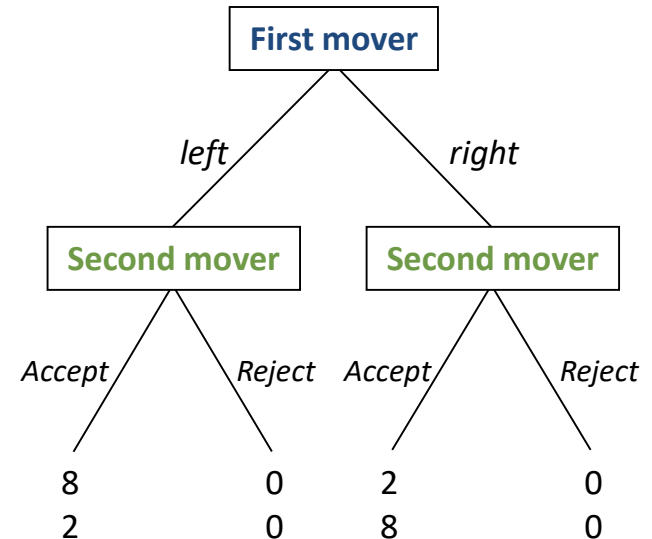
PUNISHMENT AND INTENTIONS



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- **Right: intentionally kind**
 - not an advantageous position and had an alternative to be less generous
- **Left: neither kind nor unkind**
 - advantageous position but did not have a reasonable alternative to be more generous

The mini-ultimatum game



**neither kind
nor unkind**
choosing 2/8
is unreasonable

kind
could have
chosen 8/2

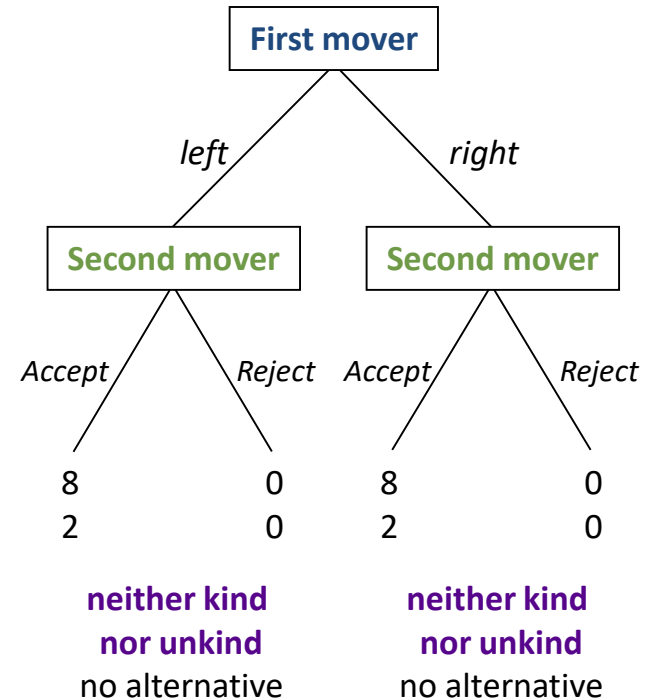
PUNISHMENT AND INTENTIONS



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- *Right*: **neither kind nor unkind**
 - advantageous position but had no alternative to be more generous
- *Left*: **neither kind nor unkind**
 - advantageous position but had no alternative to be more generous

