Measuring Social Preferences

Maxwell Burton-Chellew

Evolving utility functions: can evolutionary biology explain why homo is not economicus?

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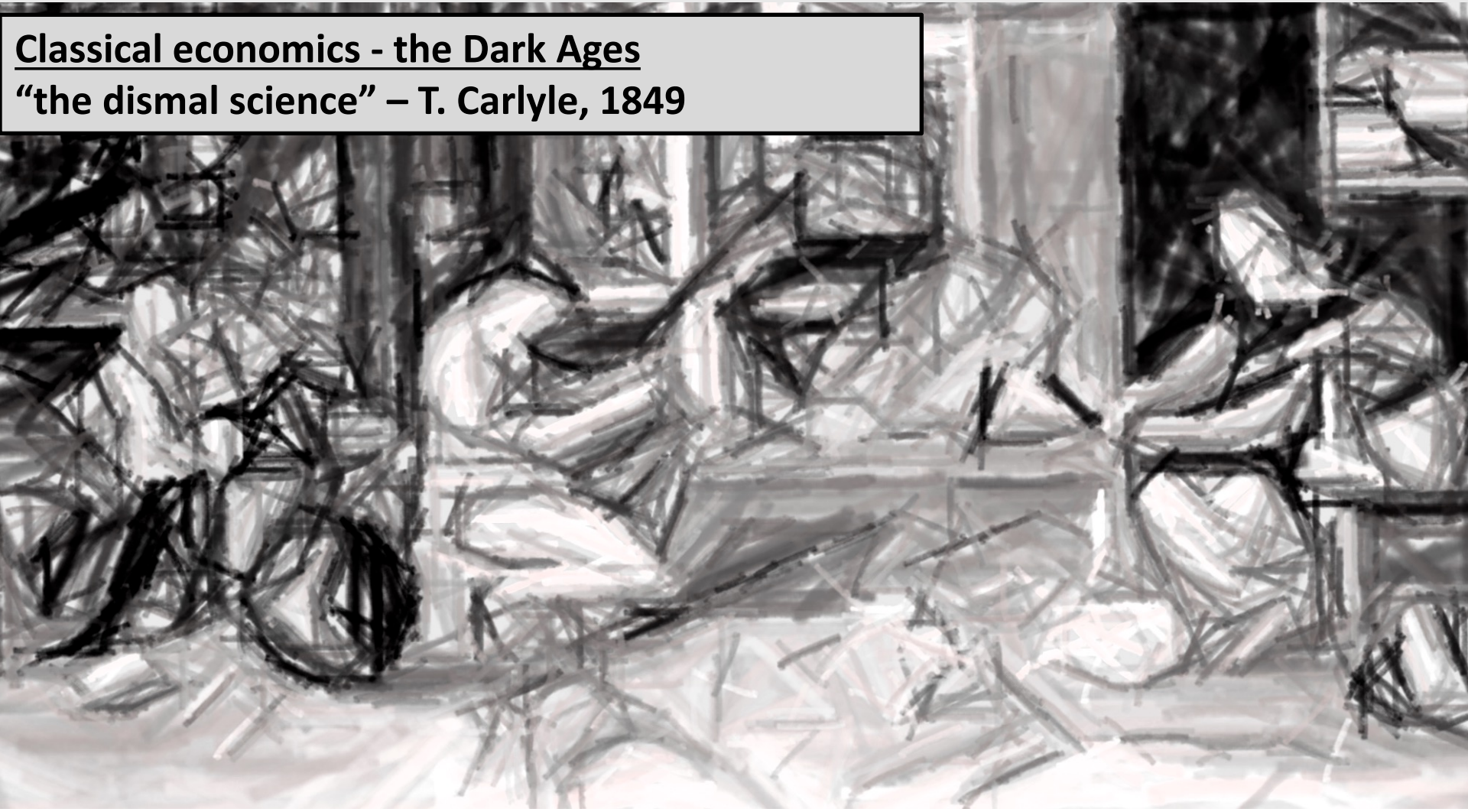

Classical economics - the Dark Ages

"the dismal science" – T. Carlyle, 1849

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Why dismal predictions?

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Why dismal predictions?

MOTIVATIONS

"Political economy [is concerned with]… a being who desires to possess wealth, and who is capable of judging the comparative efficacy of means for obtaining that end." – JS Mill, 1836

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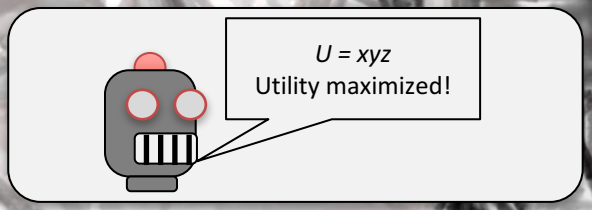
COMPUTATION

"The hedonistic conception of man is that of a lightning calculator of pleasures and pains" – T. Veblen, 1898



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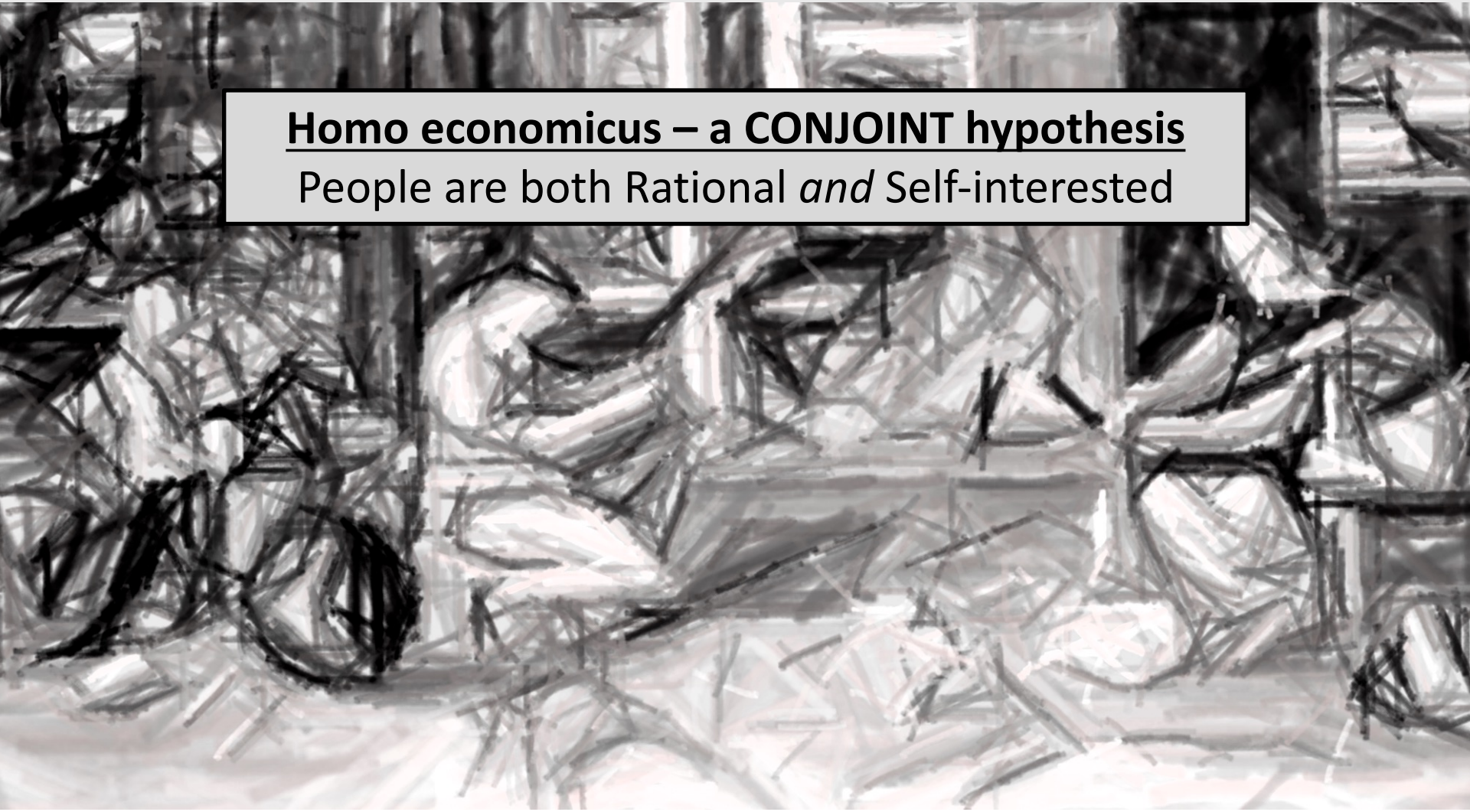

Homo economicus – a CONJOINT hypothesis

People are both Rational *and* Self-interested

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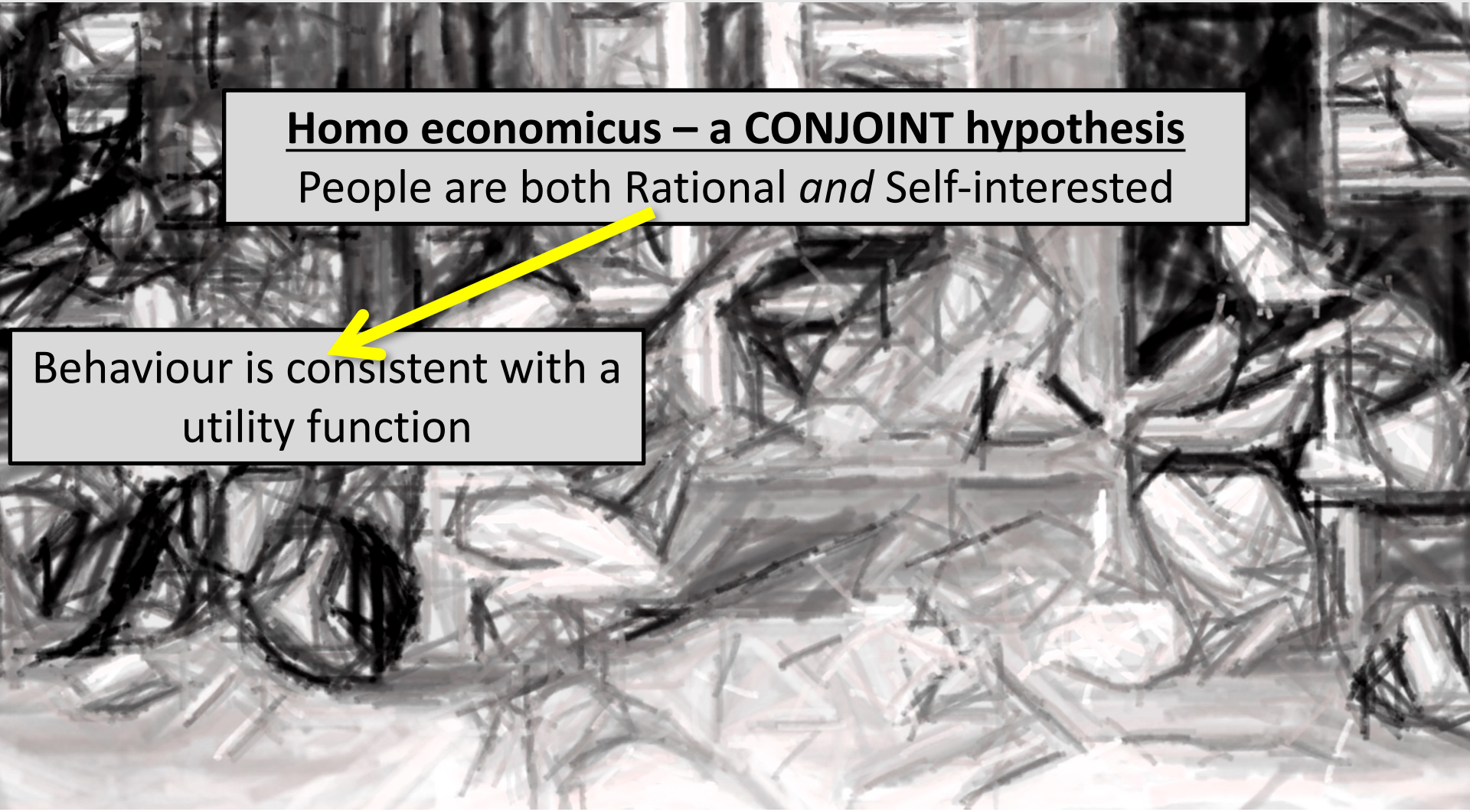

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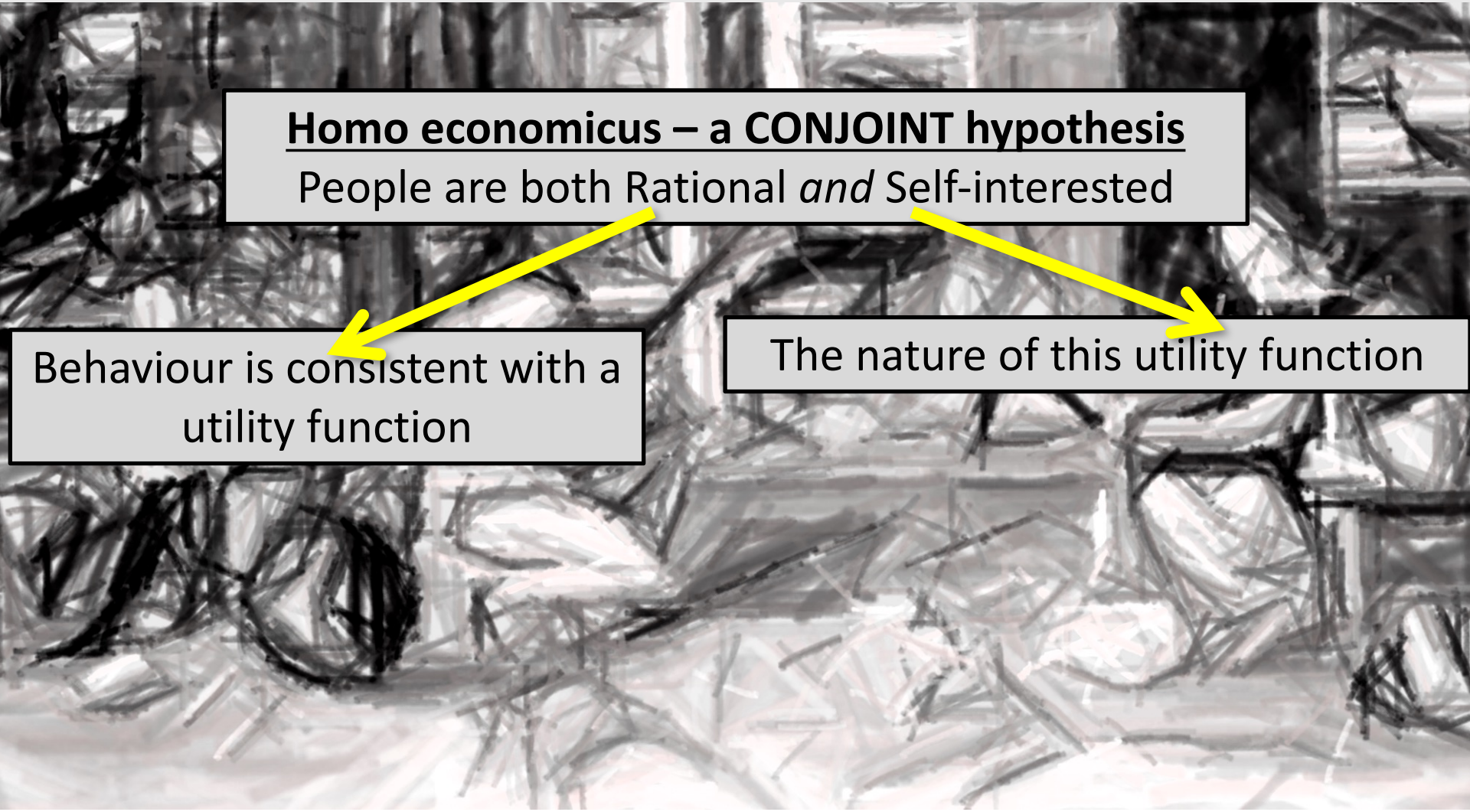

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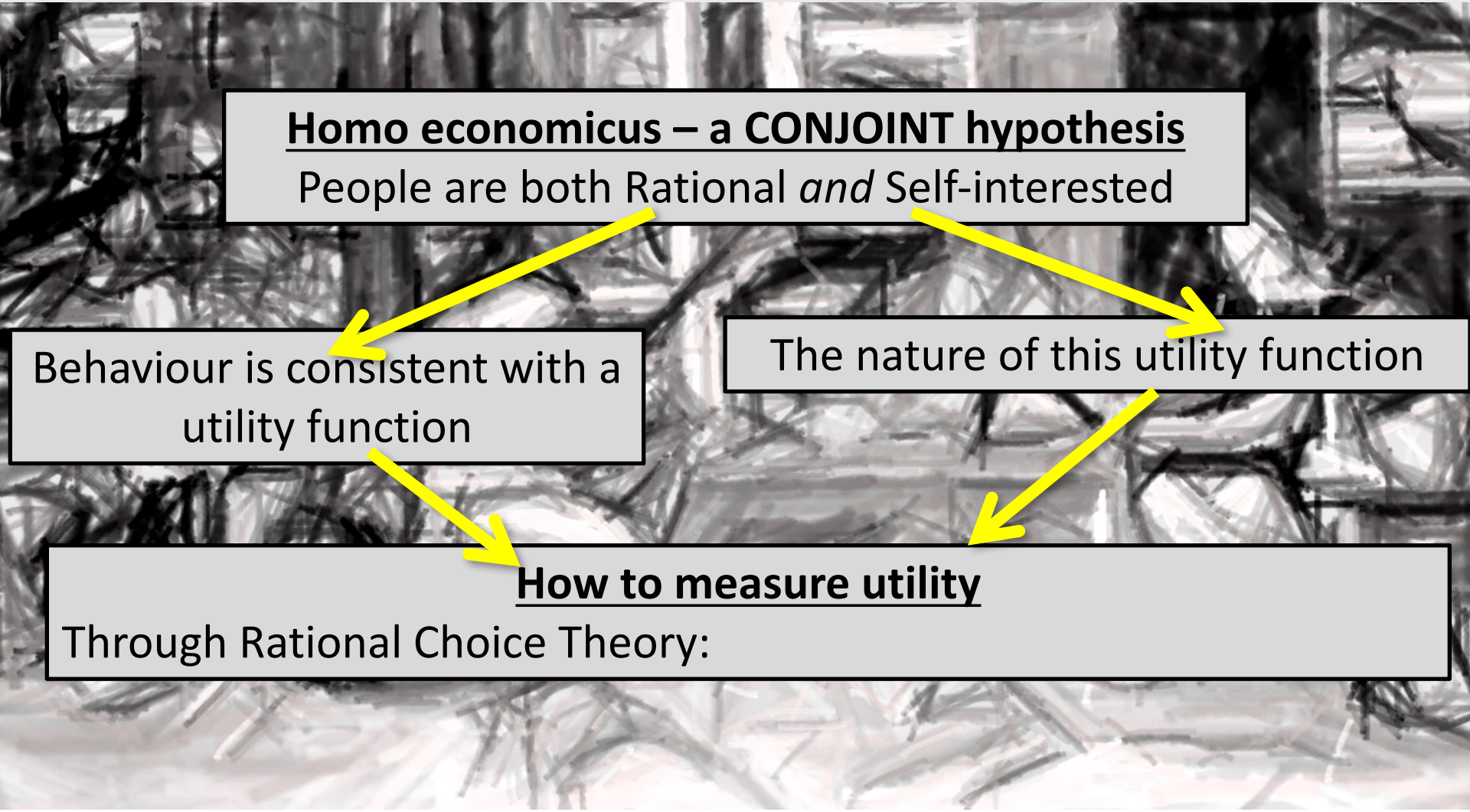

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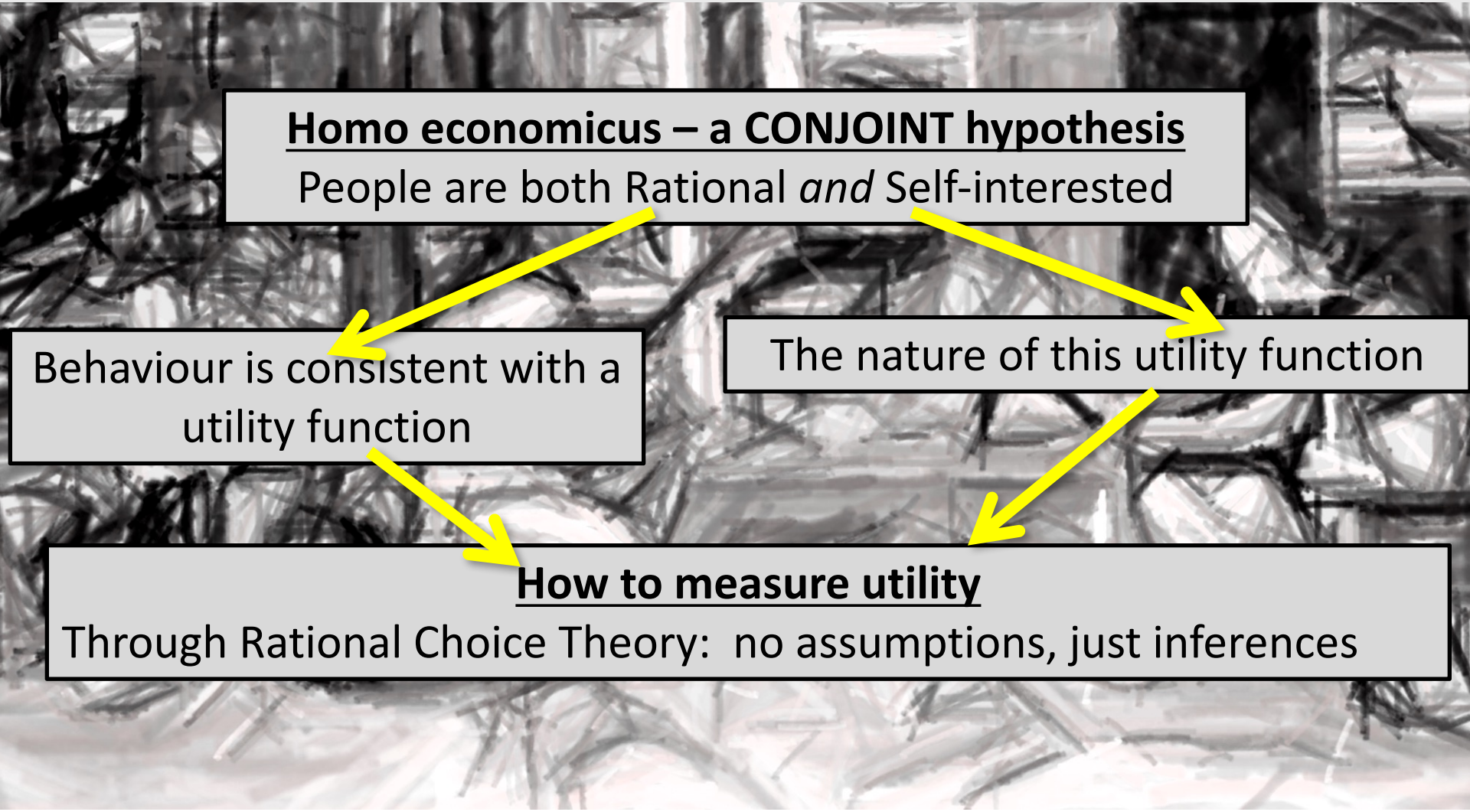

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Behavioural Economics – the age of Enlightenment

What changed?

