INTERACTIVE PREFERENCES

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«RATIONAL CHOICE SOCIOLOGY» @ SAN SERVOLO

NOVEMBER 17, 2015

- **Good morning San Servolo!**

- **Thanks**
  - to LMU, Josef Brüderl, Patrick Riordan for organizing and inviting!
  - and to Andreas Diekmann for introducing me to the sociology crowd…

- **Please contact me (hnax@ethz.ch) if you have any questions**

SOURCES

Economics Letters 135 (2015) 133–136

Contents lists available at ScienceDirect

Economics Letters

journal homepage: www.elsevier.com/locate/ecolet

Interactive preferences

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THIS IS JOINT WORK

with

- **Ryan Murphy (who needs no introduction here I guess)**
- **Kurt Ackermann: a brilliant recently graduated PhD student**

Motivation:

ECONOMICS/ RATIONAL CHOICE THEORY MAKES RATHER EXTREME ASSUMPTIONS IN TERMS OF

>PREFERENCE INDEPENDENCE

>RATIONALITY

>OPTIMIZATION

>STRATEGIZING

MESSAGE OF THIS TALK

- **In real-life (as well as in the laboratory),**

  preferences are often interactive,

  not independent and stable!

  My (social) preferences depend on yours, and vice versa.

  (Reciprocal intentions matter!)

- **This issue has been neglected, but it has important implications for theory.**
- **It can be used to explain reciprocity based on preferences.**

OUR CONTRIBUTION

1. **Offer a model of interactive preferences**
2. **Provide a first laboratory test**

BEHAVIORAL ECONOMICS BACKGROUND: THE CASE OF DECISION THEORY

The clean "theory of expected utility maximization"

Ramsey-Savage-von Neumann

contradicted by simple experiments such as those by

Allais/ Ellsberg/ Kahneman-Tversky

EXPERIMENTS: BEHAVIORAL GAME THEORY

The clean equilibrium predictions

von Neumann-Nash

(seemingly) contradicted by simple experiments such as on

Dictator games/ public goods games

VOLUNTARY CONTRIBUTIONS GAME

THE GAME

1. every player i simultaneously chooses to contribute some amount of his budget B. Given contributions, for a *marginal per-capita rate of return* $(mpcr)$ $r/n \in (1/n, 1)$, a public good is provided and its return split equally so that i's payoff is

$$u_i\ (c) = (B - c_i) + \sum_{j \in N} mpcr * c_j$$

- **Unique Nash equilibrium: all give nothing.**
- **What explains deviations from this prediction?**

EXPLAINING BEHAVIOR VIA THE 'SUBJECTIVE UTILITY CORRECTION PROJECT' (GIGERENZER AND SELTEN)