The mini-ultimatum game



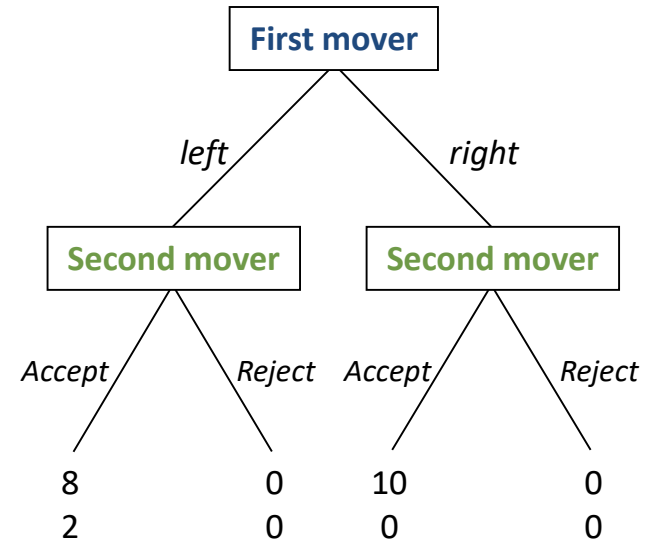
PUNISHMENT AND INTENTIONS



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- **Right: intentionally unkind**
 - advantageous position and had a reasonable alternative to be more generous
- **Left: neither kind nor unkind**
 - advantageous position but did not have a reasonable alternative to be more generous

The mini-ultimatum game



**neither kind
nor unkind**
8/2 is advantageous
to the first mover

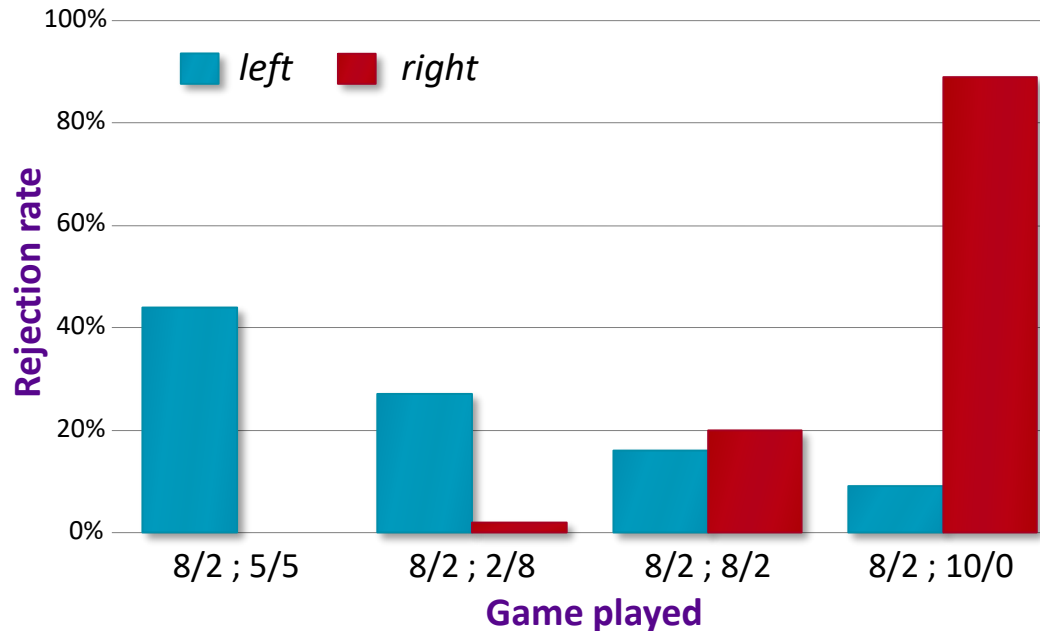
unkind
could have
chosen 8/2

PUNISHMENT AND INTENTIONS



Falk et al. (2003, 2008)

- 90 subjects play mini-ultimatum games using the strategy method (one paid at random)
- Intentions matter → rejection of 8/2 varies significantly depending on the alternative!



PUNISHMENT ACROSS SOCIETIES



Ultimatum games in 15 small-scale societies (Henrich et al. 2005)

- Large variation in living styles and conditions
 - From nomadic foragers to sedentary farmers
 - From tropical forests to a high-altitude desert