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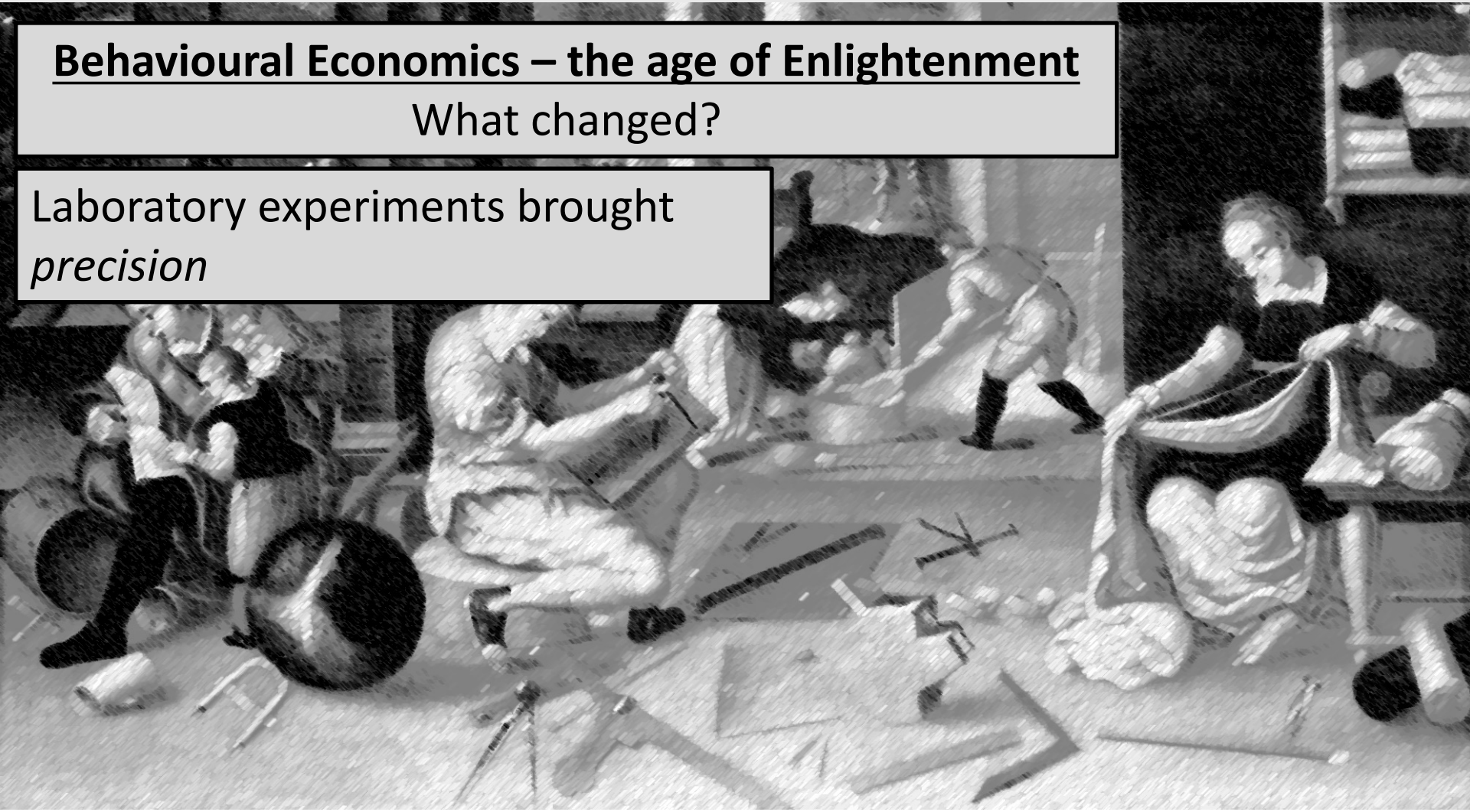

Behavioural Economics – the age of Enlightenment

What changed?

Laboratory experiments brought *precision*

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Laboratory experiments brought
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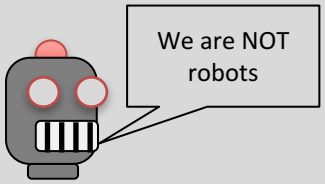
The application of Rational Choice Theory to Experimental Economics has taught us two things:



1) **People are *not rational***
(make systematic mistakes that reduce their own welfare,
e.g. present bias, overconfidence, loss aversion,…)

2) **People are *not selfish***
(make systematic decisions that reduce their own welfare *and benefit others,*
e.g. sharing with others, investing in others, punishing others,…)

why homo is not economicus?

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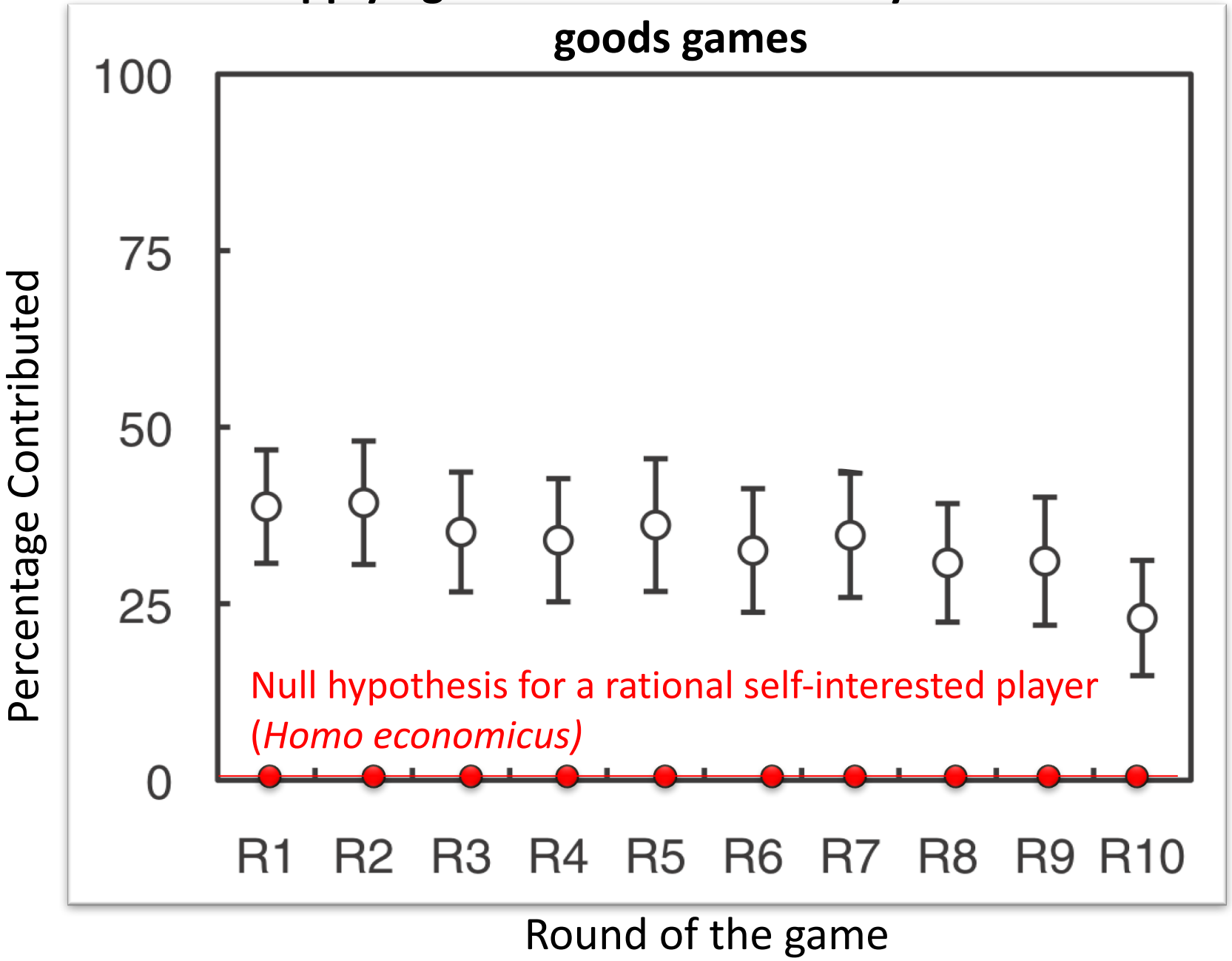
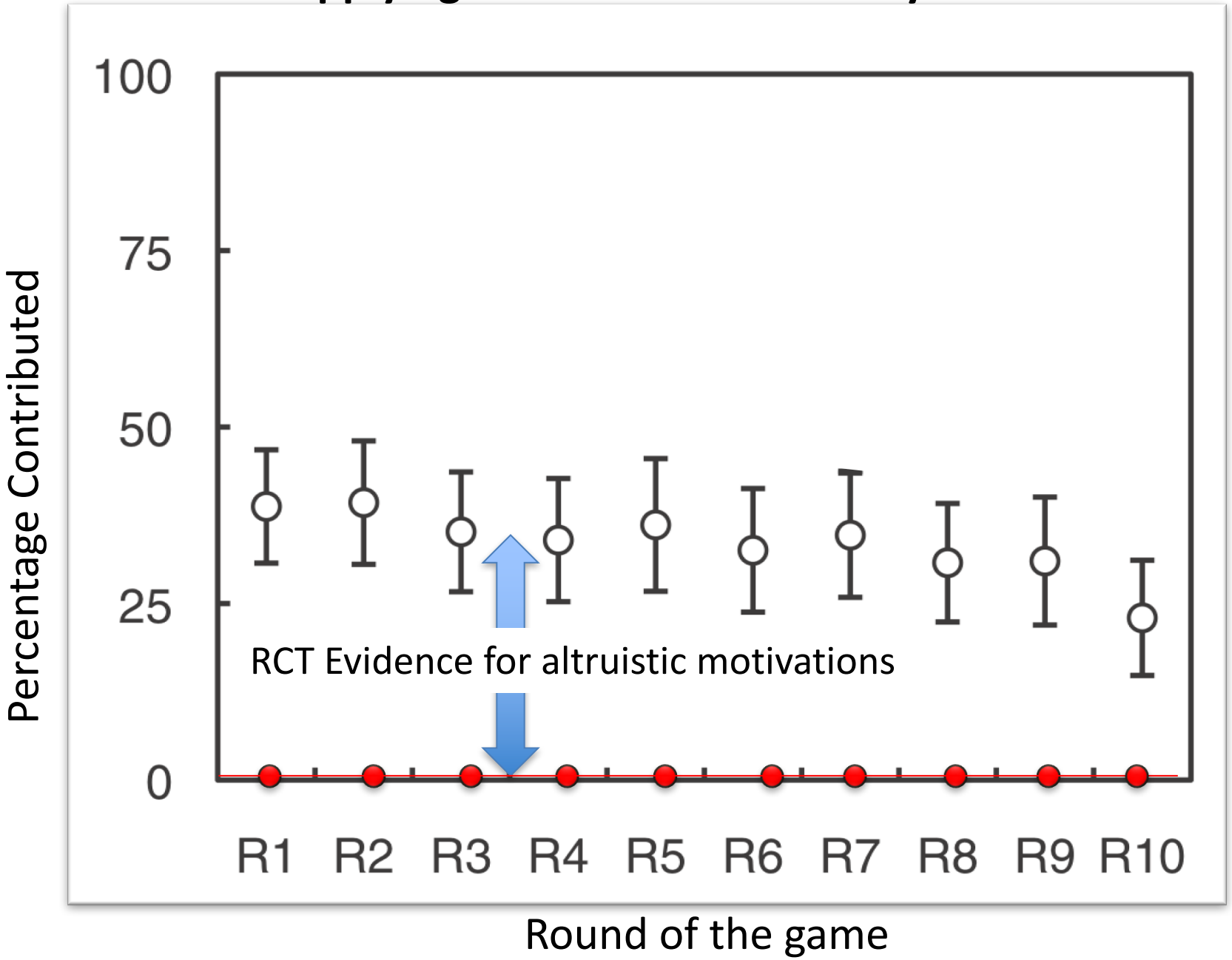
Applying Rational Choice Theory to Public goods games



Applying Rational Choice Theory to PGG



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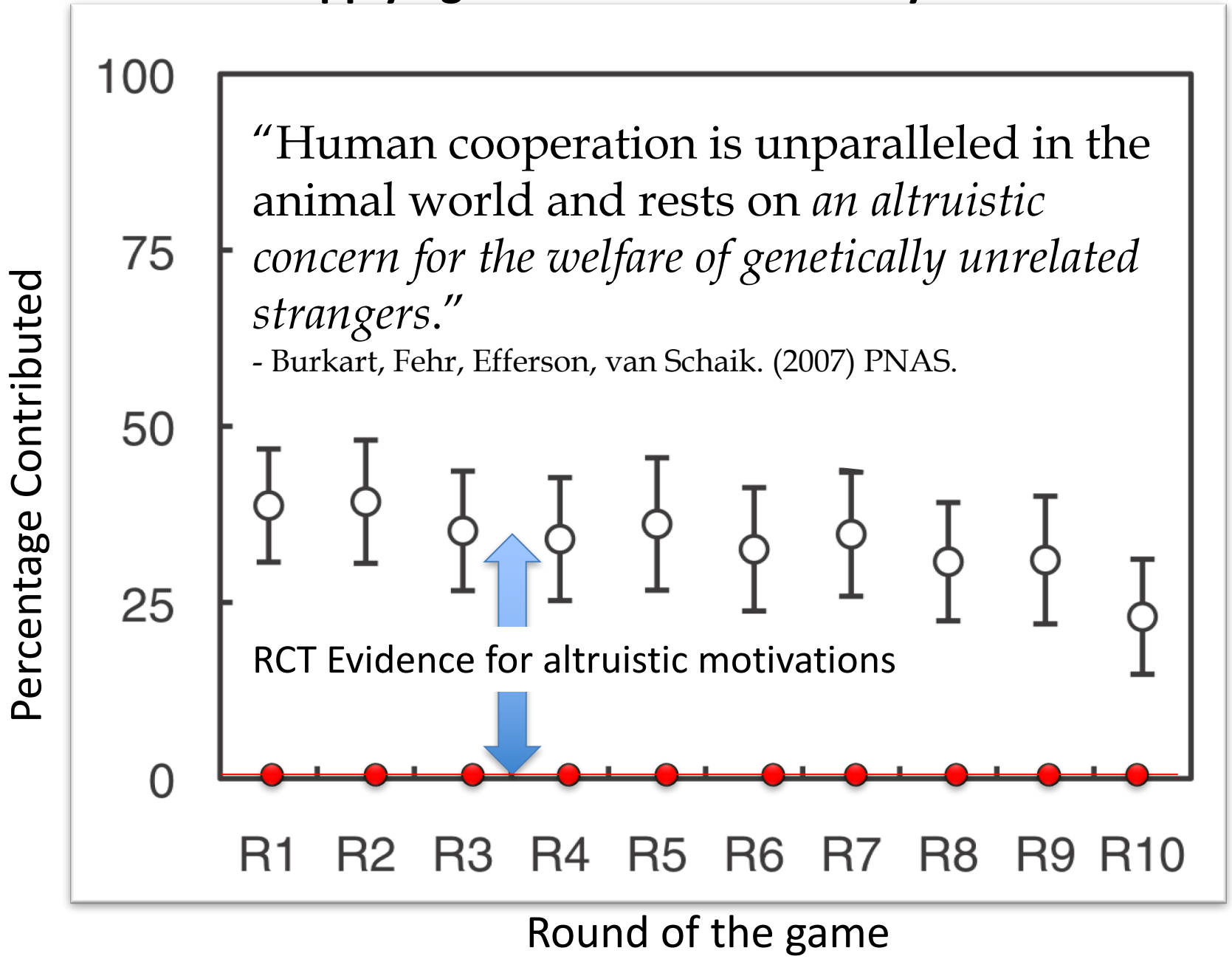
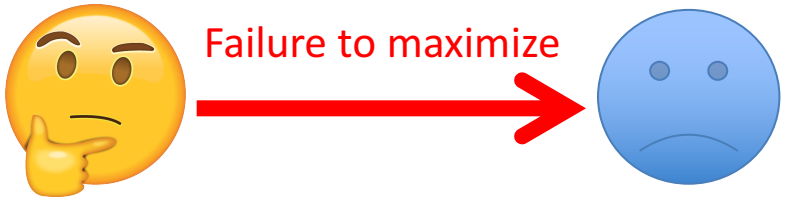


An inconsistent use of Rational Choice Theory?

Behavioural Econ.



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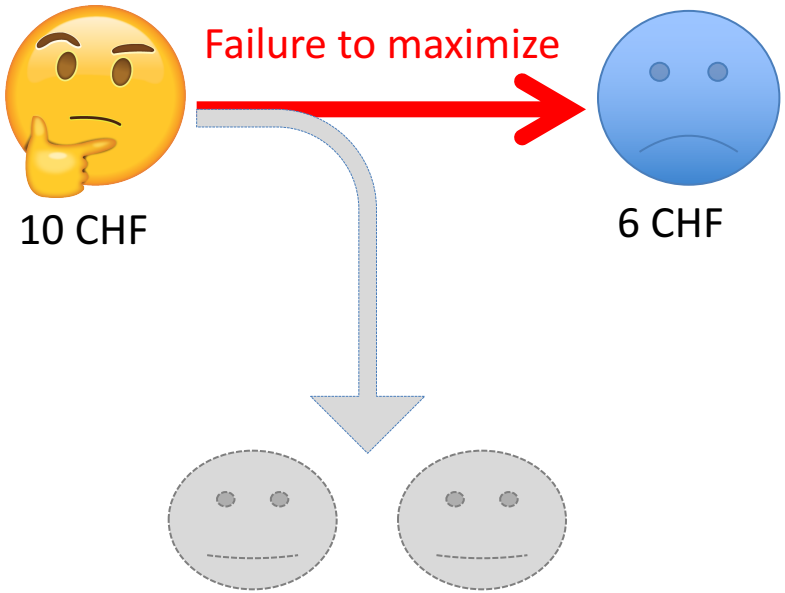

✗ No social consequences

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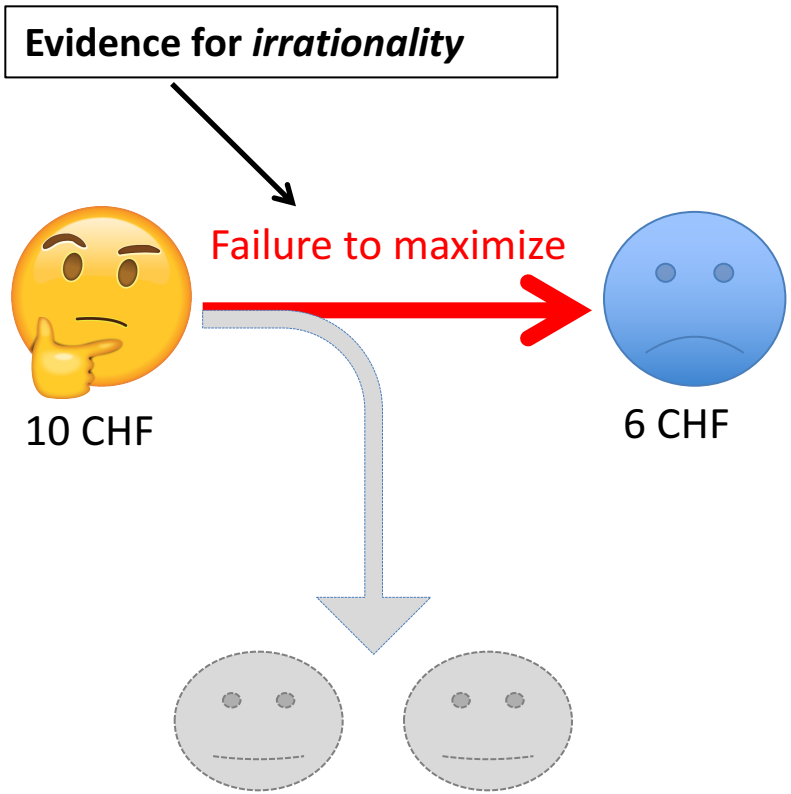

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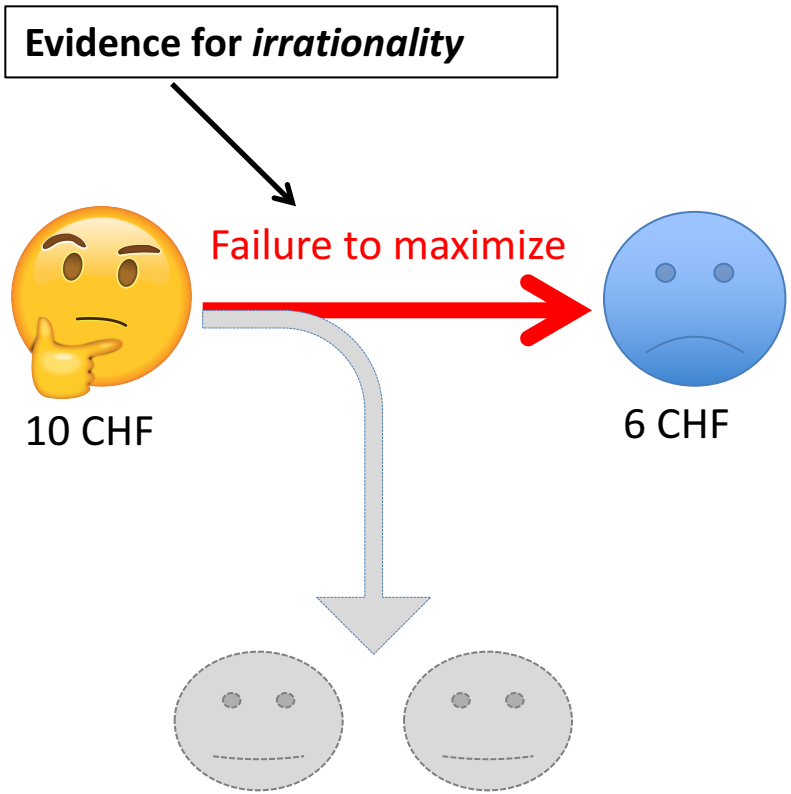

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Social Behavioural Econ.

