

Department of Psychological and Behavioural Science
public lecture
Human Cooperation

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Dr Bradley Franks

Chair, LSE

EVENTS

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THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■



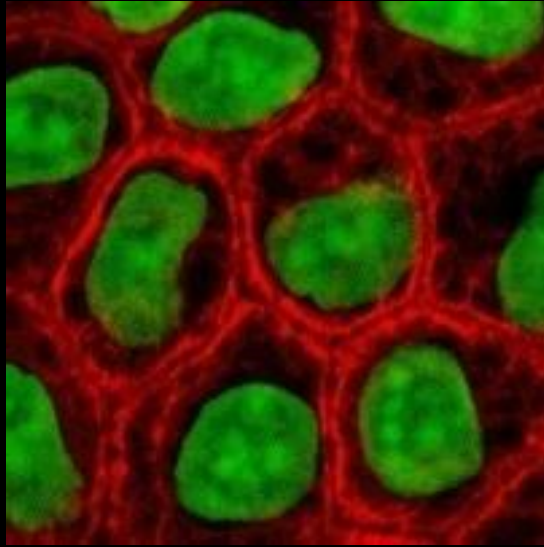
Human cooperation

David G. Rand

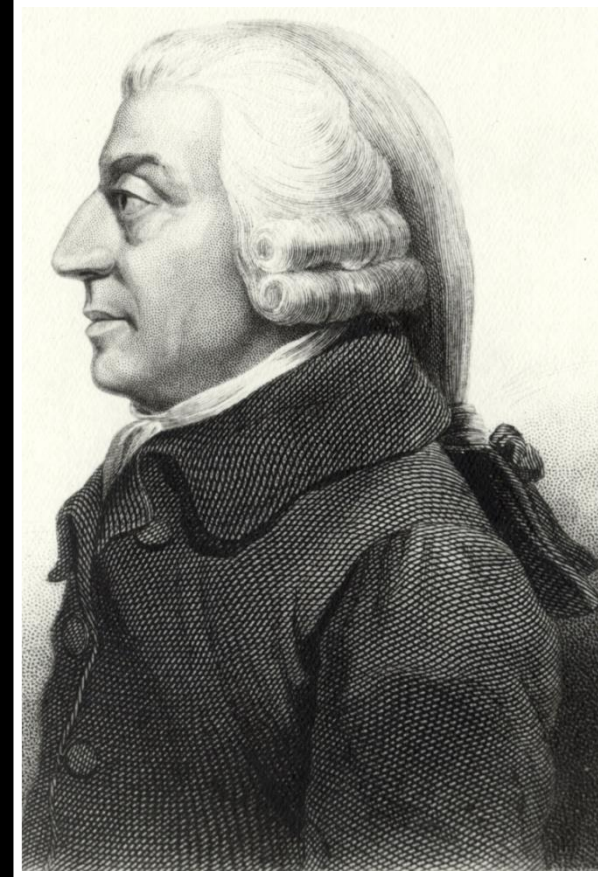
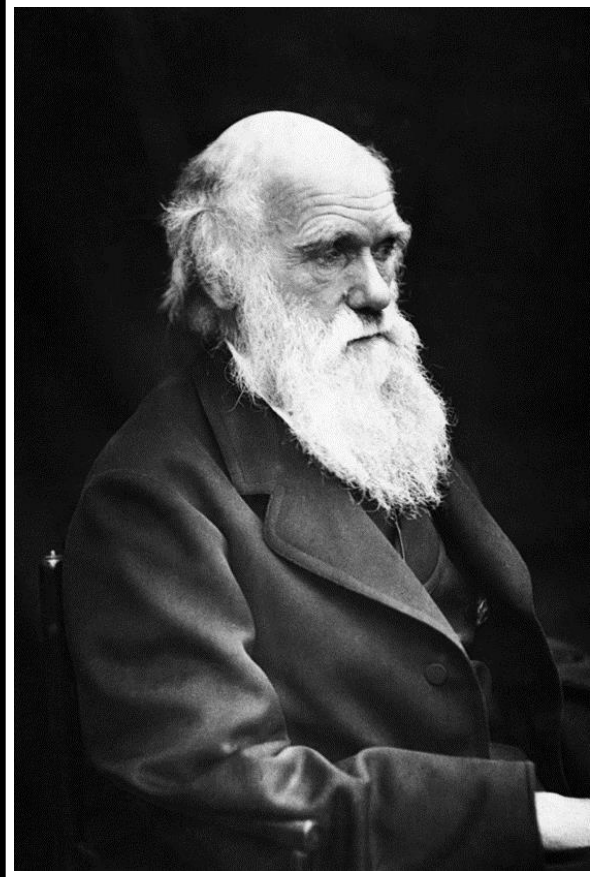
Associate professor of Psychology, Economics, and
Management, Yale University

London School of Economics, December 8 2016

Cooperation is essential



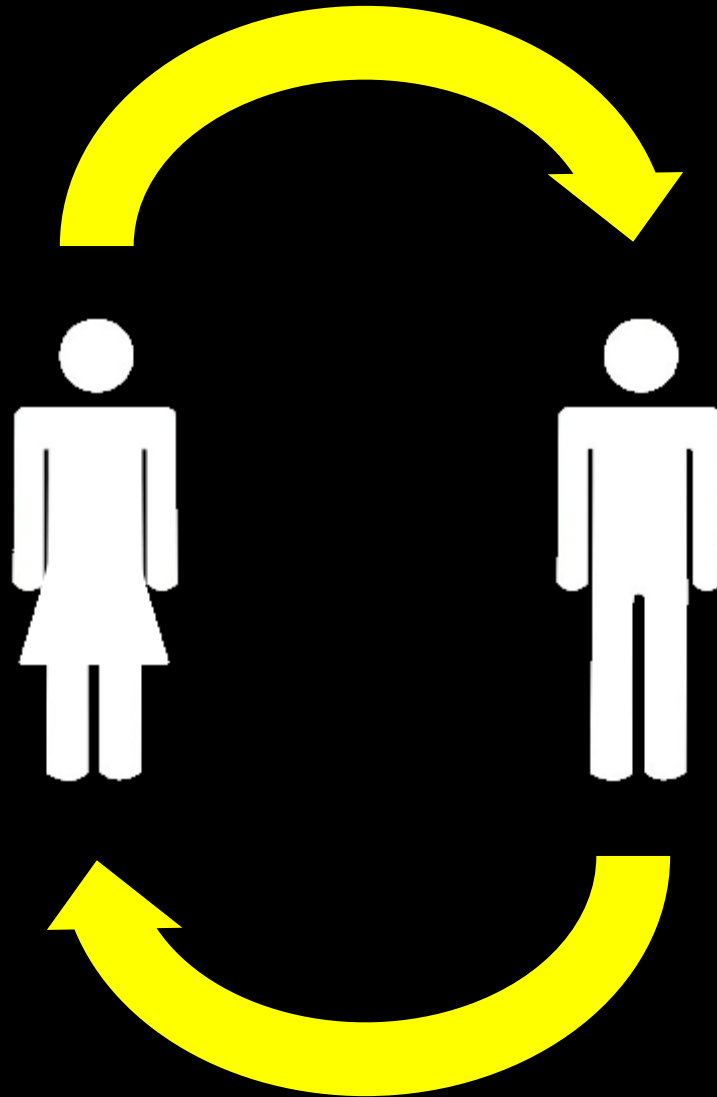
...but cooperation is a challenge



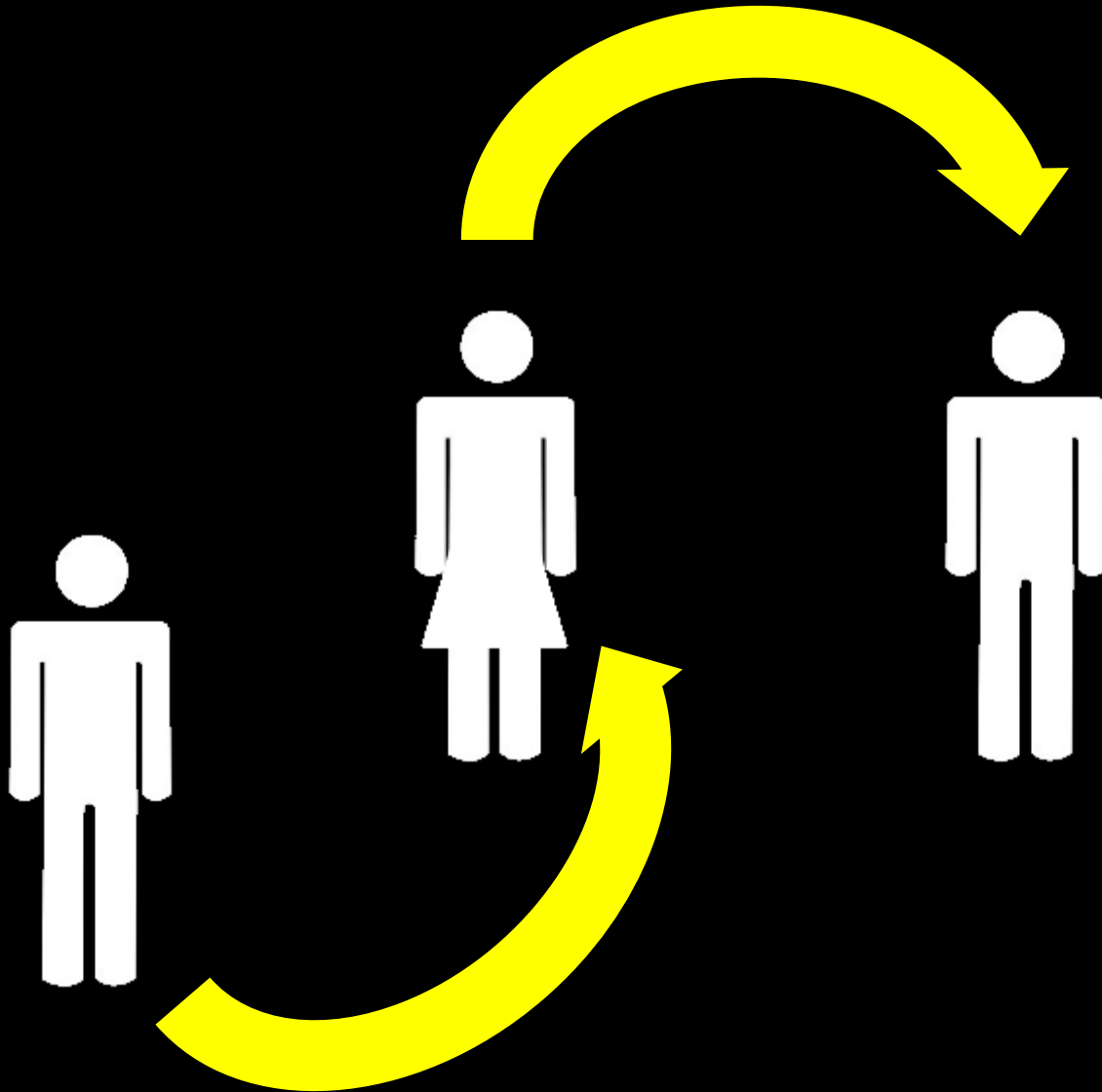
Why do people
cooperate?

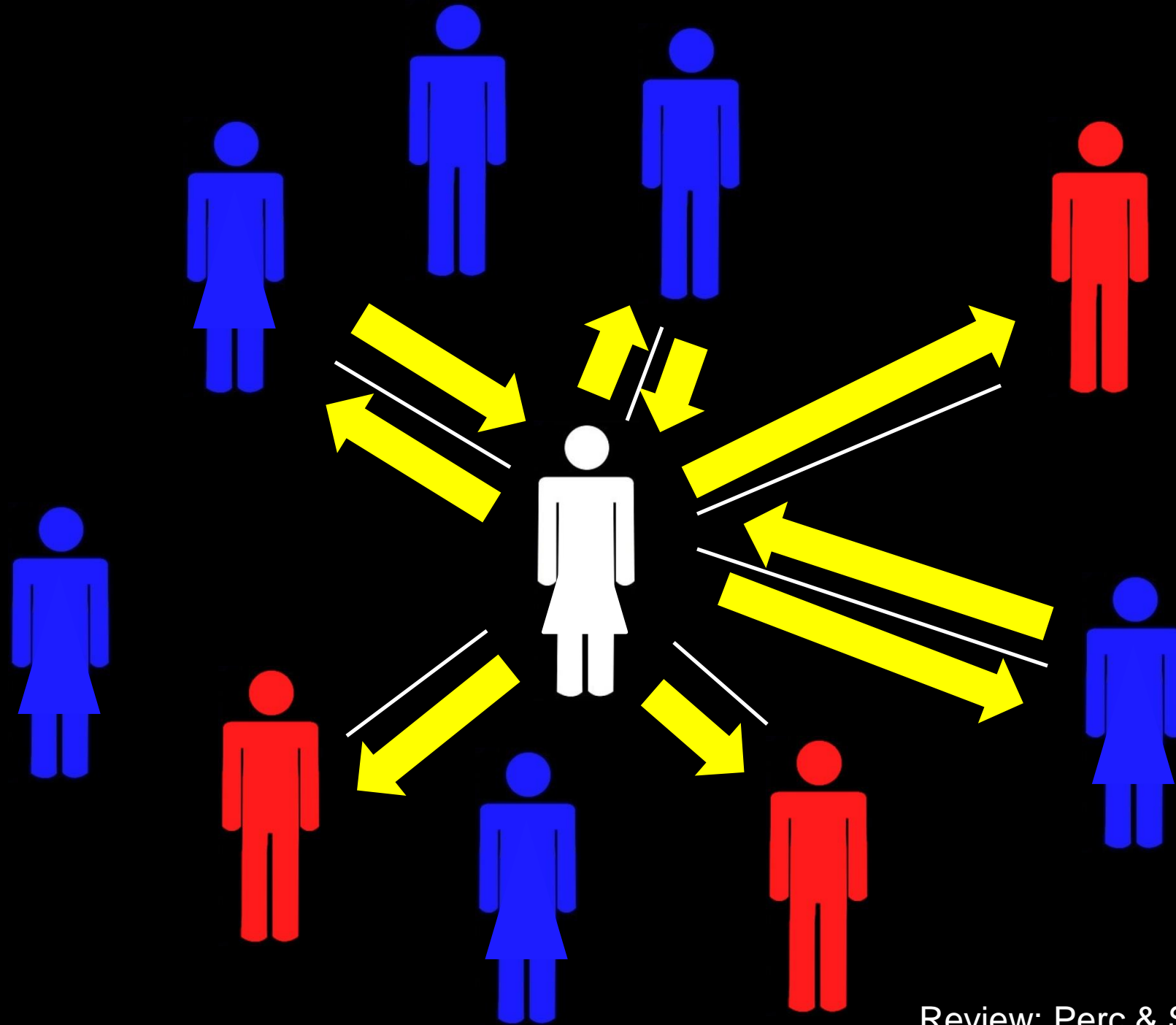
Cooperation **pays off**
(in the long run)