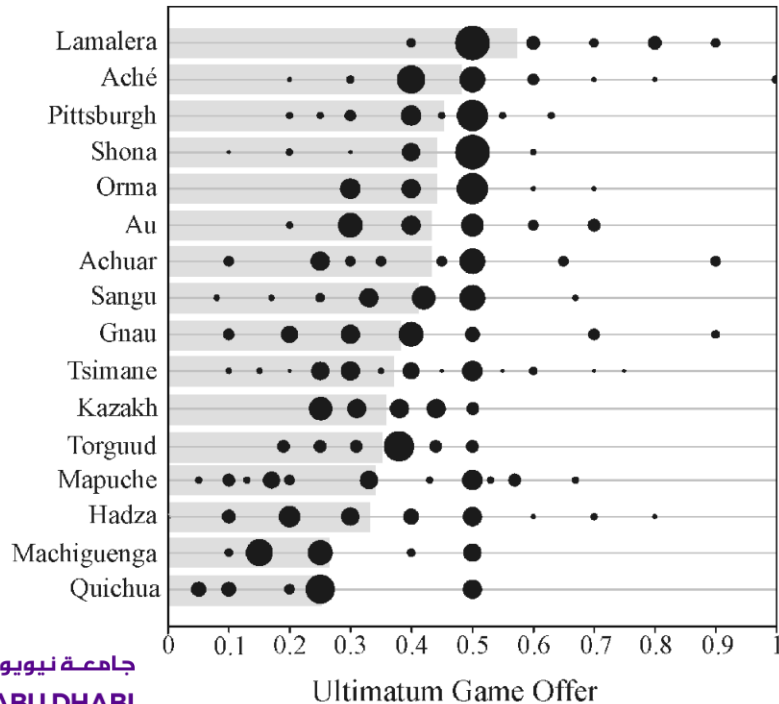


PUNISHMENT ACROSS SOCIETIES

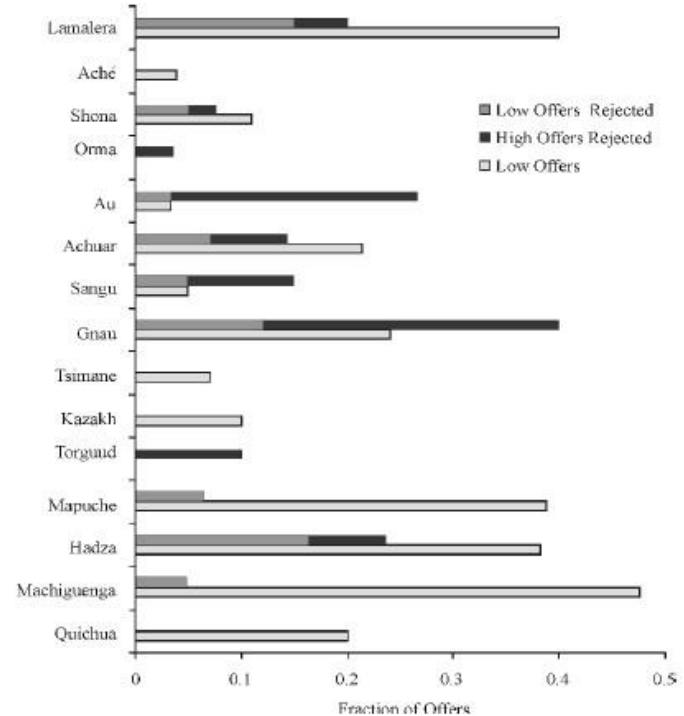


Ultimatum games in 15 small-scale societies (Henrich et al. 2005)

