

The Description - Experience gap in Cooperation

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Joint work with O. Isler and D. van Dolder

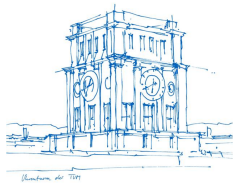


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Cooperation



Conditional Cooperation



Conditional Cooperation Under Uncertainty





Decisions under **risk**: probability distribution and outcomes are known



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Decisions under **ambiguity**: probability distribution and/or outcomes are (at least partially) unknown

There is a Description - Experience gap in individual choice under risk/
uncertainty

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- People overweight rare events in Description but underweight them in Experience (Hertwig et al., 2004; Wulff et al., 2018)
- Sampling bias is the most important, but not the only contributor (Fox and Hadar, 2006; Cubitt et al., 2021)

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Social uncertainty is likely to be treated differently than individual one. People under social uncertainty have been found to:

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Social uncertainty is likely to be treated differently than individual one. People under social uncertainty have been found to:

- Be less ambiguity averse (Li et al., 2020)
- Respond differently to emotions (Kugler et al., 2012)
- Remember past events better — such as cases of defection (Tooby and Cosmides, 2005)

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RQ2. Does the format of information influence responses? If so, how and why?

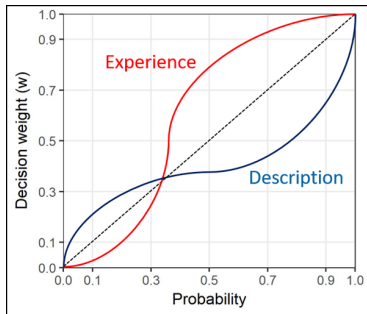
RQ1. How do people respond to different probabilities of cooperation?

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RQ2. Does the format of information influence responses? If so, how and why?

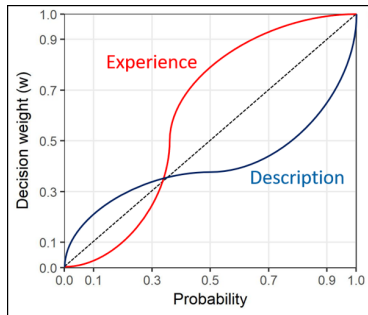
- Introduce treatments: Description (Risk) & Experience (Ambiguity)
- We find a significant Description - Experience gap in cooperation, but, in the opposite direction than that in individual risky decisions
- We demonstrate how stickiness of priors can account for this disparity

Analysis Plan

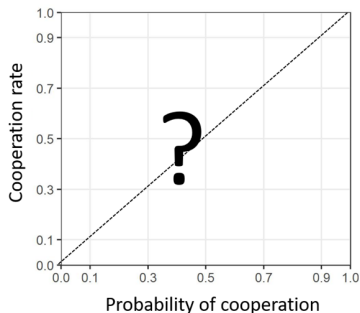


Individual Uncertainty

Analysis Plan



Individual Uncertainty



Social Uncertainty

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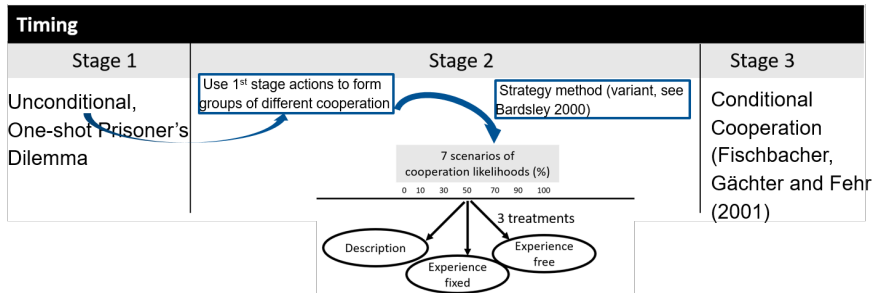


