

The Evolution of Trust

Erin A Heerey & Philippa J Beston
Western University, Canada & Bangor University, UK

Humans evolved as a social species. We depend on others for many of our needs.



To support that dependence, most societies have a social contract to which people contribute and from which they receive.

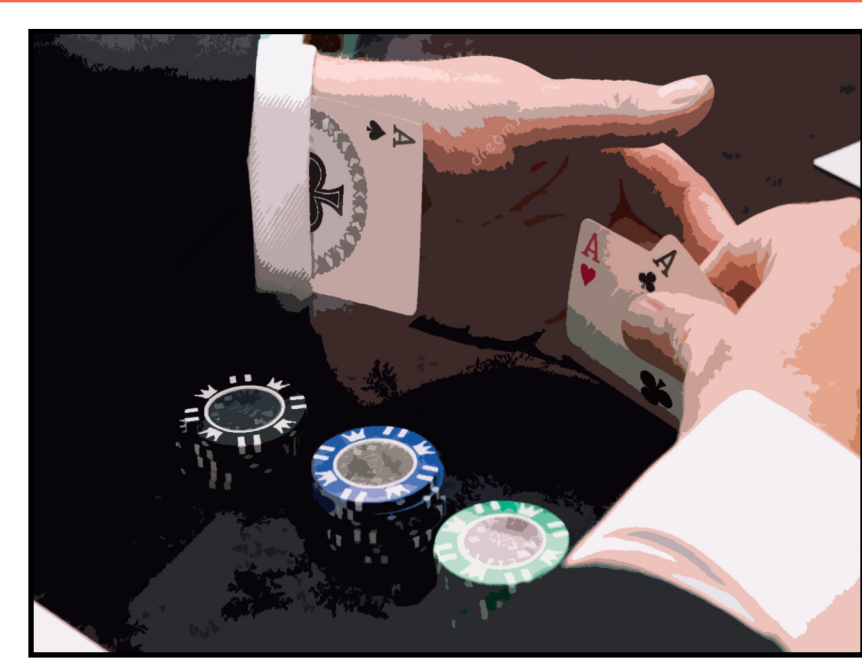
It is normative to cooperate with that social contract and most people do so - although they also withdraw cooperation when others do likewise*.

* These folks are known as "conditional cooperators" (about 75% of us).¹



But, of course, not everyone plays fairly*.

* The so-called "free riders" (about 15% of us).¹



People are more likely to cooperate when they have an effective punishment option available.²

However, because people are sensitive to trust betrayals, we must have a mechanism that allows us to infer betrayal likelihood.³



In individual interactions, feelings of trust may provide this information.⁴

However, many of our interactions take place in groups, making individuals' contributions difficult to assess.⁵



So, what is this signal?

Research in our lab hints that either:



1: People use statistical information about environmental reliability to deduce group-level cooperation.

OR



2: People cooperate more when they have the effective punishment options for promoting group cooperation.

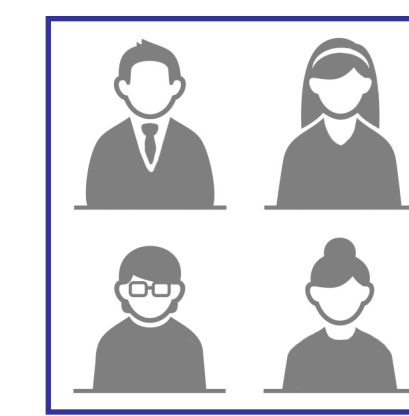
Previously...

- Four player "Public Goods" game
- 15 rounds
- Players receive 10 pennies
- Choose contribution to public fund
- Fund tallied and "matured" (x1.6)
- Players receive equal return from fund
- Random assignment to group
- 30 groups (120 participants)
- Non-costly punishments allowed
- No explicit communication
- Players only know total investment
- Median split groups on total investment
- Compared "high" and "low" investment groups