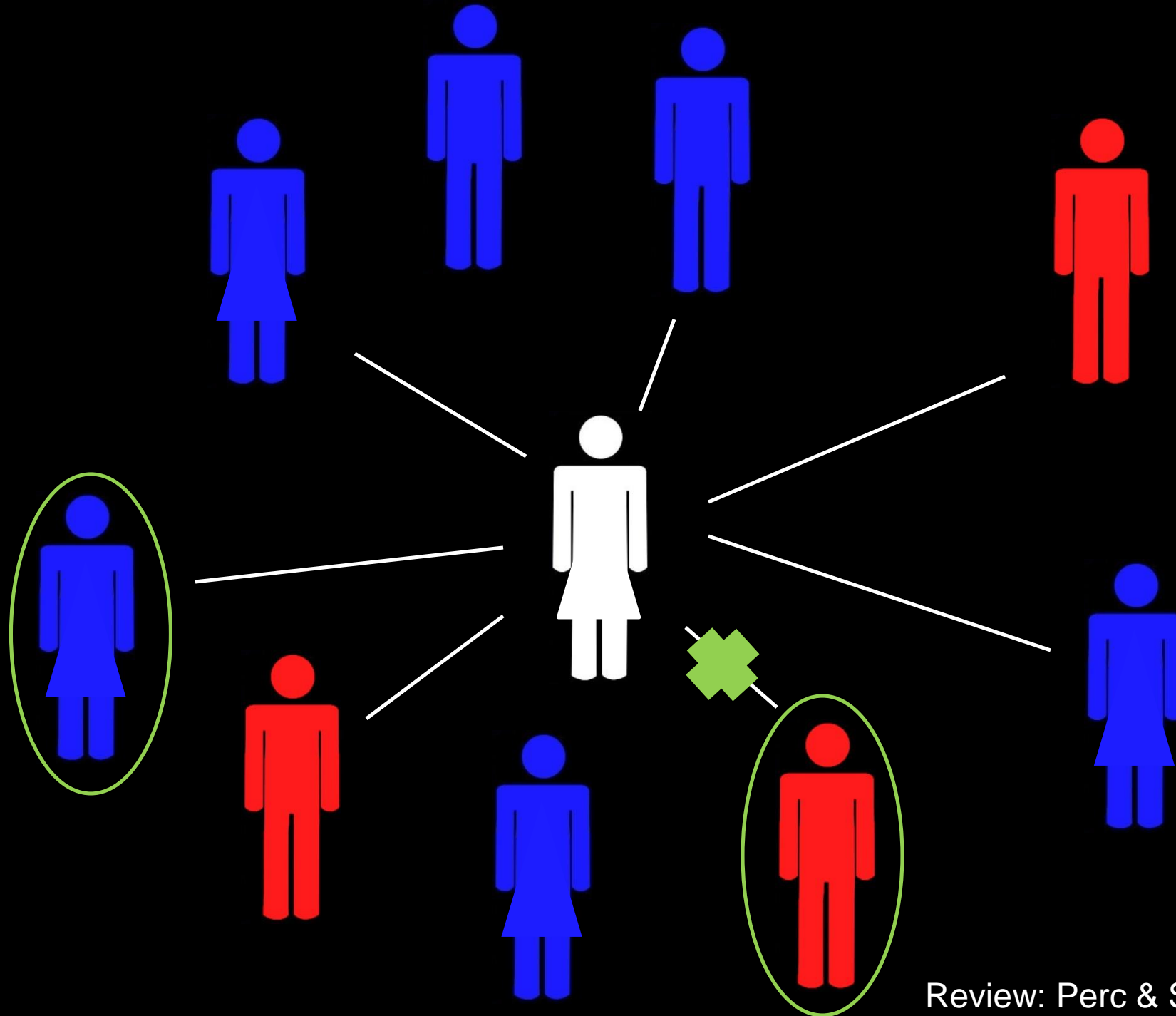
“Strategic” cooperation



“Strategic” cooperation







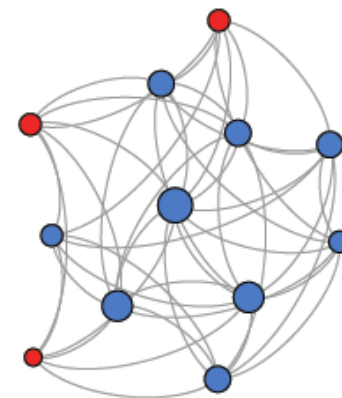
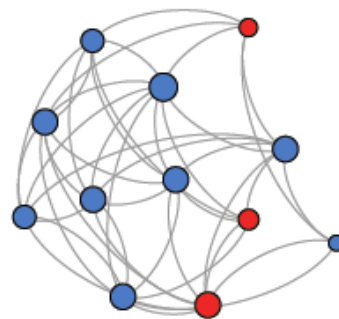
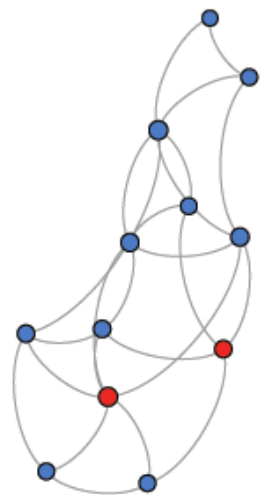
Round

2

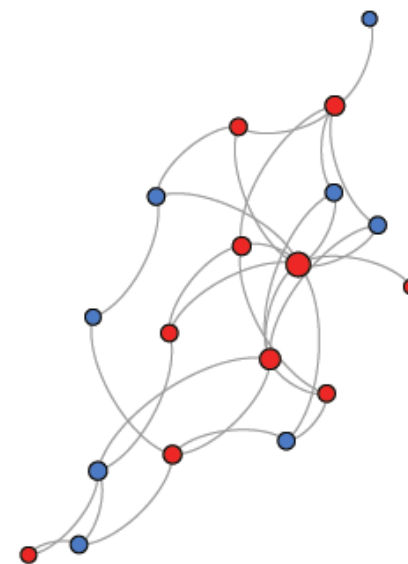
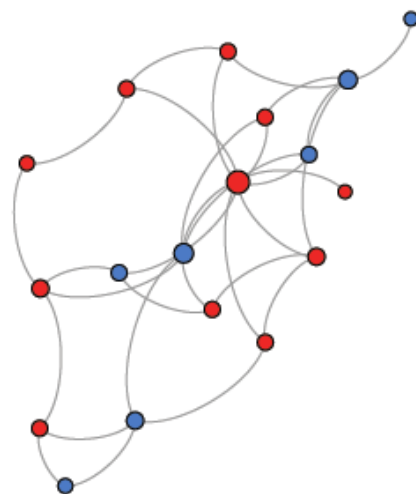
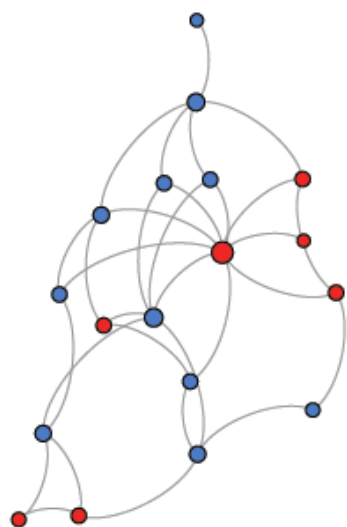
5

