

Experimental Economics

- **Social Preferences**
 - Models of social preferences
 - Outcome-based models
 - Inequality
 - Efficiency
 - Fairness or envy?
 - Intention-based models
 - Intentions and reciprocity
 - Second-order beliefs

Fairness & Reciprocity

- **Fairness**
 - Unconditional behavior
 - Relative to a reference standard
- **(Strong) Reciprocity**
 - Positive reciprocity
 - Rewarding kind behavior at a cost (and without strategic incentives)
 - Negative reciprocity
 - Punishing unkind behavior at a cost (and without strategic incentives)

Fairness or Selfishness?

- **Ultimatum game**
 - Lots of fairness?
 - High offers: 38%
 - High rejection rates: 50%
 - Low inequality: 1.6 (proposer/responder earnings ratio)
- **Ultimatum game with competition Fischbacher et al. 2003**
 - 1 responder more
 - Offers went down: 31%
 - Rejection rates went down: 33%
 - Inequality went up: 2.2 (proposer/responder earnings ratio)
 - 4 responders more
 - Offers are even lower: 16%
 - Rejection rates too go down: 7%
 - Inequality is even higher: 5.2 (proposer/responder earnings ratio)

Outcome-based models

- **Background**

- The standard model successfully explains behavior in many games:
 - Double-auction markets, ultimatum games with proposer/responder competition, auctions, markets with Bertrand competition, voting games, repeated public good games, minimum-effort games, etc.
- But not in others:
 - Ultimatum game, trust game, moonlighting game, public good games with punishment, gift exchange game, prisoner's dilemma games, rent-seeking games.
- But even then, the standard model can explain some of the behavior in this games
 - Proposers in ultimatum games, trustors in trust games, cooperation in public good games with punishment, firms in gift exchange games, etc.
- Maybe we just need to tweak the standard model a bit.

Outcome-based models

- **Modeling fairness**

- Assume social preferences

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

- Utility depends on *own* and others' payoffs
- Heterogeneity with regard to the importance given to fairness
 - Types of players (selfish and non-selfish)

Outcome-based models

- **Modeling fairness**

- **Examples**

- Altruism

- Andreoni (1989) Cox, Friedman and Gjerstad (2004)

- Inequity aversion

- Fehr and Schmidt (1999) Bolton and Ockenfels (2000)

- Quasi-maximin preferences

- Rawls(1971) Charness and Rabin (2002)

- Spitefulness

- Levine (1998)

- Reciprocity

- Rabin (1993) Dufwenberg and Kirchsteiger (2004) Falk and Fischbacher (2006)

- Social emotions and guilt aversion

- Bowels & Gintis (2000) Charness and Dufwenberg (2004)

Models of inequity aversion

- **Fehr and Schmidt (1999) (F&S)**

- Dislike differences between *my* income and the income of others
 - The dislike of disadvantageous inequality is greater than the dislike of advantageous inequality

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

- **Bolton and Ockenfels (2000) (B&O)**

- Dislike differences between *my* income and the mean income of others

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

Models of inequity aversion

- **What they explain (F&S, B&O)**
 - Ultimatum game: rejection of low offers and proposers making high offers
 - Trust game: trust and trustworthy behavior
 - Gift exchange game: high wages and high effort
 - Public goods games: low contributions without punishment and high contributions with punishment
 - Ultimatum game with competition (and other markets): Subjects “accept” more inequity so standard prediction prevails.
- **These models are surprisingly accurate across many games using the same set of parameters!**