Two Game Versions

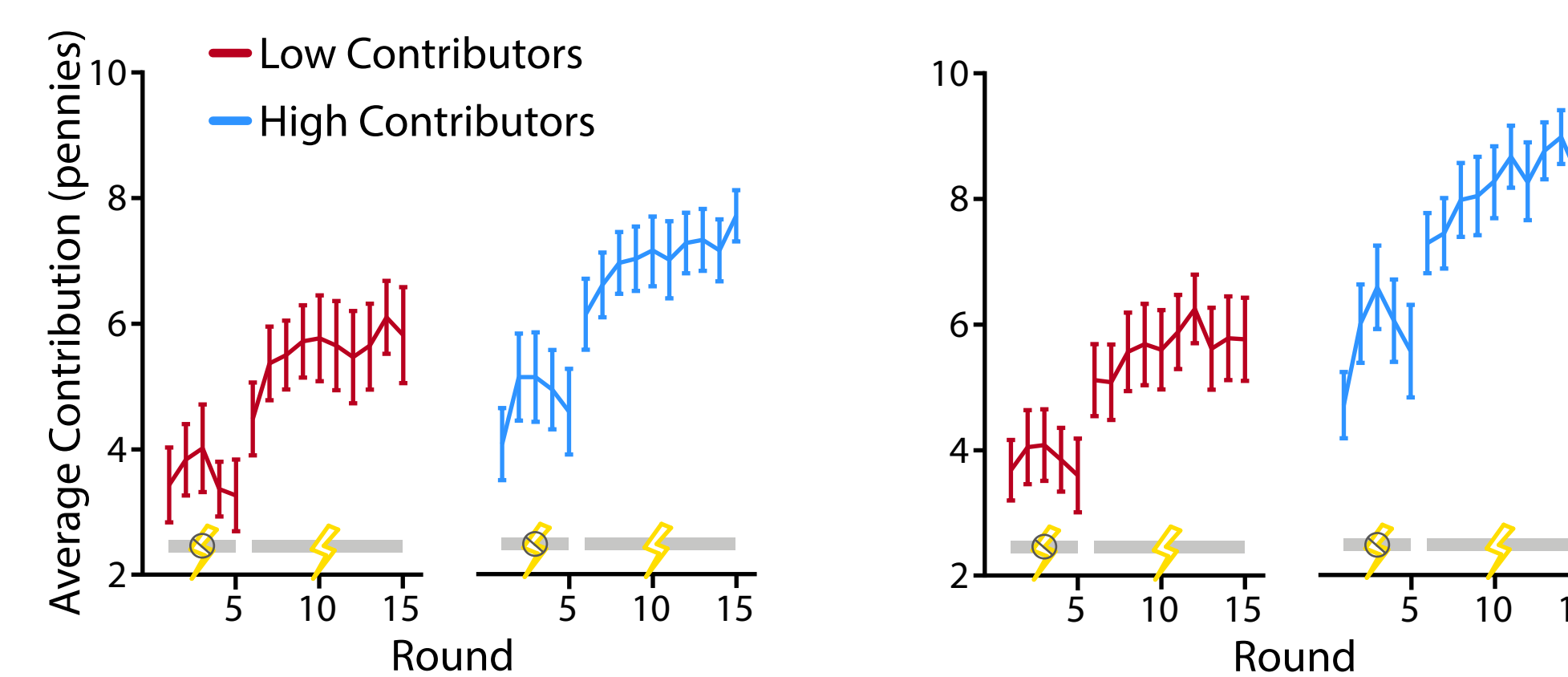


Real-time interaction via computer



Real-time interaction face-to-face

Key Results



Groups with effective punishment options are more likely to have been classified as "high" investment groups.

