

## Introduction

- Multiple numeric competencies predict distinct decision outcomes [1,2,3]
- Skilled Decision Theory posits that superior decision making may result not only from optimization processes but rather from a sophisticated and meaningful memory representation of a decision problem [4]
- We provide an empirical test of the Skilled Decision Theory predictions; we expected that multiple numeric competencies would be the most robust predictors of superior decision making.

## Procedure

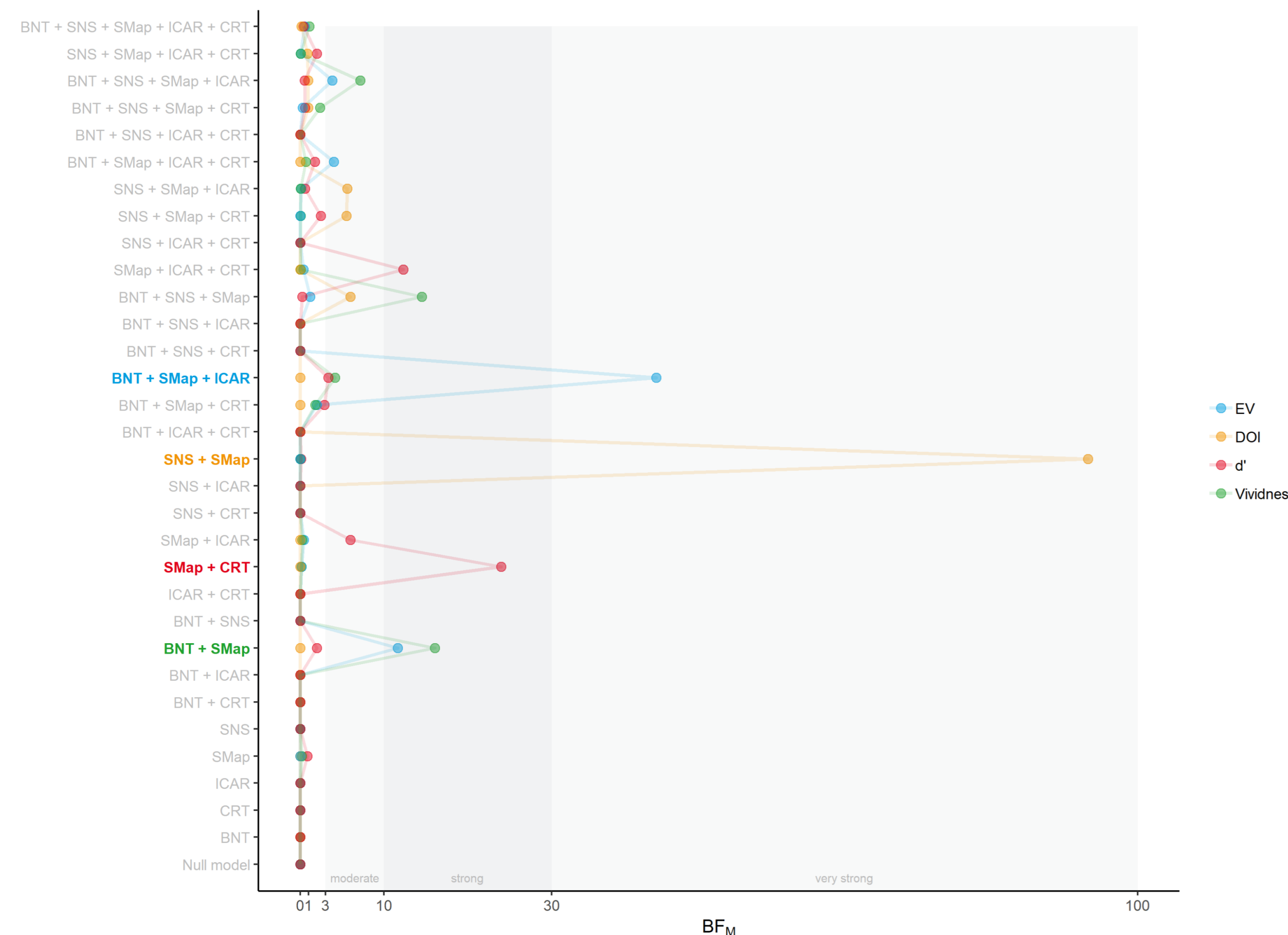
- Decision Outcome Inventory (DOI) [5]

- Statistical Numeracy (BNT) [6]
- Approximate Numeracy (SMap) [7,8]
- Subjective Numeracy (SNS) [9]
- Lottery task (EV)
- Cognitive Reflection (CRT) [10]
- Fluid Intelligence (ICAR) [11]