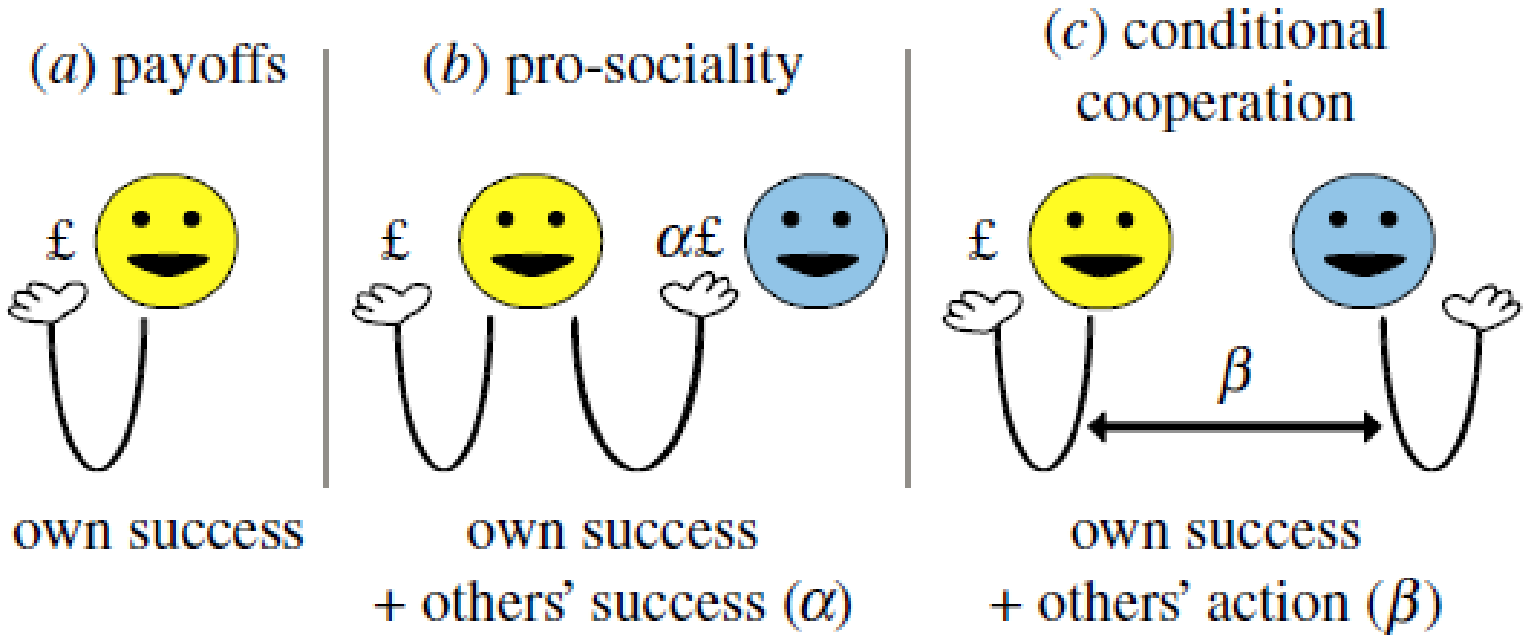
The failure to play according to Nash equilibrium as predicted by pure self-interest is explained using alternative payoff functions that include concerns for other players' payoffs such as

- **Fairness considerations (Fehr-Schmidt)**
- **Inequality/inequity aversion (Bolton-Ockenfels)**
- **Altruism (Fehr-Gachter, Gintis-Bowles-Boyd-Fehr, Fehr-Fischbacher)**
- **Reciprocity (Fischbacher-Gachter-Fehr)**
- **Spite (Saijo-Nakamura, Saijo)**

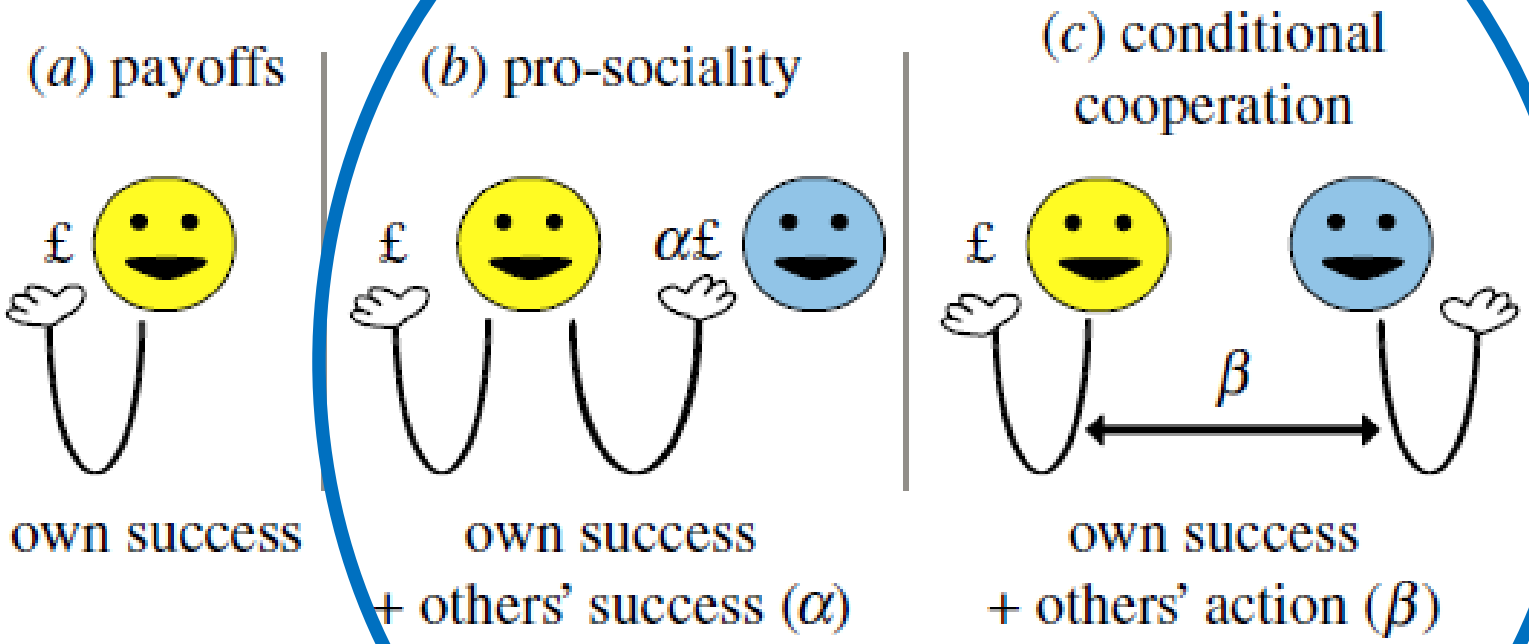
"pro-sociality branch"