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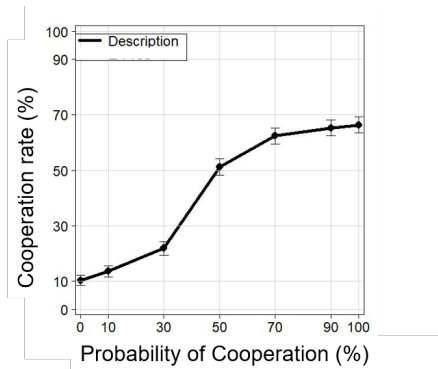
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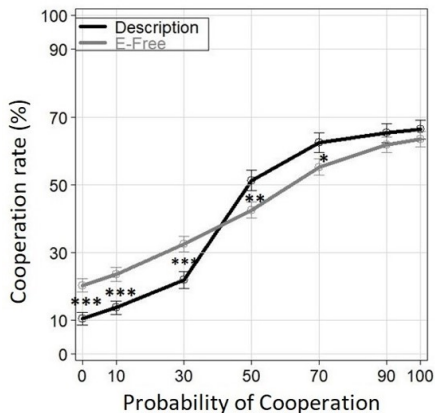
Cooperation as response to likelihood of cooperation



Result 1

Cooperation increases monotonically with the probability of reciprocation

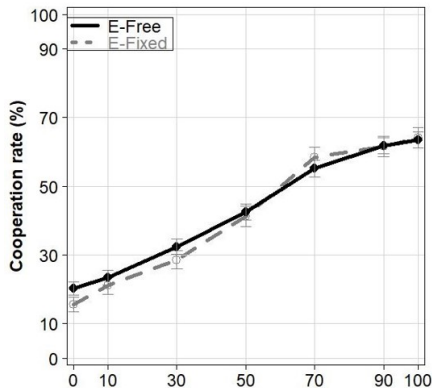
The Reverse DE gap in social uncertainty



Result 2

When the likelihood of cooperation is low, people in Experience tend to cooperate more than those in Description

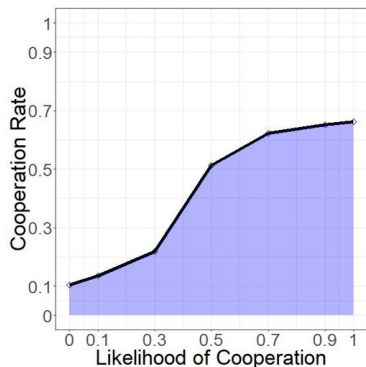
The role of Sampling Bias



Result 3

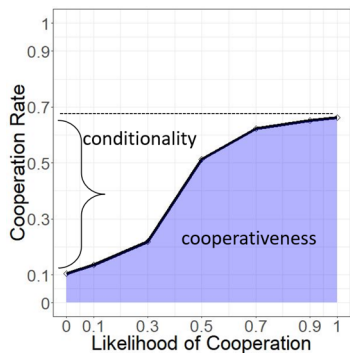
Sampling Bias does not affect the Description - Experience gap in social uncertainty

Cooperation indexes: Cooperativeness



- cooperativeness = $\frac{1}{n} \frac{1}{7} \sum_{i=1}^n \sum_{r=1}^7 C_{ir}$

Cooperation indexes: Conditionality



- cooperativeness = $\frac{1}{n} \frac{1}{7} \sum_{i=1}^n \sum_{r=1}^7 C_{ir}$
- conditionality = $\frac{1}{n} \sum_{i=1}^n (C_{i7} - C_{i1})$

Conditionality the key driver

Table 4.2: Cooperativeness and conditionality indexes across treatments

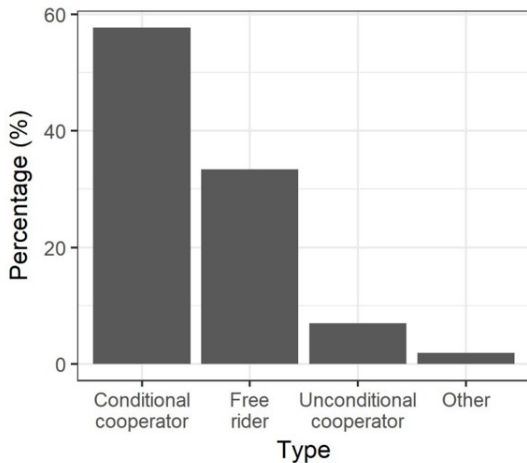
	COOPERATIVENESS	CONDITIONALITY
DESCRIPTION	0.416 (0.016)	0.558 (0.034)
E-FREE	0.427 (0.015)	0.432 (0.026)
E-FIXED	0.415 (0.019)	0.486 (0.033)
P-VALUE	0.909	<0.01***

Note. Standard errors in parentheses. P-values derive from Kruskal-Wallis tests across treatments.

