

Foreign Language Use in Competition vs. Cooperation

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Introduction

- ▶ We increasingly operate in a global, multilingual environment; in the workplace, many of us use a foreign language to work with others.
- ▶ We study cooperation, a crucial concept in the Social Sciences that is not only central to the work/study context, but also to the larger societal context. Finding people are less (or more) cooperative in a FLU setting has important implications

Introduction

- ▶ The use of games rather than questionnaires/scenarios
 - ▶ Games study actual behaviour, rather than cognitive/affective responses to questionnaires or moral/ investment dilemmas (Volk et al., 2014; Murnighan and Wang, 2016)
 - ▶ Games are incentivised and have been shown to not only capture people's strategic behaviour, but also reflect their choices in social interactions in similar real life social contexts

Three seminal prior studies on this

- ▶ Akkermans et al. (2010)
Binary cooperation game, two languages
- ▶ Gargalianou et al. (2017)
Binary cooperation game, one foreign two native languages
- ▶ Urbig et al. (2016)
Continuous cooperation game, two language setting

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Experimental Design

We study cooperation using three games in three languages:

- 1** Mother tongue use (German)
 - 2** Foreign language 1 (English)
 - 3** Foreign language 2 (Dutch)
- ▶ Earlier studies predominantly use English as foreign language (i.e. Akkermans et al., 2010). Our study can rule out idiosyncratic results caused by specific language combinations by employing Dutch as third language.
 - ▶ We recruit German students at a large Dutch University and present either a German, Dutch or English setup
 - ▶ We employ three one-shot cooperation games in stranger matching and without intermediary feedback

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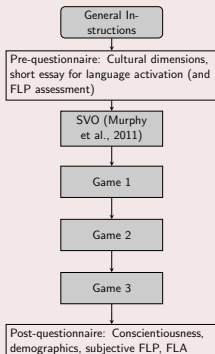
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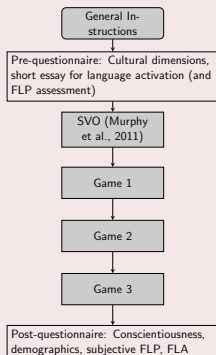


More specifics

- ▶ Invite German students only (via ORSEE)
- ▶ Entire session in either EN or DE or NL
 - ▶ This includes welcoming of participants, instructions, experiment interface...
- ▶ Randomise order of Games 1-3

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Game 1 – Prisoner's Dilemma

- ▶ Classical setup of the prisoner's dilemma game as described by Luce and Raiffa (1958)

		©	
		L	R
Ⓡ	T	10,10,	0,18
	B	18,0	4,4

Table: Prisoner's Dilemma Game.

Equilibrium Strategies

Nash Equilibrium The only strong Nash equilibrium of this one shot game is $NE = (B, R)$

Social Optimal $SO = (T, L)$

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Game 2 – Public Goods Game

Game statics

- ▶ Groups of four
- ▶ Individual endowment of $T = 10$ points
- ▶ $MPCR = 0.5$

Equilibrium Strategies

Nash Equilibrium Keep all points to self

Social Optimal Assign all points to group

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Game 3 – Volunteer's Dilemma Game

Game statics

- ▶ Groups of four (all stranger matching)
- ▶ Each player chooses between two options, i.e. to volunteer or not to volunteer
- ▶ The individual cost to volunteer is $C = 4$, which is due whenever an individual decides to volunteer – i.e. even if she is not pivotal
- ▶ If at least one player volunteers, each group member receives $U = 20$, else, if nobody volunteers, they receive $D = 4$

Equilibrium Strategies

Nash Equilibrium No NE in pure strategies, weak symmetric equilibrium point in mixed strategies

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After Game 3

- ▶ Player learns about her payoff in the three games & total payoff

Post-Questionnaire

- ▶ Qualitative questions on individual choice in the three games
- ▶ FLA questions
 - ▶ I am more afraid that people are ready to correct every mistake I make when speaking English than when speaking my native language.
 - ▶ No German equivalent
 - ▶ Ik ben meer bang dat mensen klaar staan om al mijn fouten te verbeteren wanneer ik Nederlands spreek dan wanneer ik mijn moedertaal spreek.

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After Game 3

Post-Questionnaire

- ▶ Subjective language proficiency questions
 - ▶ How often do you read or listen to x?
 - ▶ How often do you speak or write in x?
 - ▶ How would you assess your ability to understand written x?
- ▶ Conscientiousness (Gosling et al., 2003)
 - ▶ I see myself as dependable, organised (that is, hard working, responsible, disciplined, thorough, and NOT careless, impulsive)
- ▶ Demographics

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Theoretical Mechanisms (Selection)

Cultural Accomodation (CA)

- ▶ Language influences the way we think
- ▶ We assess whether participants associate a language with a culture that they in turn associate with cooperation as opposed to competition.