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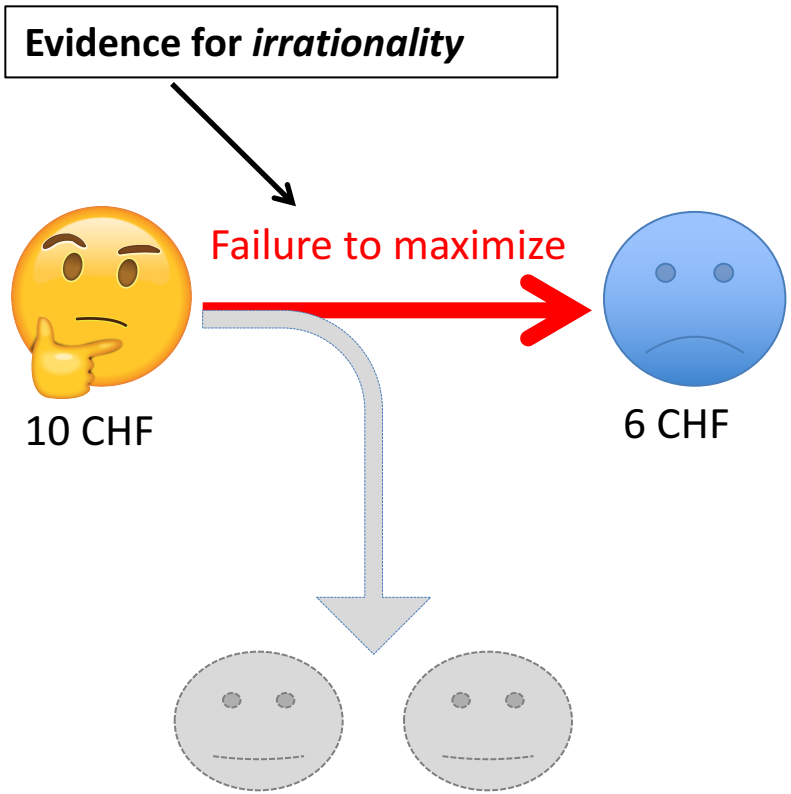

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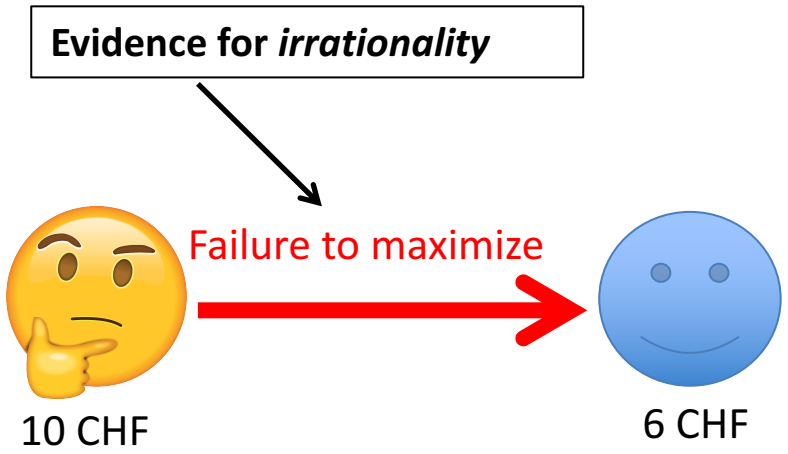

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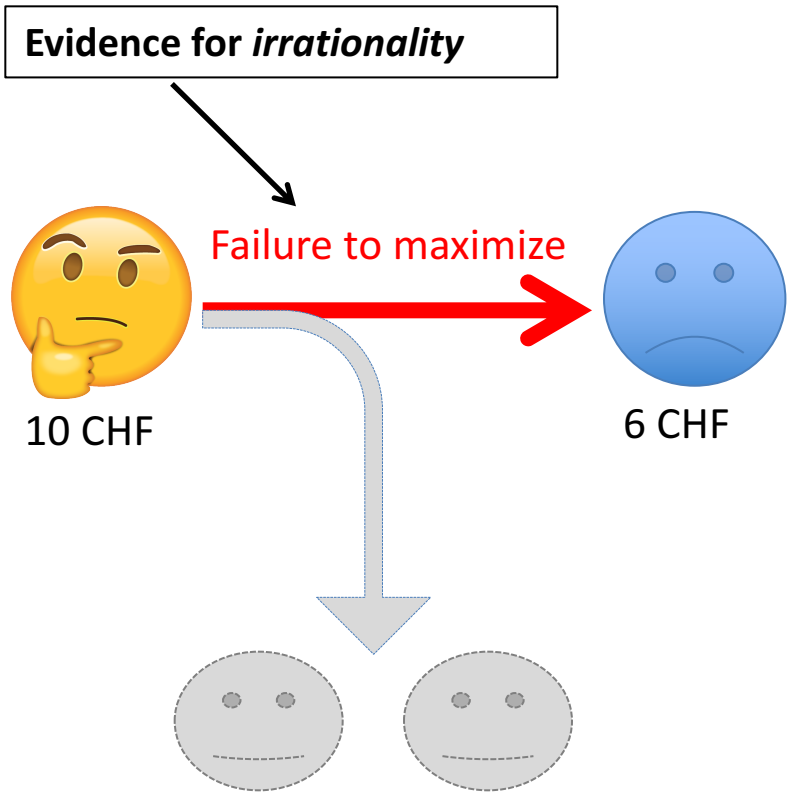

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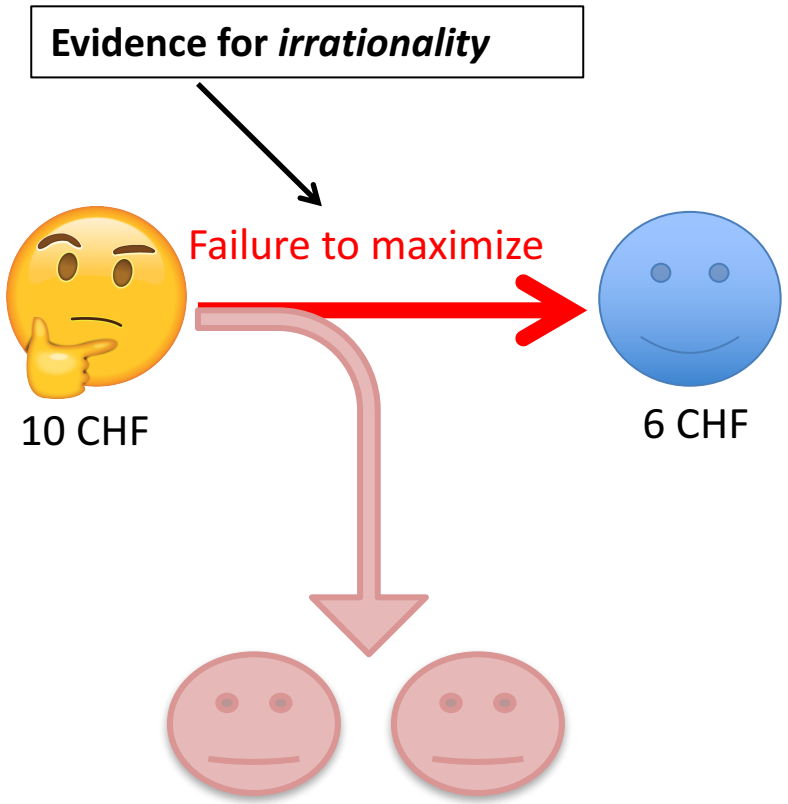

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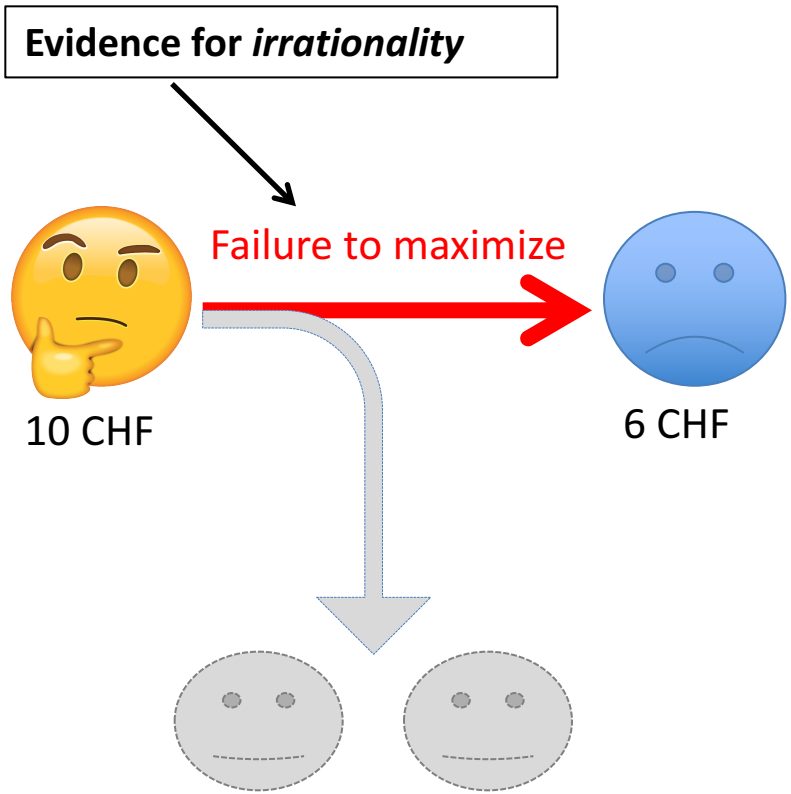

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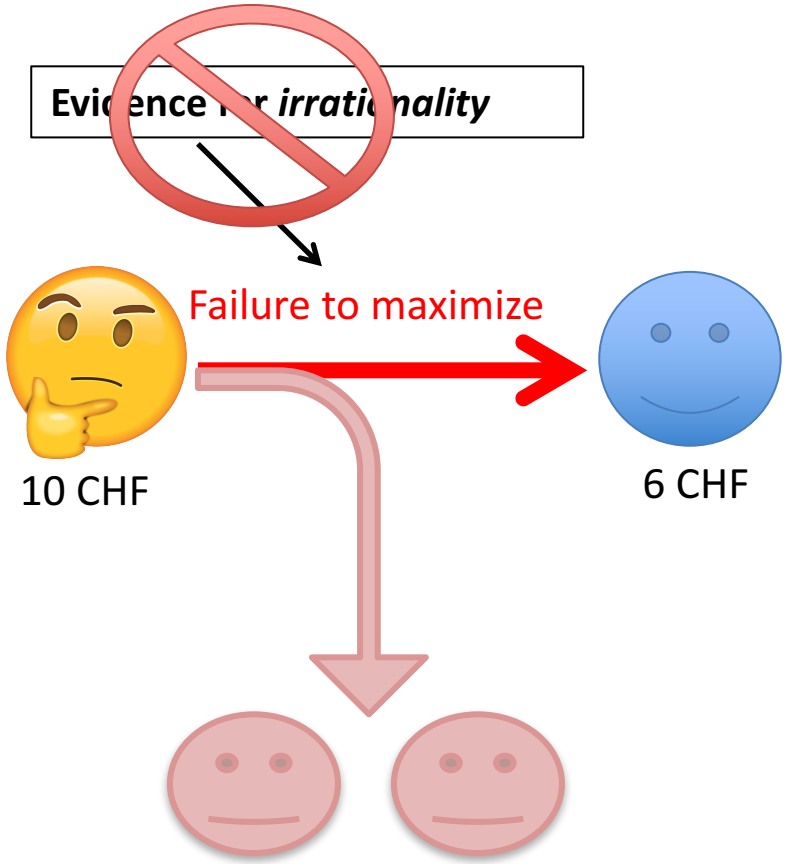

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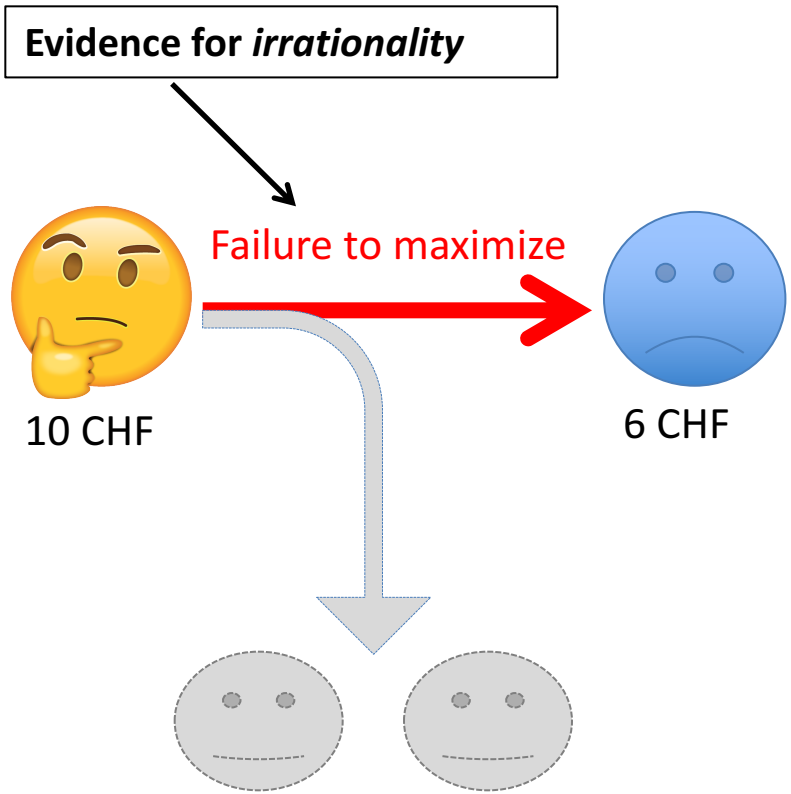

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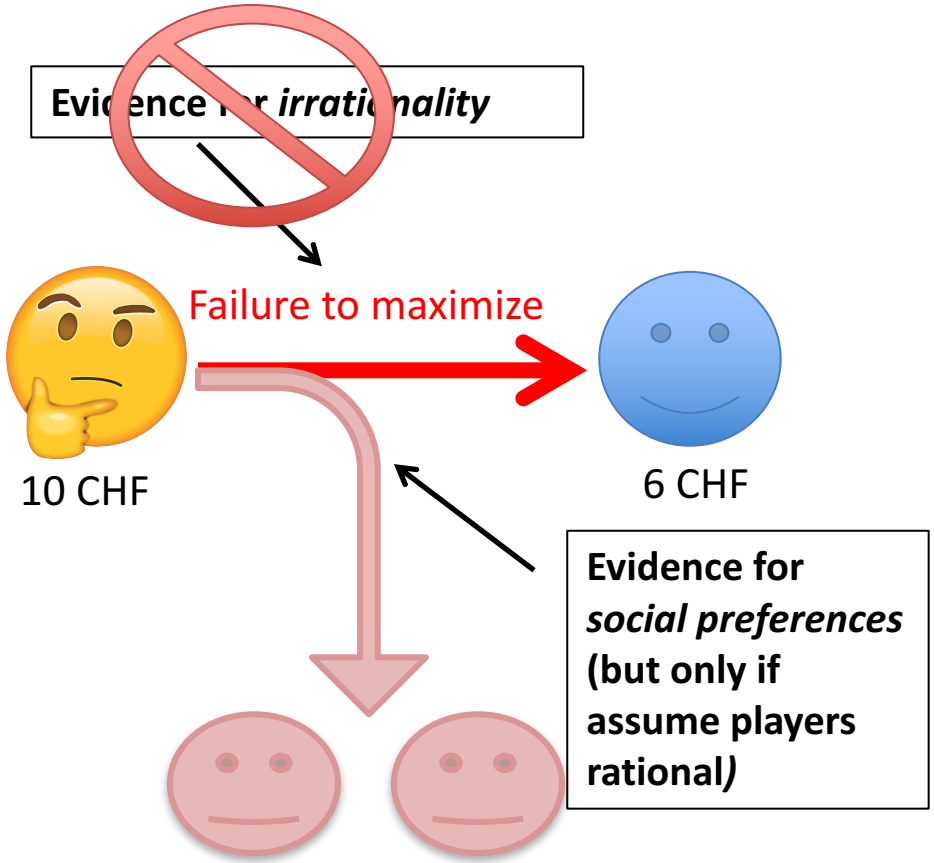

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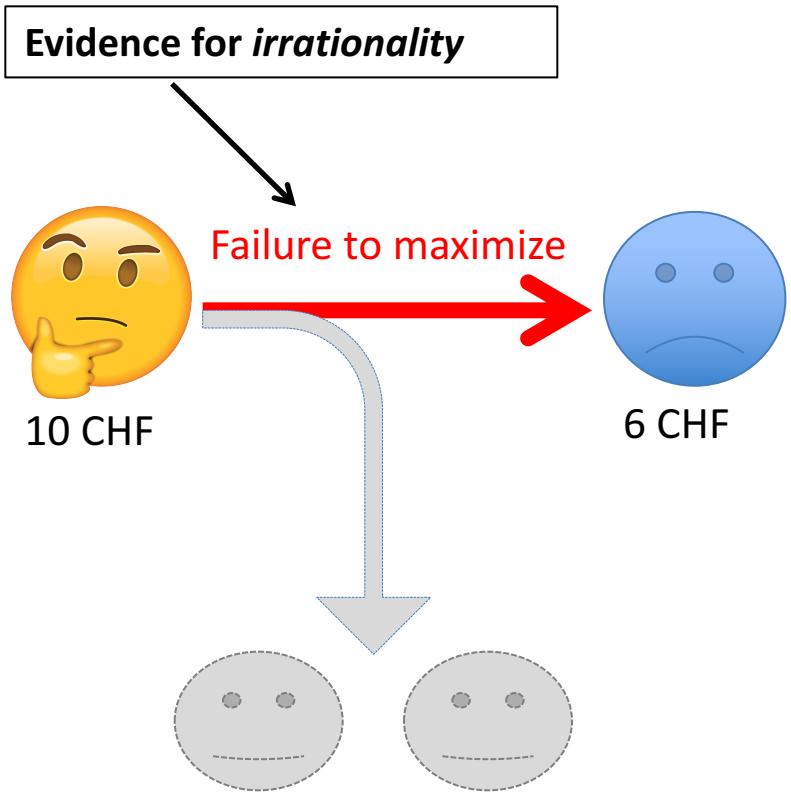

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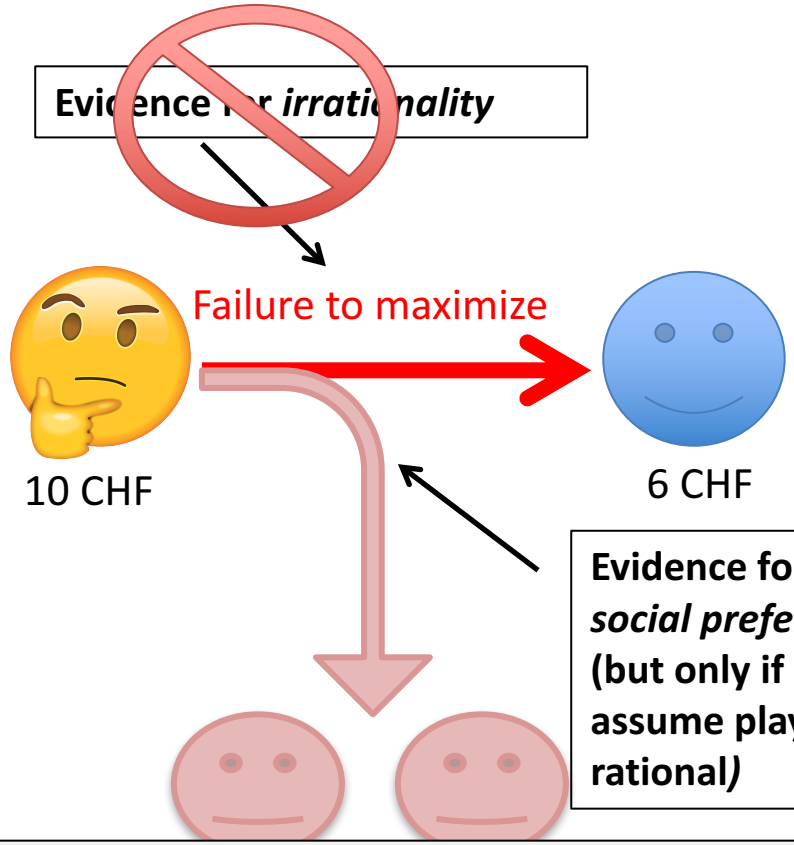

"Expanding the domain of preferences to include the utility of others provides a coherent way to extend rational choice theory" - Sobel J (2005) Interdependent preferences and reciprocity. J Econ Lit 43(2):392–436.

Four suggested controls for measuring social behaviours

If players are rationally altruistic then:

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(1) Reverse the link between a failure to maximize personal income and positive social effects

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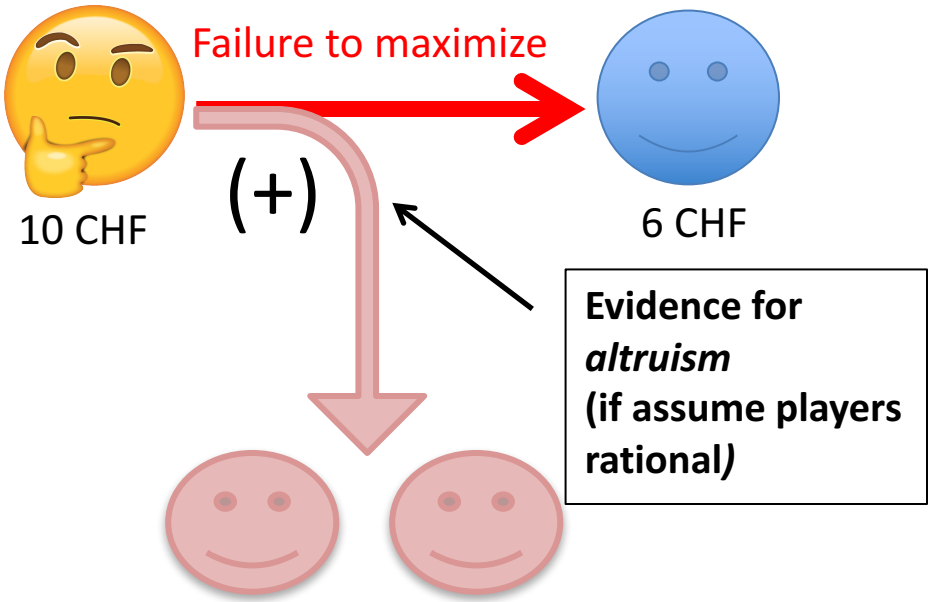
If players are rationally altruistic then:

(1) Reverse the link between a failure to maximize personal income and positive social effects – *if failure now harms others, failures should cease*

Control 1: Reverse the link between mistakes and positive social effects –
if costs now harm others, mistakes should cease



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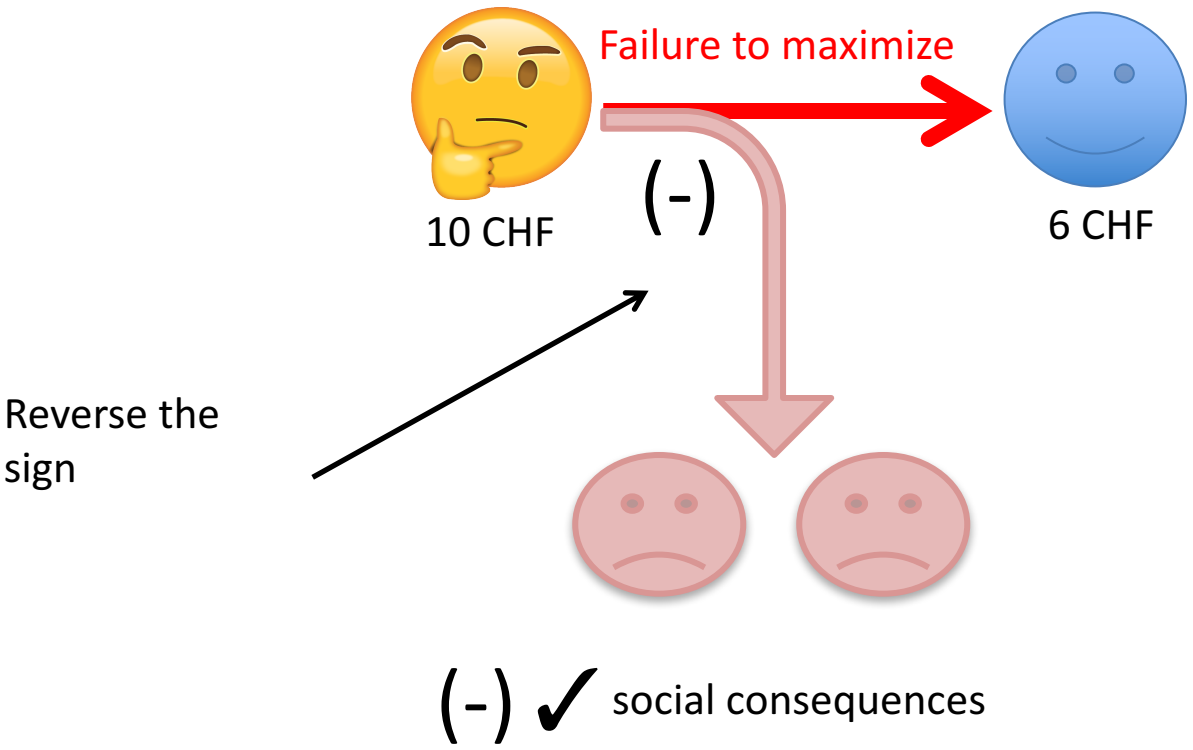

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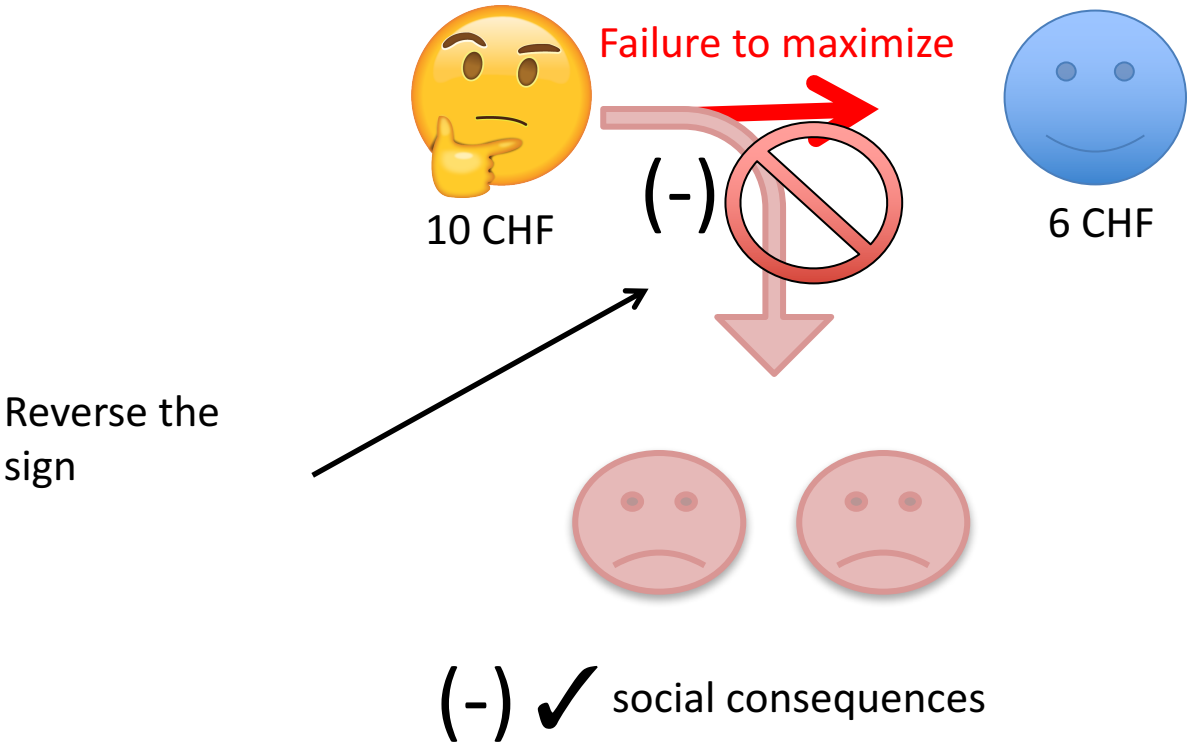