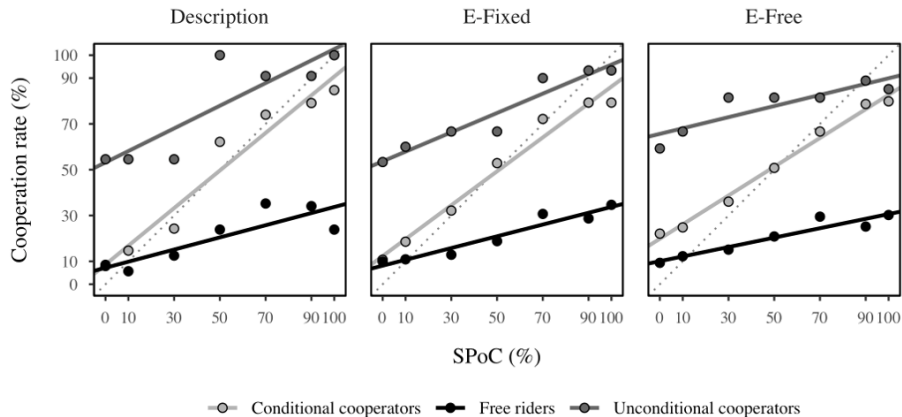
Result 4

People in Description react more strongly to social information than those in Experience

Stage 3: Individual types distribution



Stage 3: Individual types behavior



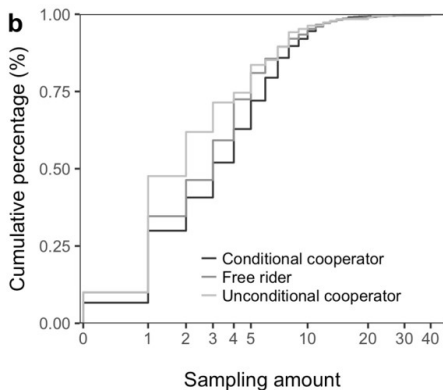
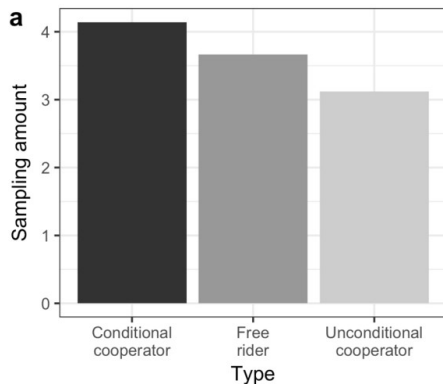
Stage 3: Individual types behavior

Table 4.3: Cooperation indexes conditioned on types

	COOPERATIVENESS			CONDITIONALITY		
	CC	FR	UC	CC	FR	UC
DESCRIPTION	49.6	20.4	77.9	76.1	16.0	45.4
	(1.7)	(2.2)	(8.2)	(3.8)	(5.4)	(16.5)
E-FREE	51.2	20.3	77.8	57.8	20.8	26.0
	(1.8)	(2.1)	(4.9)	(3.8)	(4.5)	(8.8)
E-FIXED	49.2	20.9	74.8	68.5	24.8	40.0
	(2.2)	(2.7)	(3.8)	(4.3)	(4.6)	(10.5)
P-VALUE	0.768	0.877	0.788	P<0.01***	0.528	0.402

Note. Standard errors in parentheses. P-values derive from Kruskal-Wallis tests across treatments.

Stage 3: Sampling amount



Questions

- Why is the Description-Experience gap 'reversed' in social uncertainty? Why is Sampling Bias not affecting it?

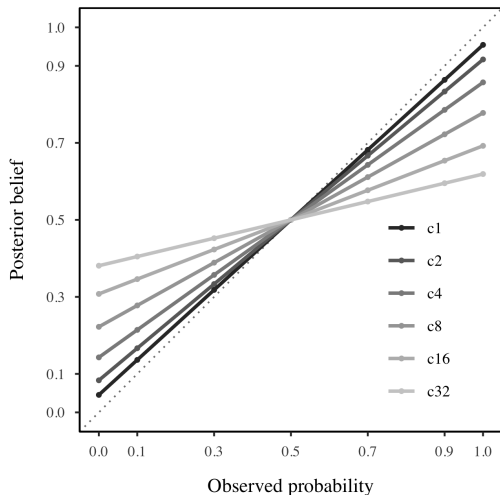
Questions

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Hypothesis

Priors are 'stickier' in Social rather than Individual uncertainty. Sticky priors induce flatter posteriors and the value of new information is discounted.