Models of inequity aversion

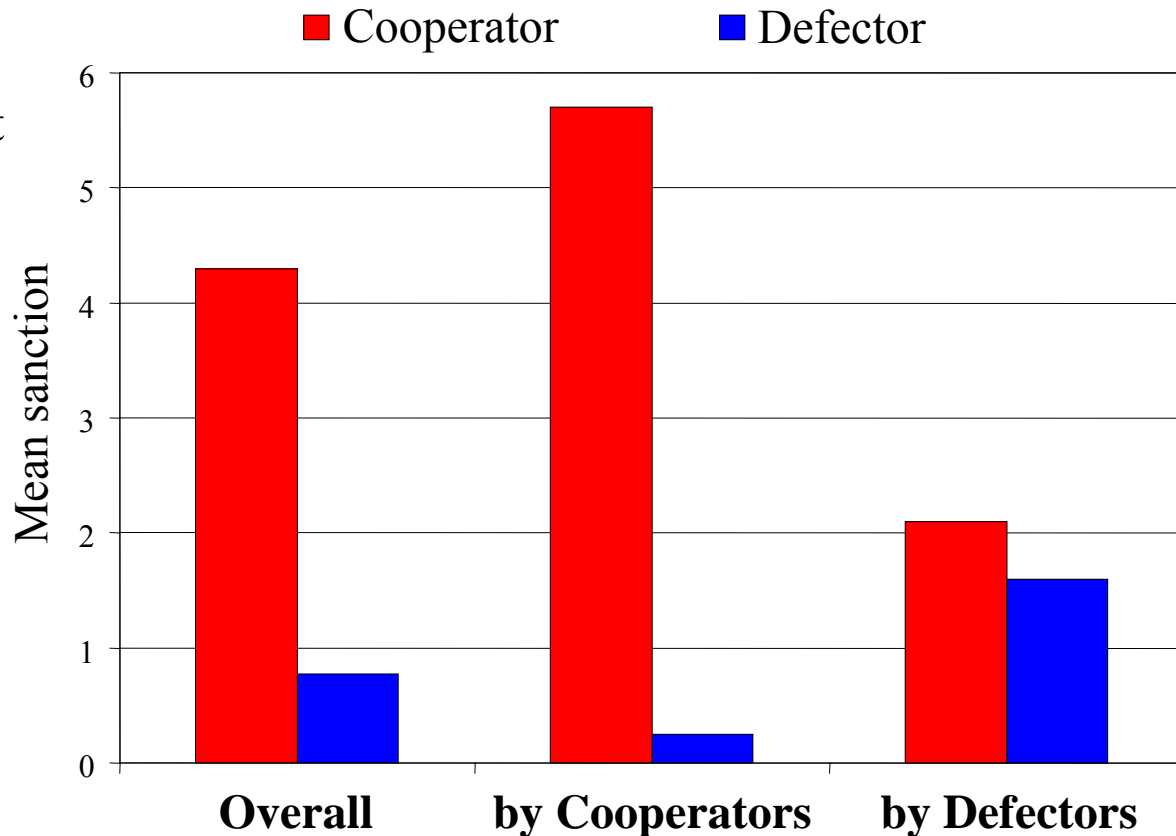
- **Comparing F&S and B&O**
 - What is the right reference agent for income comparisons?
 - F&S: compares to each other individual in the group
 - B&O: compares to the average other individual in the group
- **Who is the sanctioning target?** Falk et al. 2005
 - 120 subjects, one-shot game, strategy method
 - Groups of 3 subjects, play an 3-person prisoners dilemma with punishment

	0 cooperate	1 cooperates	2 cooperate
Cooperate	12	24	36
Defect	20	32	44

- Sanctions: cheaper to sanction cooperators!
 - costs 1 point to sanction a cooperator by 3.33 points
 - costs 1 point to sanction a defector by 2.50 points

Models of inequity aversion

- **Who is the sanctioning target?** Falk et al. 2005
 - Sanctions: cheaper to sanction cooperators!
 - F&S: cooperators punish defectors
 - B&O: cooperators punish cooperators
 - Results:
 - Mostly punishment of defectors
 - But defectors do punish



Models of quasi-maximin preferences

- **Charness and Rabin (2002)**
 - People care for:
 - Own payoff
 - Sum of payoffs (efficiency)
 - The payoff of the poorest (Rawlsian concerns)

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

- They even suggest γ and δ can depend on how closely the other person complies with an optimal welfare criterion.