Offers



Rejection

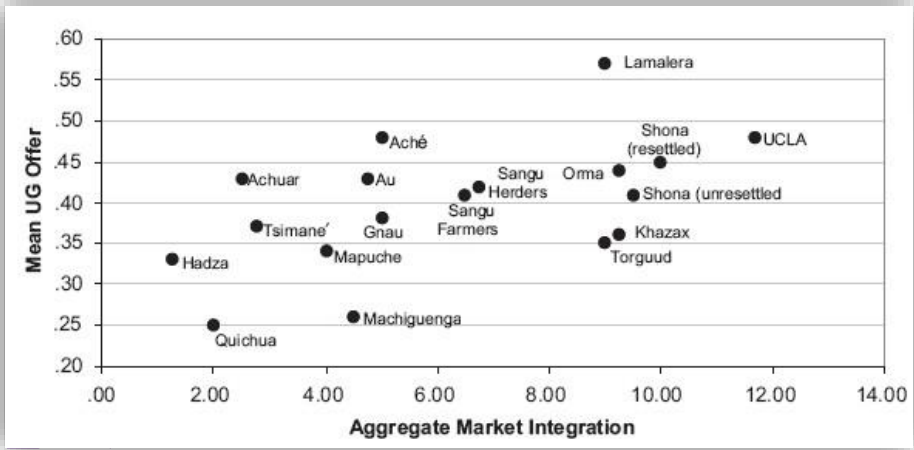
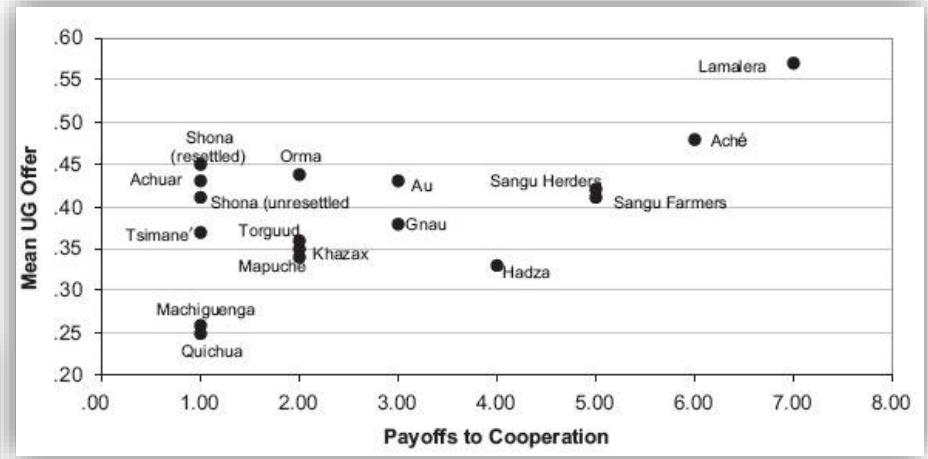


PUNISHMENT ACROSS SOCIETIES



Ultimatum games in 15 small-scale societies (Henrich et al. 2005)

- Positive association between the importance of cooperation in everyday life and high offers



- Positive relationship between market integration and high offers

THEORIES OF SOCIAL NORMS



Punishment as sanctioning of deviations of social norms

- A preference to punish **intentional deviations of a social norm** as long as you expect sufficiently many others think one **should** comply with the norm
- Note that:
 - Here intentionality is judged compared to a commonly-shared norm, not kindness/unkindness towards an individual
 - A preference to punish does not mean one always punishes → still scope for cost-benefit analysis

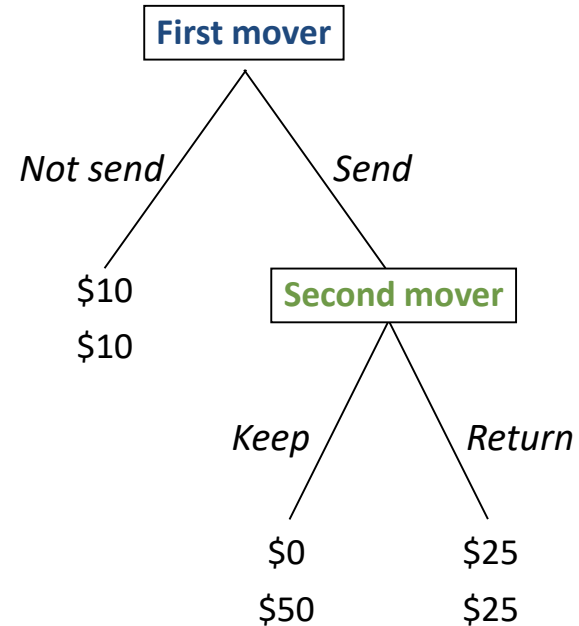
EXTERNAL ENFORCEMENT OF SOCIAL NORMS



Why punish? (Quervain et al. 2004)

- PET scan while making the punishment decision
- **Intentional and costly:** \$1 for every \$2 reduction
- **Intentional and free:** reduce up to \$40 for free
- **Intentional and symbolic:** free but harmless
- **Non-intentional and costly:** \$1 for every \$2 reduction but the second mover's decision is taken by a computer