8

Fluid

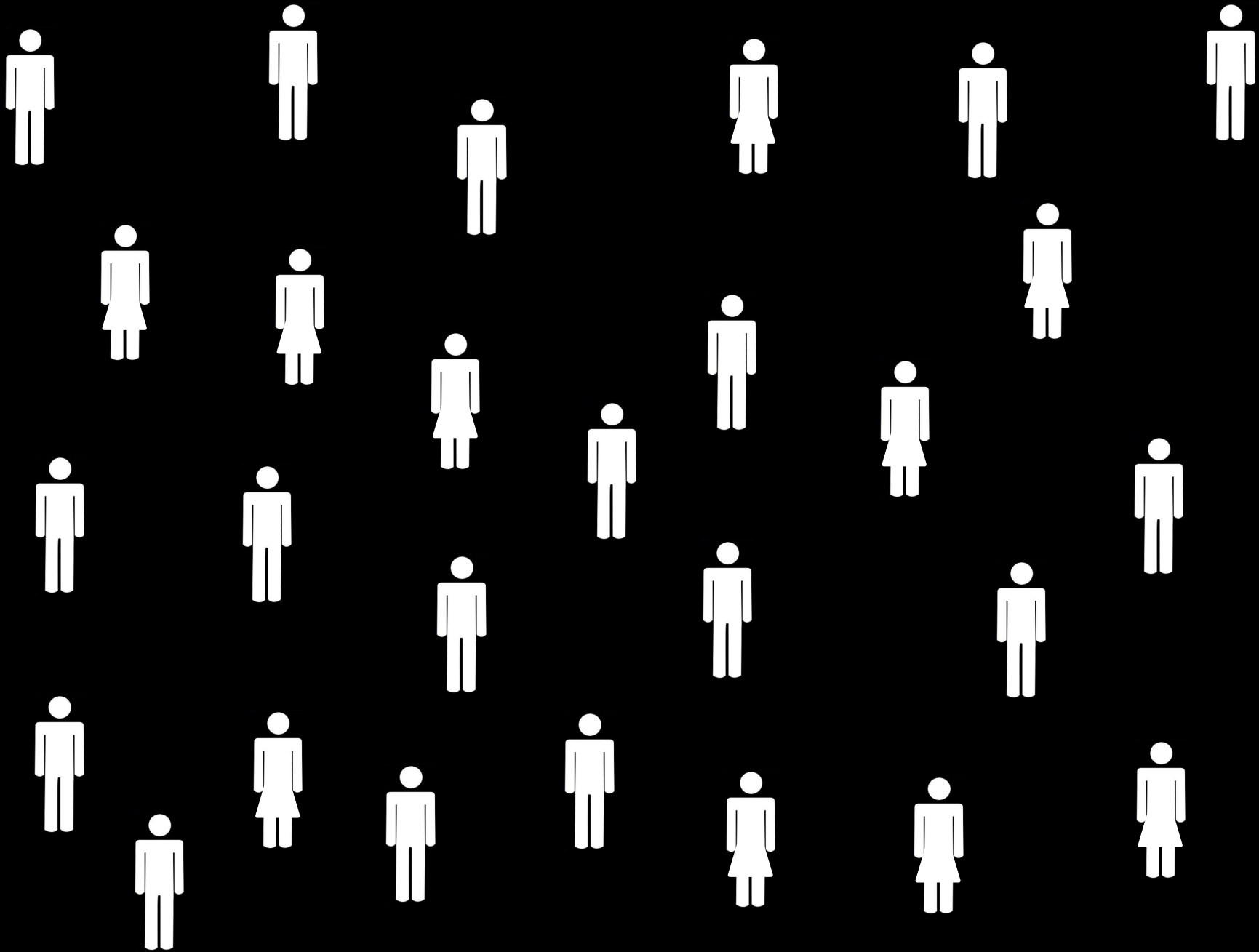


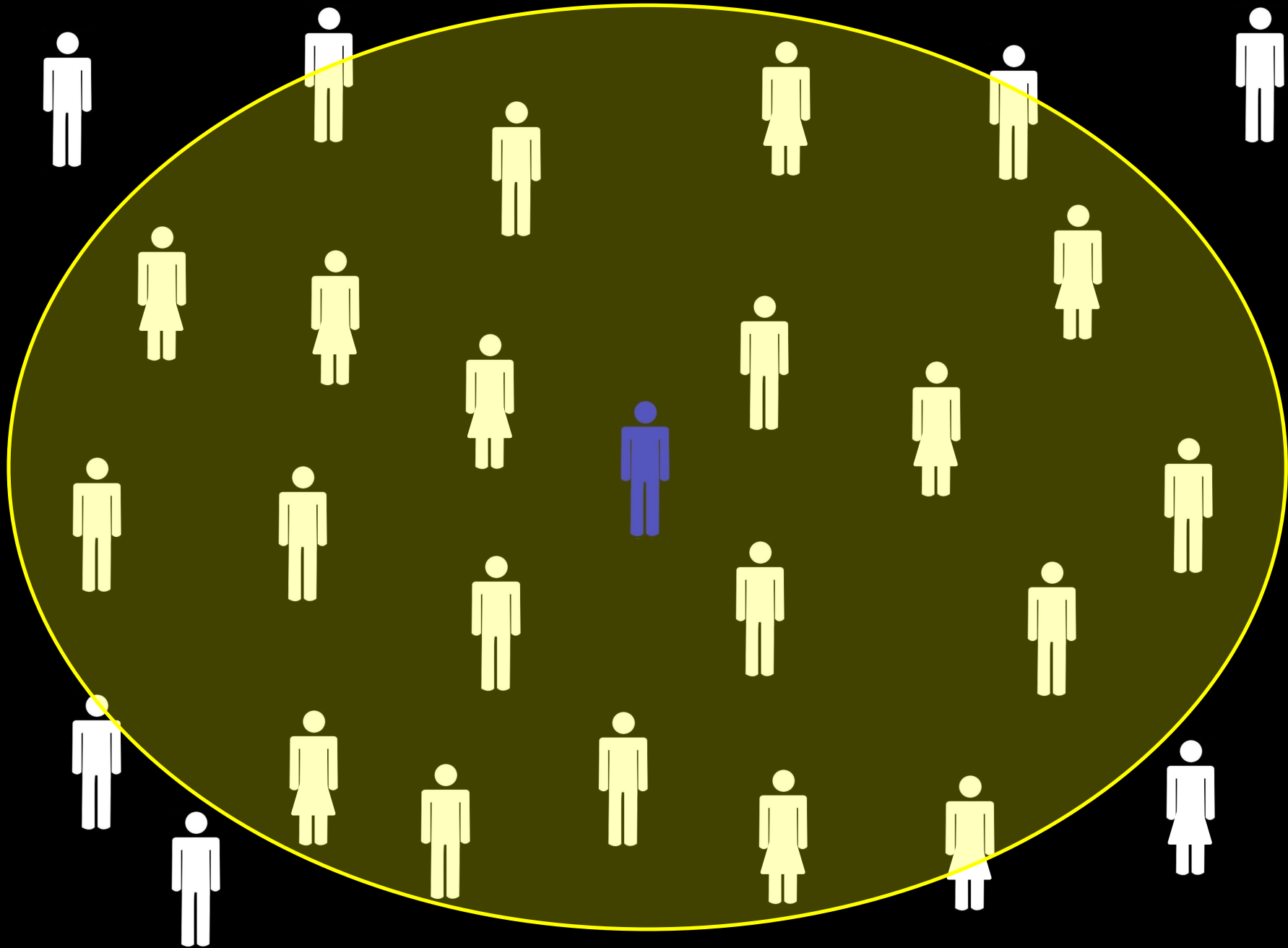
Fixed

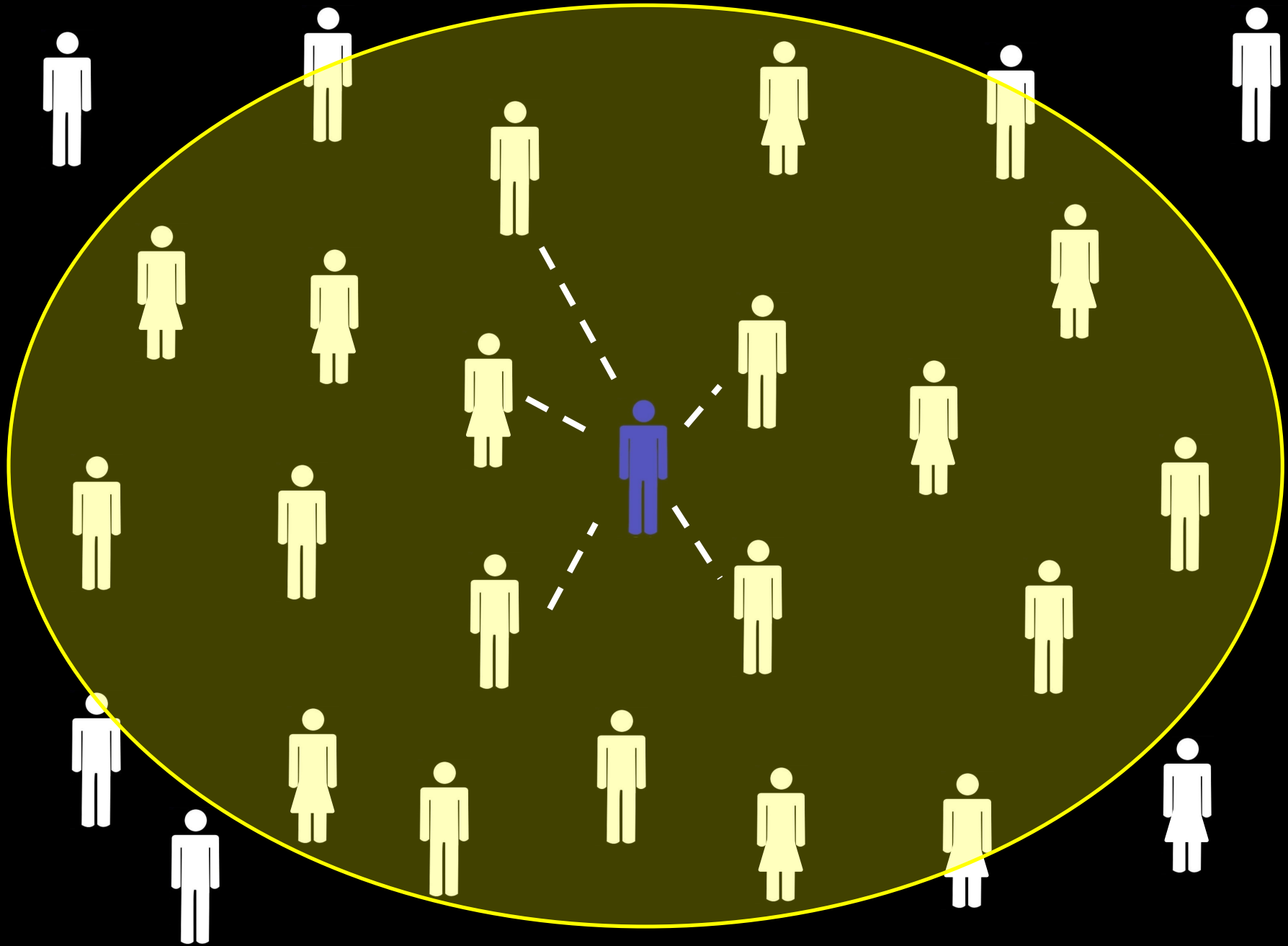


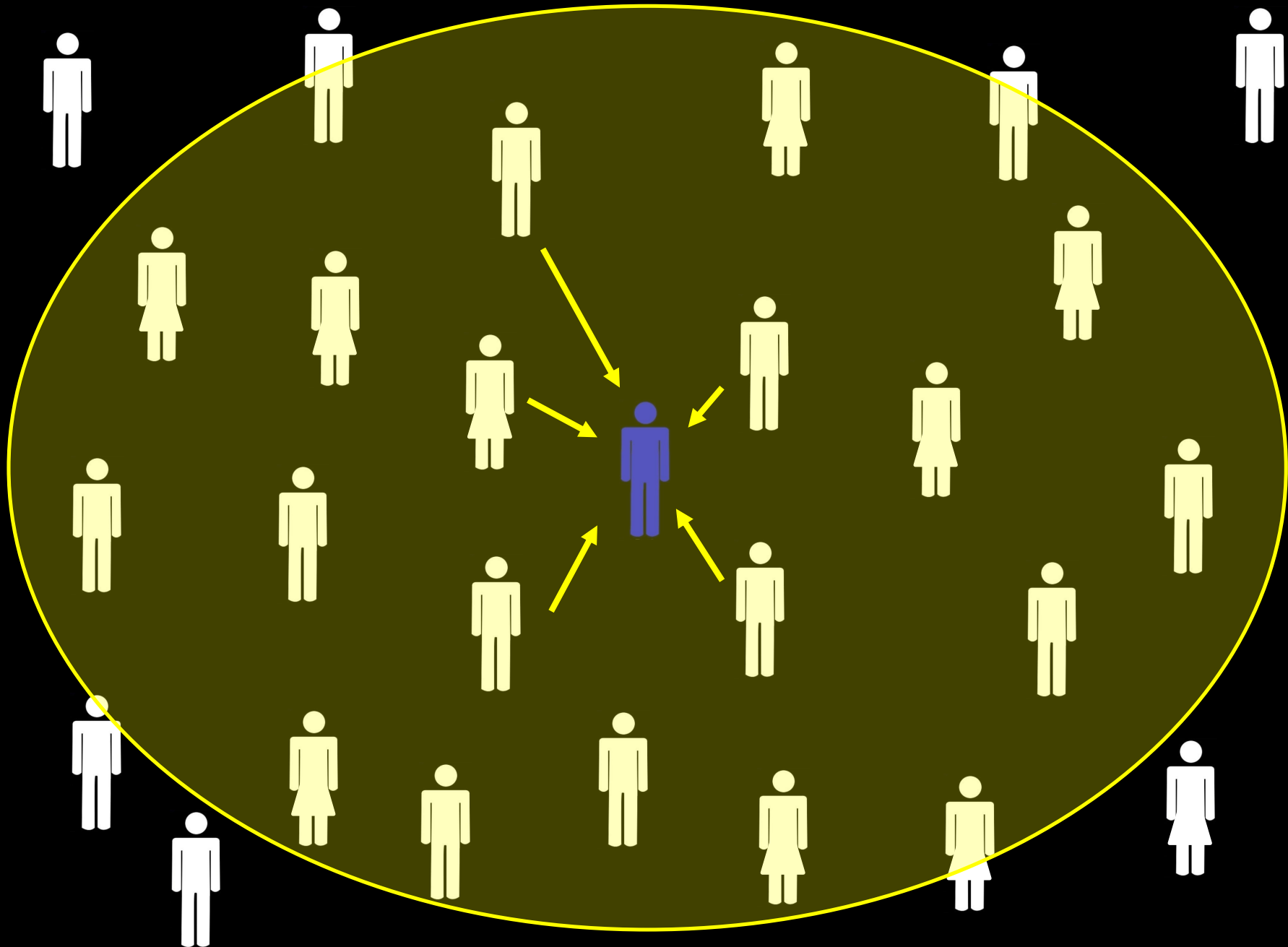
N=430 Mturkers

Rand et al 2011 PNAS









Milinski et al 2002 Nature, Rand et al 2009 Science



Your Code: [code]

[Name]
Or Current Occupant
[Address]
[Address]
[City, State, Zip]
[Barcode]

Dear [Name],

We have teamed up with your building's management to offer Pacific Gas and Electric Company's SmartAC™ program to you and your neighbors. Please take a moment to read about the program and let us know whether you'd like to participate.

The power is in your hands.

It has been said that one small action can cause a ripple effect that results in a dynamic change, like the idea that a butterfly flapping its wings can set off the winds that change the weather on the other side of the planet.

A ripple effect happens in California when temperatures rise and thousands of individual air conditioners start operating at the same time. This can strain California's energy resources and can create peak conditions that result in summer heat power interruptions.

Just like the idea that a butterfly's wings have the power to change the weather, you too have



You have the power to make a difference.

- It's free
- It's easy
- It's good for California
- You have the power



Erez Yoeli

N=1408 CA residents

Yoeli Hoffman Rand Nowak 2013 PNAS

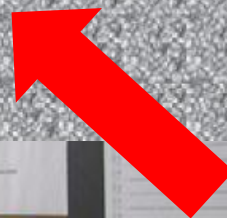
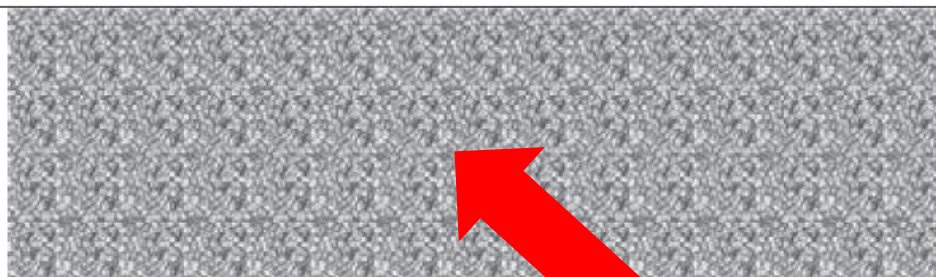




**Pacific Gas and
Electric Company®**

SmartAC[®] SIGN-UP SHEET

Sign Me Up!	Personal Code (From your letter)	Date (MM/DD)
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	____/____
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	____/____
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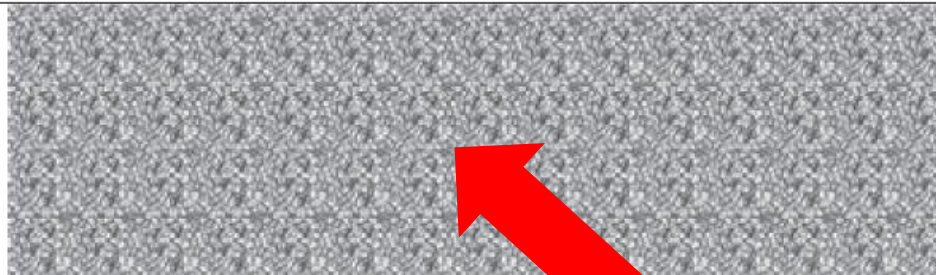