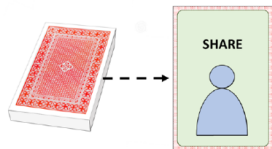
Study 2: a simulation



Notes: Carnap (1952): $\frac{cp_0+n}{c+N}$, c : strength of prior (p_0), here set at $p_0 = 0.5$.

Study 2: eliciting stickiness through confidence

Social Uncertainty



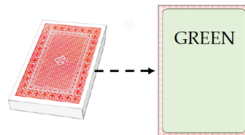
Please estimate the percentage of all other participants in this study who chose to "share"

0 10 20 30 40 50 60 70 80 90 100

52



Individual Uncertainty



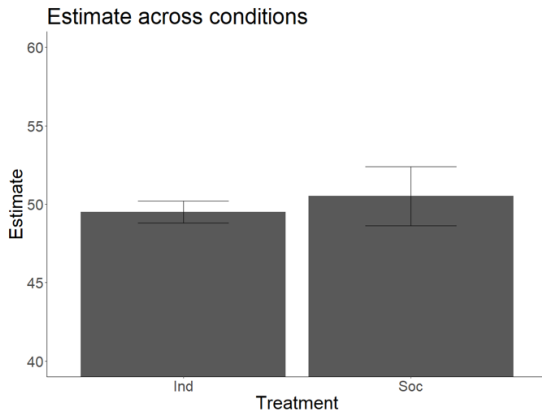
Please estimate the percentage of green cards in this deck

0 10 20 30 40 50 60 70 80 90 100

52



Study 2: eliciting stickiness through confidence



Conditionality the key driver



Result 5

People are more confident about their prior belief in Social Uncertainty compared to Individual Uncertainty

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People are generally conditionally cooperative

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- Aggregate: Cooperation increases monotonically with the probability of cooperation
- Individual: Most of our subjects were Conditional Cooperators
- Typology under information certainty matches behaviour under social uncertainty

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Social Uncertainty \neq Individual Uncertainty

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Social Uncertainty \neq Individual Uncertainty

- Rare events appear to be more influential in Experience than in Description
- Sampling bias does not affect the Social Description - Experience gap
- People in Social Uncertainty are less responsive to new information compared to Individual Uncertainty. This is because they have stronger priors

Questions?



Additional resources

<https://kopsacheilis.com>



Contact

orestis.kopsacheilis@tum.de

Decisions from **Description (risk)**

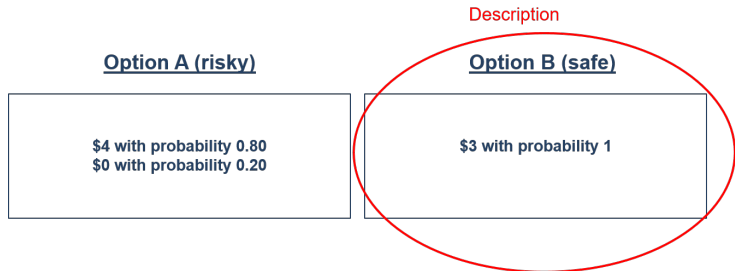
Option A (risky)

\$4 with probability 0.80
\$0 with probability 0.20

Option B (safe)

\$3 with probability 1

Decisions from **Description (risk)**



Decisions from **Experience** (ambiguity)

Option A (risky)



Option B (safe)



Sampling paradigm: Hertwig et al. (2004)

Decisions from **Experience** (ambiguity)

Option A (risky)

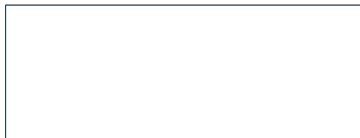


Option B (safe)

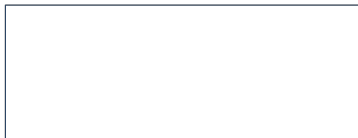


Decisions from **Experience** (ambiguity)

Option A (risky)



Option B (safe)



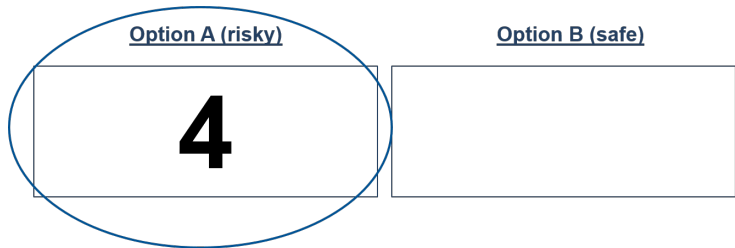
Decisions from **Experience** (ambiguity)