The game



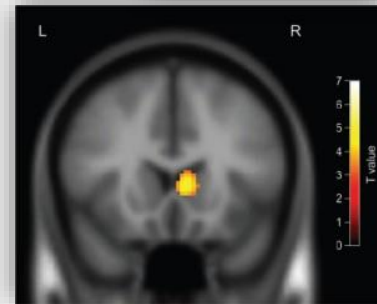
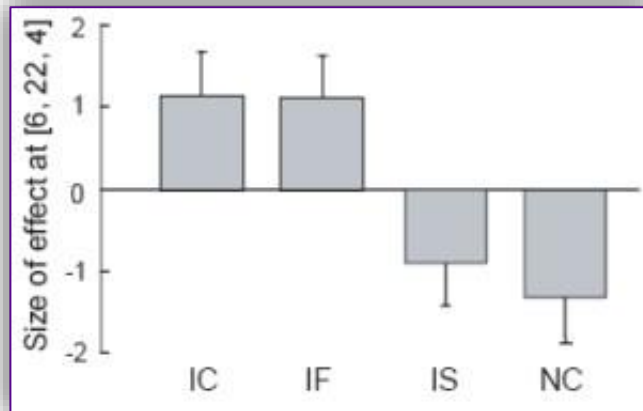
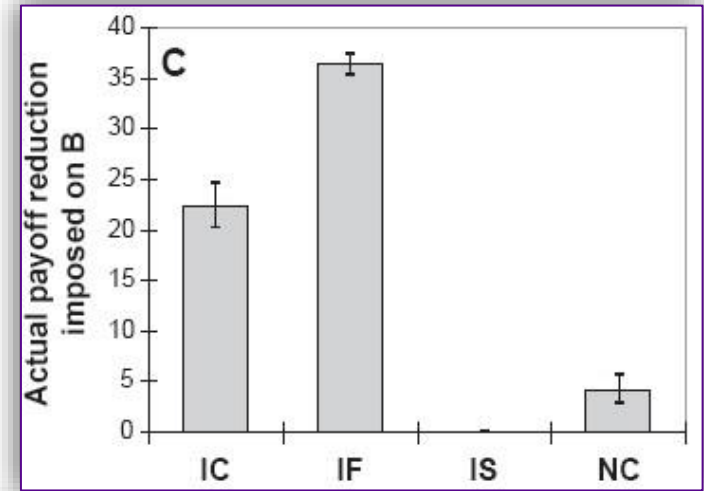
+ First mover can punish the second mover

EXTERNAL ENFORCEMENT OF SOCIAL NORMS



Why punish? (Quervain et al. 2004)

- Sweet taste of revenge: evidence that people who have the option to **effectively punish** (cause harm) a norm violator feel the need to do so
- If punishing is costly, then one must compare the costs and (psychological) benefits of punishment



EXTERNAL ENFORCEMENT OF SOCIAL NORMS

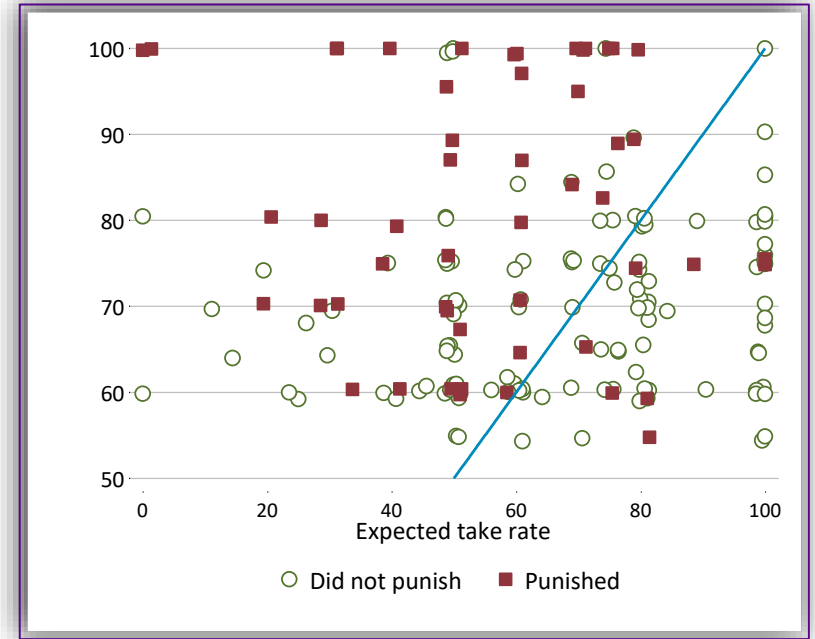


Punishment and the role of expectations

- Power-to-take game (**Bosman & van Winden 2002**)
 - Both proposer and responder get \$10
 - Proposer chooses a take rate
 - Responder punishes by destroying up to \$10 of his/her own endowment