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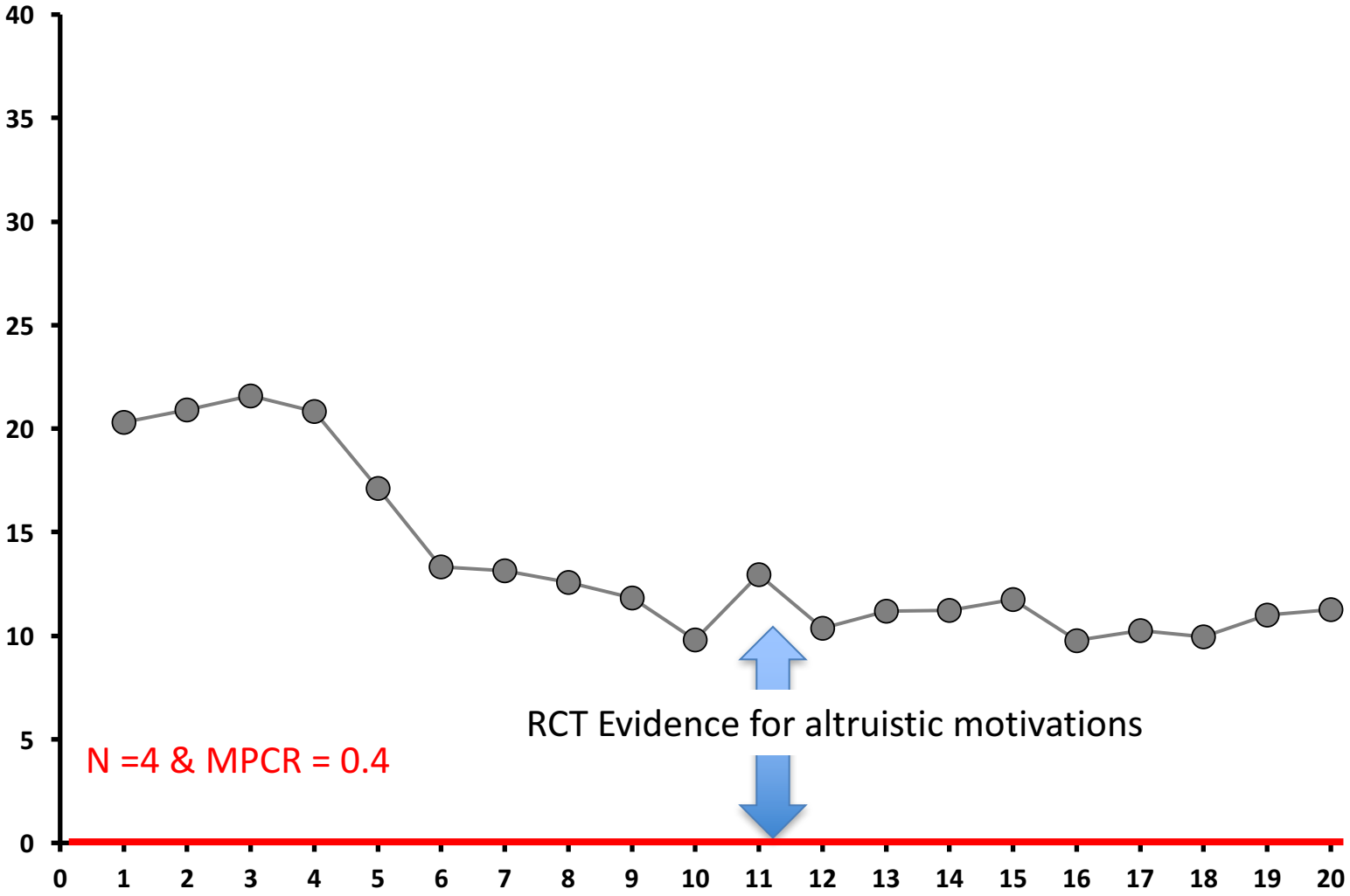
Control (1) Reverse the link between failure and social effects



Burton-Chellew & West, 2013 PNAS

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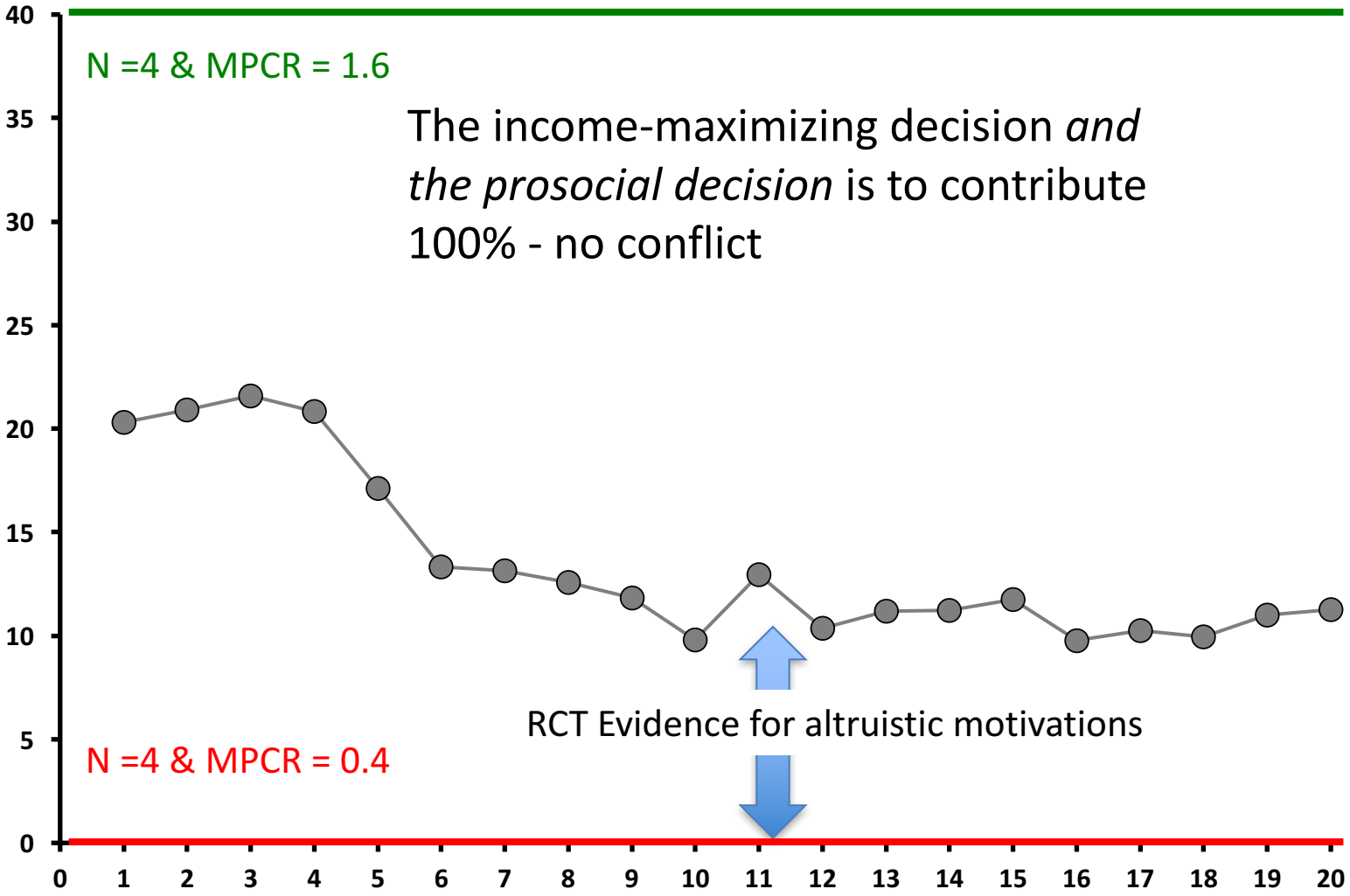

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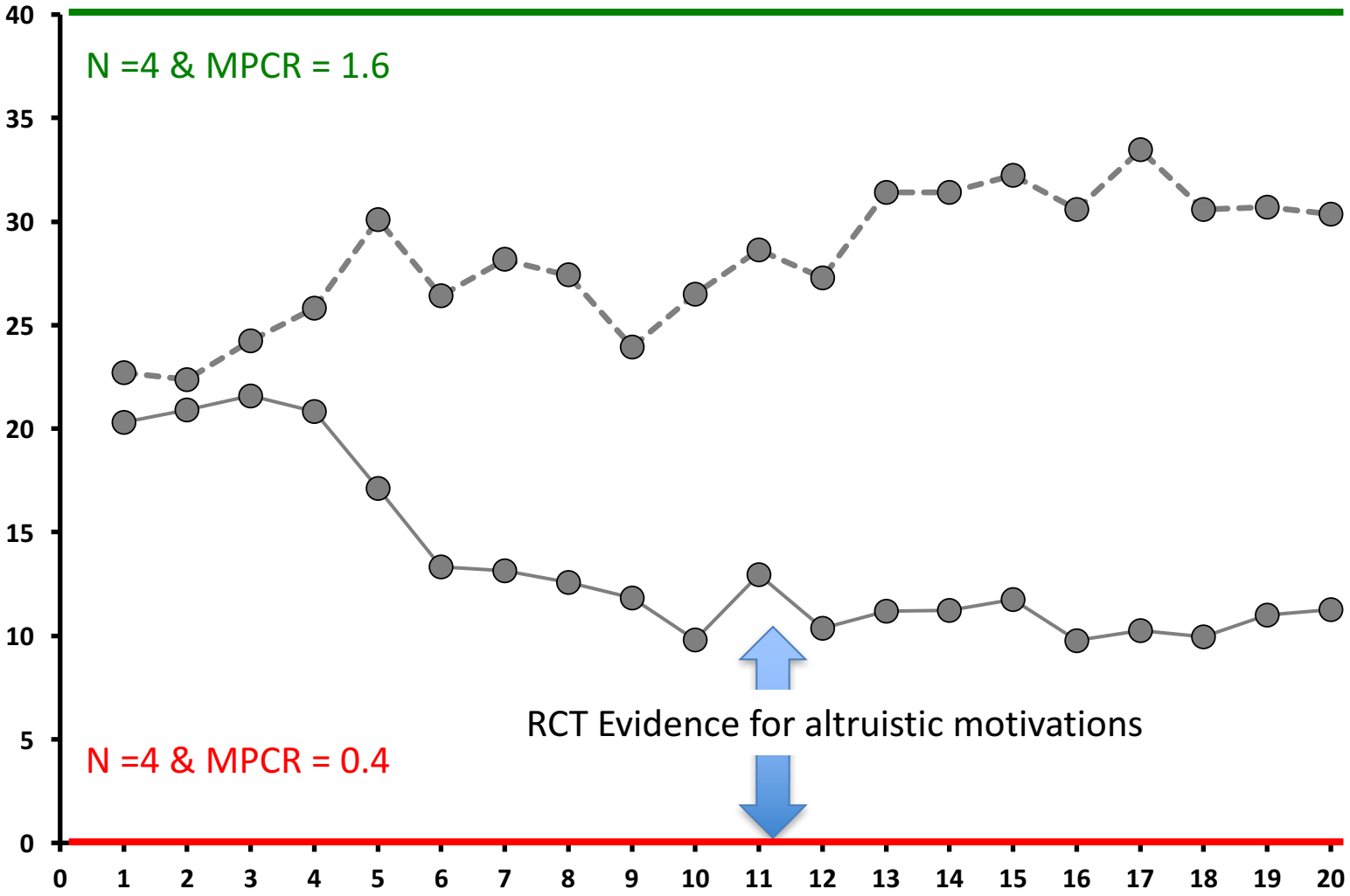

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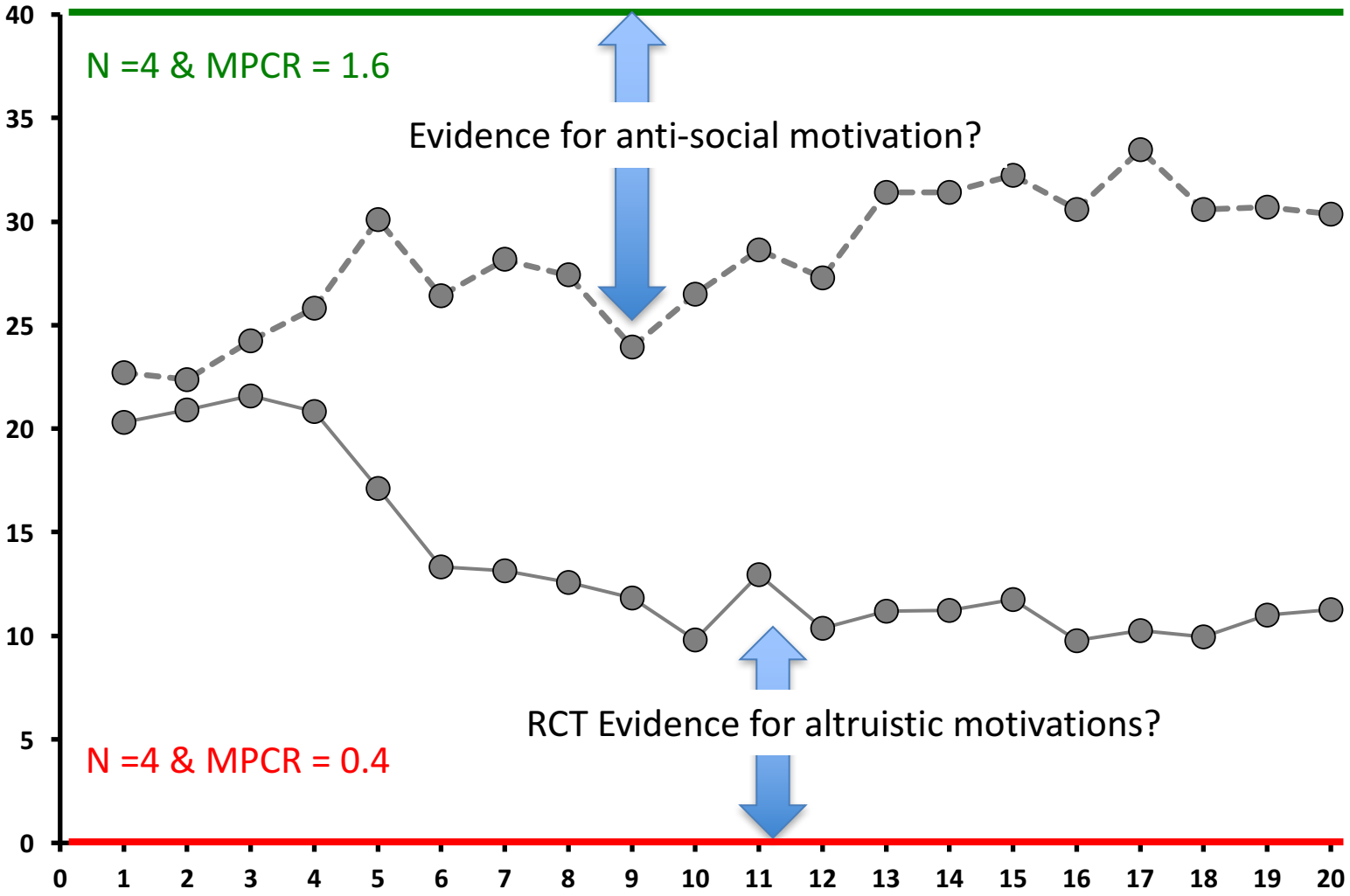

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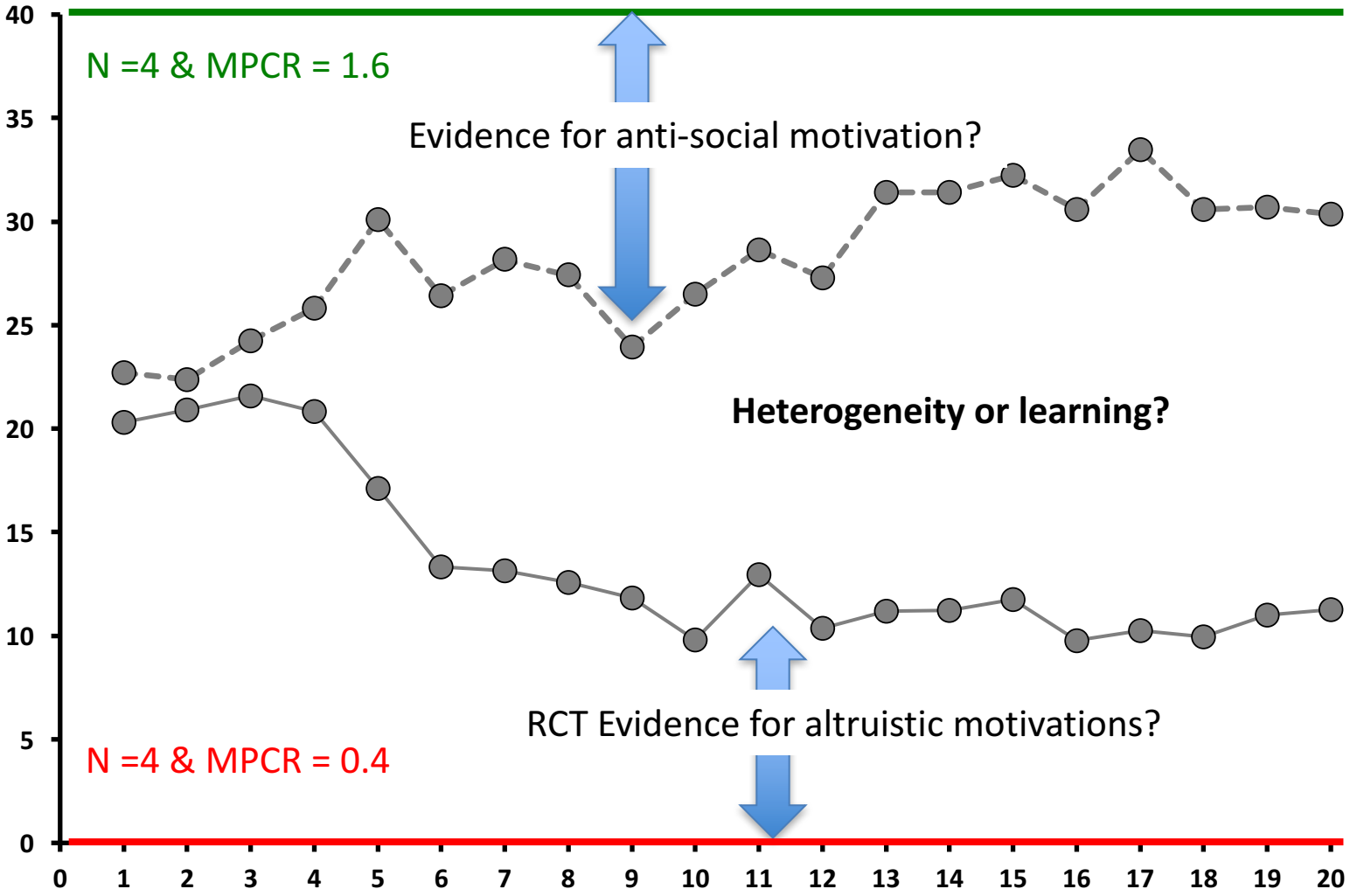

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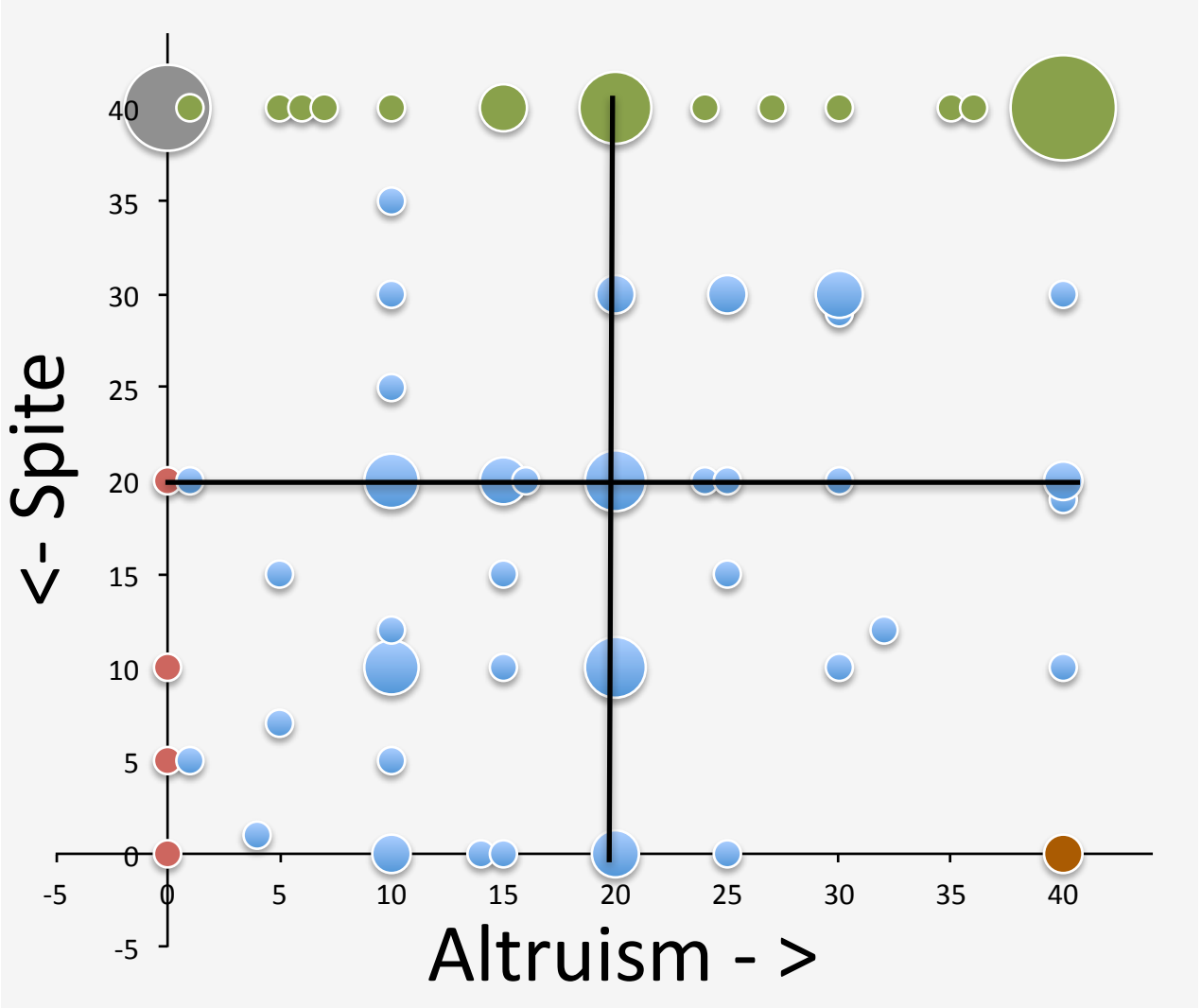
Control (1) Reverse the link between personal and social effects

Grey = income maximizer (10/112)



Control (1) Reverse the link between personal and social effects

Green = altruistic, not spiteful (full altruists = 15/112)