Inequity aversion or quasi-maximin preferences

- **Comparing F&S and C&R**
 - Is it really income differences?
 - In most games equality coincides with efficiency and Rawlsian concerns
- **Disentangling the fairness motives?** Englemann & Strobel 2004
 - 120 subjects, one-shot game, between-subjects
 - Groups of 3 subjects, one subject is a dictator and allocates money among the other two subjects

	Choice A	Choice B	Choice C
Dummy 1	17	18	19
Dictator	10	10	10
Dummy 2	9	5	1
Fairness Concept	Inequity Efficiency Maximin		

Inequity aversion or quasi-maximin preferences

Disentangling the fairness motives? Englemann & Strobel 2004

All	Choice A	Choice B	Choice C
Dummy 1	17	18	19
Dictator	10	10	10
Dummy 2	9	5	1
Fairness Concept	All		
% Choices	83.8%	10.3%	5.9%
Maximin	Choice A	Choice B	Choice C
Dummy 1	11	8	5
Dictator	12	12	12
Dummy 2	2	3	4
Fairness Concept	Efficiency Inequity		Maximin
% Choices	26.7%	20.0%	53.3%

Inequity	Choice A	Choice B	Choice C
Dummy 1	16	13	10
Dictator	8	8	8
Dummy 2	5	3	1
Fairness Concept	Efficiency Maximin		Inequity
% Choices	70.0%	26.7%	3.3%
Efficiency	Choice A	Choice B	Choice C
Dummy 1	21	17	13
Dictator	9	9	9
Dummy 2	3	4	5
Fairness Concept	Efficiency		Maximin Inequity
% Choices	40.0%	23.3%	36.7%

Inequity aversion or quasi-maximin preferences

- **The economists effect?** Fehr et al. 2006
- Englemann & Strobel (2004) use only business and economics subjects
- With other subjects (mostly other social sciences) F&S does better
- **In summary**
 - For allocation decisions there are many possible fairness considerations.
 - Both inequity aversion and inefficiency aversion can be important.
 - Note that these are dictator games, thus they probably depend a lot on framing.

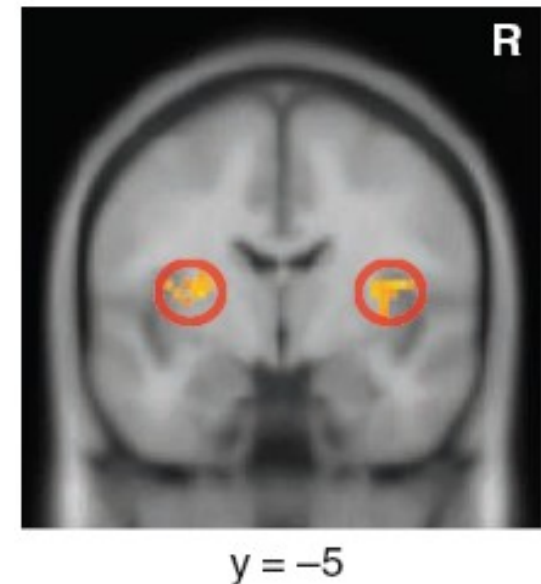
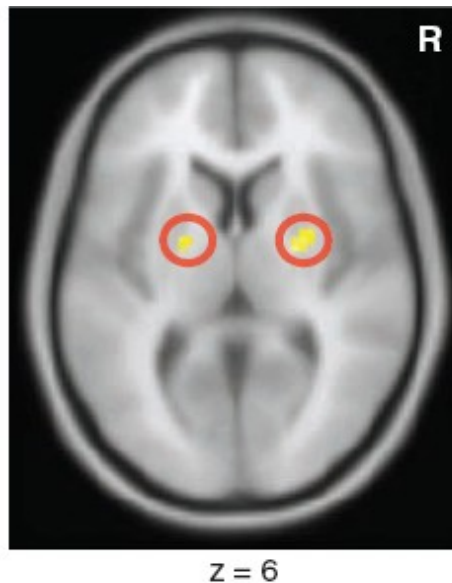
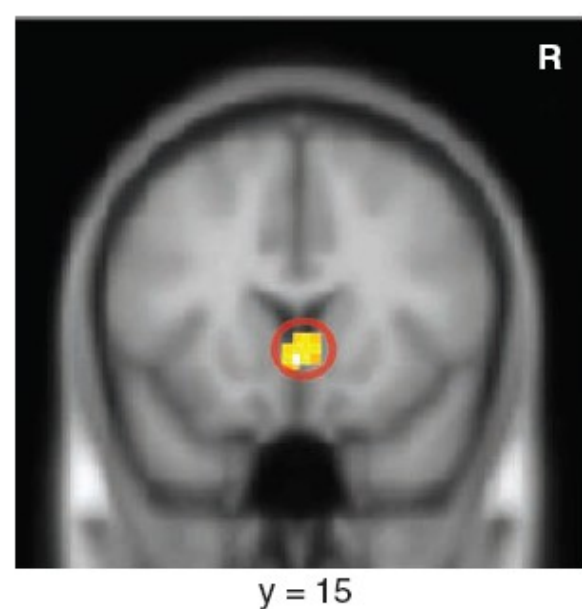
Econ	Choice A	Choice B	Choice C
Dummy 1	14	11	8
Dictator	4	4	4
Dummy 2	5	6	7
Fairness Concept	Efficiency		Inequity
% Econ	53.5%	15.5%	31.0%
% non-Econ	32.7%	15.4%	51.9%