$$\chi^2(1) = 12.80$$

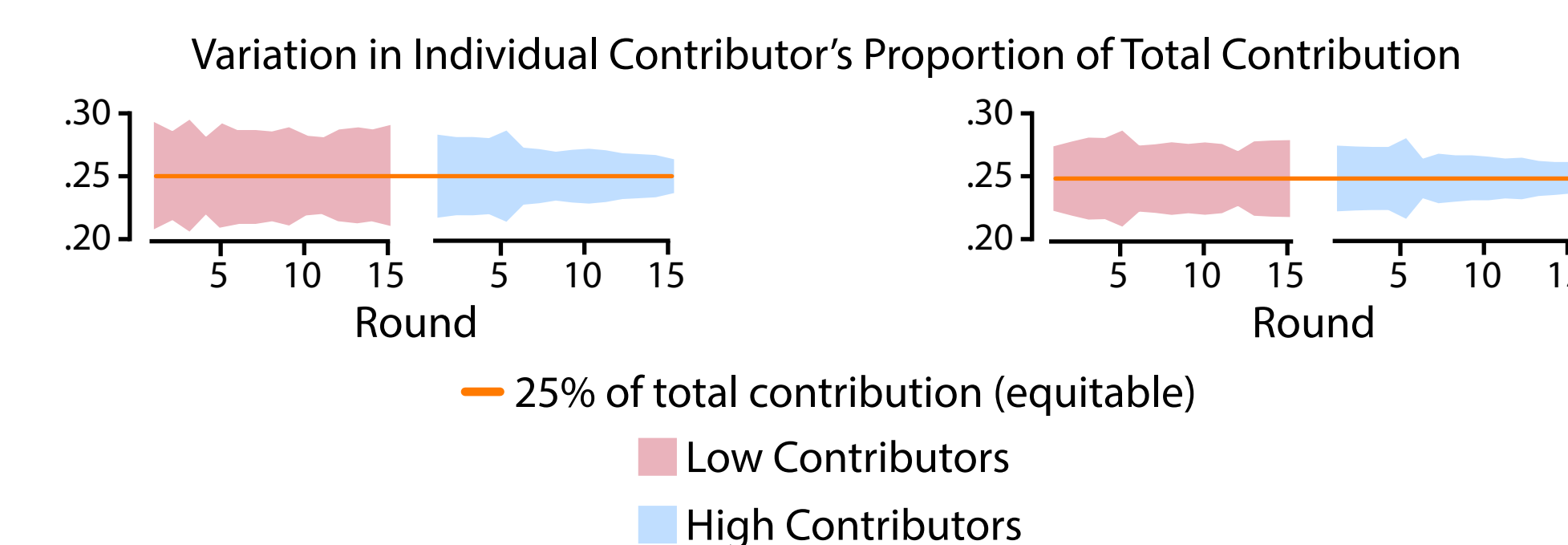
$$p = .002$$

$$\chi^2(1) = 24.99$$

$$p < .001$$



High investment groups also contain members whose contributions converge on "equality."



Significant change in contribution variability over time amongst high- but not low-contribution groups.

$$F(1, 118) = 9.27,$$

$$p = .003, \eta^2 = .072$$

$$F(1, 118) = 4.96,$$

$$p = .028, \eta^2 = .039$$

Current experiment...

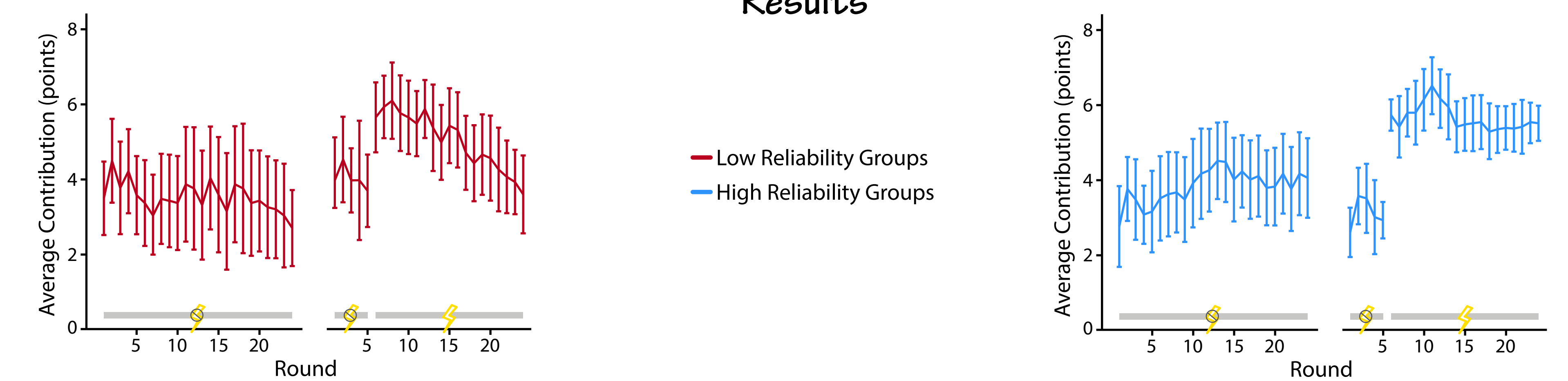
To test these ideas, participants completed a pre-registered study in which we manipulated the type of "group" they joined (highly reliable or less reliable contribution values) and whether they could punish free-riders.