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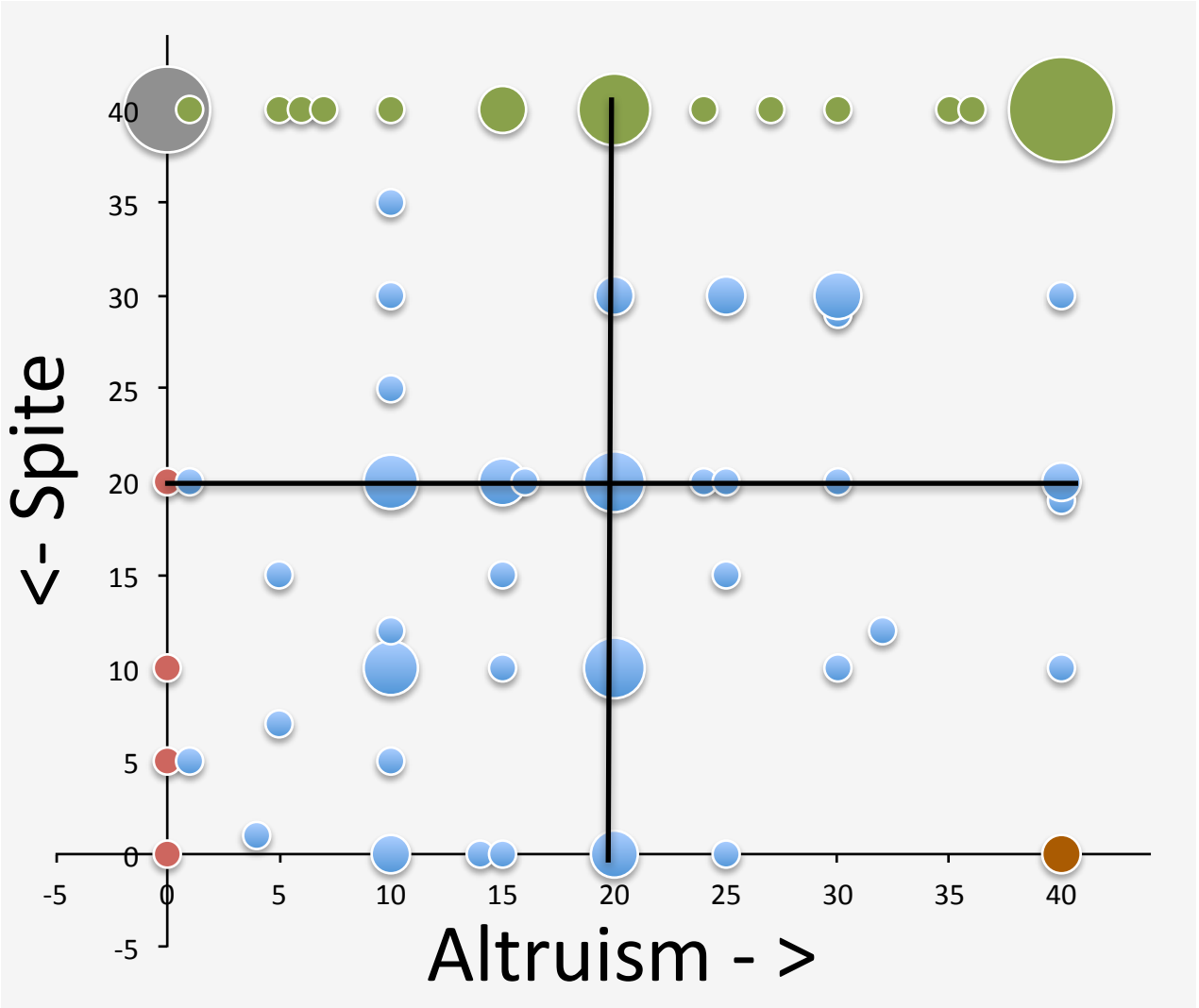

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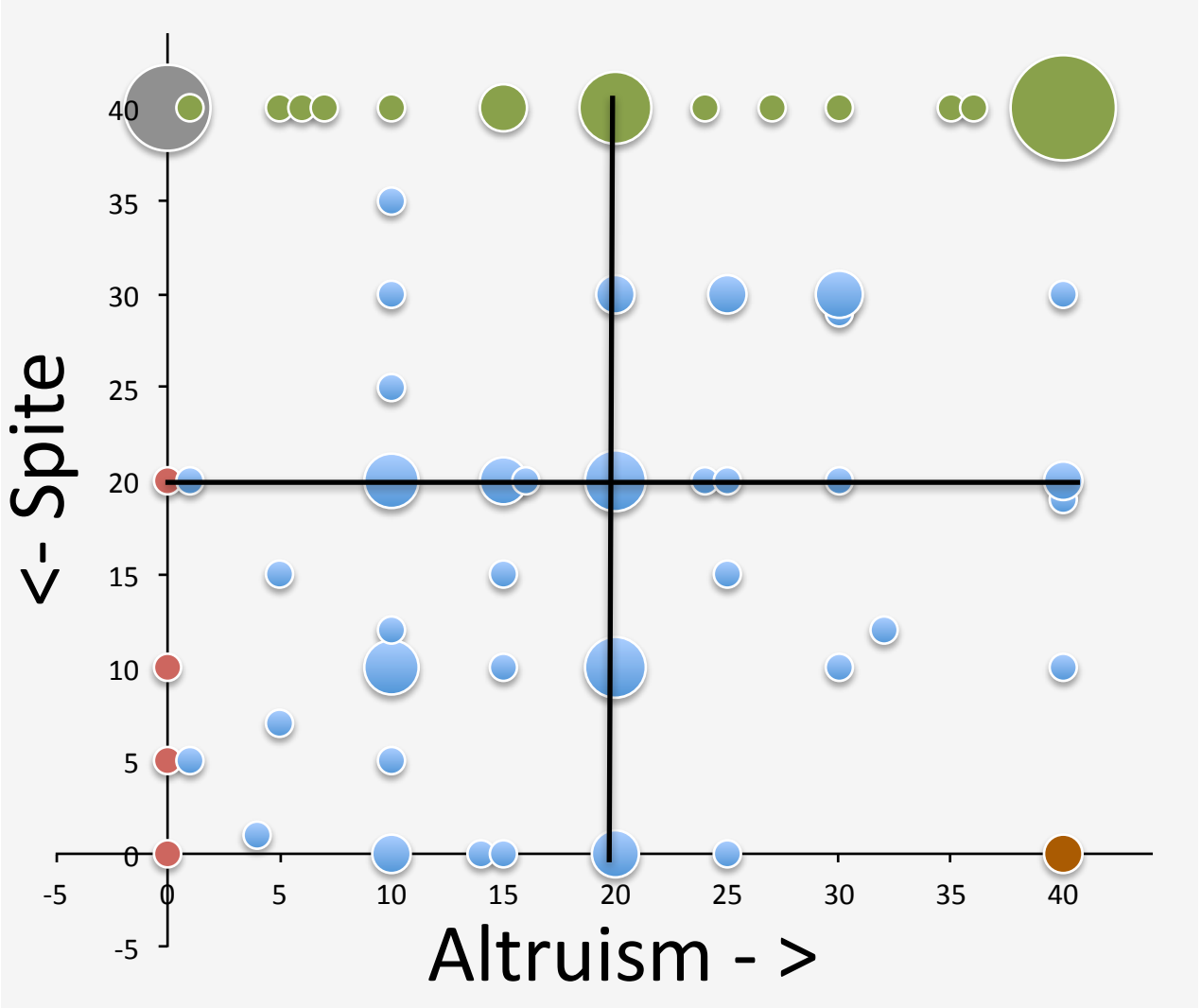

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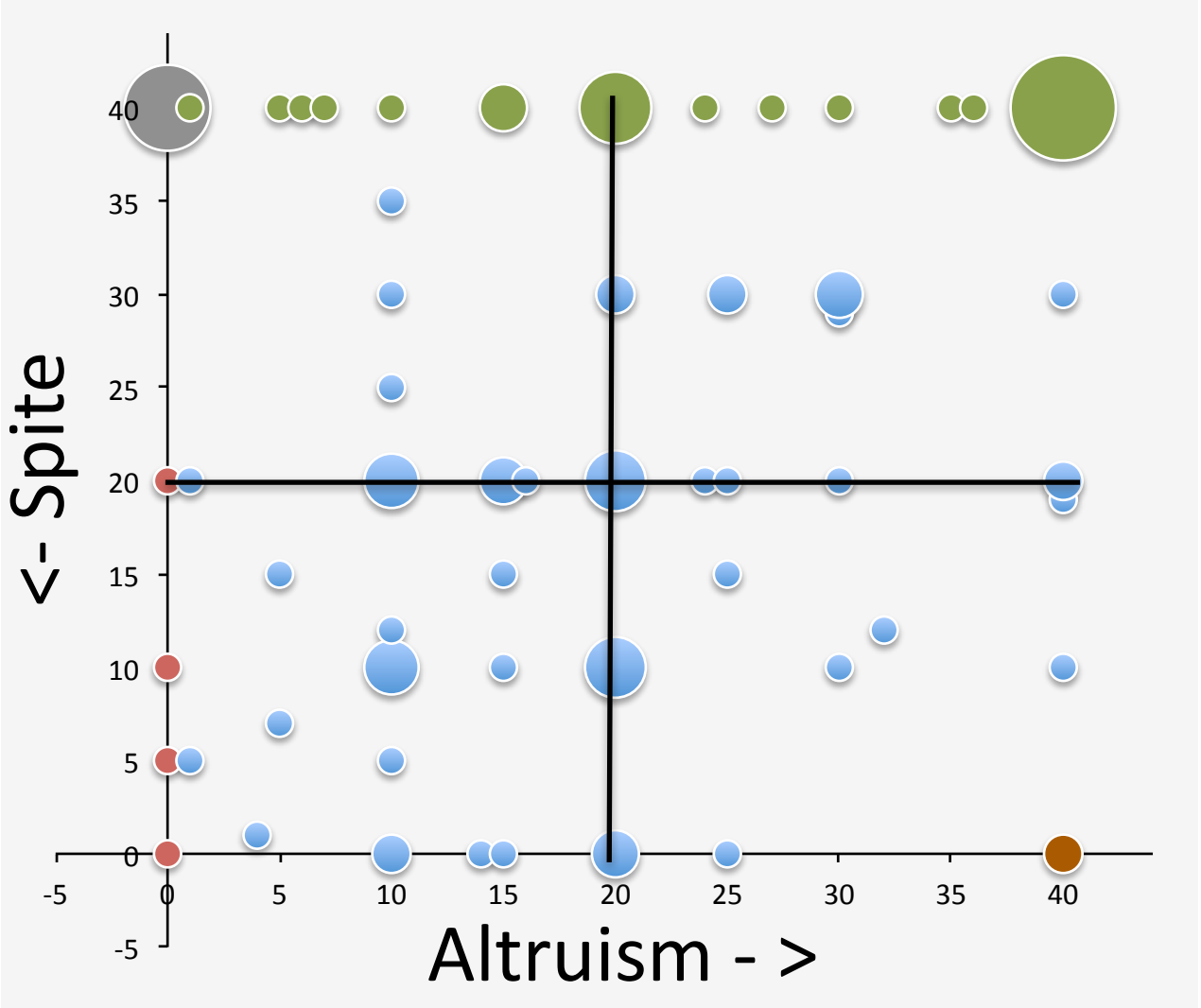

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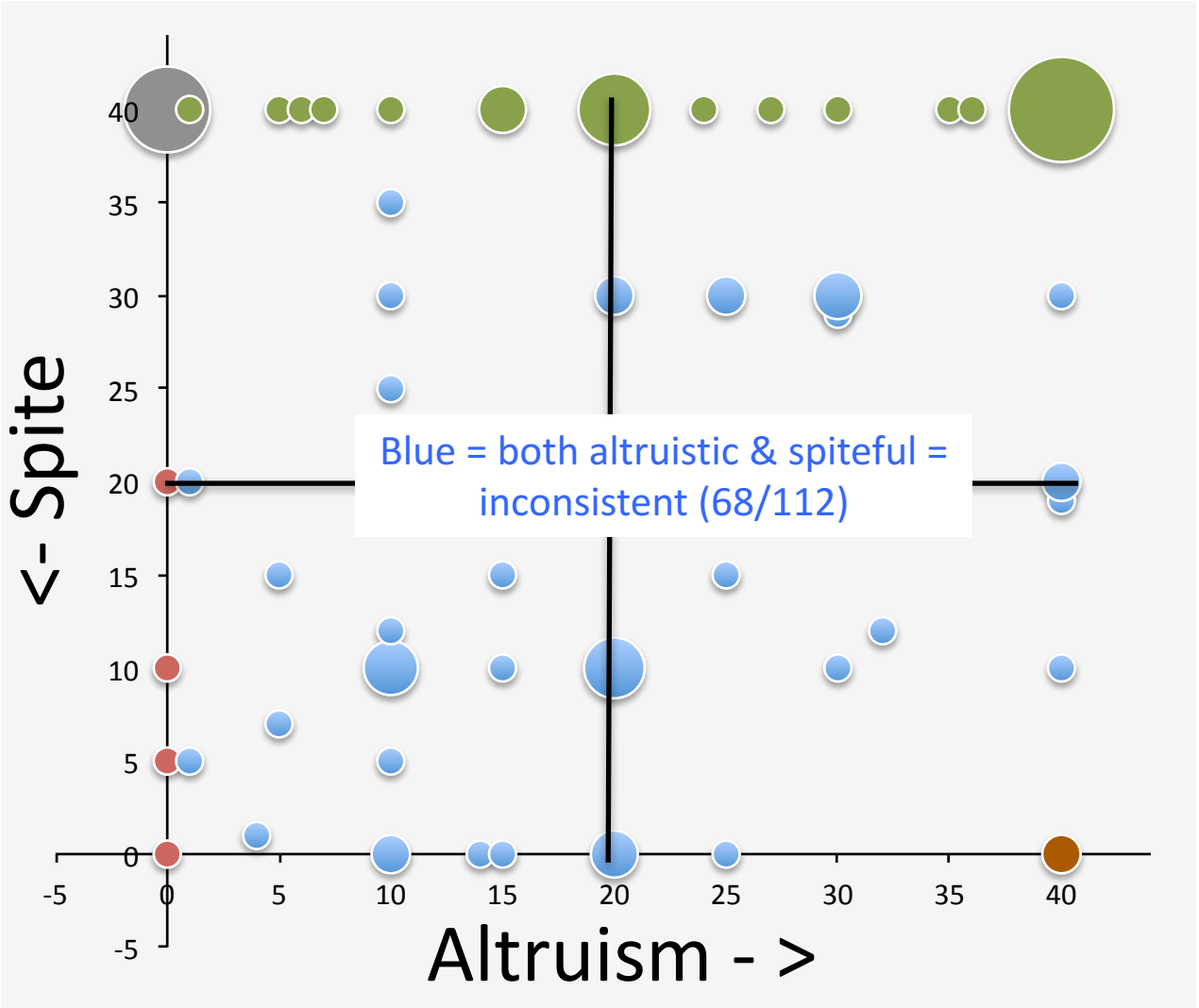

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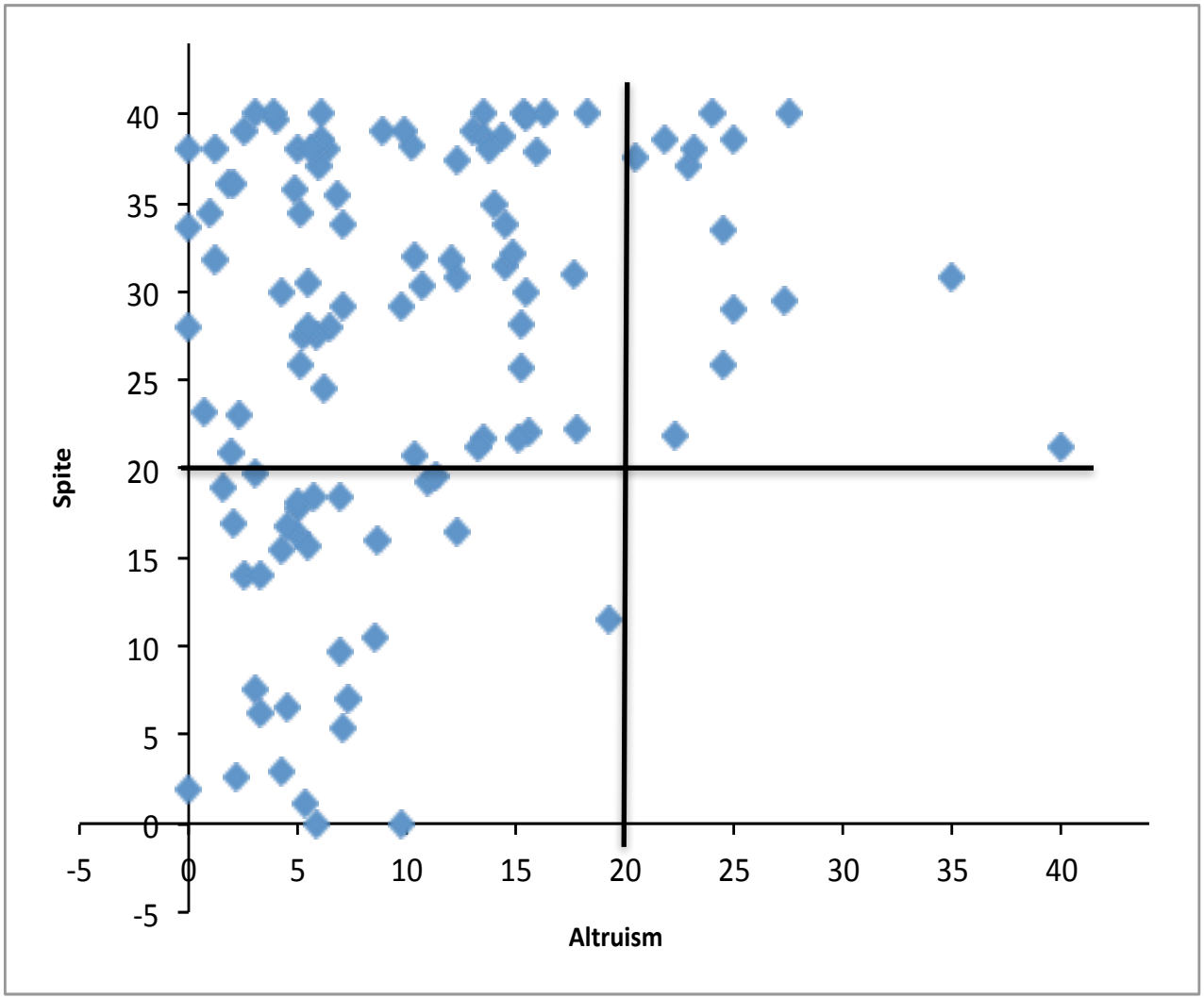
Control (1) Reverse the link between personal and social effects

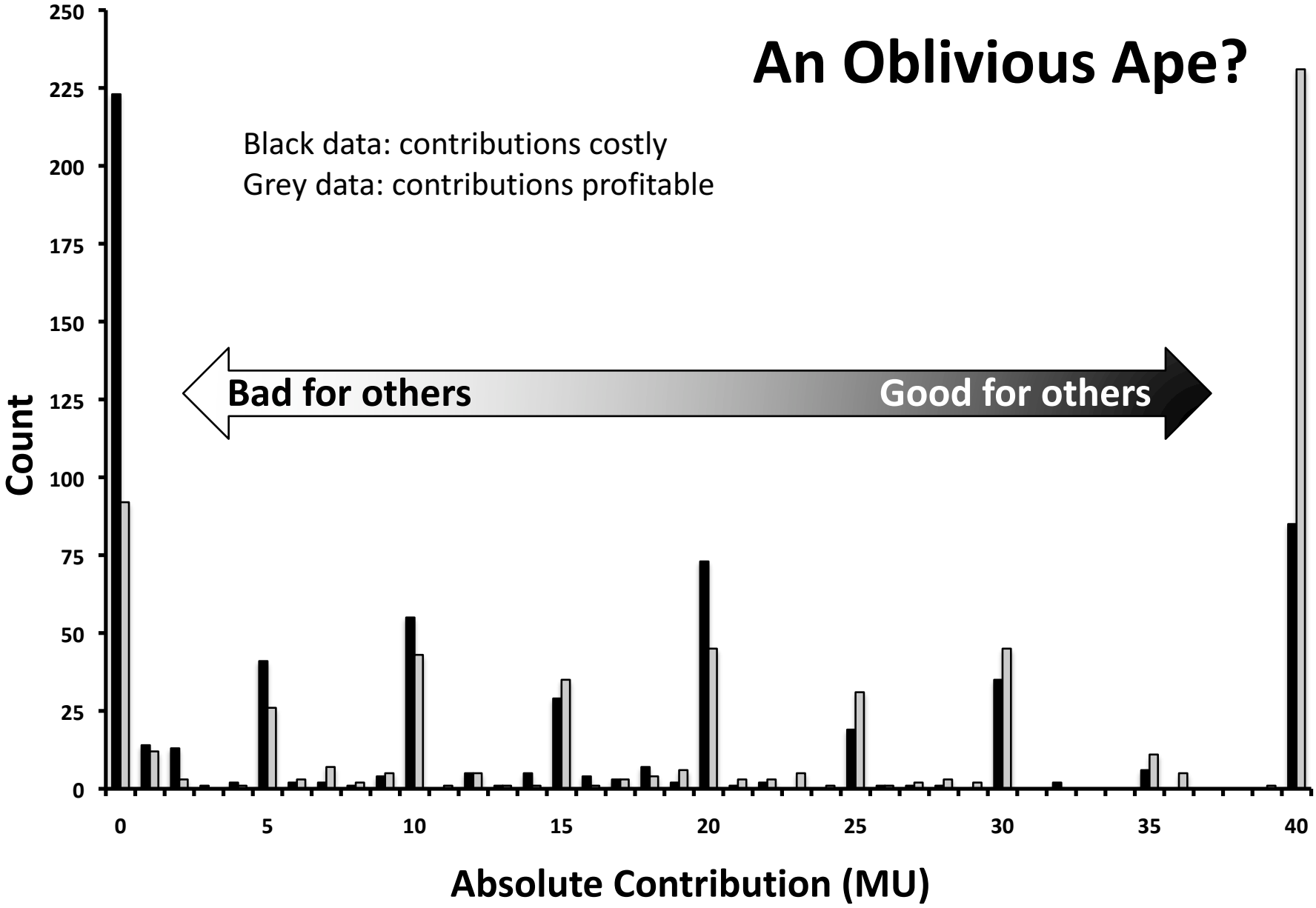
N homo economicus



N full altruists

Experienced players are more like Homo economicus

Control (1) Reverse the link between personal and social effects



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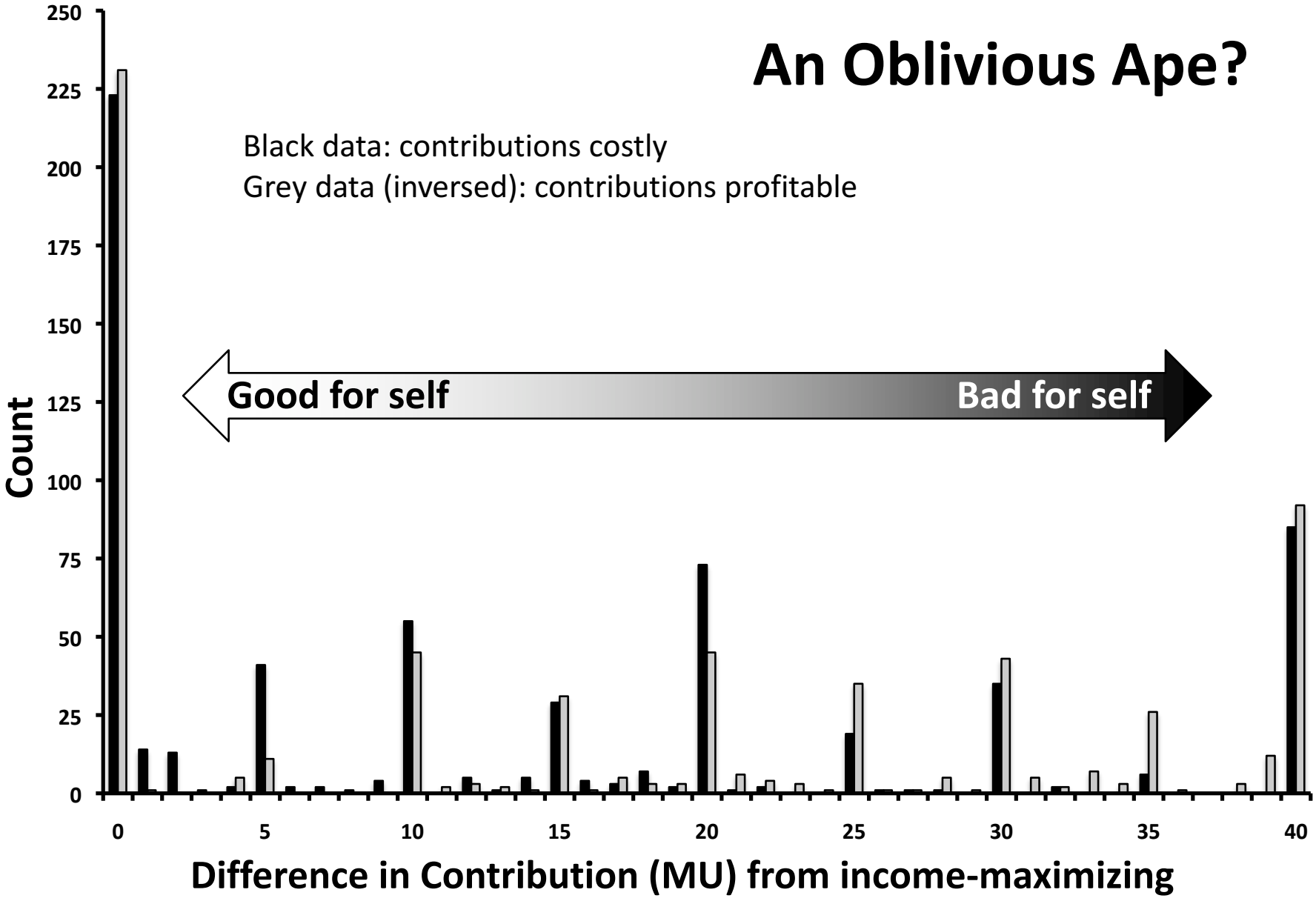

Four suggested controls for measuring social behaviours

If players are rationally altruistic then:

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RESULT: income failures constant!

