

The Effect of Positive Mood on Cooperation in the Repeated Prisoners' Dilemma

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Joint work with Eugenio Proto (Bristol) and Mahnaz Nazneen (Warwick)

Emotion and Mood in Social Interactions

- ▶ The repeated PD captures a fundamental tension in social interactions, emphasizing the conflict between short-term and long term profit for the individual
- ▶ Despite standard dominance arguments we see cooperation in many settings in the lab
- ▶ In most settings the role of mood has not been considered
- ▶ However, psychologists and neuroscientists (Damasio, 1994; Ralph and Damasio, 2000; Forgas, 2002; Fischer, Manstead, et al., 2008) have provided a wealth of evidence that mood and, more generally, emotions are an essential and adaptive component of *social behavior*

Positive Mood & Cooperation

- ▶ We analyze the effect of *positive* mood (“happiness”) which allows us to contribute to the growing debate on the effect of wellbeing on economic performance (productivity) in the workplace
- ▶ Other work has emphasized that positive mood seems to invigorate individuals, leading them to exert more effort in individual tasks (Oswald, Proto, and SgROI, 2015)
- ▶ However, many workplace tasks are not of the individual, one-shot decision-making variety but instead are likely to involve repetition, social behavior (including strategic interaction) and a degree of cooperation

Positive Mood: Good or Bad for Cooperation?

According to the existing literature, the effect of positive mood on cooperation seems to be rather complex:

- ▶ “Cognitive Hypothesis”: people experiencing positive mood are more inward oriented, use less information and avoid systematic thinking (Schwarz, 2013; Forgas, 1998)
 - ▶ which in turn might reduce cooperation under repeated interactions (Proto, Rustichini, and Sofianos, 2014)

Positive Mood: Good or Bad for Cooperation?

- ▶ “Social Preference Hypothesis”: positive mood produces more open, altruistic and helpful behavior (Isen and Geva, 1987)
 - ▶ consistent with recent experimental economics studies investigating the effect of emotion on *one-shot* economic decisions (Kirchsteiger, Rigotti, and Rustichini, 2006; Capra, 2004; Drouvelis and Grosskopf, 2016; Dunn and Schweitzer, 2005; Kessler, McCellan, and Schotter, 2016)

This leaves the question of how mood should affect cooperation under repeated interactions very much open

Main Questions (and Preview of the Answers)

Considering a Repeated Prisoners' Dilemma:

- ▶ Does mood affect cooperation?
- ▶ In what direction does positive mood affect cooperation?
- ▶ How do the pre-play communication and the length of the interaction affect this relationship?
- ▶ What can we learn from the text in the pre-play communication?

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 - ▶ Yes
- ▶ In what direction does positive mood affect cooperation?
 - ▶ *Typically Negatively*
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 - ▶ *Both the existence and length of pre-play communication decrease the effect of positive mood*
- ▶ What can we learn from the text in the pre-play communication?
 - ▶ *Those with positive mood are more inward-oriented (use "I" more) and use fewer positive words and more negative words*

Experimental Design

Mood Induction - Positive & Neutral

Cooperation Task - Repeated Prisoner's Dilemma

- ▶ Finite repetition: exactly 11 rounds (3 SGs, perfect strangers)
- ▶ Indefinite repetition: at least 10 rounds (3 SGs, perfect strangers)
- ▶ Pre-play communication: chat for 180 seconds
- ▶ No communication: wait 60 seconds before proceeding

Other Controls

- ▶ Personality (Big Five Inventory 120 questions)
- ▶ Risk (30 Item DOSPERT)
- ▶ Raven (30 puzzles)
- ▶ Demographics (age, gender, year of school, stated mood, life satisfaction etc.)