$$\pi_p = 10 + \text{take rate} \times (10 - \text{amount destroyed})$$

$$\pi_r = (1 - \text{take rate}) \times (10 - \text{amount destroyed})$$



- Punishment is triggered by high take rates and low **expected** take rates

EXTERNAL ENFORCEMENT OF SOCIAL NORMS



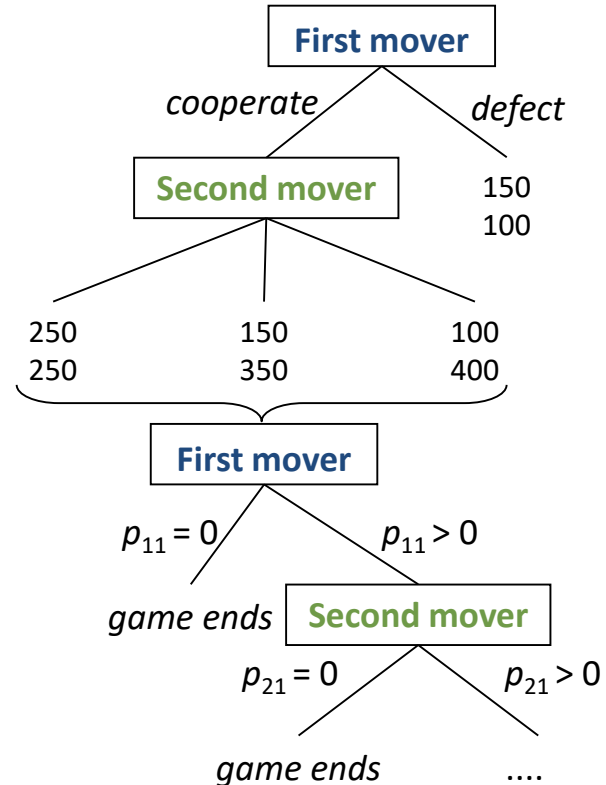
For punishment to be effective

- Punished subjects should switch to cooperation
- Punished subjects should not punish back

Hopfensitz & Reuben (2009)

- Subjects play 2 periods of a trust game with either **no punishment** or **'infinite' rounds of punishment** (costs 1 point to reduce 4 points)
- Perfect strangers matching and emotions are measured before making decisions

Trust game with punishment



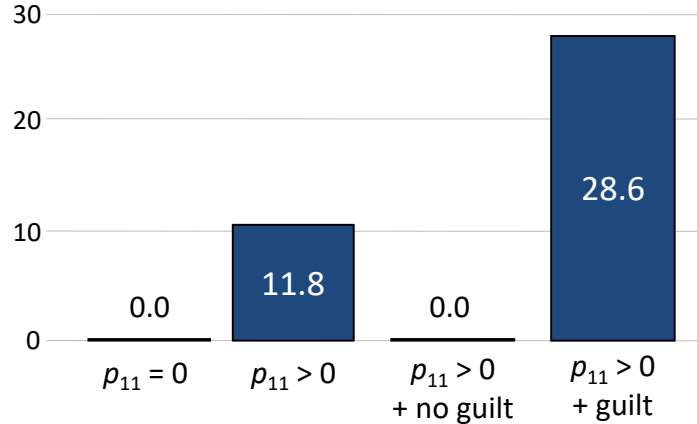
EXTERNAL ENFORCEMENT OF SOCIAL NORMS



Hopfensitz & Reuben (2009)