Option A (risky)

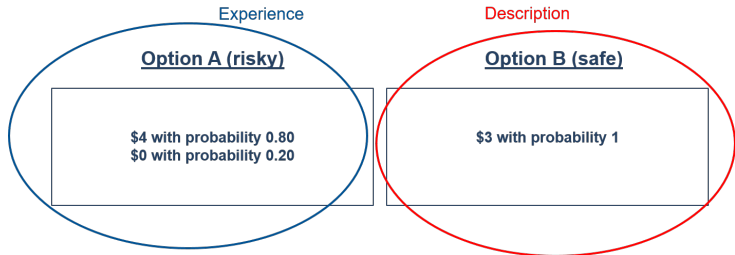
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Option B (safe)

Decisions from Experience (ambiguity)

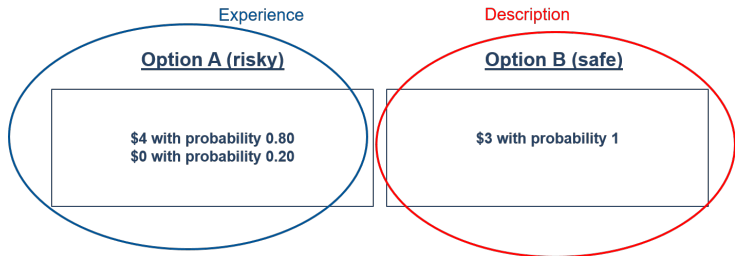


The Description - Experience gap in risky choice



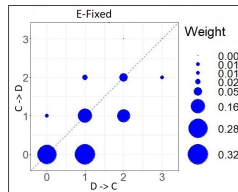
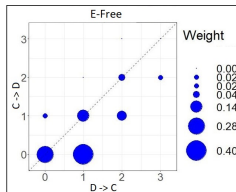
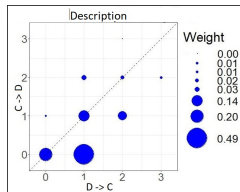
Rare events as *if overweighted* in Description but as *if underweighted* in Experience

The Description - Experience gap in risky choice



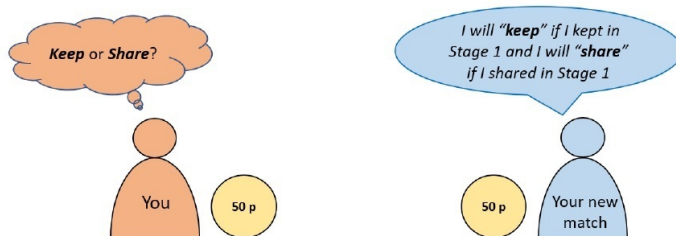
Rare events as *if overweighted* in Description but as *if underweighted* in Experience

Transitions



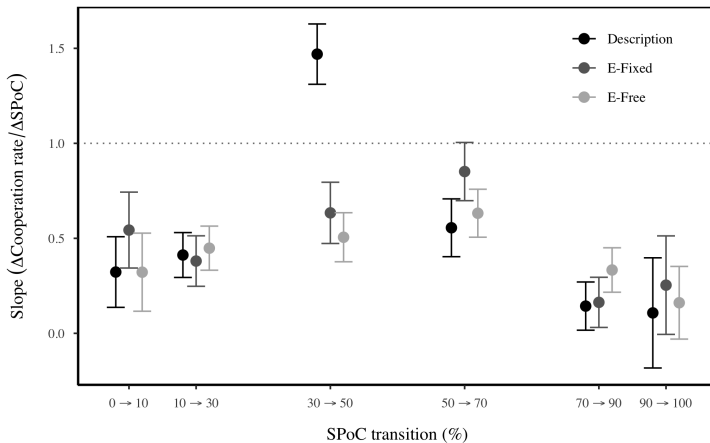
Stage 2

The outcome of Stage 2 depends on what you choose for the deck representing your actual group, and what your new match from the actual group has chosen in Stage 1. The relationship between actions and earnings is exactly the same as in Stage 1, as presented below:



CHOICES		OUTCOMES			
If you choose:	&	If your new match chose:	Then you get:	&	Your new match gets:
<i>Keep</i>		<i>Keep</i>	50 p		50 p
<i>Share</i>		<i>Share</i>	100 p		100p
<i>Keep</i>		<i>Share</i>	150 p		0 p
<i>Share</i>		<i>Keep</i>	0 p		150p

Slope-analysis



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