Inequity aversion vs. efficiency

- **Neural correlates of other-regarding concerns** Hsu et al. 2008
- Are there differences in how we take into account the different other-regarding concerns: efficiency vs. inequality
- **Allocating food to the poor**
 - Subjects make many decisions where they have a tradeoff:
 - Making 2 children slightly worse off (large total)
 - Making 1 children considerable worse off (smaller total)
 - 26 subjects
 - fMRI scan at three moments
 - Display: Choices are displayed
 - Switch: Subject makes the decision
 - Hit: Decision is implemented

Inequity aversion vs. efficiency

- **Neural correlates of other-regarding concerns** Hsu et al. 2008
 - Correlates of both increases in efficiency and equality
 - Caudate/septal region (during hit)
 - Correlates of increases in efficiency
 - Putamen/striatum (during display)
 - Correlates of increases in equality
 - Insula (during display and switch)



Outcome-based models

- **Is this really about social norms**
 - Is punishment driven by violations to norms such as equality & efficiency?
- **The role of envy** Leibbrandt & López-Pérez 2007
 - 165 subjects, series of games (one paid at random), within-subjects
 - Groups of 3 subjects:
 - Dictator: allocates money between himself and the dummy player
 - Dummy: does nothing
 - Punisher: can spend money to punish the other players (costs 1 to reduce by 3)

	Choice A	Choice B
Dictator	560	120
Dummy	60	140
Punisher	200	200
Fairness Concept	Efficiency	Equity

Outcome-based models

▪ The role of envy Leibbrandt & López-Pérez 2007

	Choice A	Choice B
Dictator	560	120
Dummy	60	140
Punisher	200	200
Fairness Concept	Efficiency Envy	Equity
Punishment	14.65	0.84

	Choice A	Choice B
Dictator	280	390
Dummy	240	240
Punisher	200	200
Fairness Concept	Equity Envy	Efficiency Envy+
Punishment	3.60	7.71

	Choice A	Choice B
Dictator	250	110
Dummy	150	290
Punisher	200	200
Fairness Concept	Equity Envy	
Punishment	4.95	1.28

▪ Fairness norms?

- Punishment in experiments might not be related to fairness at all
- Models that incorporate envy (F&S) do quite well explaining punishment

Intention-based models

- **Is all punishment driven by outcomes?**
 - Intentions ought to be important
 - What determines kindness?
 - Kindness depends on how nice I think you will treat me depending on (my expectation of) your belief of my action.