Mood Induction Process

Velten Statement describing either positive self evaluations or somatic statements

- ▶ Positive Statement: *If your attitude is good, then things are good, and my attitude is good*
- ▶ Neutral Statement: *The orient express travels between Paris and Istanbul*

Music MIP mood-suggestive piece of classical or modern music

- ▶ Positive Mood: *Eine Kleine Nacht Musik* (Mozart)
- ▶ Neutral Mood: *Ariel Boundaries* (Michael Hedges)

Movie MIP we also used a comedy scene from “City Lights” and a well-used neutral clip as robustness checks

Repeated PD

Table: Stage Game

	Cooperate	Defect
Cooperate	51, 51	22, 63
Defect	63, 22	39, 39

- ▶ Game taken from Embrey, Fréchet and Yuksel (2014)
- ▶ Each unit corresponds to £0.30
- ▶ Monetary incentives: participants on average earned £17 including a show up fee of £5

Cooperation rates per round in different treatments



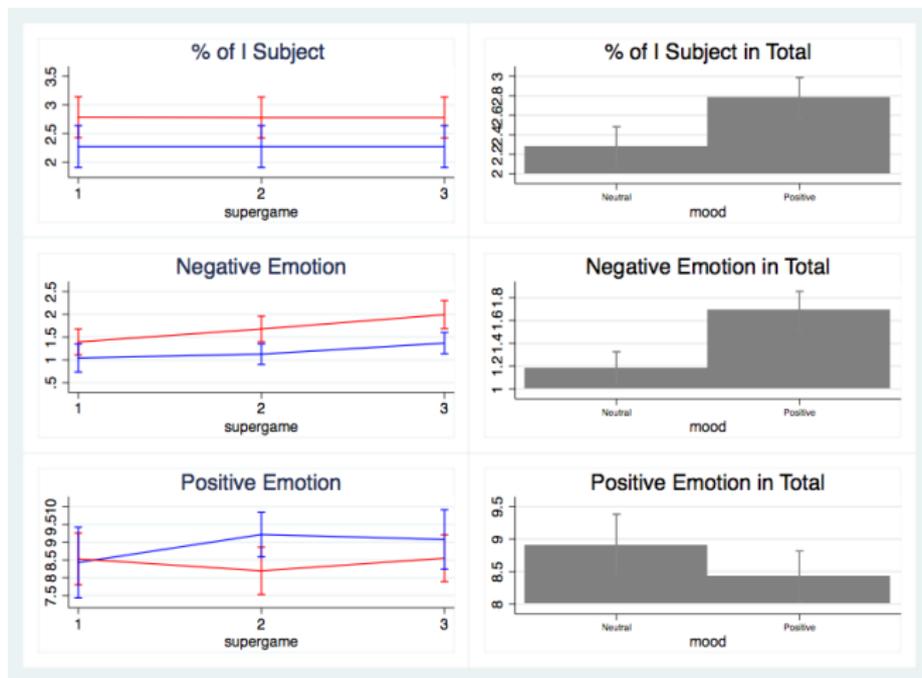
Red = positive mood, blue = neutral mood

Econometric analysis

	1st SG Infinite b/se	1st SG Finite b/se	All Infinite b/se	All Finite b/se
choice				
+ve mood	-0.57508* (0.3339)	-1.45644** (0.5743)	-0.54612** (0.2694)	-0.69244** (0.3504)
+ve m x chat	-0.75955** (0.3513)	0.17256 (0.4522)	-0.61901** (0.2852)	0.04545 (0.2429)
chat	1.02885*** (0.3076)	0.76438** (0.3430)	1.22149*** (0.2274)	0.71560*** (0.1879)
clip	-0.19203 (0.2315)		-0.12501 (0.1729)	
SG fixed-eff	No	No	Yes	Yes
N	3036	1940	8280	5820

Also included as controls are last period actions and interactions between mood and last period actions

Text analysis



Red = positive mood, blue = neutral mood

Conclusions

- ▶ Individuals in the positive mood treatment typically cooperate less and are less efficient than individuals in the neutral mood treatments
- ▶ Everything is robust to the inclusion of pre-play communication, to changing the end date from known to unknown and to the alternative mood-induction process
- ▶ Text analysis reveals that those in a positive induced mood are more inward-oriented and generally (use less positive language and more negative language) which might explain why they cooperate less