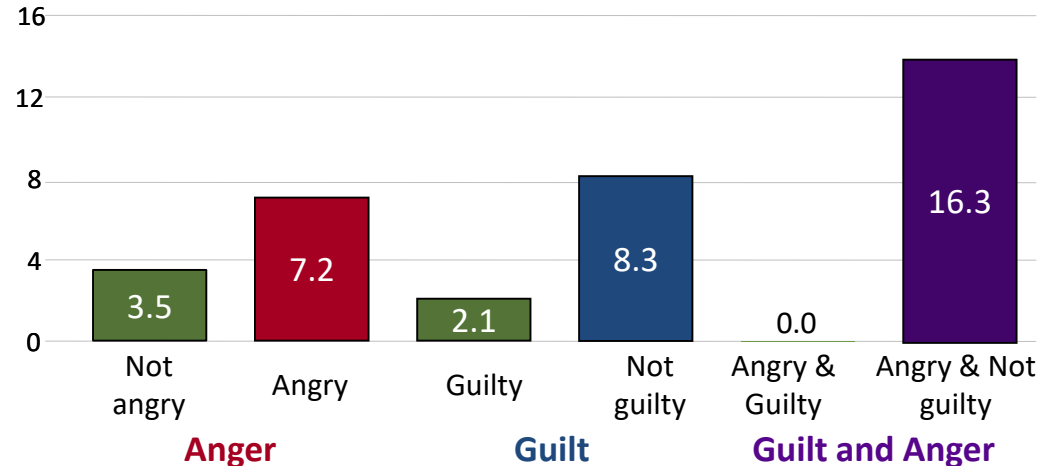
- Second movers cooperate after being punished only if they feel guilt

Percentage of second movers who increase the amount returned



- Second movers retaliate after receiving punishment if they are angry and do not fill guilty

Amount of retaliation depending on ...



THE RIGHT MODEL OF SOCIAL PREFERENCES?



A compelling model of social preferences ought to have the following characteristics

- A **preference to comply** with a **social norm** and **punish** those who behave differently
- The **social norm** corresponds to (one's belief of) a common expectation by others concerning the right way to behave → **normative expectations**
 - Deviating from the social norm causes guilt
- Punishment is conditional on there being an **intentional** deviation from the norm
 - Observing intentional deviations triggers anger
 - Being punished for intentionally deviating causes guilt
 - Intentions are judged based on the empirical and normative expectations of others
- Compliance with the norm and punishment of deviations are conditional on sufficiently many others complying → **empirical expectations**

INGROUP FAVORITISM AND SOCIAL PREFERENCES



In-group favoritism: behavior favoring in-group members over out-group members

- Induced in the lab by randomly allocating subjects to groups (minimal groups)