- **Rabin (1993) and Dufwenberg and Kirchsteiger (2004)**

- Fairness is the midpoint of possible (efficient) actions.

$$U_i = \pi_i + \rho_i \sum_{j \neq i} \sigma_{ij} [\pi_j(s_i, b_{ij}) - \pi_j^e(s_i, b_{ij})] \lambda_{iji} [\pi_i(b_{ij}, b_{iji}) - \pi_i^e(b_{ij}, b_{iji})]$$

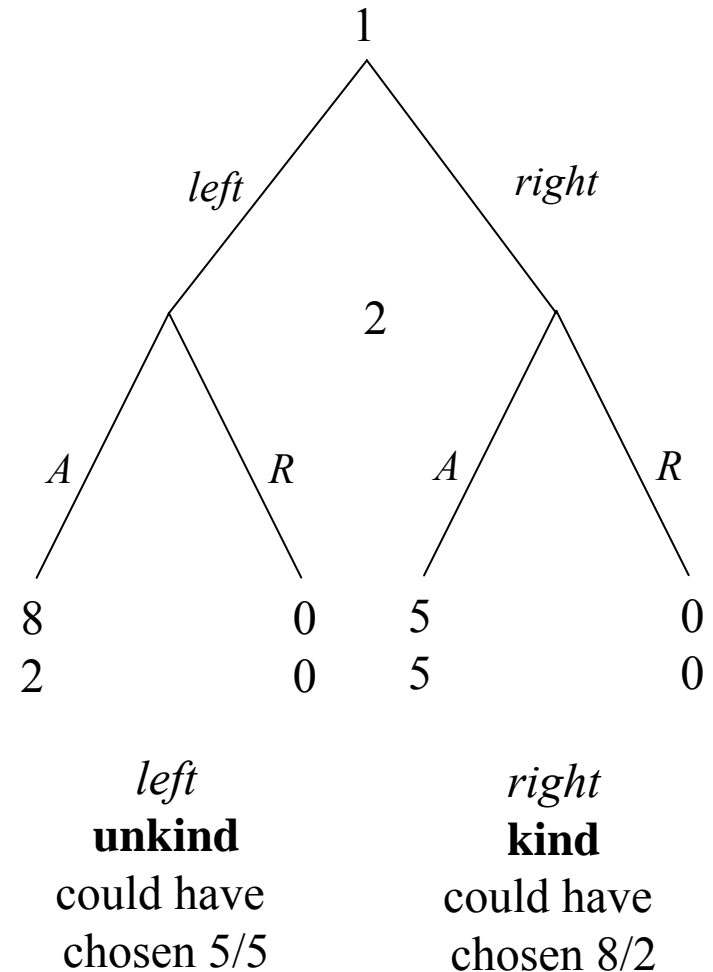
- **Falk and Fischbacher (2006)**

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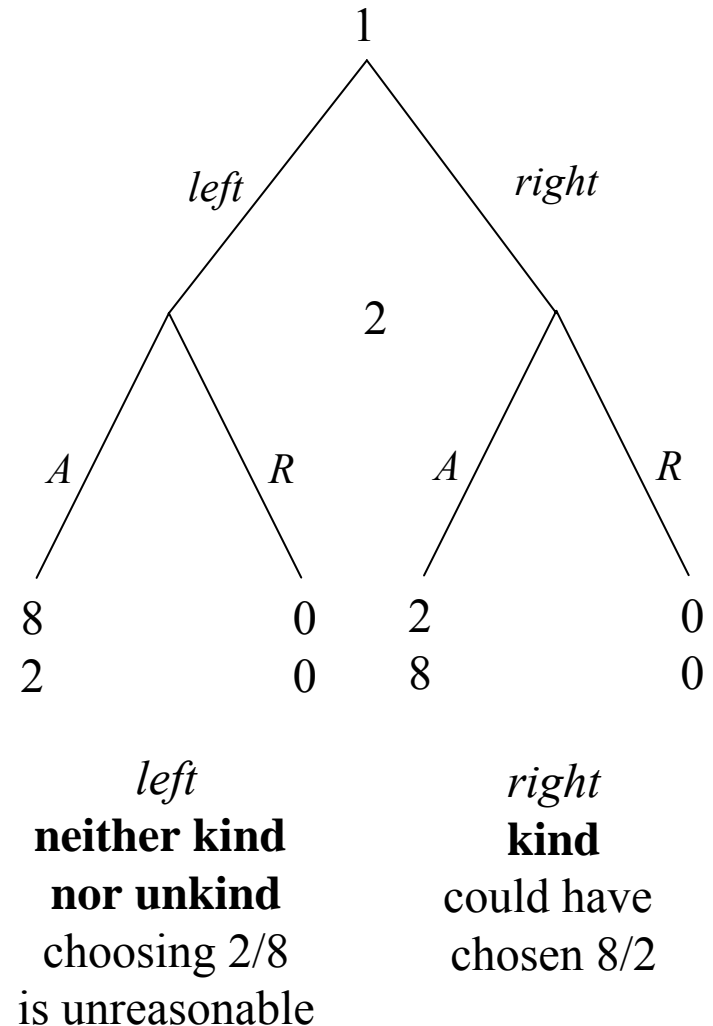
Intention-based models