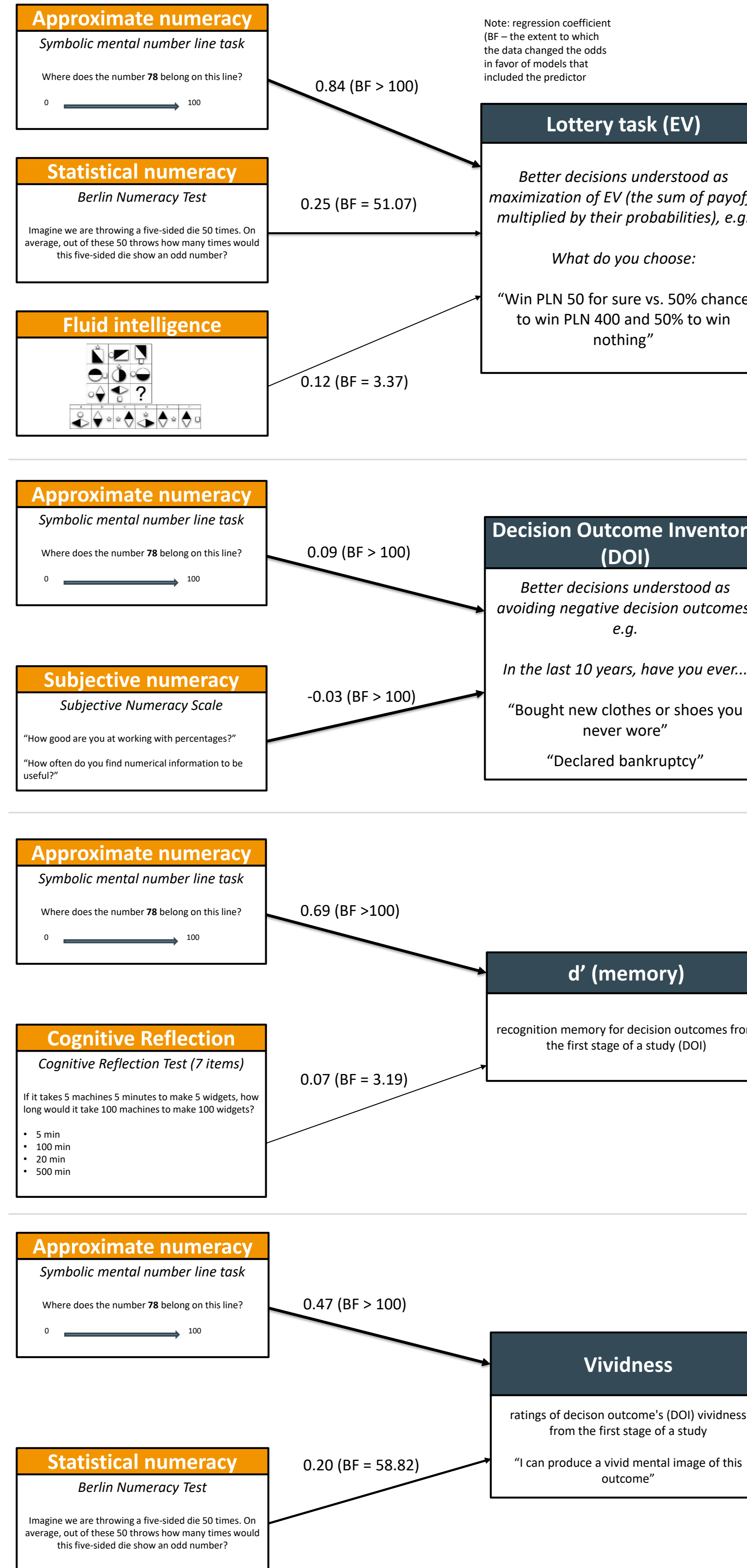
Decision Outcome Inventory (DOI2) we asked participants to recognize items from DOI they completed in the first stage of the study to measure their recognition memory and vividness of decision outcomes (d', vividness)

N = 581 (305 females)

## Results (Bayesian Model Averaging)



## Detailed results



## Conclusions

Multiple numeric competencies (statistical numeracy, approximate numeracy, and subjective numeracy) predicted decision making beyond fluid intelligence and cognitive reflection.

- Statistical numeracy** – the ability to understand and use probabilistic and mathematical concepts – was positively related to superior decisions in lottery task as well as with better vividness of decision outcomes in memory.
- Subjective numeracy** – perceived numerical abilities and preference for numerical information – was negatively related to better decision making in real-life. People who assessed their numerical abilities as higher experienced more negative decision outcomes.
- Approximate numeracy** – the intuitive ability to perceive and manipulate numerosities, and to map symbolic numbers to magnitudes – was the most robust predictor of decision and memory outcomes. People who were more precise in their estimates made superior decisions both in laboratory tasks and real-life situations.

## Full paper (open access)

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Multiple numeric competencies predict decision outcomes beyond fluid intelligence and cognitive reflection

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