H1 Subjects who associate their language condition with a more cooperative (vs. competitive) culture cooperate more

Cognitive Load

Emotional Distance

Theoretical Mechanisms (Selection)

Cultural Accomodation (CA)

Cognitive Load

- ▶ We assess whether subjects are fluent in a language or not. More fluency reduces cognitive load
 - H2a Cognitive load drives the foreign language effect via deliberate thinking if the participants (both native and foreign) that are more fluent cooperate more
 - H2b Cognitive load might trigger the intuitive system instead of the deliberate system, such that more fluency is associated with more deliberate thinking

Emotional Distance

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Cultural Accomodation (CA)

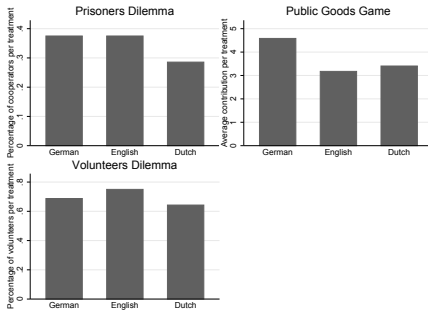
Cognitive Load

Emotional Distance

- ▶ Foreign language may also trigger the intuitive system via emotional distance rather than via cognitive load

H4 For participants who are innately cooperative, those in the foreign language condition cooperate more, and for participants who are innately competitive, those in the foreign language condition cooperate less.

Results



- ▶ Common directionality between German and Dutch
- ▶ Significant mother tongue bias in PGG

Results

VARIABLES	(1)	(2)	(3)	(4)
	Cooperative Play			
English	0.000 (0.44)	0.042 (0.45)	0.046 (0.46)	-0.269 (0.67)
Dutch	-0.405 (0.45)	-0.199 (0.47)	-0.092 (0.50)	0.290 (0.68)
Female		0.174 (0.39)	0.024 (0.40)	0.133 (0.42)
SVO angle		0.018 (0.01)	0.019 (0.01)	0.023 (0.02)
Culture fit			-0.139 (0.14)	-0.134 (0.15)
Dec. Time Prisoners Dilemma Game			-0.012** (0.01)	-0.013** (0.01)
Perceived Cooperativeness				1.036*** (0.39)
Creative				-0.091 (0.13)
Structured				-0.075 (0.16)
Restricted				-0.187 (0.13)
Complex				-0.125 (0.13)
Constant	-0.511* (0.30)	-1.158** (0.54)	1.318 (1.23)	-1.639 (2.51)
N	130	127	127	127
Pseudo R-squared	0.006	0.016	0.053	0.119

* p<0.10, ** p<0.05, *** p<0.01
 Standard errors in parentheses.

Logit Regression: Is there a difference between treatments with respect to cooperative play in the prisoner's dilemma game?

Heine, van Hugten, van Witteloostuijn, Harzing

Prisoners Dilemma

- Decision Time,
- + Perc. Cooperativeness

Public Goods Game

- Mother tongue bias,
- + SVO

Volunteers Dilemma

Nothing

Results

VARIABLES	(5)	(6)	(7)	(8)
	Contribution to Group Account			
English	-1.408* (0.72)	-1.338* (0.69)	-1.272* (0.70)	-2.590*** (0.92)
Dutch	-1.179* (0.71)	-0.854 (0.70)	-0.956 (0.72)	-2.693*** (0.93)
Female		0.708 (0.58)	0.645 (0.59)	0.608 (0.59)
SVO angle		0.057*** (0.02)	0.057*** (0.02)	0.059*** (0.02)
Culture fit			-0.035 (0.21)	-0.039 (0.21)
Dec. Time Public Goods Game			0.001 (0.00)	0.001 (0.00)
Perceived Cooperativeness				-0.363 (0.51)
Creative				0.297* (0.18)
Structured				-0.576*** (0.21)
Restricted				0.158 (0.18)
Complex				-0.182 (0.17)
Constant	4.583*** (0.48)	2.567*** (0.78)	2.379 (1.55)	7.095** (3.26)
N	130	127	127	127
R-squared	0.035	0.102	0.105	0.181

* p<0.10, ** p<0.05, *** p<0.01
 Standard errors in parentheses.

Prisoners Dilemma

– Decision Time,
 + Perc. Cooperativeness

Public Goods Game

Mother tongue bias,
 + SVO

Volunteers Dilemma

Nothing

OLS Regression: Is there a difference between treatments with respect to contributions to the group account in the public goods game?

Results

VARIABLES	(9)	(10)	(11)	(12)
	Cooperative Play			
English	0.310 (0.48)	0.328 (0.48)	0.365 (0.49)	0.435 (0.68)
Dutch	-0.201 (0.45)	-0.106 (0.46)	-0.387 (0.53)	-0.789 (0.73)
Female		0.013 (0.40)	-0.010 (0.40)	-0.108 (0.41)
SVO angle		0.010 (0.01)	0.011 (0.01)	0.006 (0.01)
Culture fit			-0.045 (0.14)	-0.090 (0.15)
Dec. Time Volunteers			0.003 (0.00)	0.003 (0.00)
Dilemma Game				
Perceived				-0.593 (0.37)
Cooperativeness				0.163 (0.13)
Creative				0.029 (0.15)
Structured				0.018 (0.13)
Restricted				0.070 (0.13)
Complex				
Constant	0.788** (0.31)	0.493 (0.52)	0.331 (1.04)	2.276 (2.26)
N	130	127	127	127
Pseudo R-squared	0.007	0.010	0.018	0.047

* p<0.10, ** p<0.05, *** p<0.01
 Standard errors in parentheses.

Prisoners Dilemma

- Decision Time,
- + Perc. Cooperativeness

Public Goods Game

- Mother tongue bias,
- + SVO

Volunteers Dilemma

Nothing

Logit Regression: Is there a difference between treatments with respect to cooperative play in the volunteers dilemma game?

Conclusion/Outlook

- ▶ Tendency towards common directionality in all three games (i.e. mother tongue bias)
 - ▶ A lot of noise in data – especially low statistical power in binary games

What's next?

- ▶ Communication between participants for higher degree of immersion in language
- ▶ Repetition for learning & more data
- ▶ Belief elicitation

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