- **Falk and Fischbacher (2006)**
 - What determines kindness
 - How your action affects our relative incomes: $\pi_i - \pi_j$
 - What are the intentions behind your action
 - Intentionally kind
 - not advantageous position and had any alternative to be less generous
 - Intentionally unkind
 - advantageous position and had a reasonable alternative to be more generous



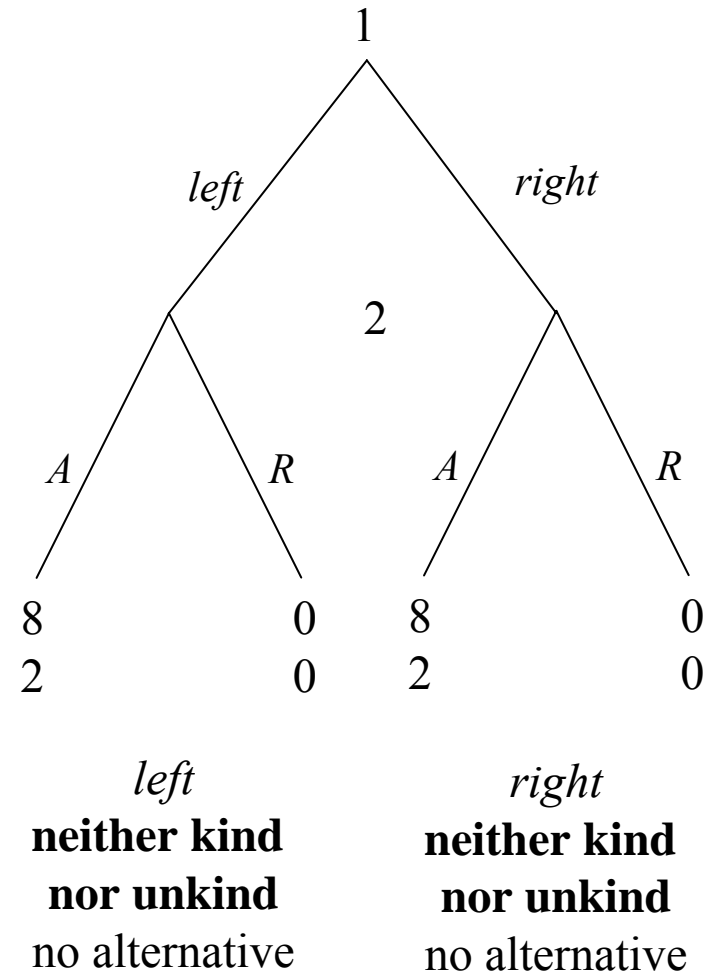
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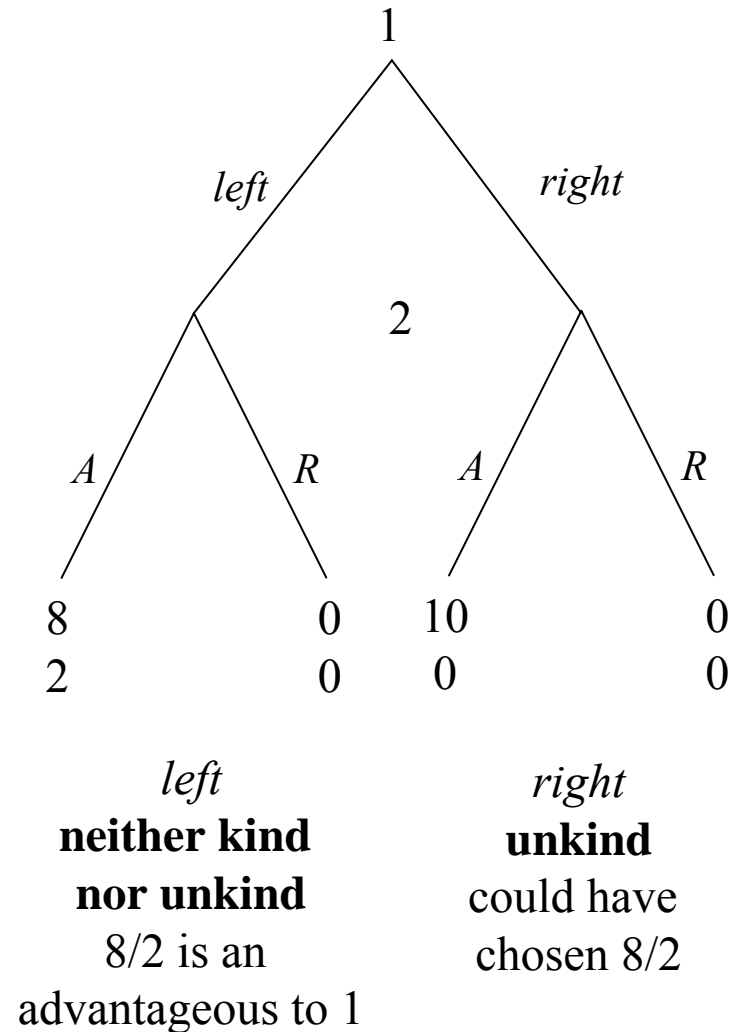
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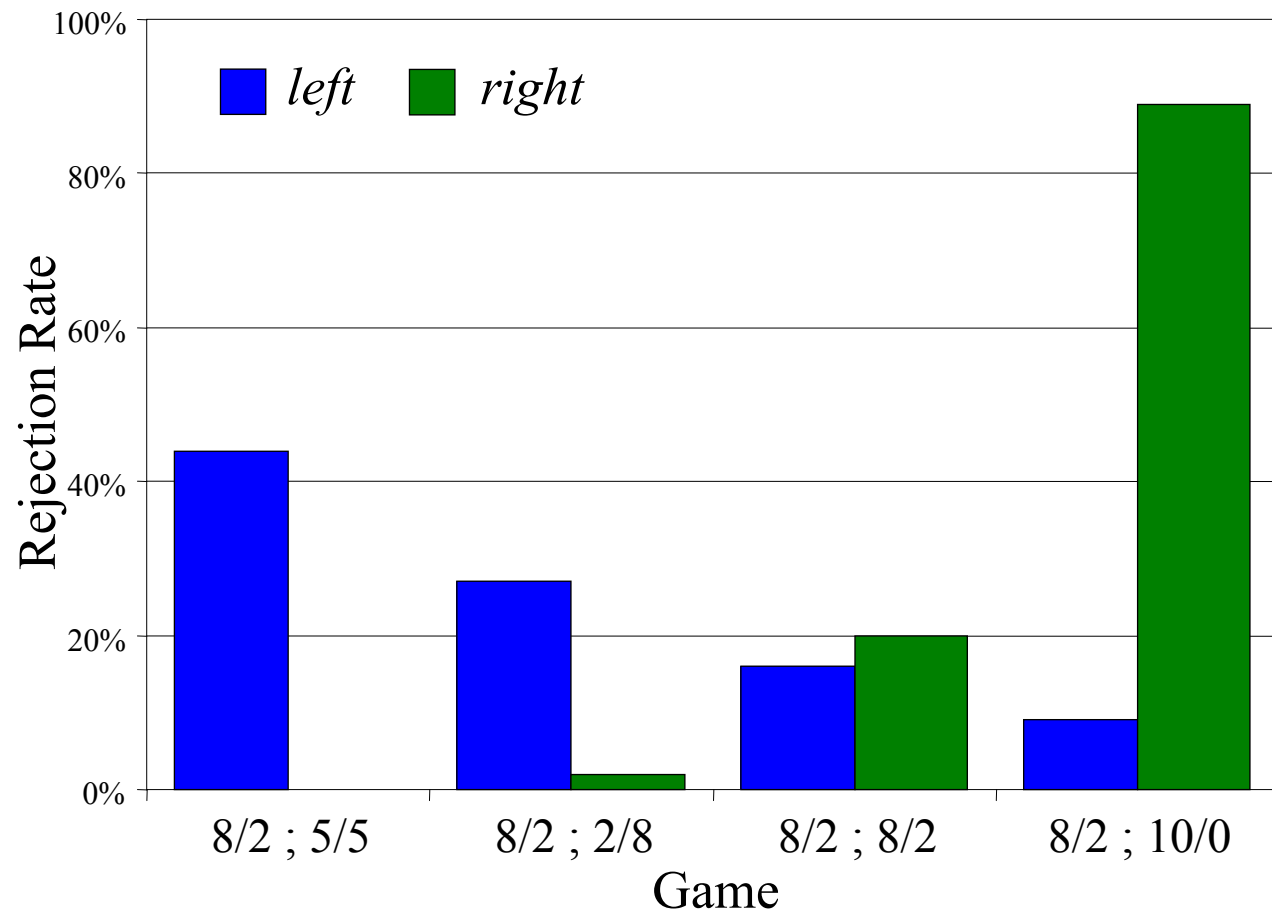
Intention-based models