*(2) Reinforce/*emphasize social effects –

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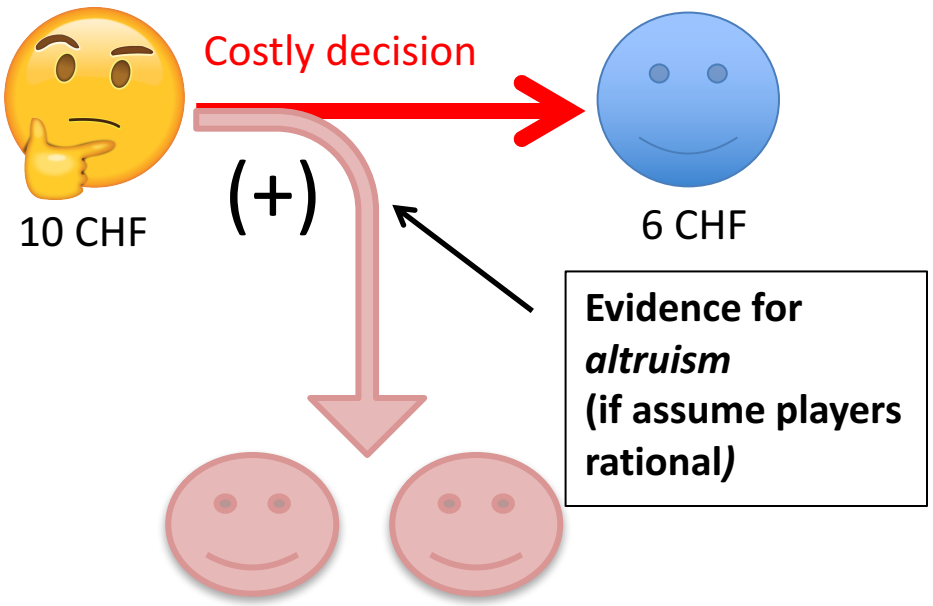
Control 2) *Emphasize* social effects – *should increase the altruistic behaviour*



(+) ✓ social consequences

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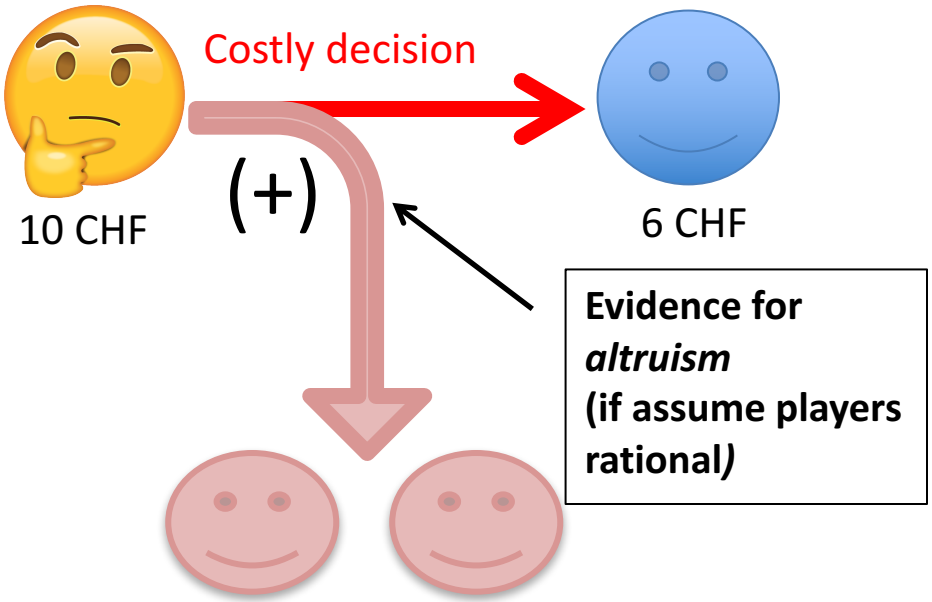

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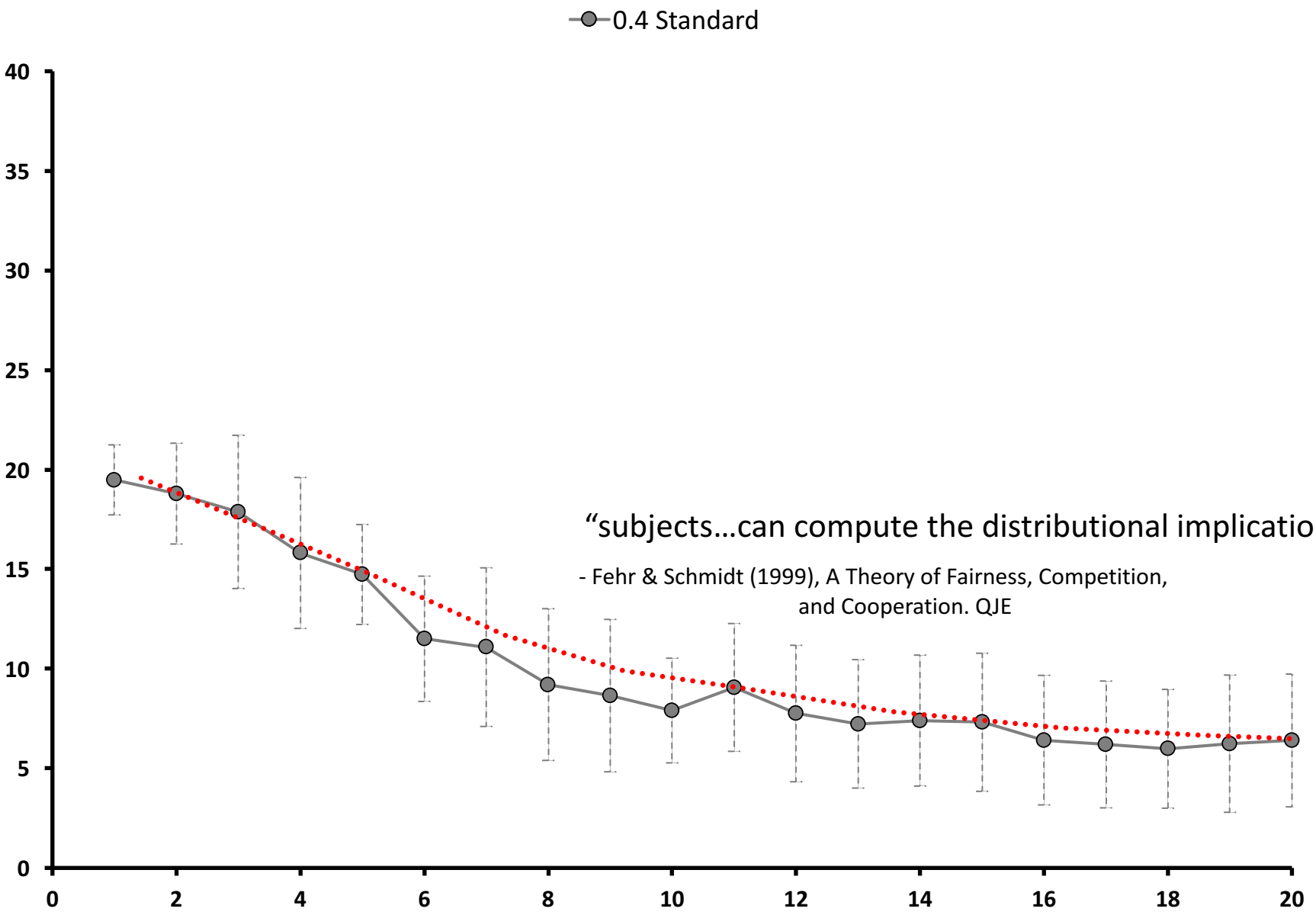

Burton-Chellew & West, 2013 PNAS

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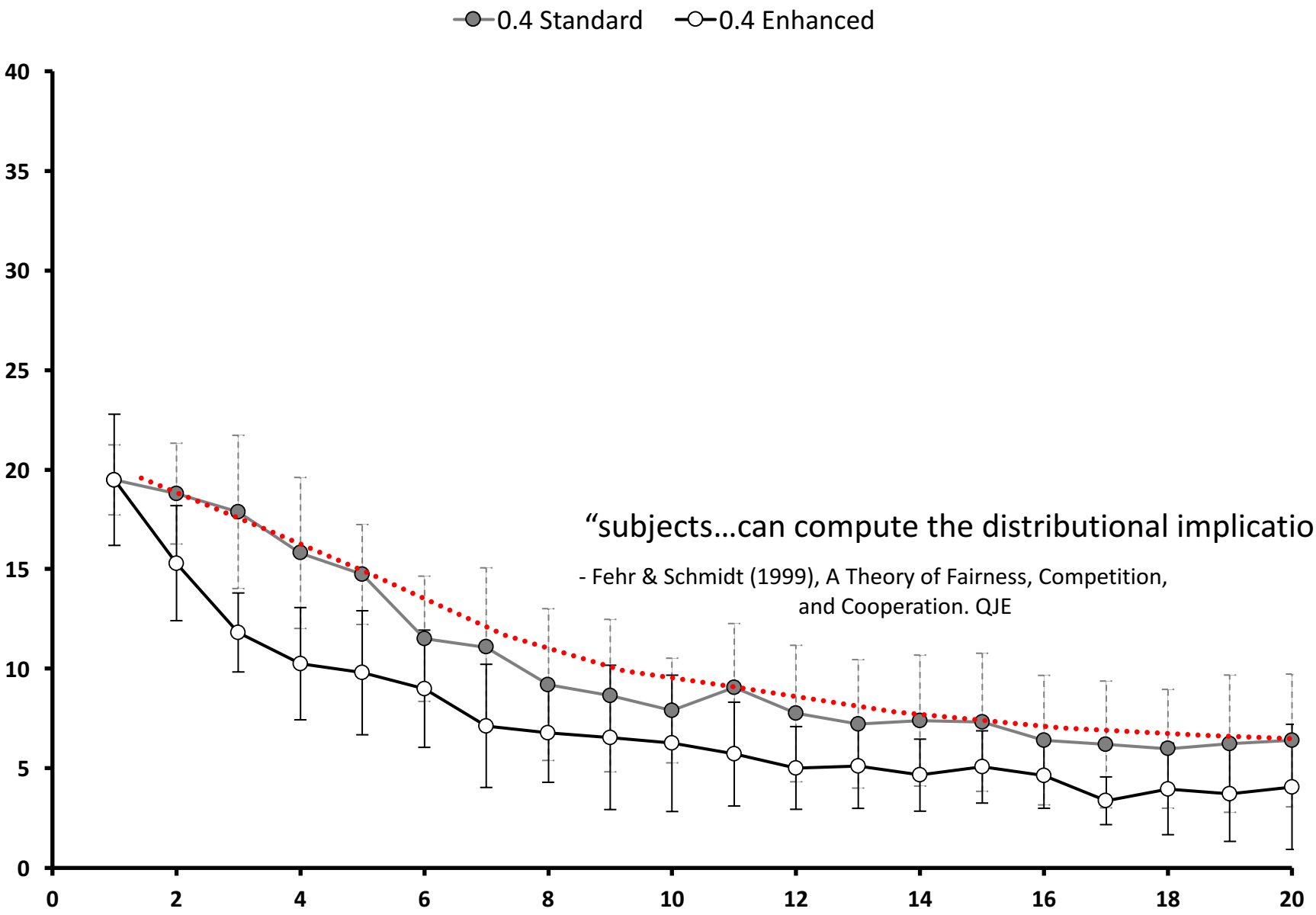

"subjects…can compute the distributional implications"

- Fehr & Schmidt (1999), A Theory of Fairness, Competition, and Cooperation. QJE

Burton-Chellew & West, 2013 PNAS

Four suggested controls for measuring social behaviours

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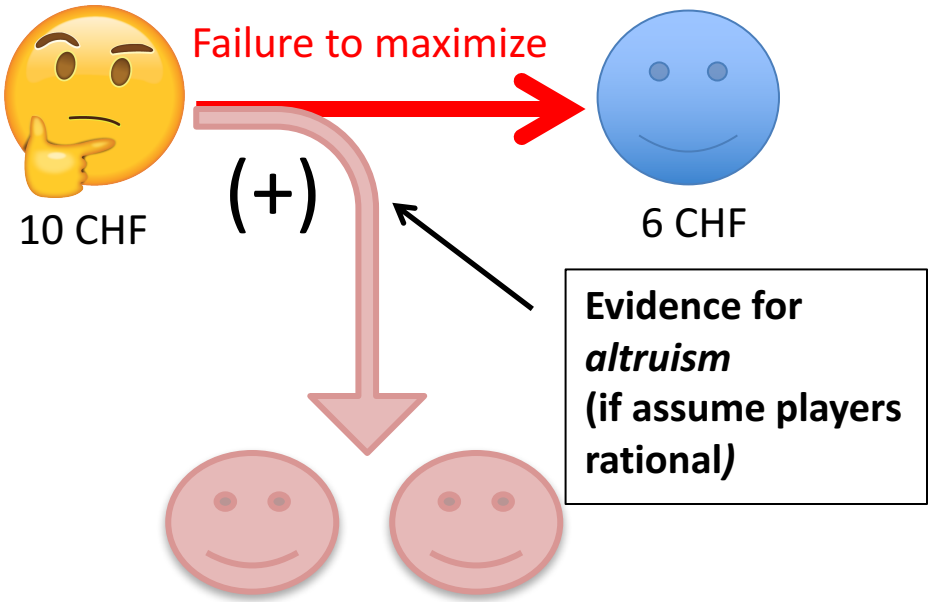

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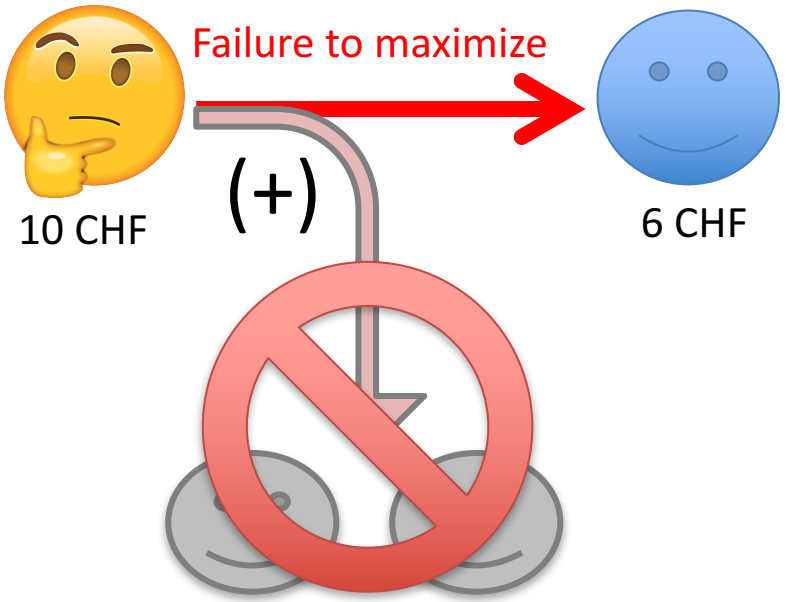

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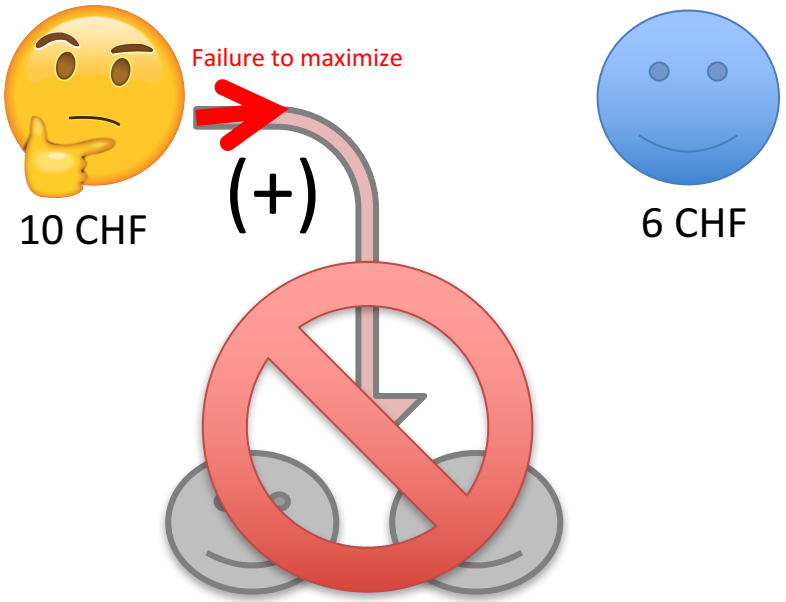

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The Strategy Method

"How much do you want to contribute if others on average contribute X"

The other players contribute, on average, 0. Your contribution is…

The other players contribute, on average, 1. Your contribution is…

The other players contribute, on average, 2. Your contribution is…

The other players contribute, on average, 3. Your contribution is…

The other players contribute, on average…

U. Fischbacher, S. Gächter, E. Fehr (2001). Are people conditionally cooperative? Evidence from a public goods experiment. Econ. Letters, Vol. 71(3): 397-404

U. Fischbacher, S. Gächter (2010). Social preferences, beliefs, and the dynamics of free riding in public goods experiments. American Economic Review, 100(1): 541-556

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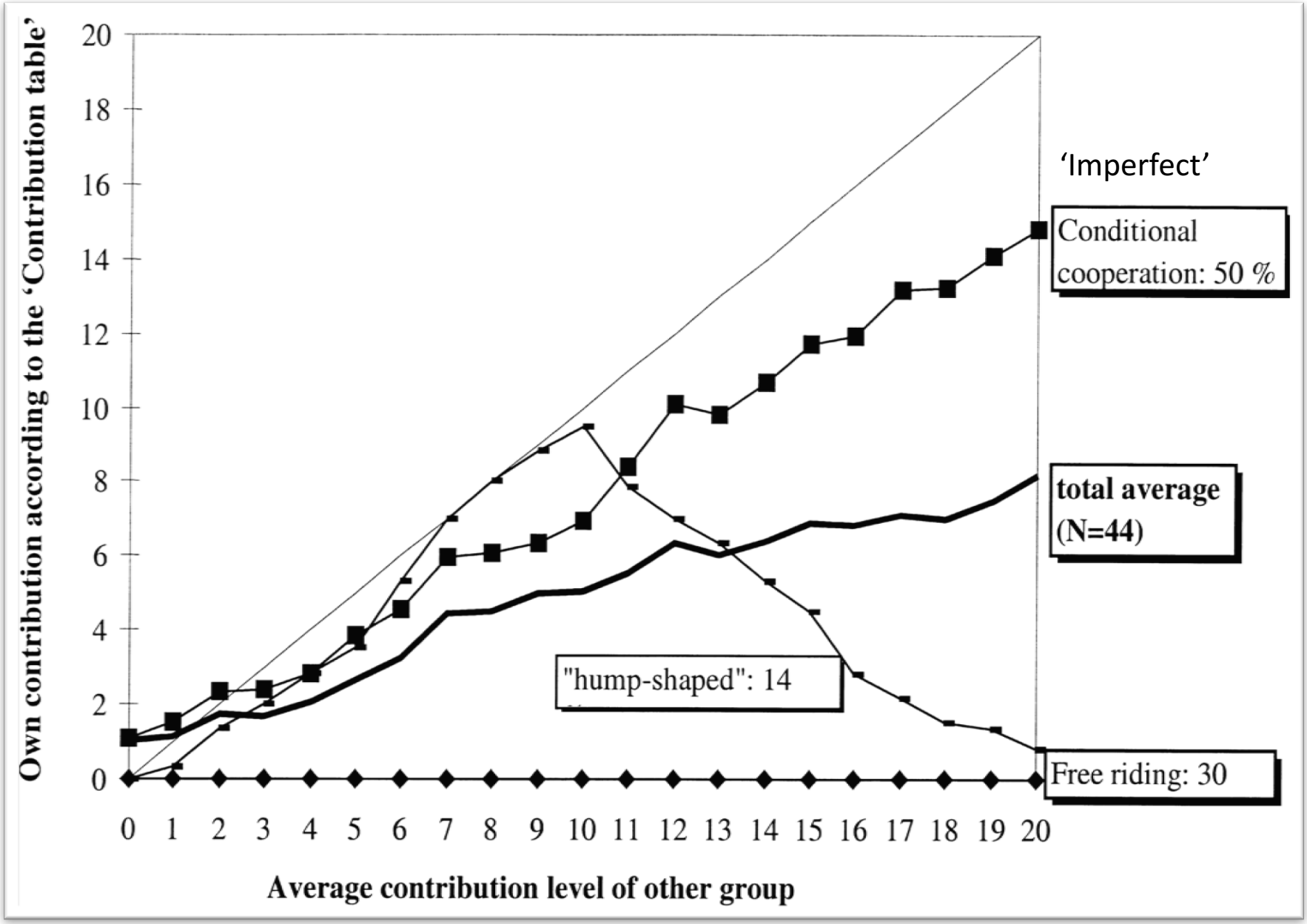

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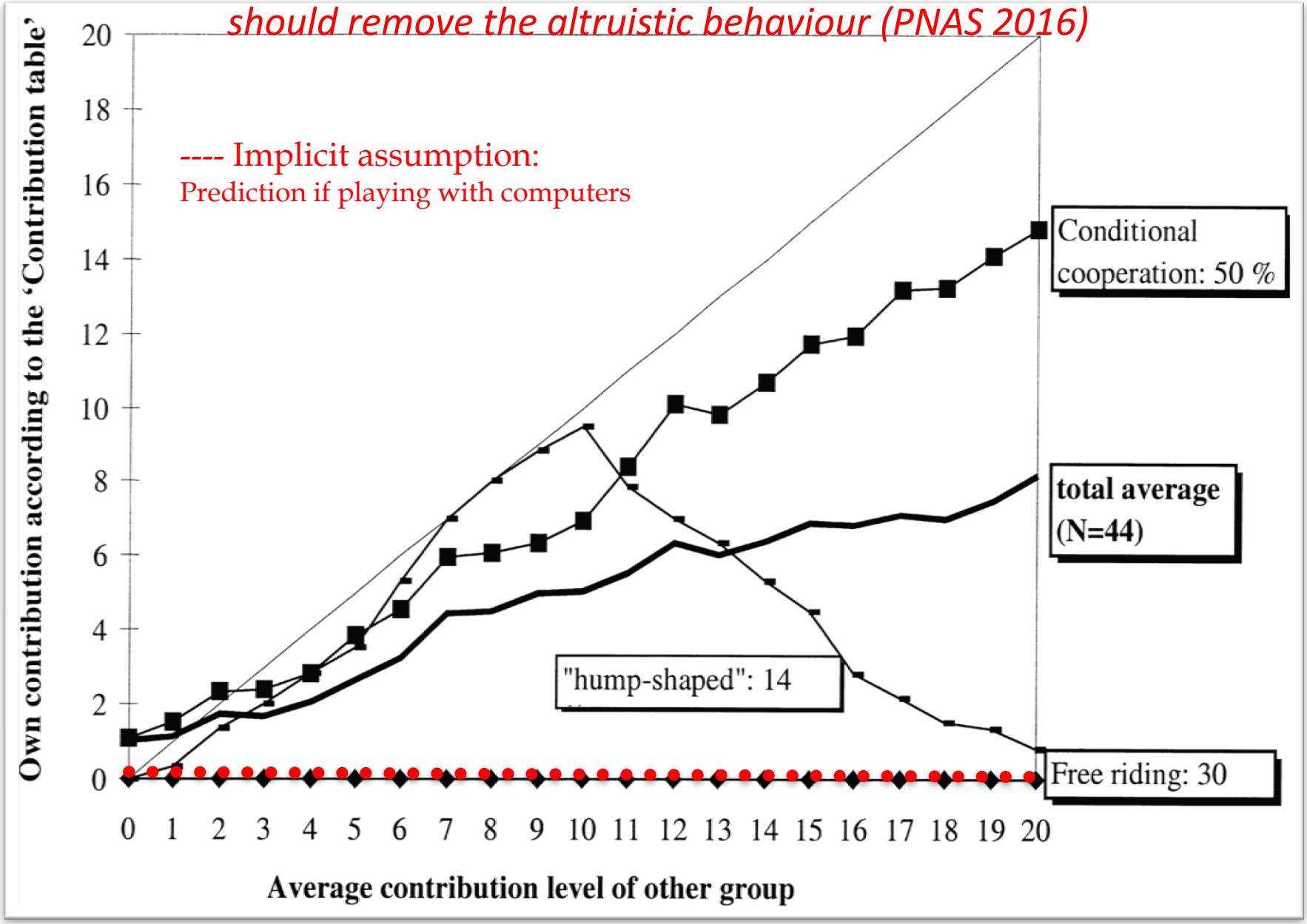