Recall this approach mirrors the various corrections to utility functions motivated by ambiguity aversion, etc.

HOMO OECONOMICUS AND FRIENDS



Rational choice theory assumes individuals to be fully rational and thus capable of expressing their preferences perfectly through the consequences of their actions (Becker 1976).



Maybe these two are the same thing/ come from the same underlying logic?

WHAT WOULD HOMO OECONOMICUS DO IN THE VOLUNTARY CONTRIBUTIONS GAME?

…he would contribute zero.

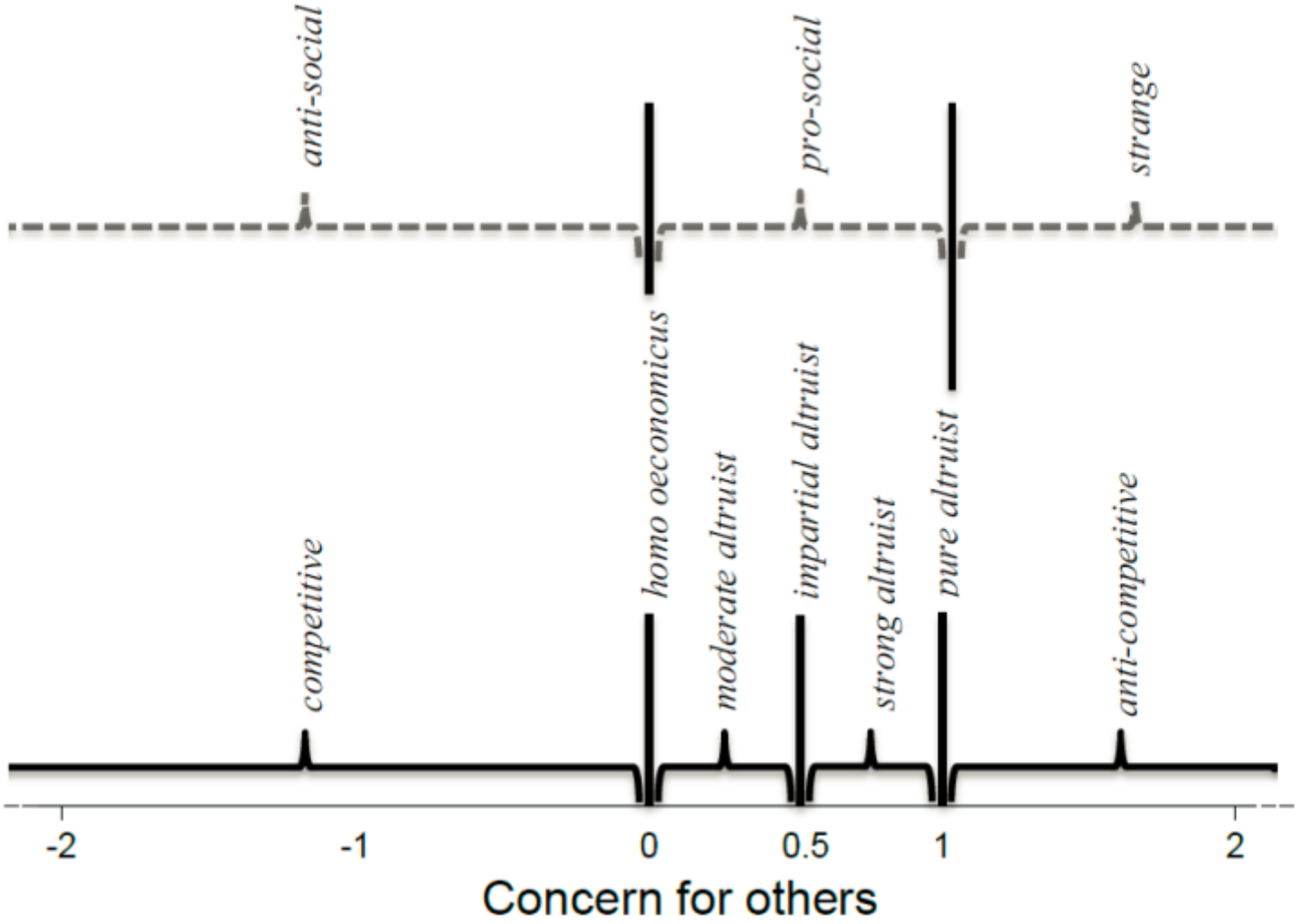
<u>but</u> UNDER OTHER-REGARDING CONCERNS….