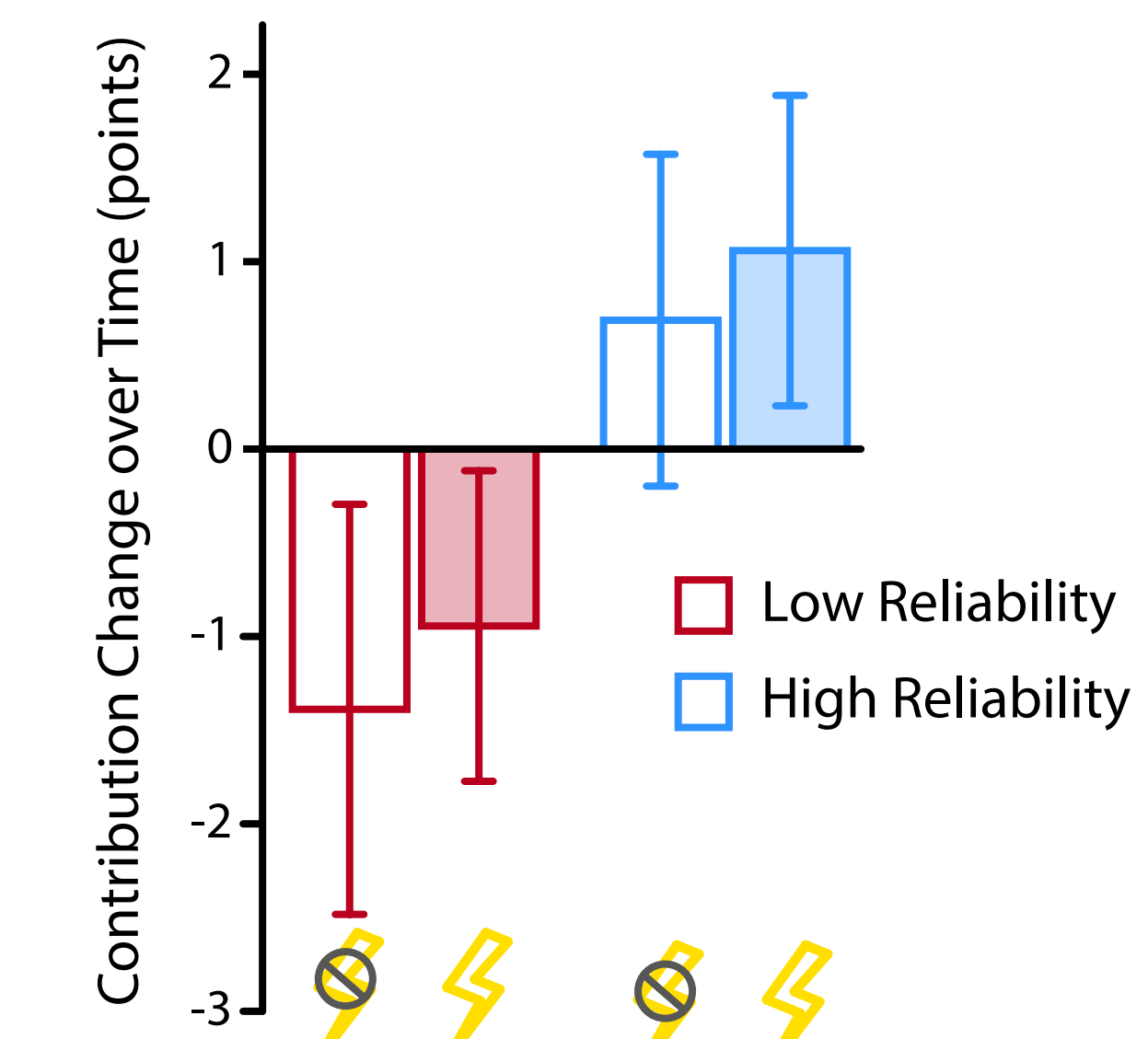
- Manipulated four player "Public Goods" game
- Simulated interaction (participants play alone)
- 24 rounds
- Players receive 10 points
- Choose contribution to public fund
- Fund tallied and "matured" (x1.6)
- Players receive equal return from fund
- Random assignment to condition (double blind)
- 117 participants (data collection in progress [goal = 212])
- Non-costly punishments allowed
- No explicit communication
- Players only know total investment

Pre-registered Hypotheses:

- 1) Participants will increase their investments over time when group contributions are high in reliability.
- 2) The presence of punishment will enhance this effect.



Results



- Main effect of environmental reliability
 $F(1, 114) = 20.12, p < .001, \eta^2 = .148$
- No main effect of punishment
 $F(1, 114) = 0.81, p = .371, \eta^2 = .007$
- No punishment x reliability interaction
 $F(1, 114) < 0.01, p = .936, \eta^2 < .001$

Discussion

- People cooperate based on the likelihood of partner cooperation (conditional cooperation).
 - Estimated from variability in natural behaviour
 - Punishment does not seem to affect these estimates in our manipulated environment
- Environmental reliability may therefore signal the degree to which it is "safe" to explore a cooperative strategy with potentially unreliable social partners.



Contact Details:
- eheerey@uwo.ca

Download a copy at:
- <http://psychology.uwo.ca/faculty/socialbehavioural/SPSP.html>



References

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- ² Fehr, E., Gächter, S. (2000). Cooperation and punishment in public goods experiments. *Am Economic Review*, 90, 980-994.
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- ⁴ Janssen, M. A. (2008). Evolution of cooperation in a one-shot Prisoner's Dilemma based on recognition of trustworthy and untrustworthy agents. *J Econ Behav Organ*, 65, 458-471.
- ⁵ Harkins, S. G. (1987). Social loafing and social facilitation. *J Exp Soc Psychol*, 23, 1-18.