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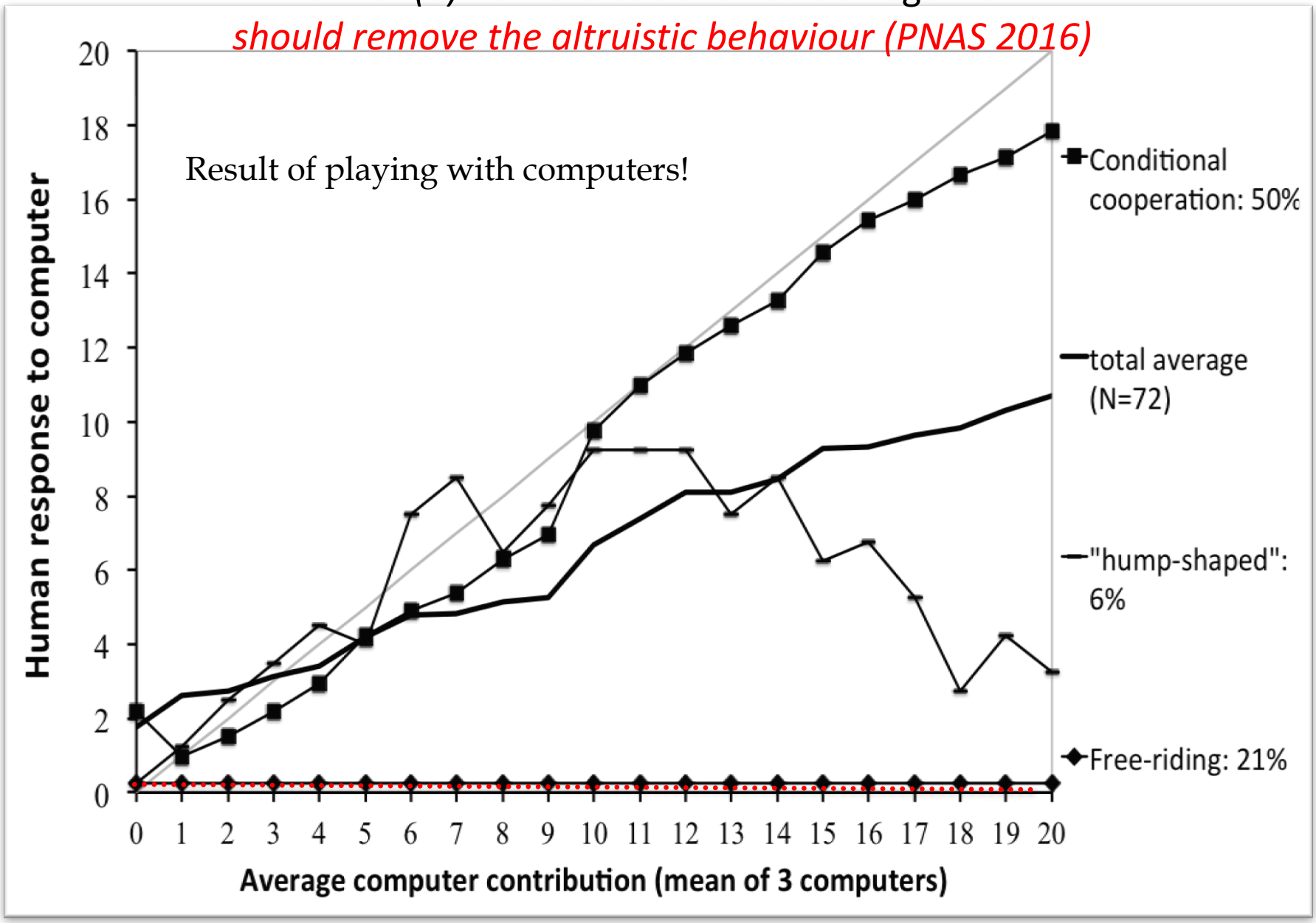

Burton-Chellew et al, 2016 Conditional cooperation and confusion in public goods experiments. PNAS

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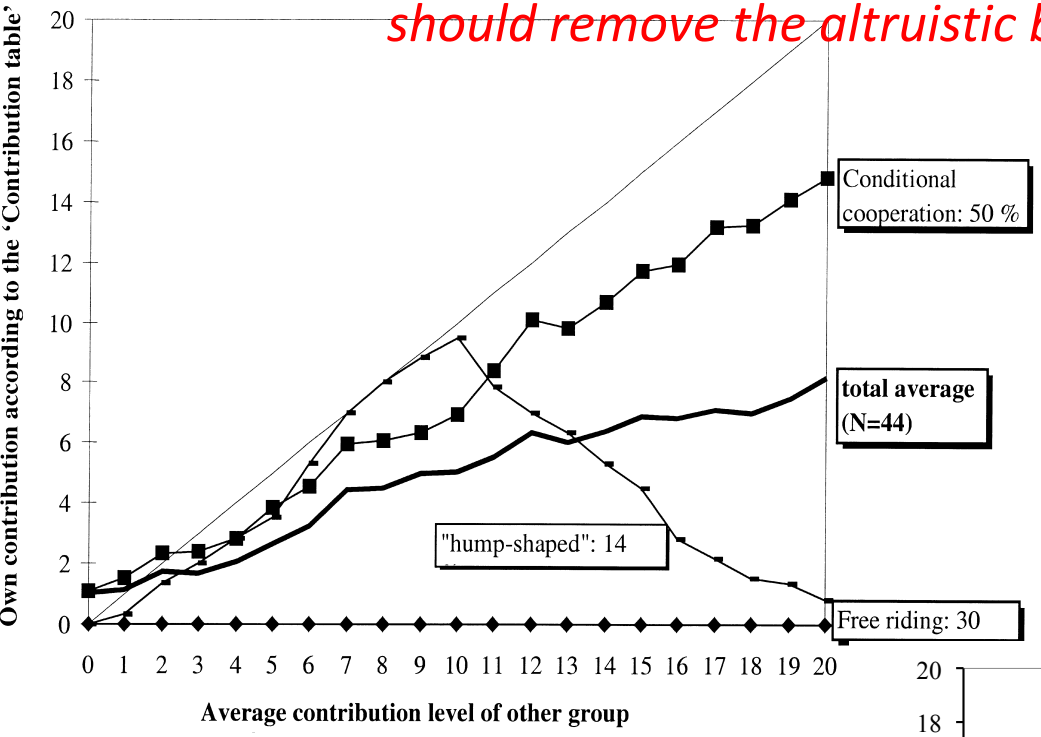
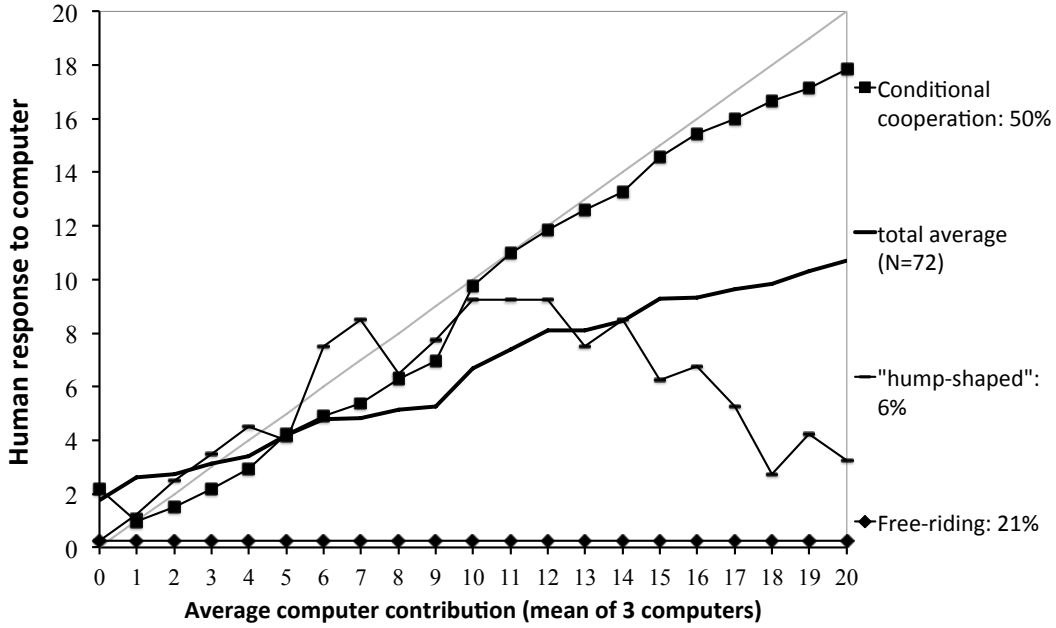


Conditional cooperation with people

Conditional cooperation with computers



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Perhaps the players think that best way to maximize income is to base their decision on what others do? Maybe to undercut them slightly (this may be *ecologically rational*)

We tested this hypothesis by asking each player:

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We tested this hypothesis by asking each player:

"In the game, if a player wants to maximize his or her earnings in any one particular round, does the amount they should contribute depend on what the other people in their group contribute?"

We allowed players to answer either:
yes/sometimes/no/unsure.

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Table S3. Strategies and understanding about the game were correlated

Type (vs. computers)	Answer: no*	Answer: yes	Answer: sometimes	Answer: unsure	Total
Noncooperators	10	4	0	1	15
Unconditional cooperators	2	1	2	0	5
Conditional cooperators	6	18	7	5	36
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1066 THE AMERICAN EC *Prior work by others*

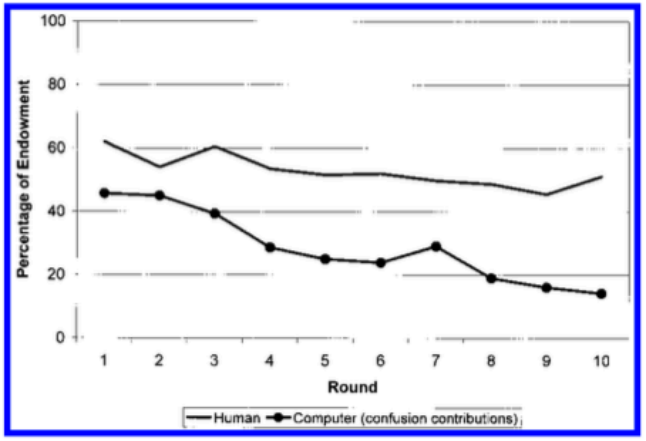

FIGURE 1. MEAN CONTRIBUTION BY ROUND IN COMPUTER AND HUMAN CONDITIONS

Houser & Kurzban 2002. Revisiting kindness and confusion in public goods experiments. American Economic Review

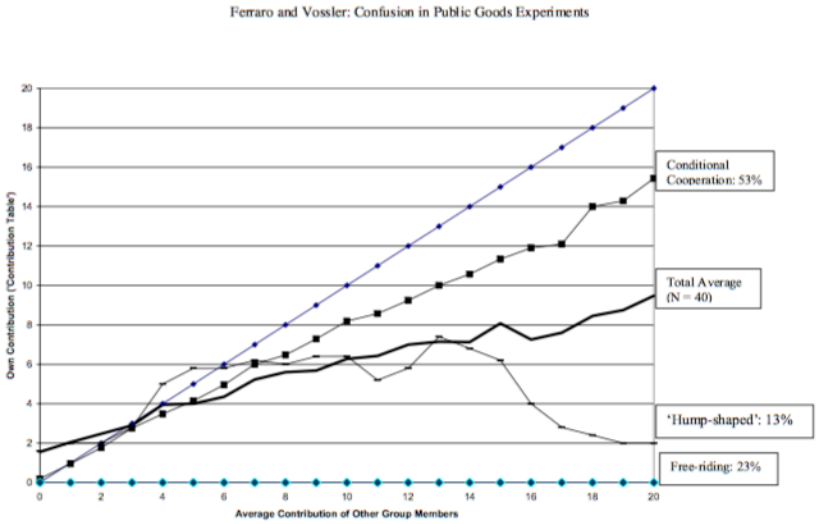

Figure 2. Experiment 2, Average Own Contribution by Average Contribution of Other Members (diagonal = perfect conditional)

Ferraro & Vossler 2010. The source and significance of confusion in public goods experiments. The B.E. Journal of Economic Analysis & Policy.

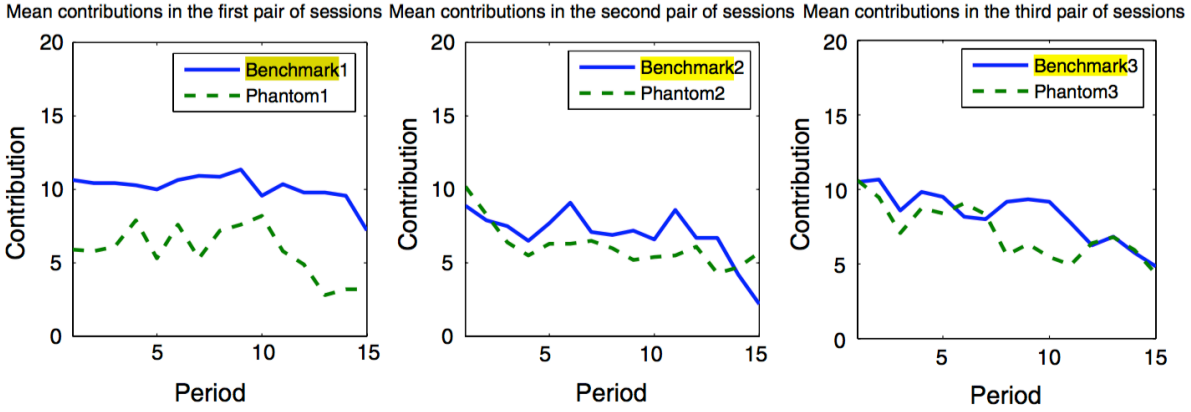

Fig. 3 Contributions in benchmark and phantom sessions. The *solid lines* represent the average contributions in the benchmark sessions. The *dashed lines* represent the average contributions in the corresponding Phantom sessions. The numbering of sessions is chronological: the first two Benchmark–Phantom pairs were conducted at Yale and the last one at UNCC

Shapiro 2009. The role of utility interdependence in public good experiments. International Journal of Game Theory

Four suggested controls for measuring social behaviours

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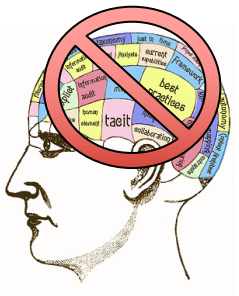

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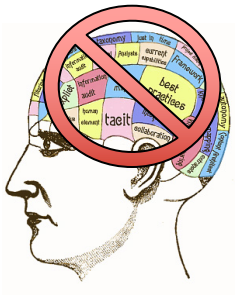

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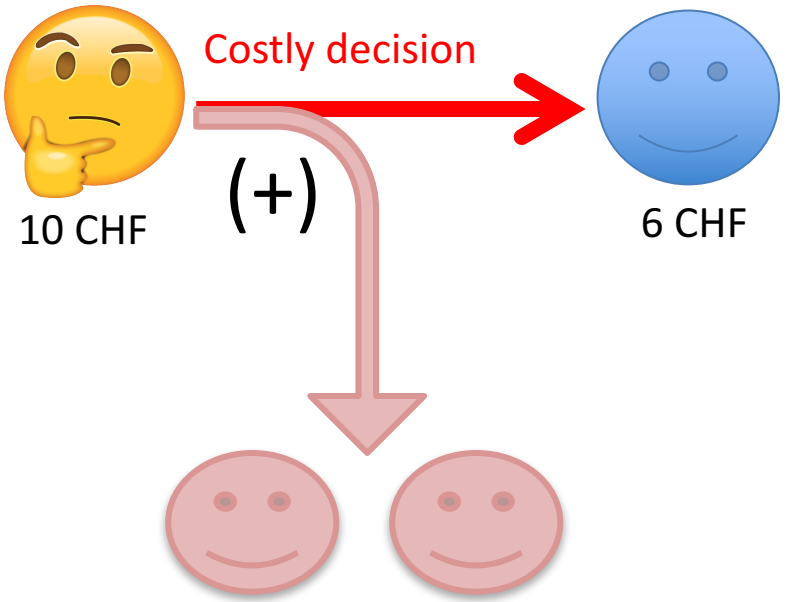

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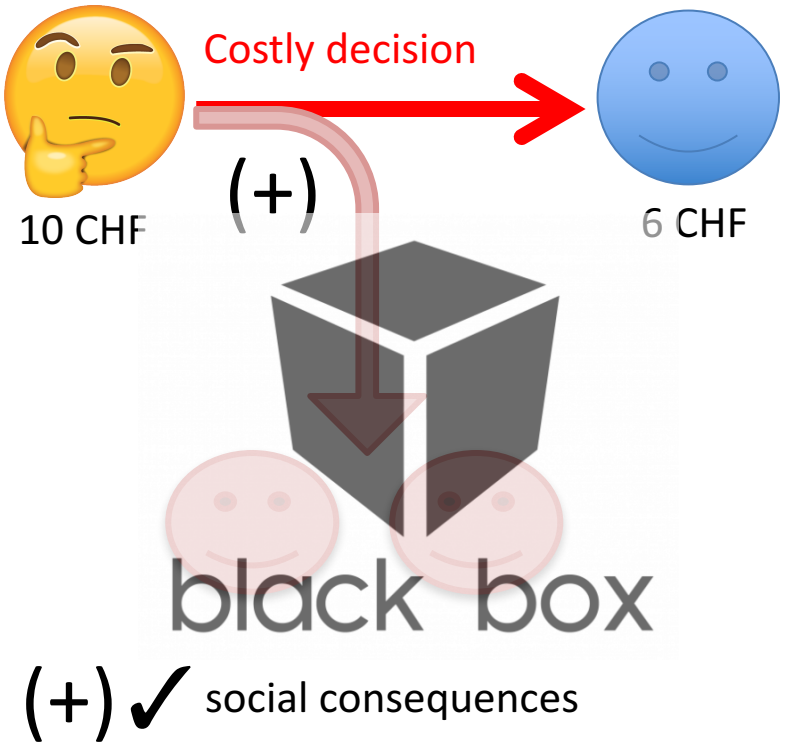

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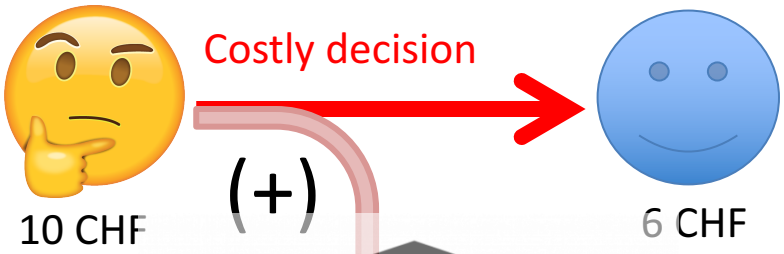

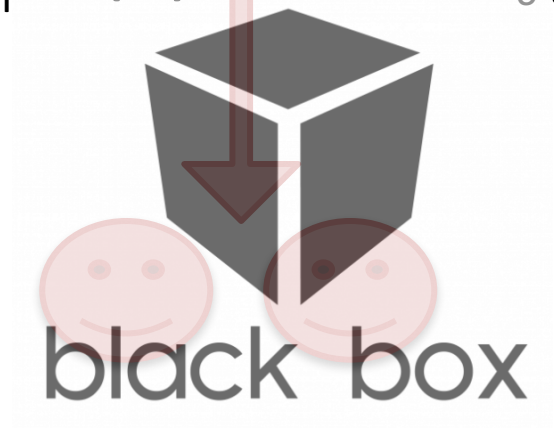

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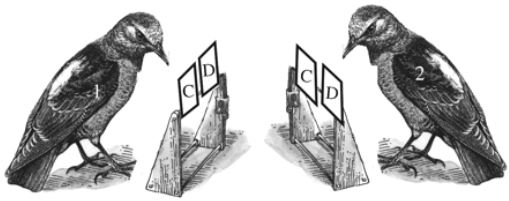
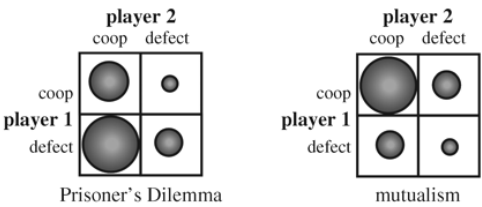
Clements & Stephens 1995. Animal Behaviour.





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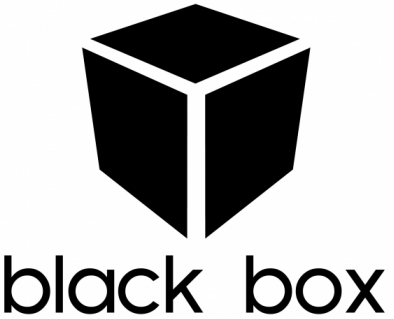
BLACK BOX
– *key instructions*



"**Decision.** You can choose to keep your coins…, or you can choose to put some or all of them into a 'black box'.

This '*black box*' performs a mathematical function that converts the number of coins inputted into a number of coins to be outputted.

The function contains a random component, so if two people were to put the same amount of coins into the '*black box*', they would not necessarily get the same output."

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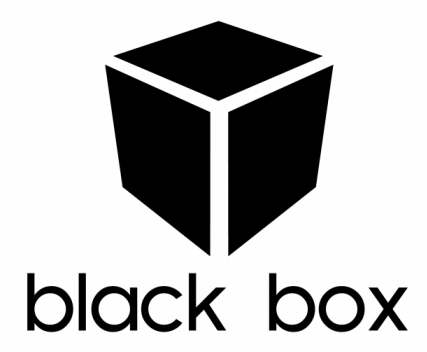
BLACK BOX
– *feedback*



Game summary	Number of coins
Initial coins	40
Minus (-) your input	10
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Your final number of coins	58

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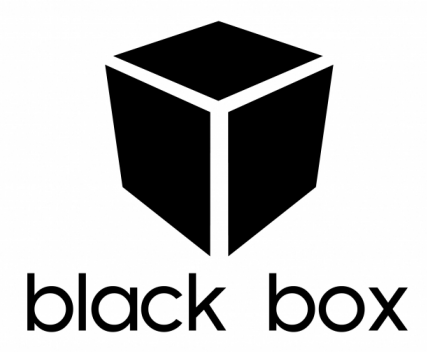

PGG Analogue
Endowment
Contribution
Returns from project
Earnings

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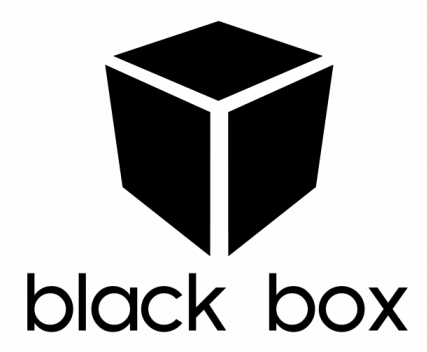
What does the Black Box do conceptually?