if his utility is, for example, "Cobb-Douglas"

$$u_i(c) = \left(\phi_i^{1-\alpha_i} * \phi_{-i}^{\alpha_i}\right) \qquad (1)$$

where ϕ_{-i}^{α} is the average payoff to players $j \neq i$, then…

WE HAVE A RANGE OF PERSONAS...



AND POSITIVE CONTRIBUTIONS ARE EVIDENCE OF CONCERNS FOR OTHERS IN THIS RANGE:

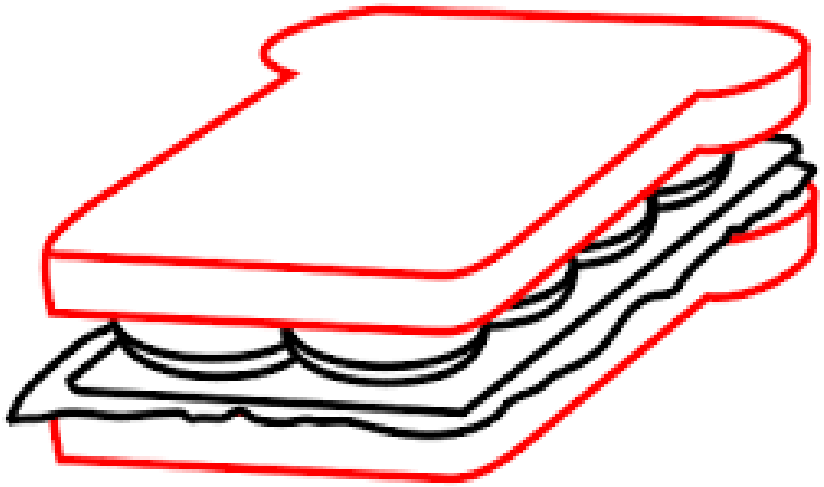
- **(0,0.5) moderate altruist**
- **0.5 impartial altruist**
- **(0.5,1) strong altruist**
- **1 pure altruist**

ARE PREFERENCES STABLE?

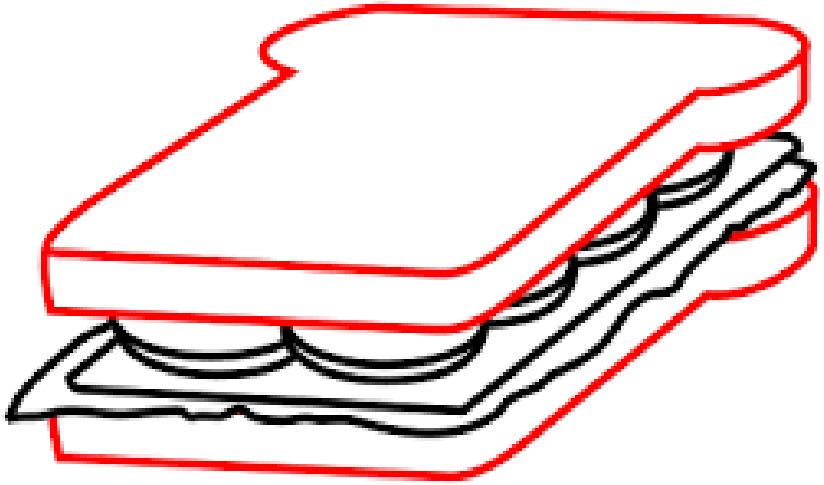
OR ARE THERE INTERACTIONS IN PREFERENCES?

