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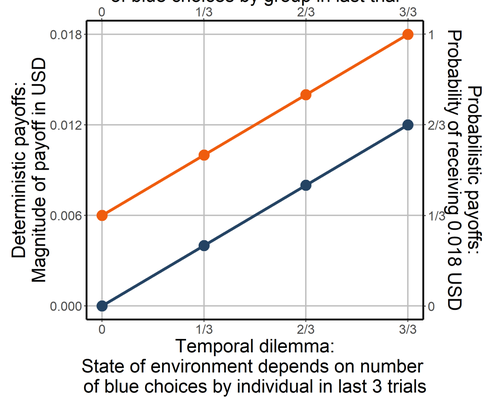
Using social information in dealing with dilemmas in disguise

Can we avoid melioration by using social information?

Background: Melioration in naturalistic environments

Individual and social challenge

- We often forego the best global option when there is a locally better option (**melioration**)[1]
- found in both temporal[2] and social dilemmas[3]
- **cues on rewards** are insufficient to prevent **melioration**[4]
- **cues on state** of environment boost **maximization**[5]



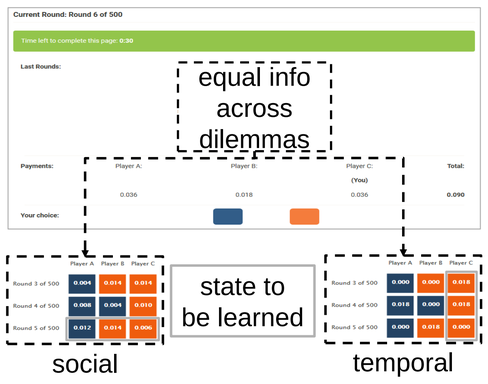
Our paradigm

- reward trade-offs are not disclosed
  → dilemmas in disguise
- rewards are noisy
  → outcome uncertainty
- actions and rewards witnessed by others
  → social information

Does individual-level exploration lead to optimal group-level exploitation?

Methods

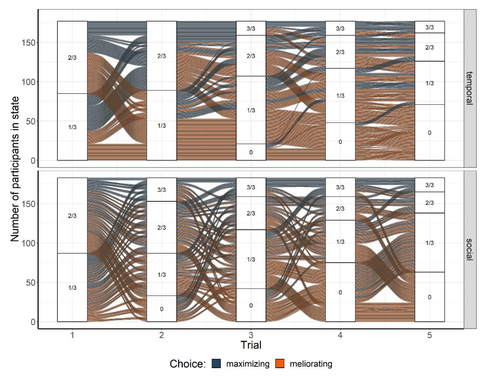
- mixed 2 × 2 × 10 design
  - state signal: temporal vs. social dilemma
  - reward signal: deterministic vs. probabilistic payoffs
  - 10 blocks, 500 trials in total
- 320 MTurk workers
- possible payoff: $3.00 – $6.00