Pacific Gas and Electric Company®

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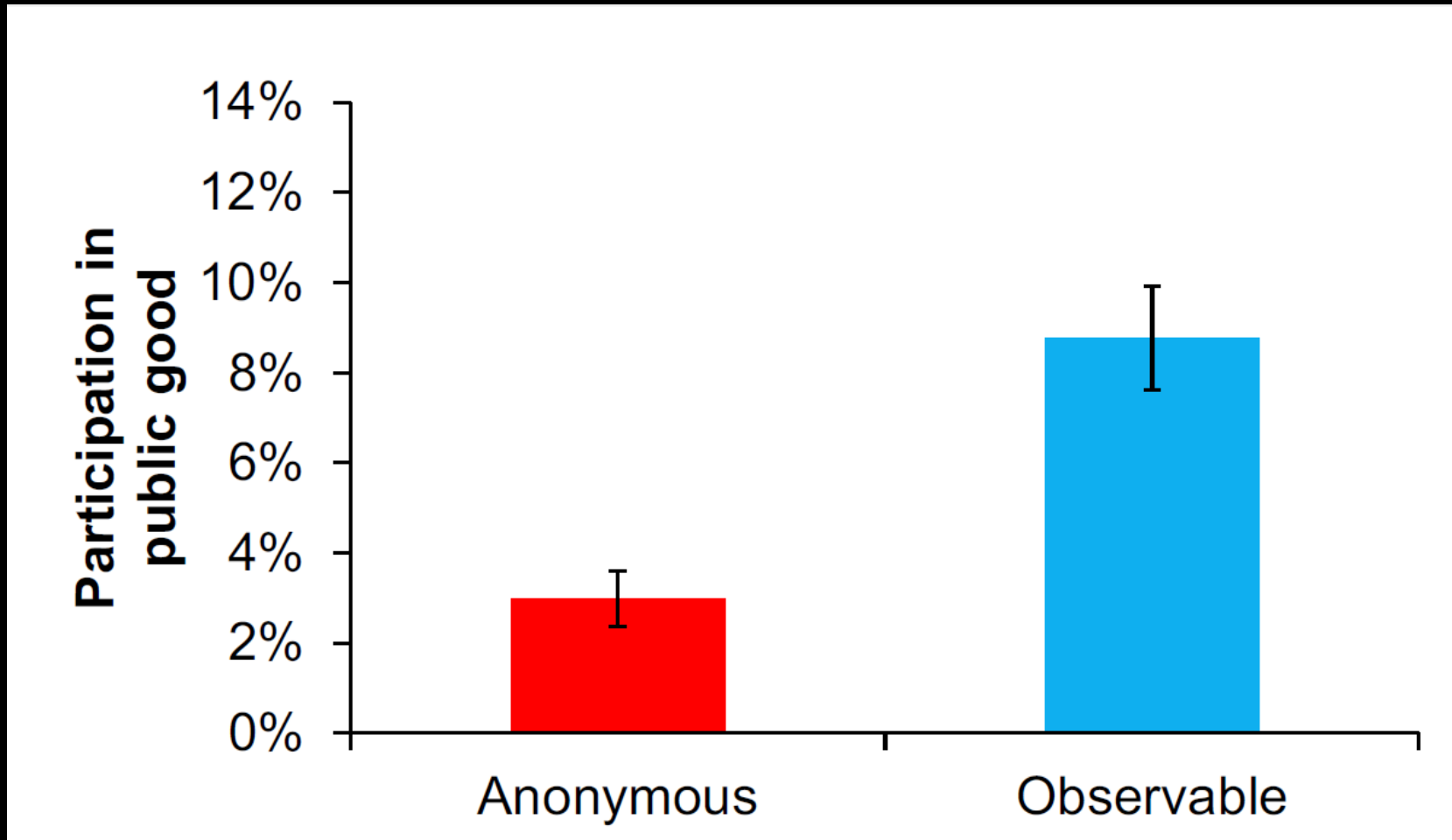
Sign Me Up!	Personal Code (From your letter)	Date (MM/DD)
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<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	____/____
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<input type="checkbox"/> Yes	_____	____/____



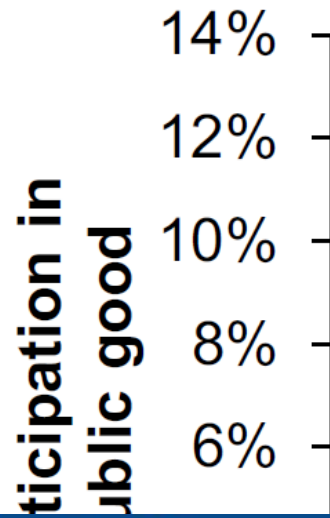
Pacific Gas and Electric Company®

SmartAC® SIGN-UP SHEET

Sign Me Up!	Personal Code (From your letter)	Date (MM/DD)	Apt. # (Please Print)	First Name (Please Print)	Last Name (Please Print)
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	____/____	_____	_____	_____
<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	____/____	_____	_____	_____
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<input type="checkbox"/> Yes	_____	____/____	_____	_____	_____



\$25 incentive had no sig effect
Observability 7x more effective



Yale Applied Cooperation Team

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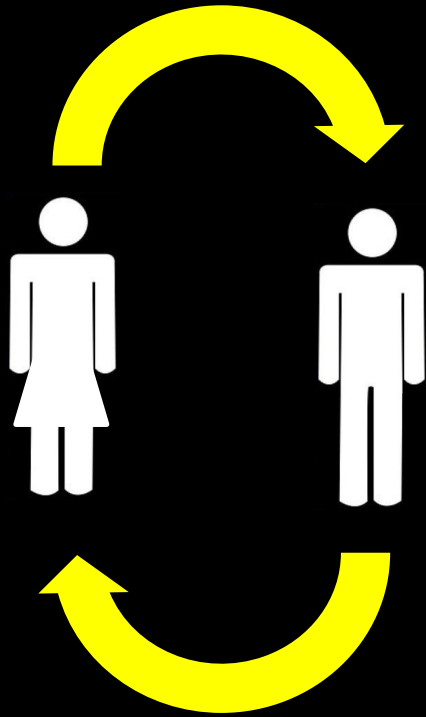


We are a team of researchers who apply lessons from the social sciences literature on cooperation to increase contributions to real-world public goods. We work with government agencies, non-profits, and for-profits on a range of problems, including energy conservation, compliance with smoking bans, disease reduction, and charitable donations.

Observable

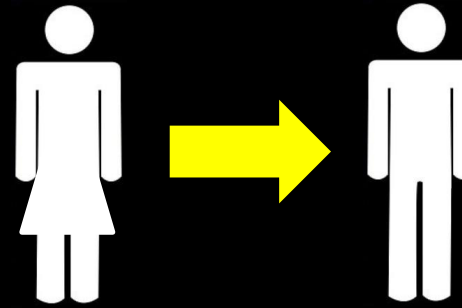
Effective

Strategic



Coordination:
Cooperation payoff-
maximizing if other
also cooperative

Pure



Social dilemma:
Not (objective) payoff-
maximizing to
cooperate

What explains
Pure cooperation?

Dual-process perspective

Slovic 1996, Stanovich & West 1998
Kahneman 2003, Evans 2008

Deliberation
vs
Intuition



Rational **self-control** of
greedy impulses?

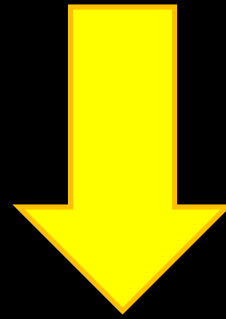


Intuitively cooperative,
rationally selfish?



Social Heuristics Hypothesis

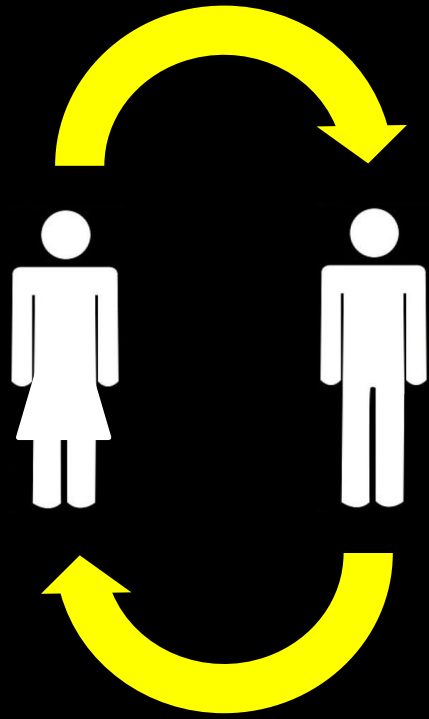
Typically long-run optimal behavior



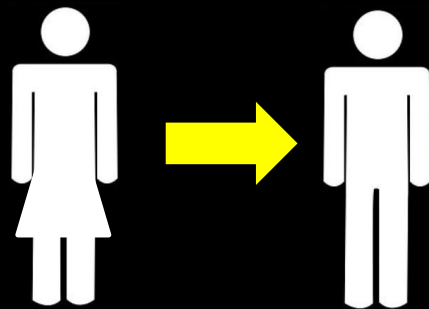
Internalized as intuitive
default “social heuristic”



Deliberation can **override**
in atypical situations



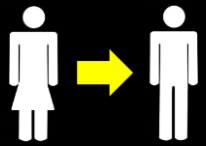
Intuition = cooperation



Deliberation = defection



Testable Predictions



Pure cooperation:

Deliberation **undermines** cooperation



Strategic cooperation:

Deliberation **supports** cooperation

Experimental evidence

Random effects meta-analysis

Pay \$ cost to give \$ benefit to other(s)

→ **Pure**: partner can't respond

→ **Strategic**: partner can respond

Intuition vs deliberation **manipulated**

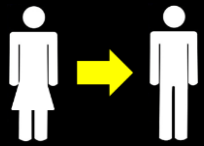
→ Time pressure/delay, cognitive load, ego depletion, intuition induction

67 studies from 26 groups, total N=17,647

→ No publication bias (Eggers or p-curve)

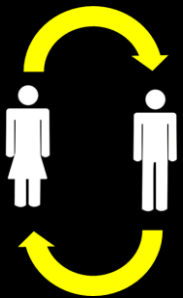
Experimental evidence

Random effects meta-analysis



Pure cooperation:

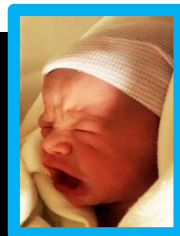
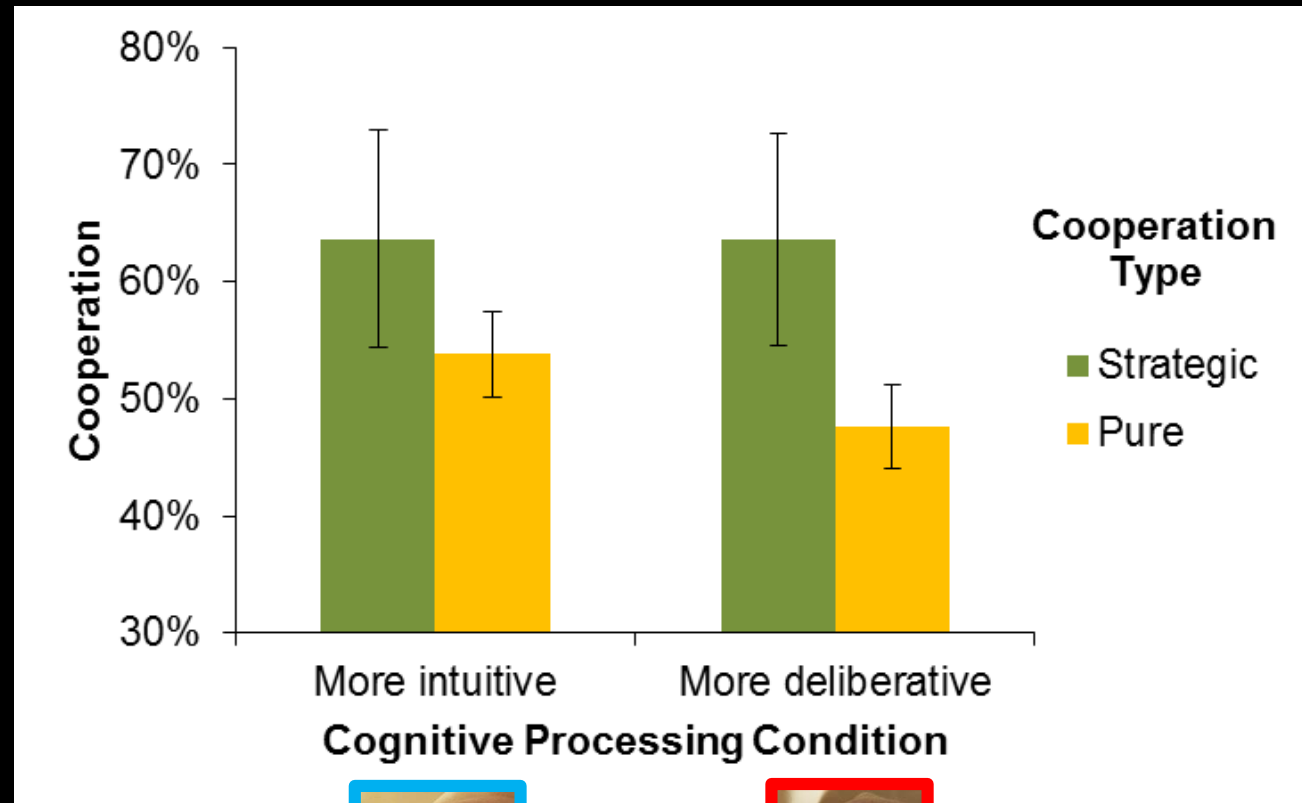
17.3% **more cooperation** when intuition is promoted relative to deliberation (ITT=13.5%)