Experiments: SET-UP

- **Experiments were conducted @ ETH's Decision Science Laboratory during February 2013 involving 128 subjects in 6 sessions ($4 * 20 + 2 * 24$).**



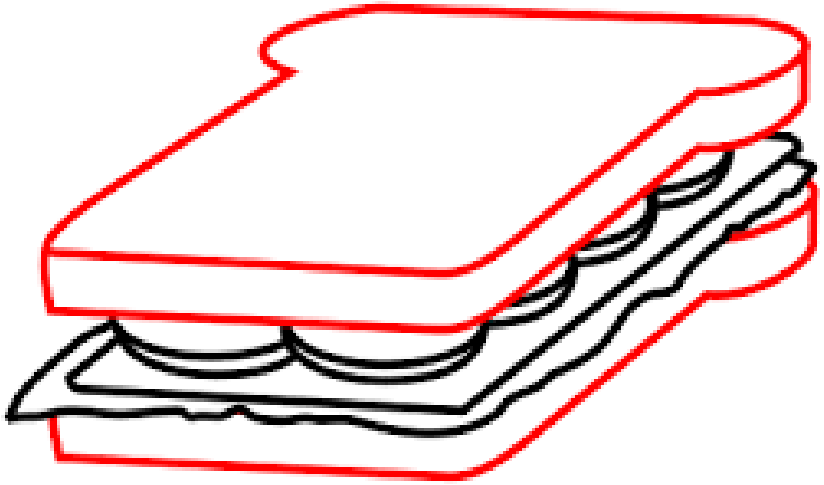
SVO Dictator Games



10-times repeated PGG with initially randomly matched, then fixed groups (size 4)
+ belief elicitation

SVO Dictator Games

Measure of initial (pro-)sociality ✓



Measure of individual preference ***responsiveness***! ?

Measure of final (pro-)sociality ✓

RATIONAL CHOICE

We assume Cobb-Douglas preferences:

$$u_i(c) = \left(\phi_i^{1-\alpha_i} * \phi_{-i}^{\alpha_i}\right) \qquad (1)$$

Hence, from own contribution decisions and beliefs about others we can deduce

$$\alpha_i = \frac{0.6\phi_{-i}(c_i, \widehat{c}_{-i})}{0.4\phi_i(c_i, \widehat{c}_{-i}) + 0.6\phi_{-i}(c_i, \widehat{c}_{-i})}. \qquad (2)$$

RESPONSIVENESS

in static equilibrium, $\alpha_i = \widehat{\alpha}_{-i}$, where $\widehat{\alpha}_{-i}$ is i's belief about α_{-i}.

The above game repeats with revelation of past outcomes. Each period t, suppose i contributes to maximize expression (1) so that expression (2) implies α_i^t given $(c_i^t, \widehat{c}_{-i}^t)$. We assume α_i^t is updated in light of evidence by

$$\alpha_i^t = (1 - \beta_i^t)\alpha_i^{t-1} + \beta_i \widetilde{\alpha}_{-i}^{t-1}, \tag{3}$$

where $\widetilde{\alpha}_{-i}^{t-1}$ is i's deduction of α_{-i}^{t-1} from previous-period evidence, and $\beta_i^t \in [0, 1]$ measures i's period-t degree of belief responsiveness.