The black box is an ***asocial control*** – a game form that mimics the game environment except for the social component



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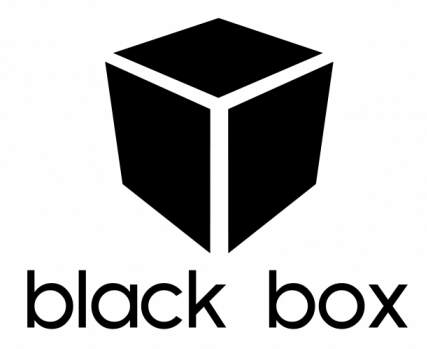

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In this way we block, or control for, any social cognition

This allows us to answer the question, what would a population of *uncertain/ignorant* players with *no social concerns* look like?

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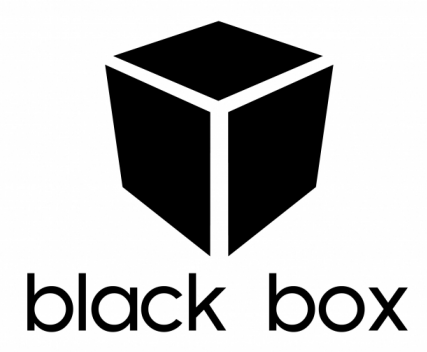

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This means that we keep the self-interested component of *Homo economicus,* but relax the rationality assumption, i.e. the assumption that players *know how* to maximize income.

If players with full knowledge of the social aspect of the game do not play much differently, then this suggests their focus is not on the social consequences of their actions

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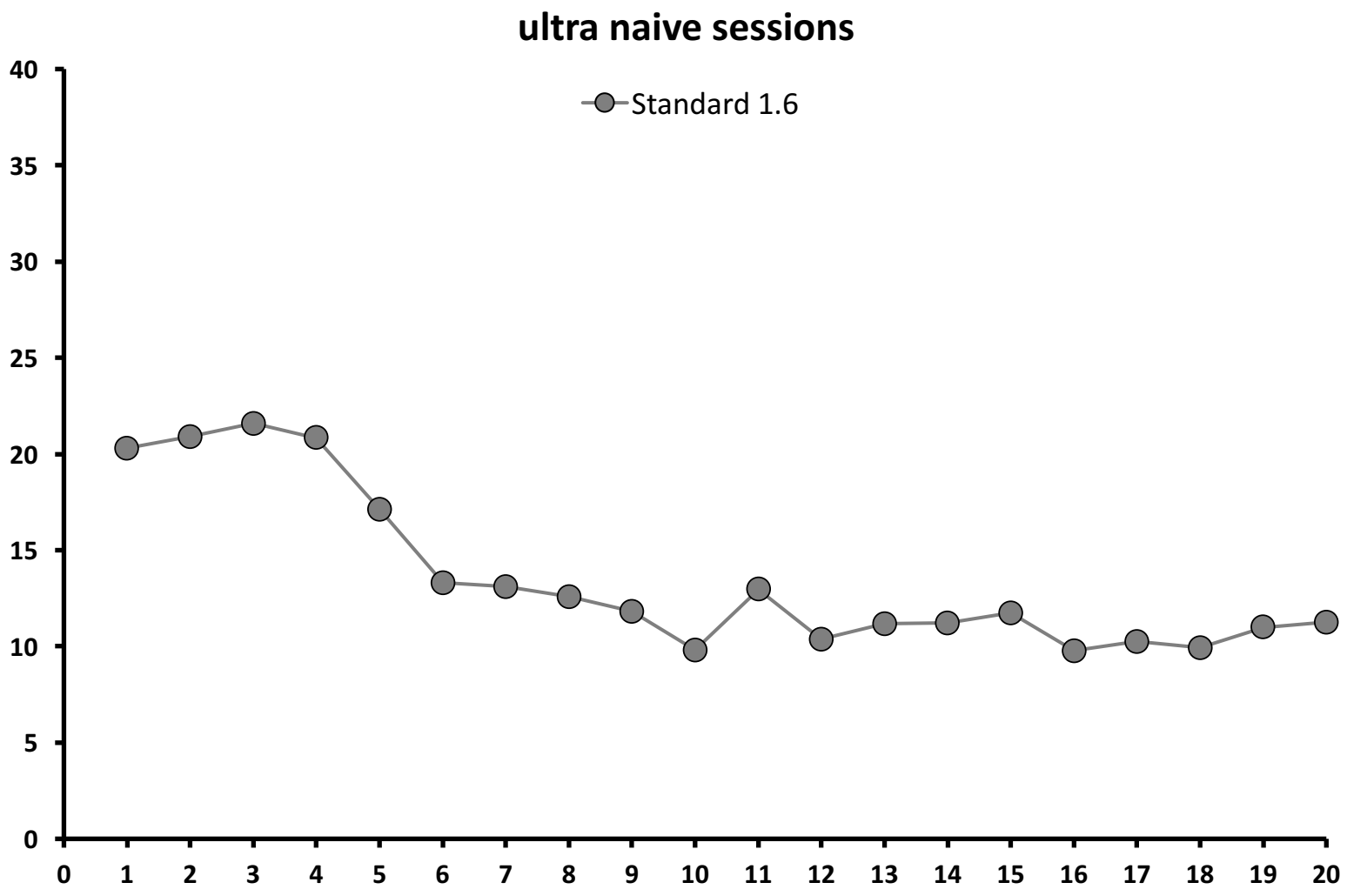

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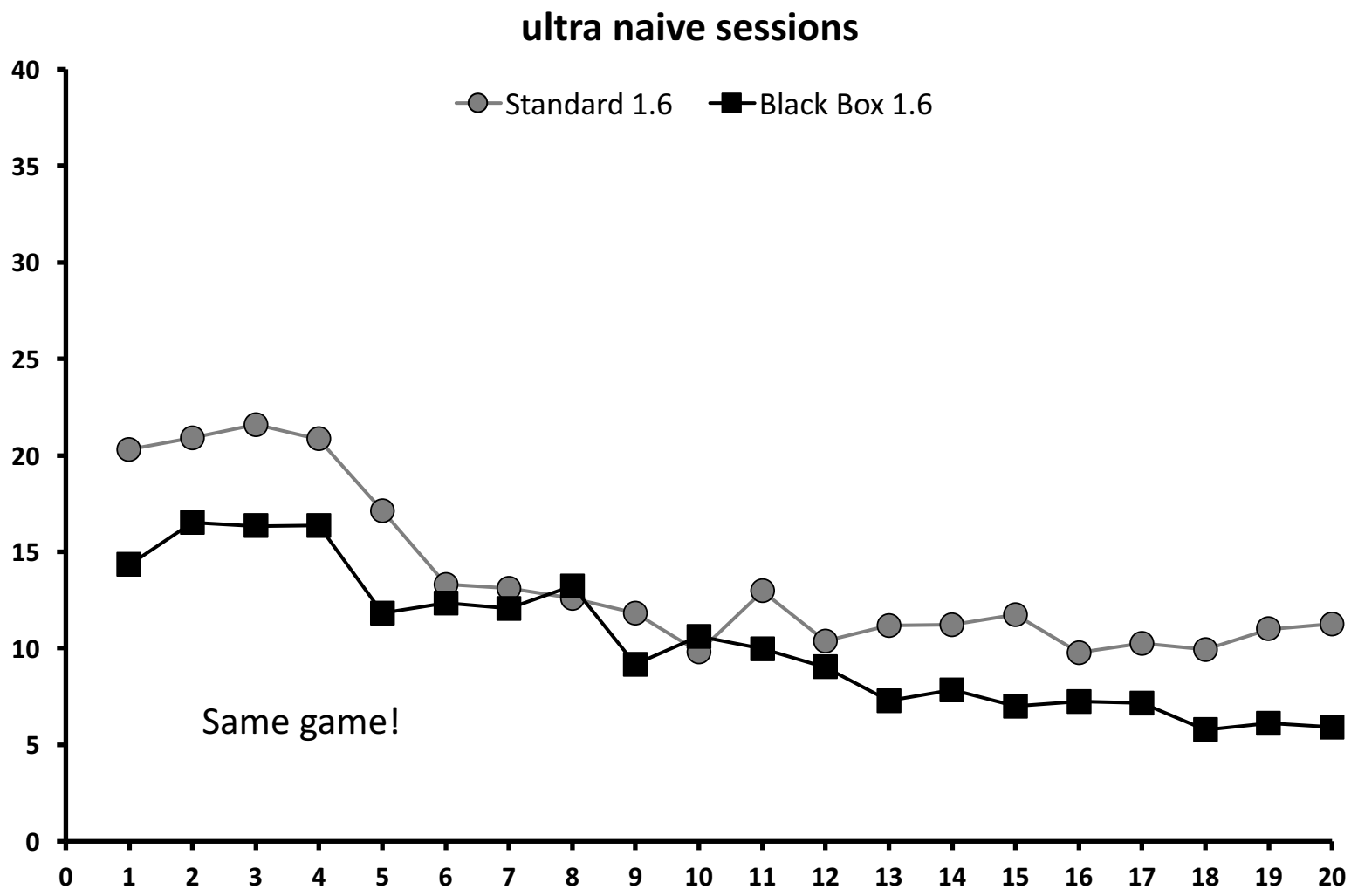

black box

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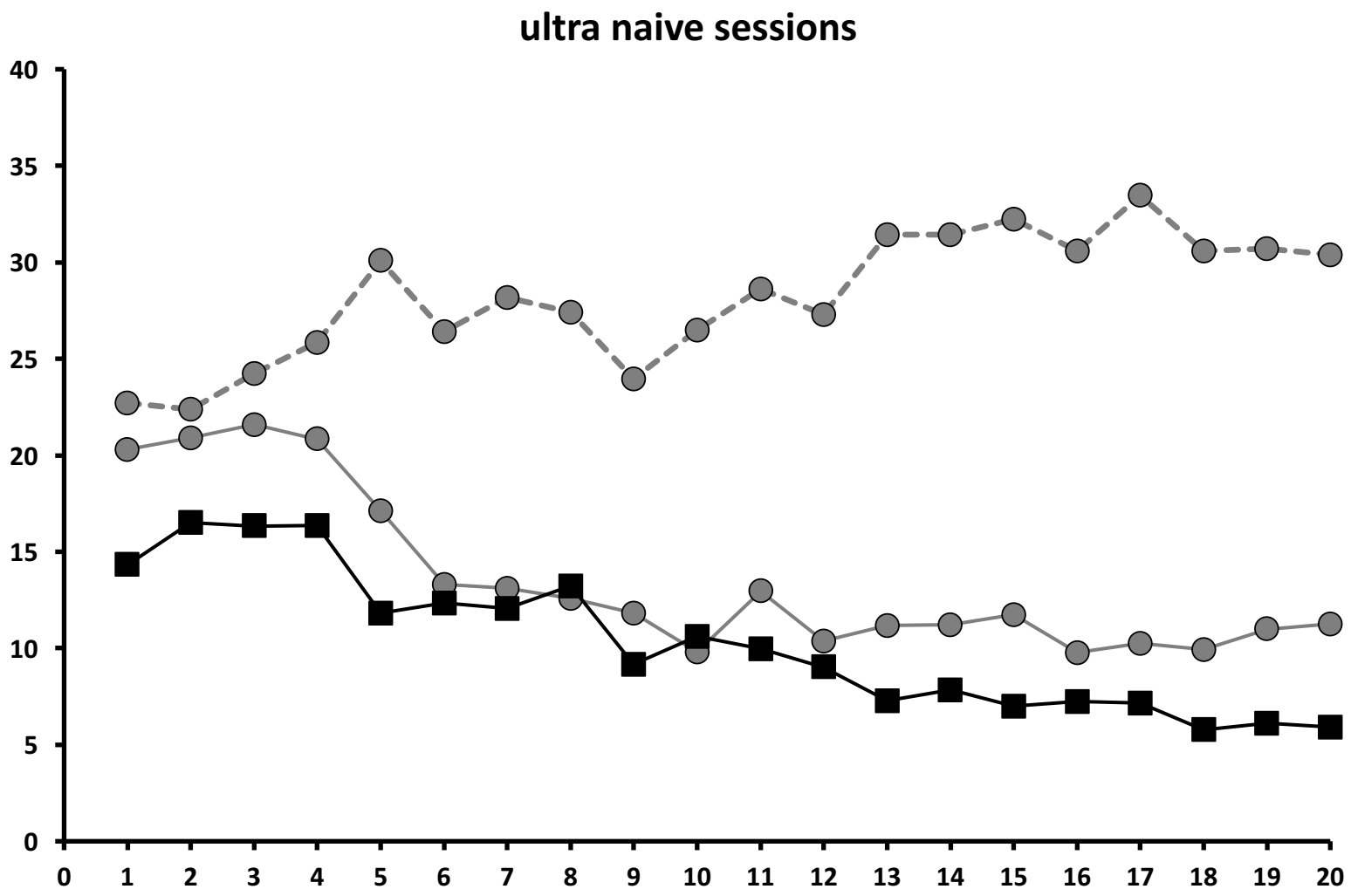

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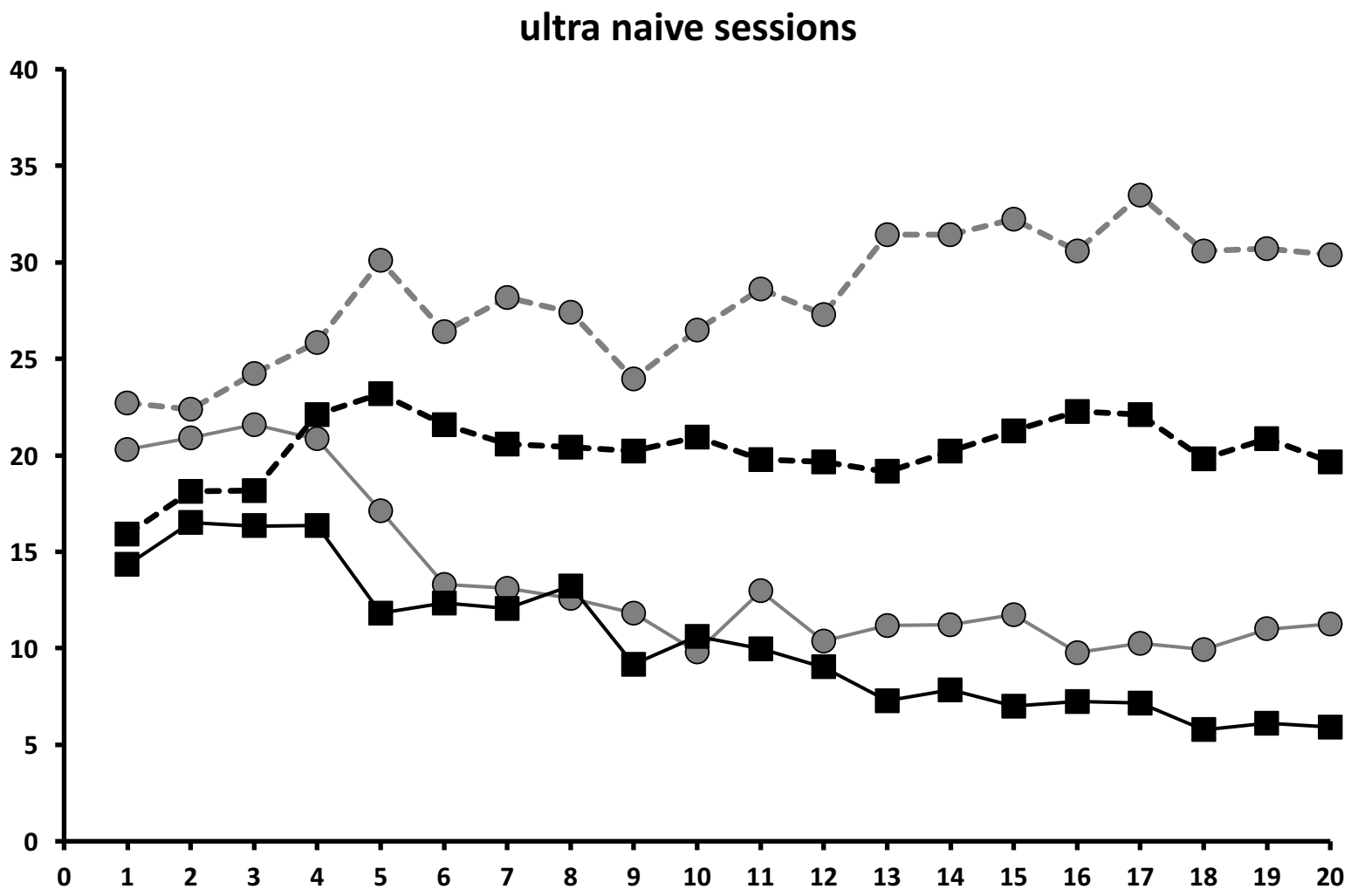
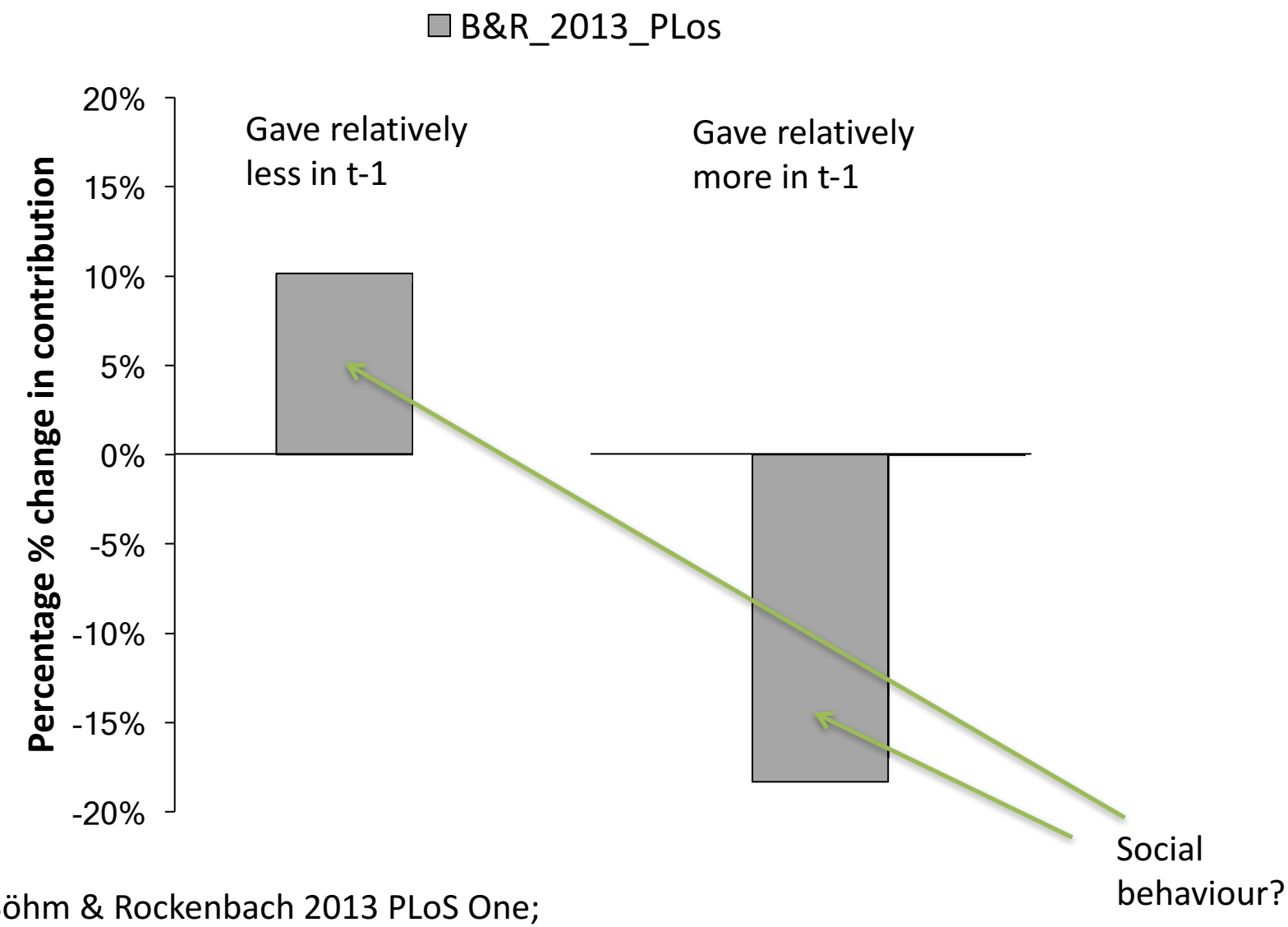


black box

An asocial control can also investigate individual level behaviours such as *conditional cooperation*



Böhm & Rockenbach 2013 PLoS One;

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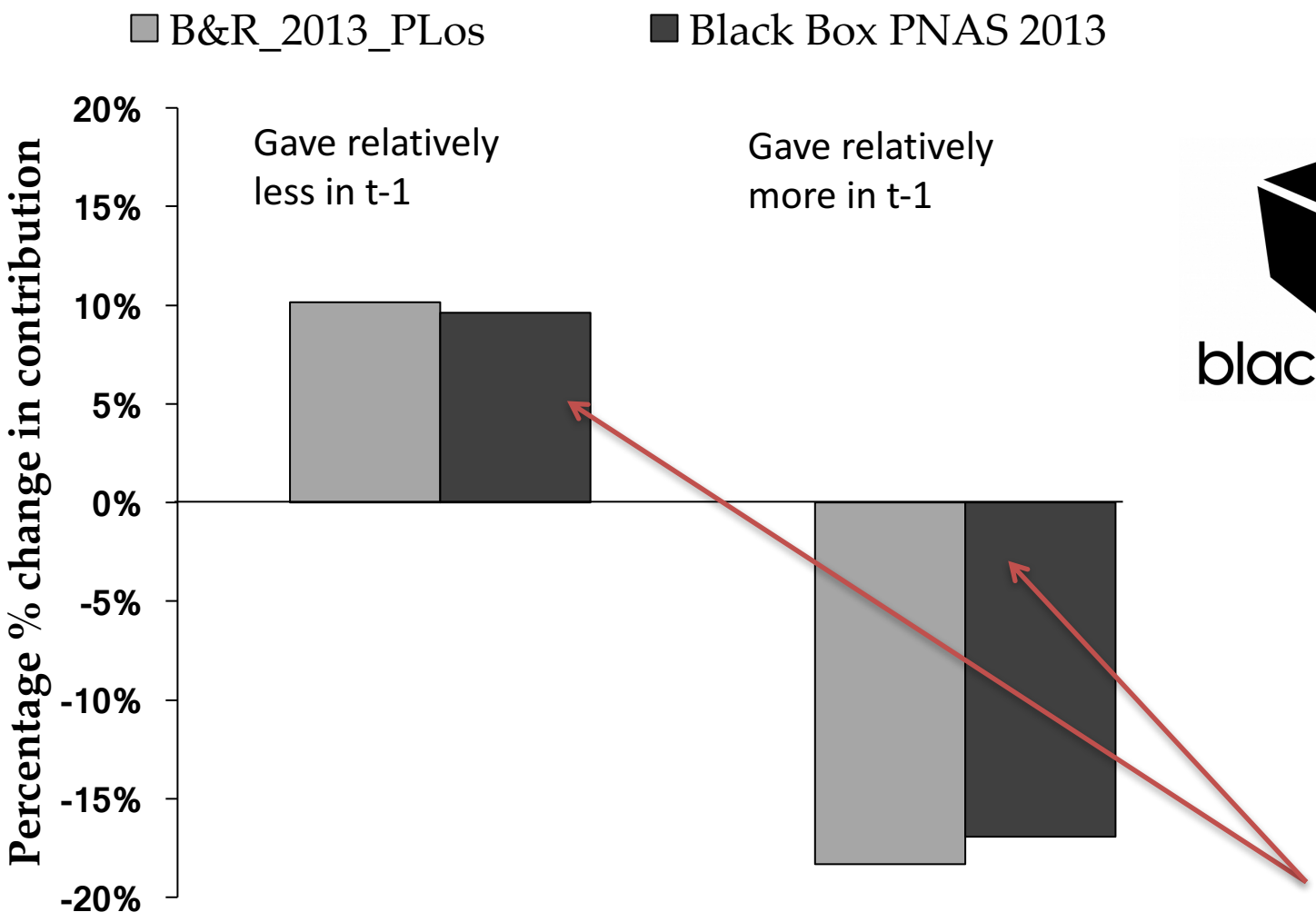

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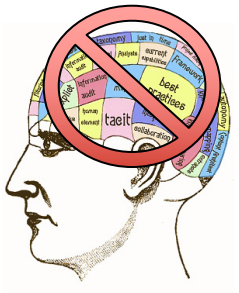

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