Strategic cooperation:

No meaningful difference (1.0%) between intuition and deliberation, $p=.76$

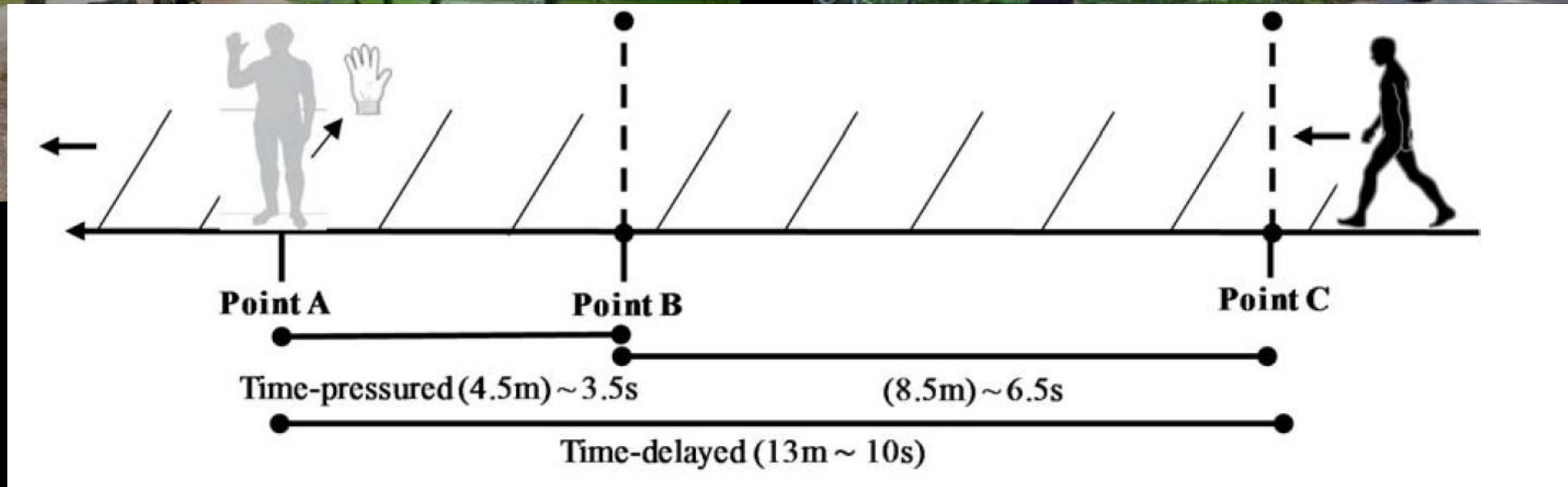
Intuition = **generalized** response
(less sensitive to incentives)



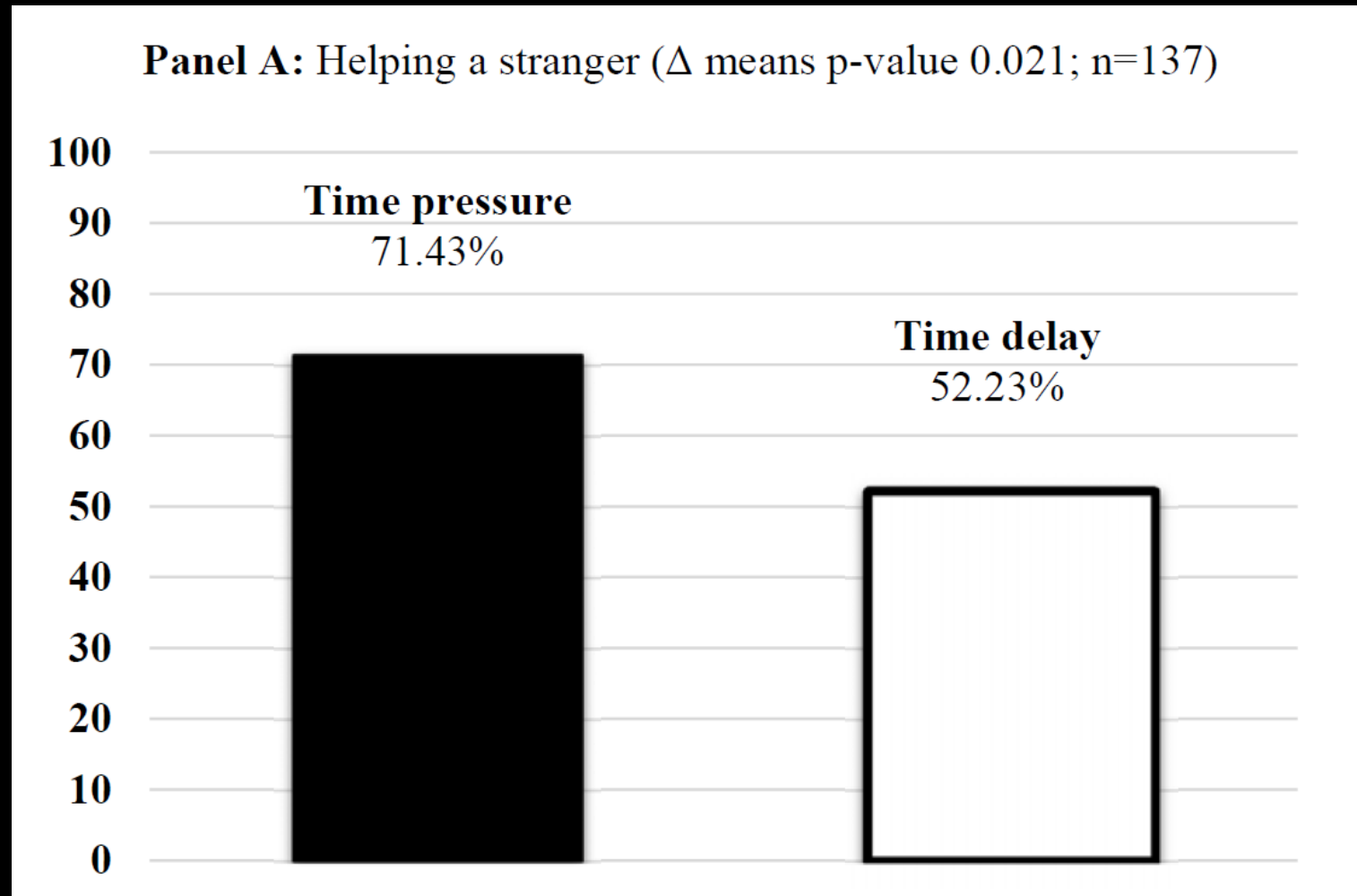
Intuitive cooperation in the **field**



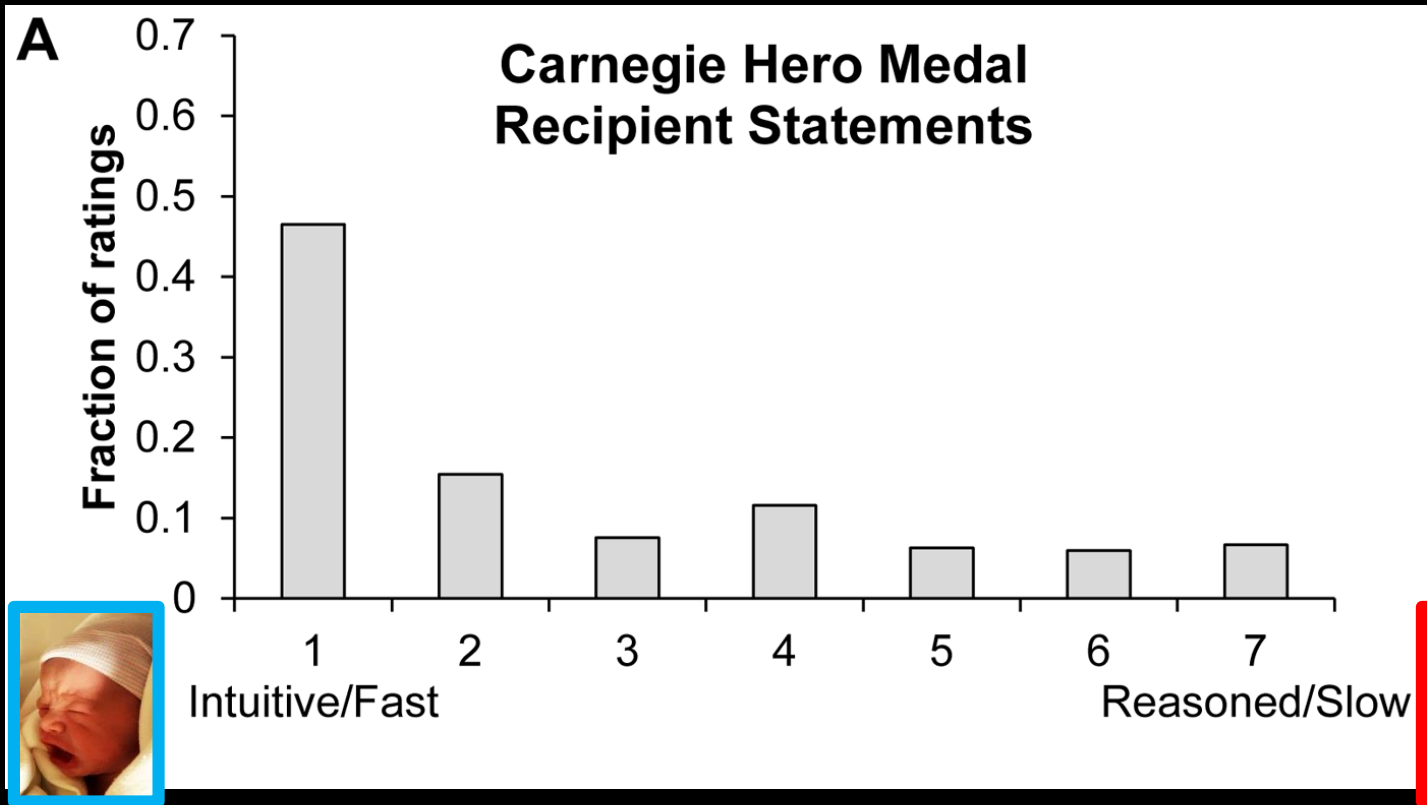
Intuitive cooperation in the field



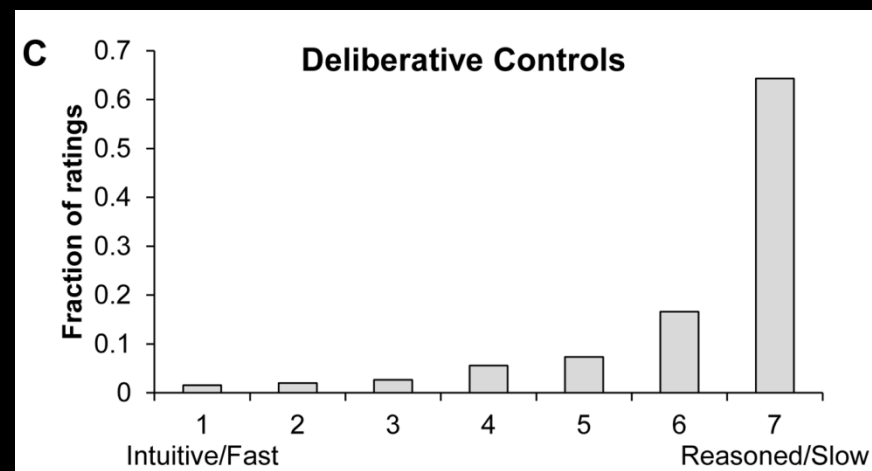
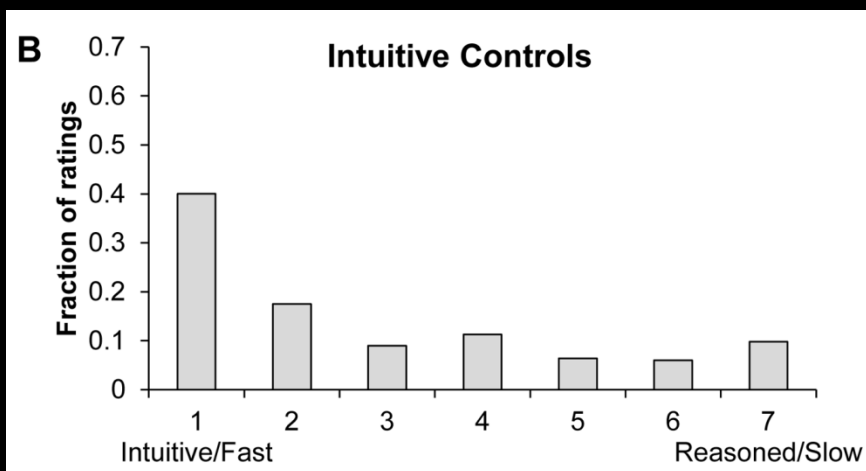
Intuitive cooperation in the field