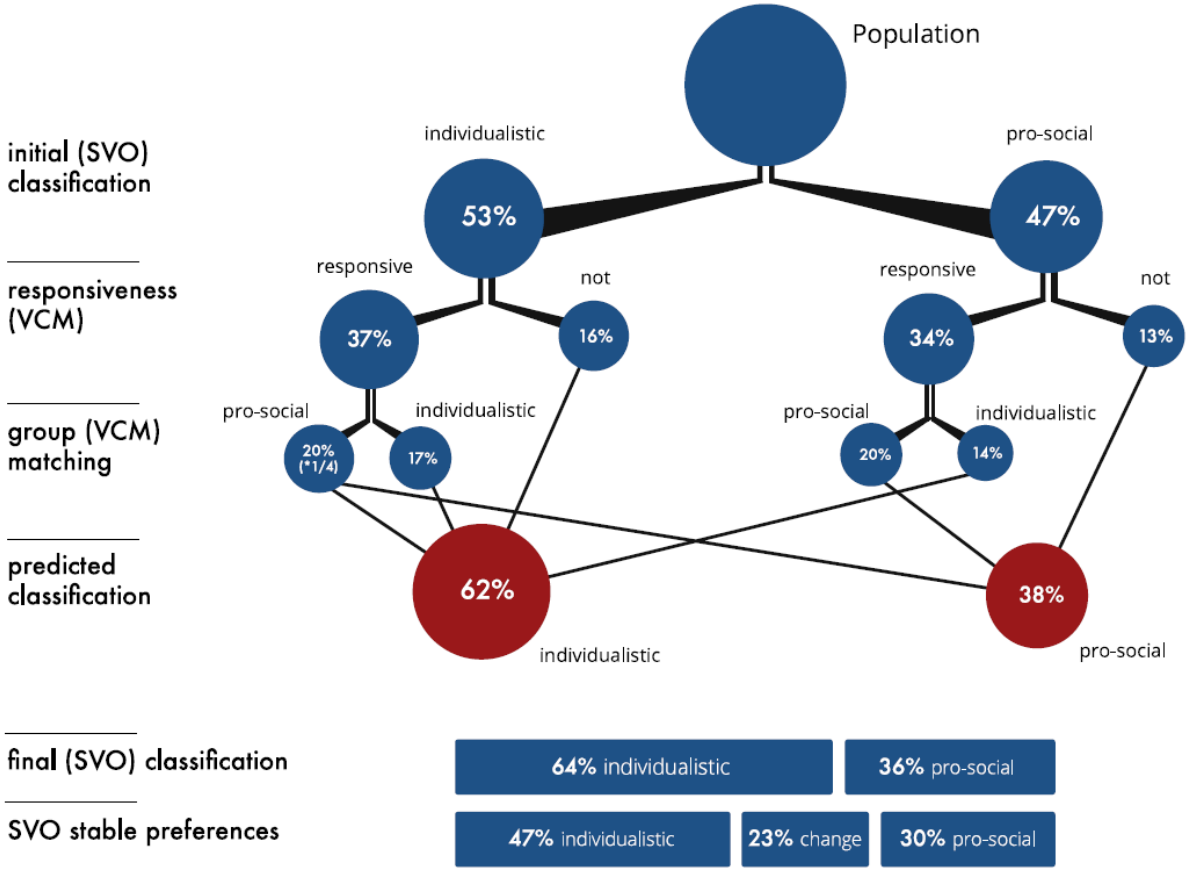
META FINDINGS

Regressions 1 and 2 (standard errors adjusted for 128 individual clusters).

Regression 1		Regression 2	
'Contribution' (VCM, $t = 1$)		'Responsiveness' (VCM, $t = 1$–10)	
Initial pro-sociality	3.54* (1.19)	α^{t-1}	−0.35* (0.04)
Constant	10.76* (2.72)	$\widetilde{\alpha}_{-i}^{t-1}$	0.44* (0.15)
Controls	Not listed	Controls	Not listed
N	128	N	1,152
R^2	0.13	R^2	0.20

* Significance level < 0.01.

RESULTS


initial (SVO) classification
responsiveness (VCM)
group (VCM) matching
predicted classification
final (SVO) classification
SVO stable preferences
Population
individualistic
pro-social
53%
47%
responsive
not
responsive
not
37%
16%
34%
13%
pro-social
individualistic
pro-social
individualistic
20% (*1/4)
17%
20%
14%
62%
38%
individualistic
pro-social
64% individualistic
36% pro-social
47% individualistic
23% change
30% pro-social

PERHAPS
INTERACTIVE PREFERENCES
CAN
UNIFY
THEORIES OF
SOCIAL PREFERENCES
AND CONDITIONALLY
COOPERATIVE BEHAVIORS:
RECIPROCITY

THANKS

AGAIN!