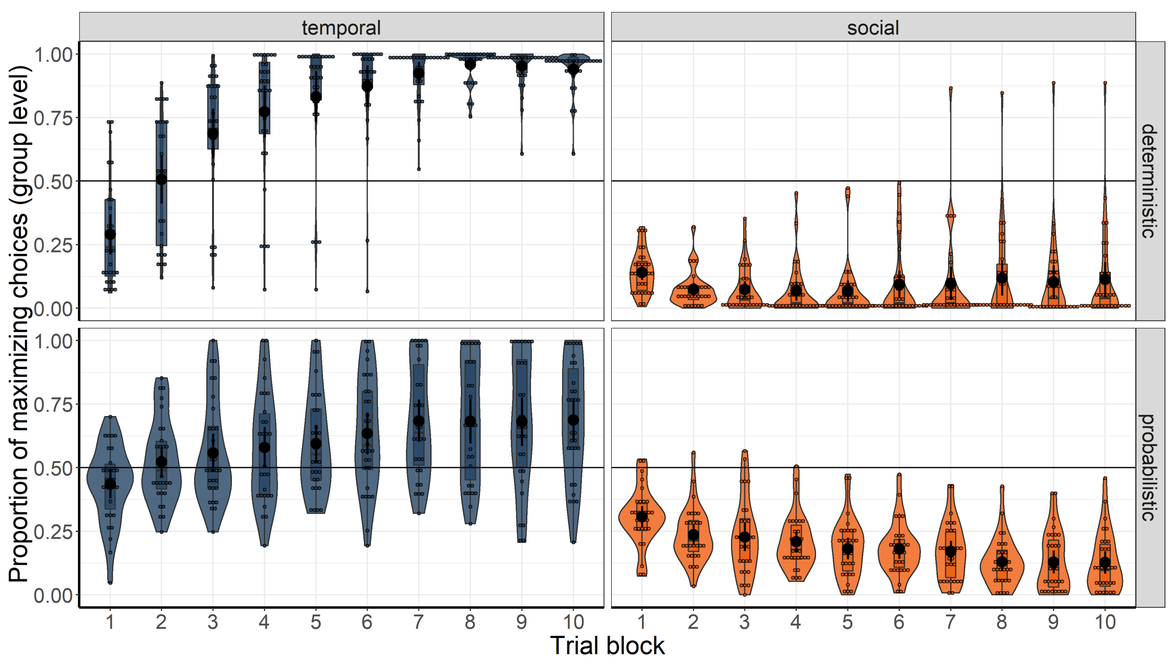
Hypotheses

- Which **dilemma** is more prone to infering the state signal by
  1. dynamic social[6] vs.
  2. gradual temporal[7]

  exploration (competitive test)?
- Learning unfolds slower under **outcome uncertainty.**[8]

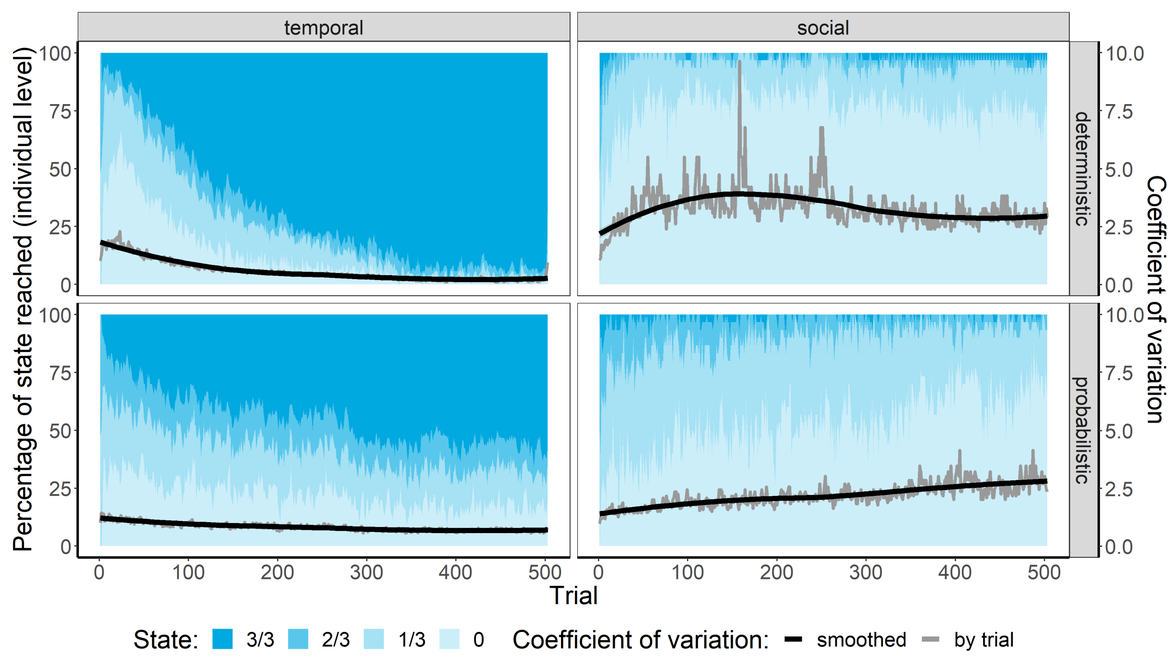


Results: Exploitation



Participants learn to **maximize** in temporal, but to **meliorate** in social dilemma.

Results: Exploration



More, but less systematic exploration in social dilemmas
→ dynamic social exploration backfires

Dynamic social dilemmas in disguise impair exploration for optimization.

Implication: Seemingly selfish behavior in dynamic social dilemmas in disguise can (at least partly) be explained by ignorance, not strategic defection.

References

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