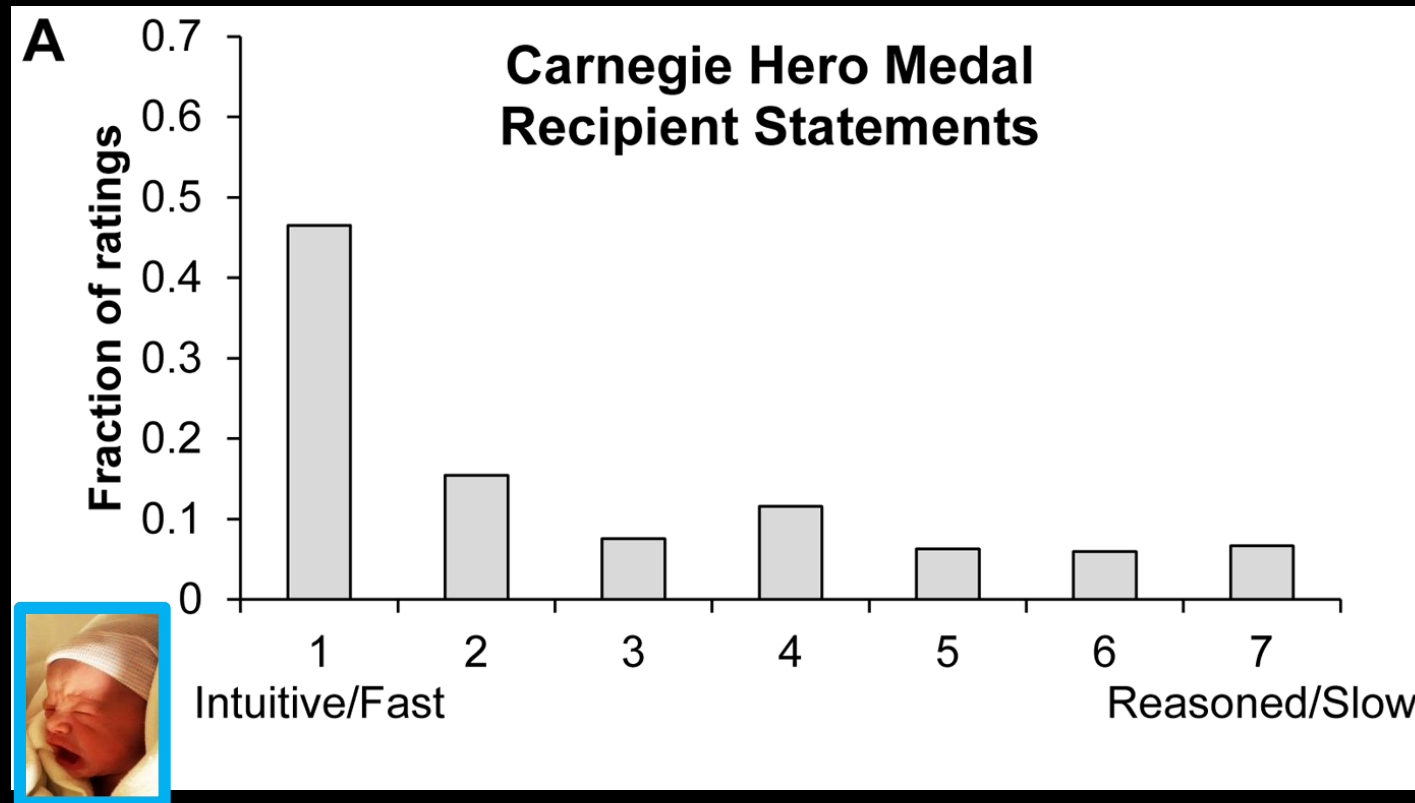


Intuitive heroism?



51 hero statements
rated by 312 Ss





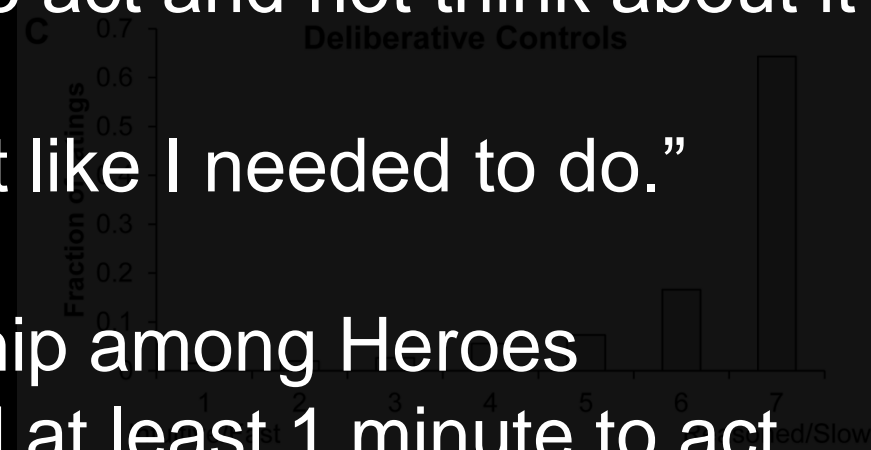
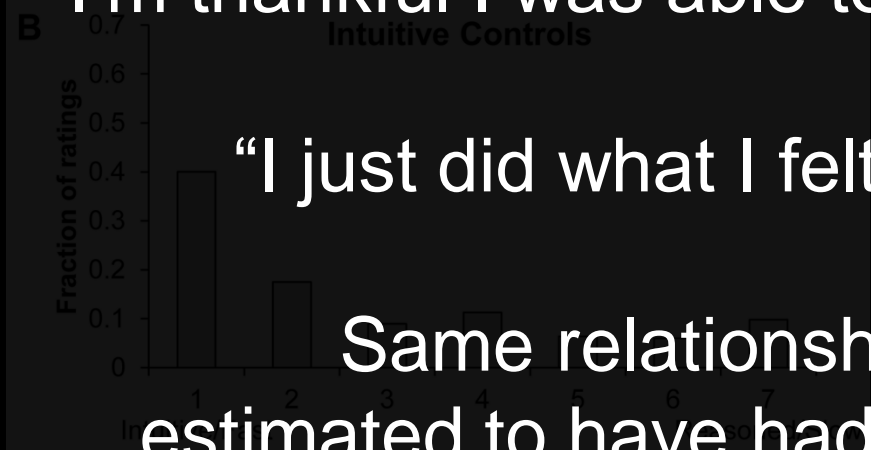
51 hero statements
rated by 312 Ss



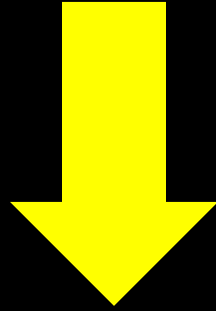
“I’m thankful I was able to act and not think about it”

“I just did what I felt like I needed to do.”

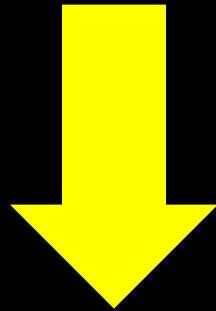
Same relationship among Heroes
estimated to have had at least 1 minute to act



Good institutions



Cooperation pays off



Cooperation internalized

Building cooperative cultures

Stage 1: 3-player 10 round Public Goods Game

→ 140 unit endowment, contributions x1.2

Manipulate institutional quality:

An Inspection Mechanism

There is a **20 in 100** chance of having your contribution **inspected** in each round.

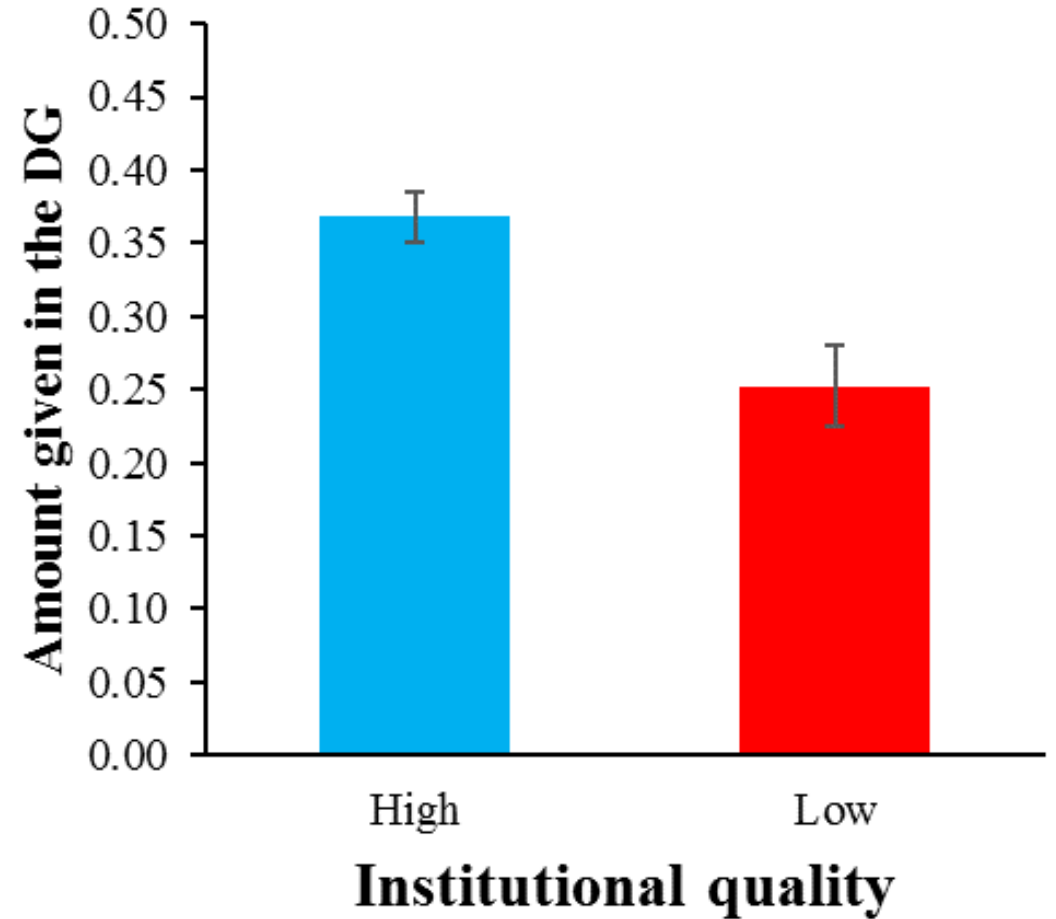
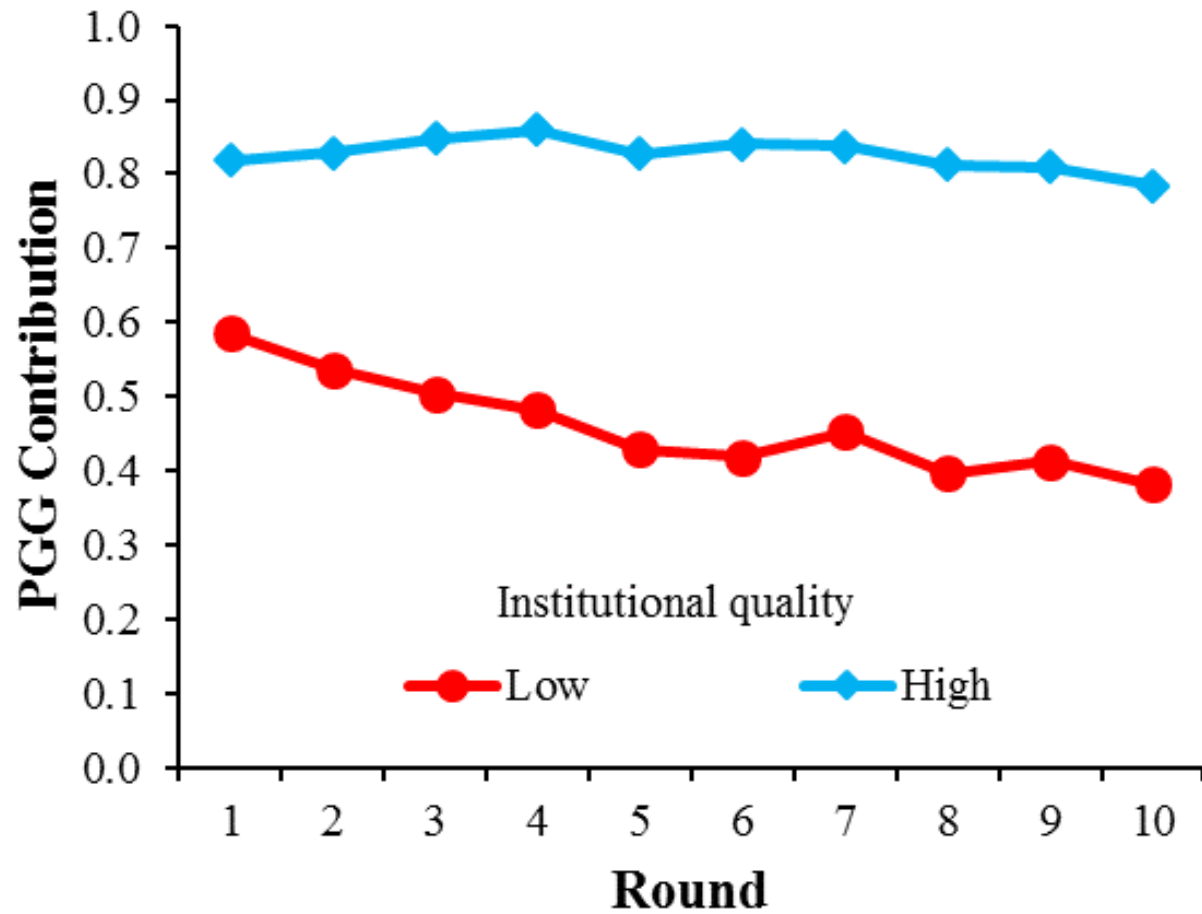
If you are inspected, you will be **fined** 1.5 points for every 1 point you chose to keep for yourself in this round.