- **Alternatives matter** Falk et al. 2003
- 90 subjects, series of games (one paid at random), within-subjects, strategy method

- **Results**

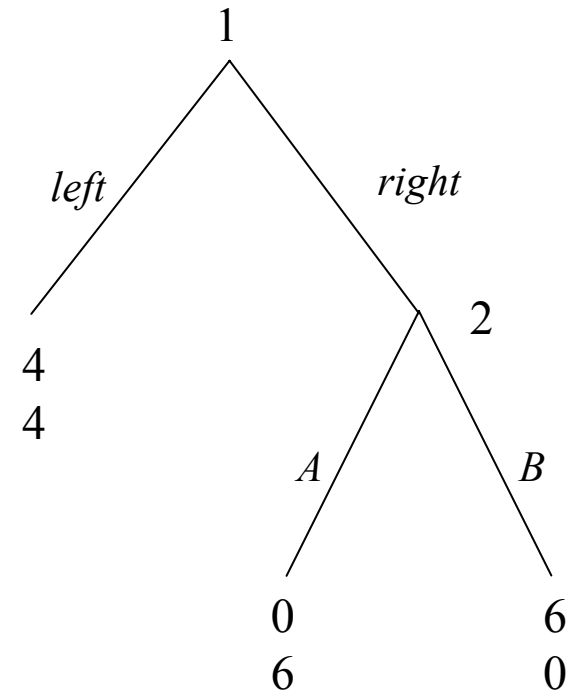
- Rejections rates for 8/2 vary by as much as 40 percentage points depending on the alternative!

- Additional evidence from games with computer-generated actions



Intention-based models

- **Importance of beliefs** Dufwenberg and Kirchsteiger 2004
 - If 1 chooses *right*, is he being kind?
 - Depends on his belief of what 2 will do
 - 2nd order beliefs are important
 - Psychological Game Theory
Geanakoplos et al. (1989)



Conclusions

- A lot of progress has been done in modeling fairness by incorporating it into the utility function.
- Models help explain when will fairness produce equal outcomes as well when it wont.
- Inequity reduction
 - Good at explaining reciprocity
 - Does less well for pure allocation decisions
- Alternatives and beliefs matter (hard to model)