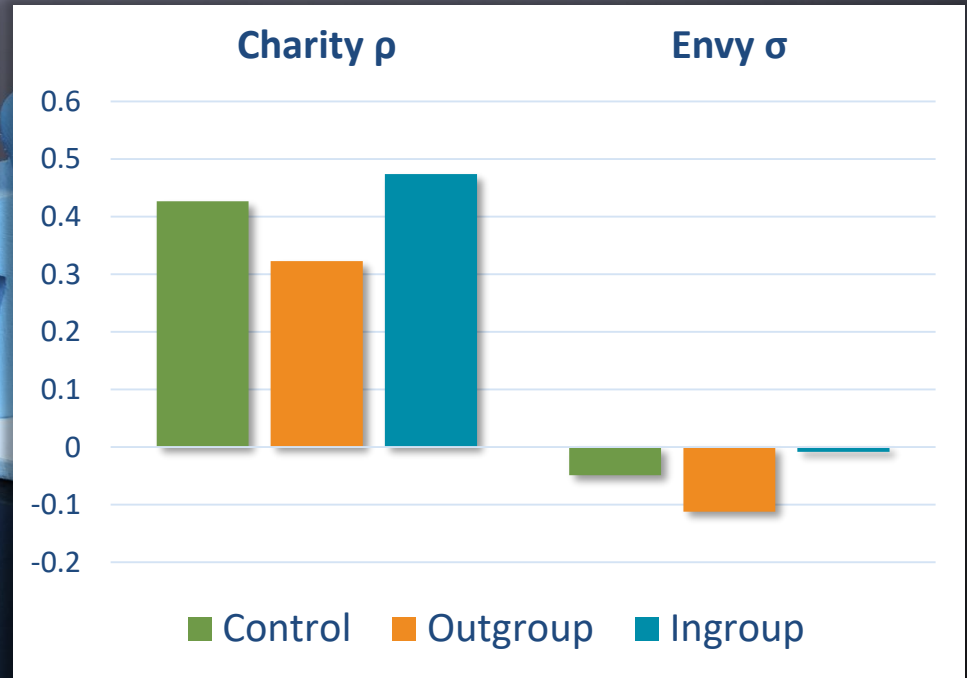
INGROUP FAVORITISM AND SOCIAL PREFERENCES



How does **in-group favoritism** affect social preferences? (Chen & Li 2009)

$$U_B(\pi_A, \pi_B) = \begin{cases} \sigma\pi_A + (1 - \sigma)\pi_B & \text{if } \pi_A > \pi_B \\ \rho\pi_A + (1 - \rho)\pi_B & \text{if } \pi_A < \pi_B \end{cases}$$

More charity toward an ingroup than that toward an outgroup.
More envy toward an ingroup than that toward an outgroup match



INGROUP FAVORITISM AND SOCIAL NORMS



What does **ingroup favoritism** imply for the **enforcement of social norms**? Do we enforce norms more/less severely if the norm violator is an ingroup member?



INGROUP FAVORITISM AND SOCIAL NORMS



Goette et al. (2012)

- Two players of different groups play a cooperation game, after which they can be punished by a third player

Outgroup sanctioning for hurting **outgroup**



Ingroup sanctioning for hurting **outgroup**



Outgroup sanctioning for hurting **ingroup**



INGROUP FAVORITISM AND SOCIAL NORMS



Goette et al. (2012)

- Two players of different groups play a cooperation game, after which they can be punished by a third player

Weak group identity



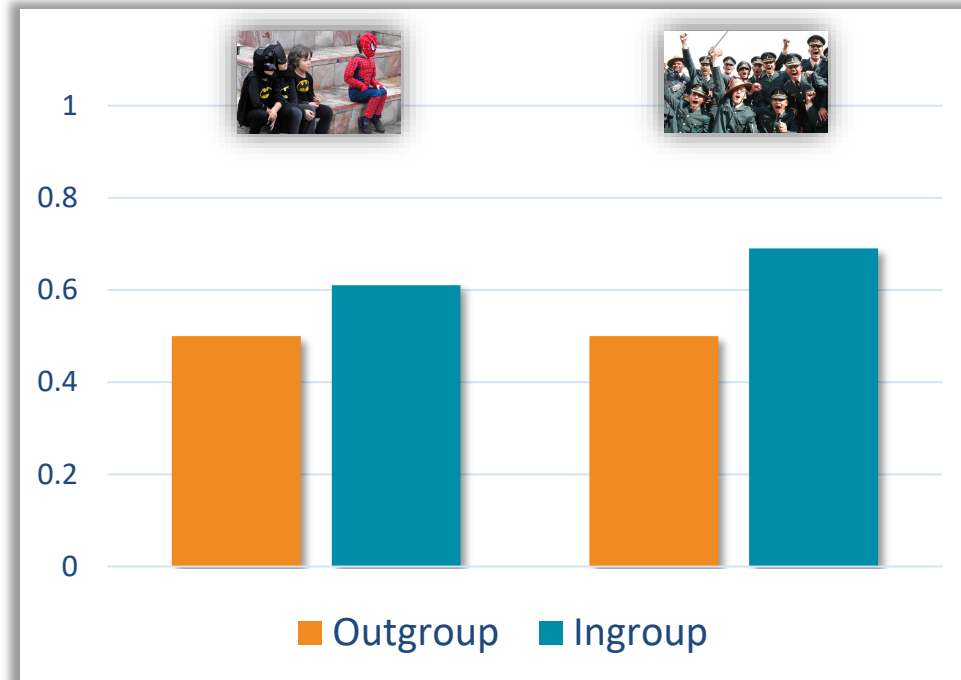
Strong group identity



INGROUP FAVORITISM AND SOCIAL NORMS



Ingroup favoritism in cooperation



INGROUP FAVORITISM AND SOCIAL NORMS



Ingroup favoritism in punishment



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