Therefore, anyone who contributes less than the maximum of 140 points will be fined **if inspected**.

Stage 2: Split money with novel recipient (Dictator Game)

N=516 Mturkers

Building cooperative cultures



Signaling trustworthiness



Jillian Jordan

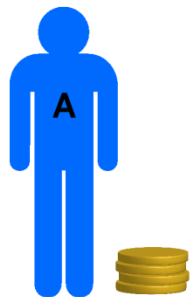
Intuition → **Insensitive** to strategic situation

“Uncalculating” cooperation in situation A
→ Likely to cooperate in situation B

Decision **process** gives information above and beyond
actual choice Pizarro et al 2003, Critcher et al 2013

Uncalculating cooperation used to signal **trustworthiness**

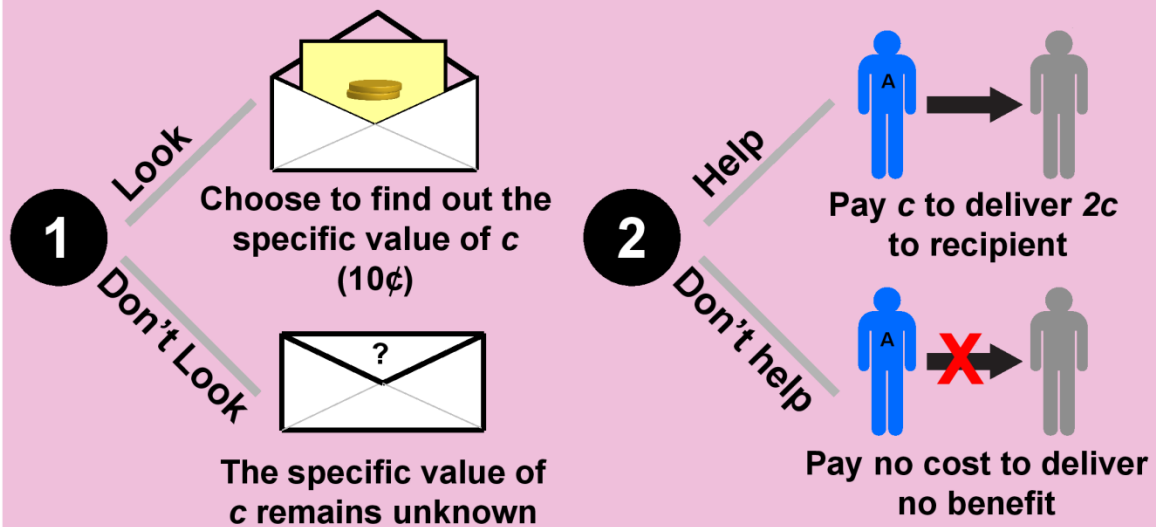
Stage 1: Helping Game



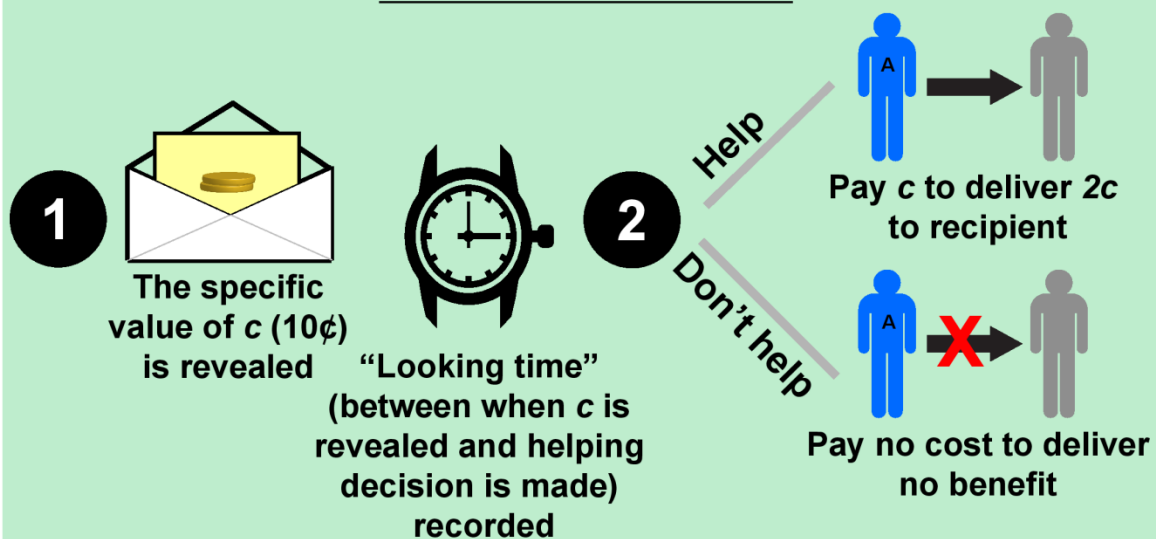
Player A starts with 20¢;
can pay c (between 0¢ and 20¢) to help another player

(c unknown)

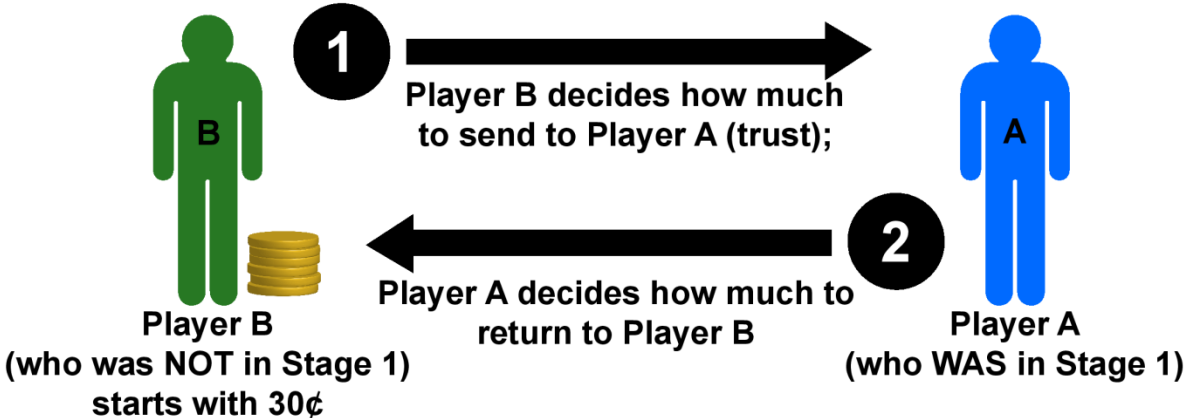
Study 1: Looking Choice



Study 2: Looking Time



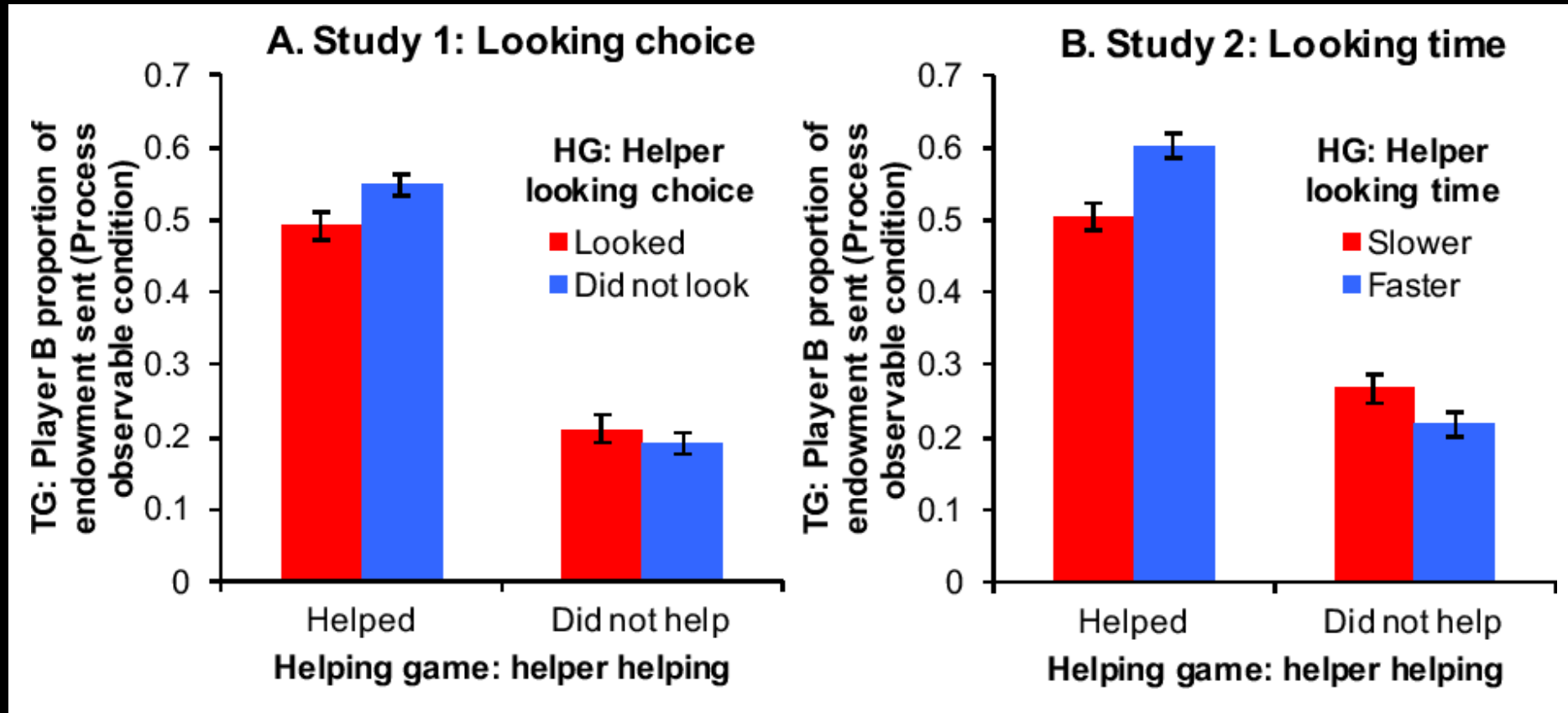
Stage 2: Trust Game



Process observable condition
Player B can base Stage 2 trust on Player A's Stage 1 helping *and* decision process

Process hidden condition
Player B can base Stage 2 trust on Player A's Stage 1 helping

Player B **perceives** decision process as signal



N=361

$p < .001$

$p = .08$

Interaction: $p < .001$

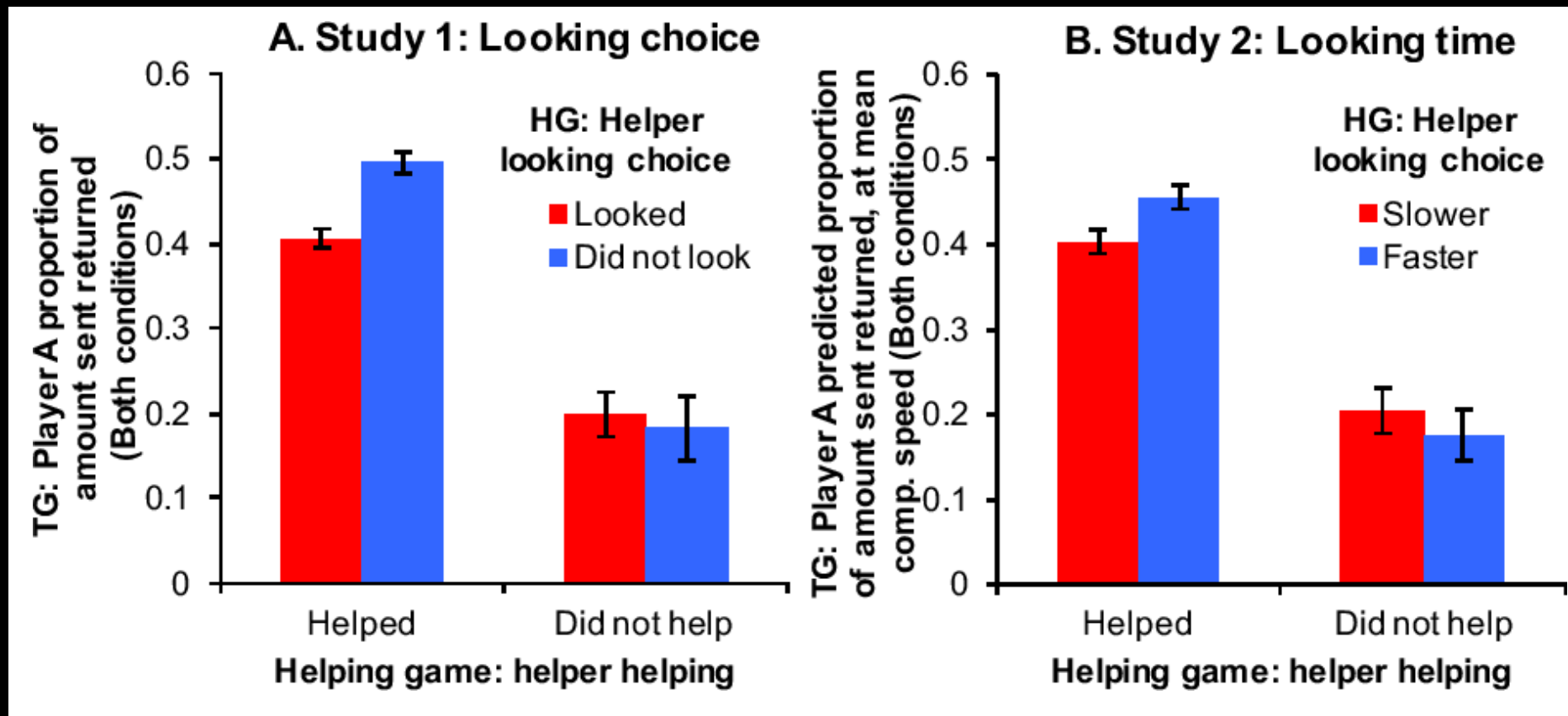
N=365

$p < .001$

$p < .001$

Interaction: $p < .001$

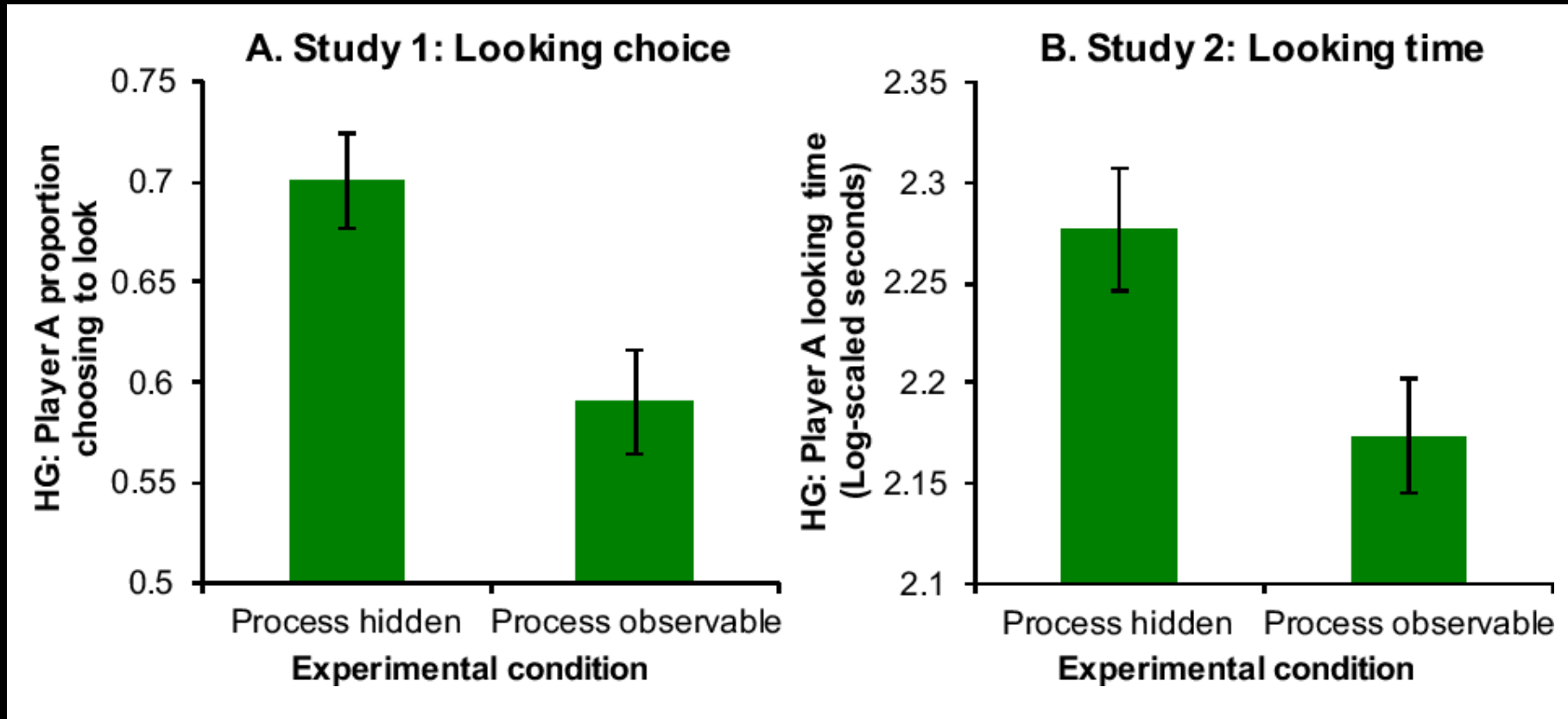
Decision process **is** signal of Player A trustworthiness



N=595 N=140
p<.001 p=.718
Interaction: p=.031

N=624 N=113
p=.021 p=.486
Interaction: p=.019
[Controlling for reading speed]

Player A **uses** decision process as a signal



N=735
p=.002

N=737
p=.014

Future consequences make cooperation pay off

People cooperate **even in 1-shot** situations

Intuition = easy/fast but **inflexible**, shaped by **typical** interactions

For our subjects, **intuition** favors
cooperation (pure and strategic)

Deliberation undermines pure cooperation,
but supports **strategic** cooperation

Good institutions can create **habits of prosociality**

Uncalculating cooperation is not only
about cognitive ease – also **reputation** motives

Feature Review

Human cooperation

David G. Rand¹ and Martin A. Nowak²

¹Department of Psychology, Department of Economics, Program in Cognitive Science, School of Management, Yale University, New Haven, CT, USA

²Program for Evolutionary Dynamics, Department of Mathematics, Department of Organismic and Evolutionary Biology, Harvard University, Cambridge, MA, USA

Why should you help a competitor? Why should you contribute to the public good if free riders reap the benefits of your generosity? Cooperation in a competitive world is a conundrum. Natural selection opposes the evolution of cooperation unless specific mechanisms are at work. Five such mechanisms have been proposed: direct reciprocity, indirect reciprocity, spatial selection, multilevel selection, and kin selection. Here we discuss empirical evidence from laboratory experiments and field studies of human interactions for each mechanism. We also consider cooperation in one-shot, anonymous interactions for which no mechanisms are apparent. We argue that this behavior reflects the overgeneralization of cooperative strategies learned in the context of direct and indirect reciprocity: we show that automatic, intuitive responses favor cooperative strategies that reciprocate.

The challenge of cooperation

In a cooperative (or social) dilemma, there is tension between what is good for the individual and what is good for the population. The population does best if individuals cooperate, but for each individual there is a temptation to defect. A simple definition of cooperation is that one individ-

defection [1]. These interaction structures specify how the individuals of a population interact to receive payoffs, and how they compete for reproduction. Previous work has identified five such mechanisms for the evolution of cooperation (Figure 1): direct reciprocity, indirect reciprocity, spatial selection, multilevel selection, and kin selection. It is important to distinguish between interaction patterns that are mechanisms for the evolution of cooperation and behaviors that require an evolutionary explanation (such as strong reciprocity, upstream reciprocity, and parochial altruism; Box 2).

In this article, we build a bridge between theoretical work that has proposed these mechanisms and experimental work exploring how and when people actually cooperate. First we present evidence from experiments that implement each mechanism in the laboratory. Next we discuss why cooperation arises in some experimental settings in which no mechanisms are apparent. Finally, we consider the cognitive underpinnings of human cooperation. We show

Glossary

Evolutionary dynamics: mathematical formalization of the process of evolution

Cooperators



Paul Bloom
Nicholas Christakis
Anna Dreber
Kyle Dillon
Tony Evans
Drew Fudenberg
Josh Greene
Moshe Hoffman
Martin Nowak
Alex Peysakhovich
Erez Yoeli

1. Rand et al. (2011) Dynamic networks promote cooperation in experiments with humans. *PNAS*.
2. Rand et al. (2012) Spontaneous giving and calculated greed. *Nature*.
3. Rand Nowak (2013) Human cooperation. *TiCS*.
4. Yoeli et al. (2013) Powering up with indirect reciprocity in a large-scale field experiment. *PNAS*
5. Rand et al. (2014) Social heuristics shape intuitive cooperation. *Nature Comm*.
6. Rand Epstein (2014) Risking your life without a second thought. *PLoS ONE*.
7. Bear Rand (2016) Intuition, deliberation, and the evolution of cooperation. *PNAS*.
8. Rand (2016) Cooperation, fast and slow: Meta-analytic evidence for social heuristics & self-interested deliberation. *Psychological Science*.
9. Stagnaro et al (2016) From good institutions to good norms. *SSRN working paper*.
10. Jordan et al (2016) Uncalculating cooperation is used to signal trustworthiness. *PNAS*.

Discussed during question period

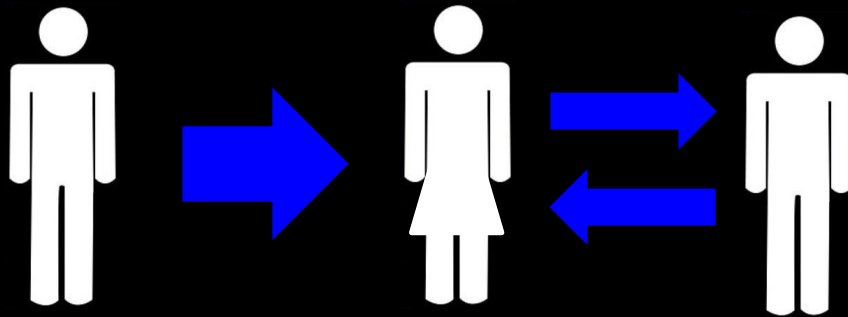
Cooperation versus **altruism**

Cooperation: possibility for **mutual** benefit

→ Pays off in repeated interactions

Altruism (e.g. unilateral cash transfers)

→ Only pays off if required by **social norms**



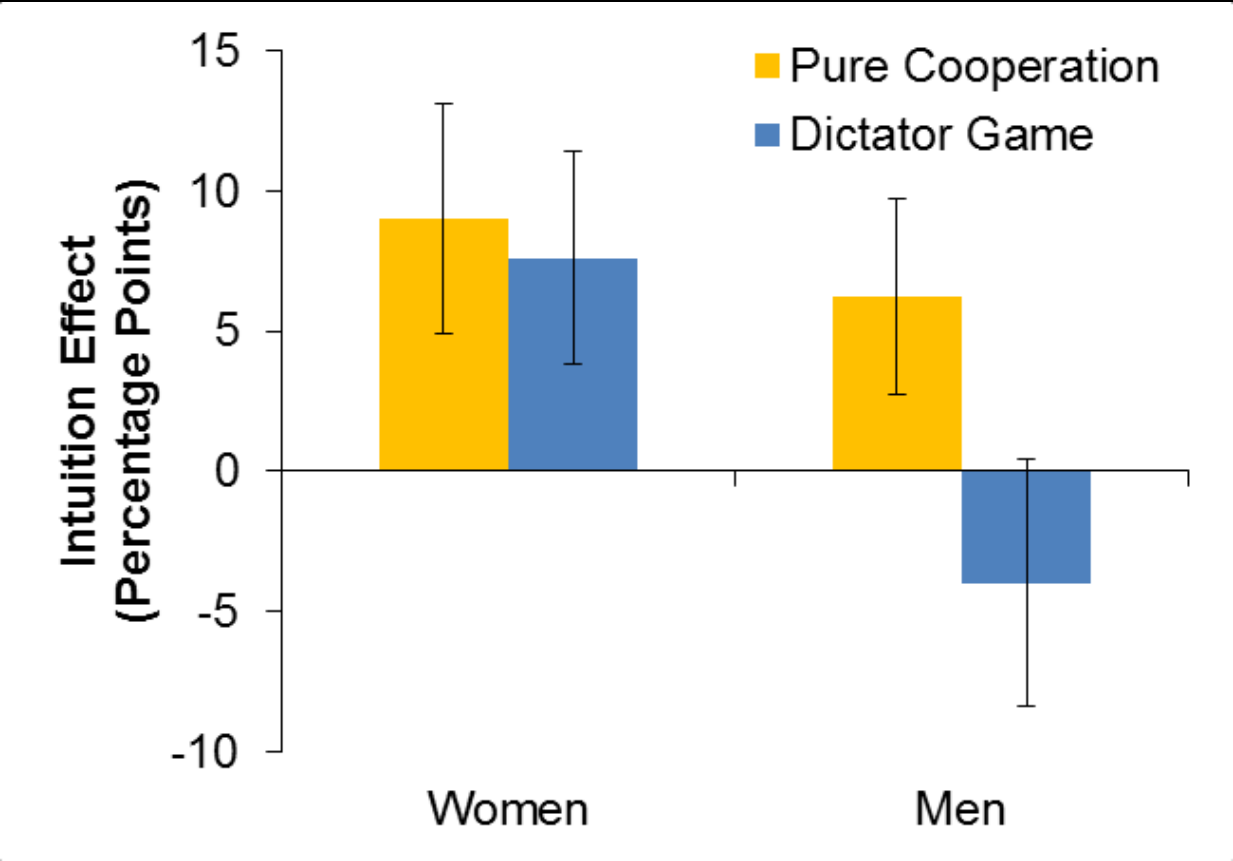
Intuitive **altruism**?

Prediction: altruism typically advantageous (and therefore intuitive) only to people for whom **social norms** require altruistic behavior

→ **Women** expected to be communal, men agentic; women punished if insufficiently communal Eagley, 1987; Heilman & Okimoto, 2007

Meta-analysis of 22 studies (N=4,366)

- Dictator game: zero-sum unilateral \$ transfer
- Manipulating cognitive processing
- 13 new studies, 9 previously published



Department of Psychological and Behavioural Science
public lecture
Human Cooperation

Dr David Rand

Associate Professor of Psychology, Economics, and Management, Yale University

Director of Human Cooperation Laboratory, Yale University

Dr Bradley Franks

Chair, LSE

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