Is more information always better? How variations in outcome feedback impact overcoming decision bias and improving advantageous choice.

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Background

- Feedback allows for learning about choice options, but quantity of feedback can vary.
- Despite common assumptions that more feedback is always better, past research provides conflicting evidence for how much feedback is optimal for decision-making (1-3).
- **This study aims to investigate the impact of different quantities of feedback on decision-making when overcoming a preexisting bias**.
  - e.g., framing bias is a propensity to be risk-seeking when choice options are framed as a loss, but risk-averse when the same options are framed as gains

Framed Gambling Task (FGT)

- Repeated choices (72 trials) between a sure gain/loss and one of two risky "deck" options
- Framing initially encourages participants to choose sure gain options over the risky decks (risk-aversion) and chose the risky decks over the sure loss opinion (risk-seeking).
- Participants must learn through feedback that one of the risky decks is a "good deck", and provides a better average outcome than the sure gain option and that another risky deck is a "bad deck ", and provides a worse average outcome than the sure deck.
- Therefore, in some trials, the advantageous choice is consistent with the bias (sure gain/bad deck, sure loss/good deck), but in other trials, the advantageous choice requires cognitive flexibility to overcome the bias (sure gain/good deck, sure loss/bad deck).

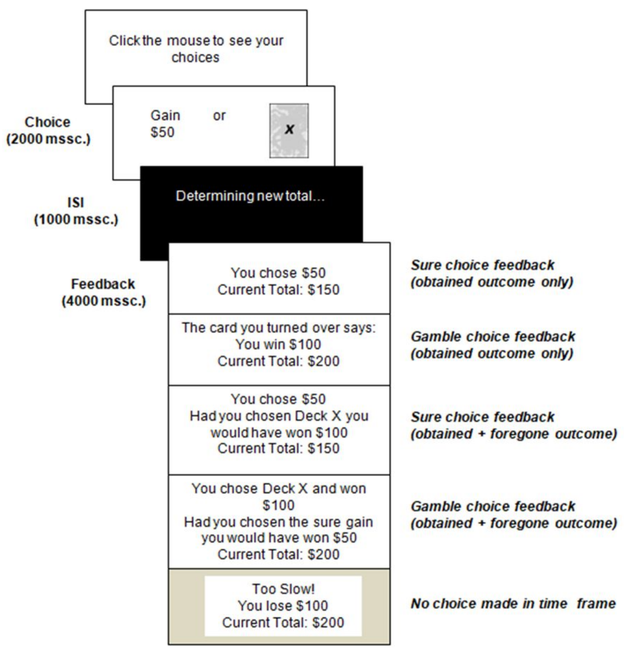

Fig 1. FGT choice trial

- 385 participants were randomly assigned to one of three feedback conditions:
  - Full (n = 129): feedback on the chosen and foregone outcome
  - Partial (n = 127): feedback on just the chosen outcome
  - Minimal(n = 129): feedback on just the chosen outcome, but only for 50% percent of the trials

Results

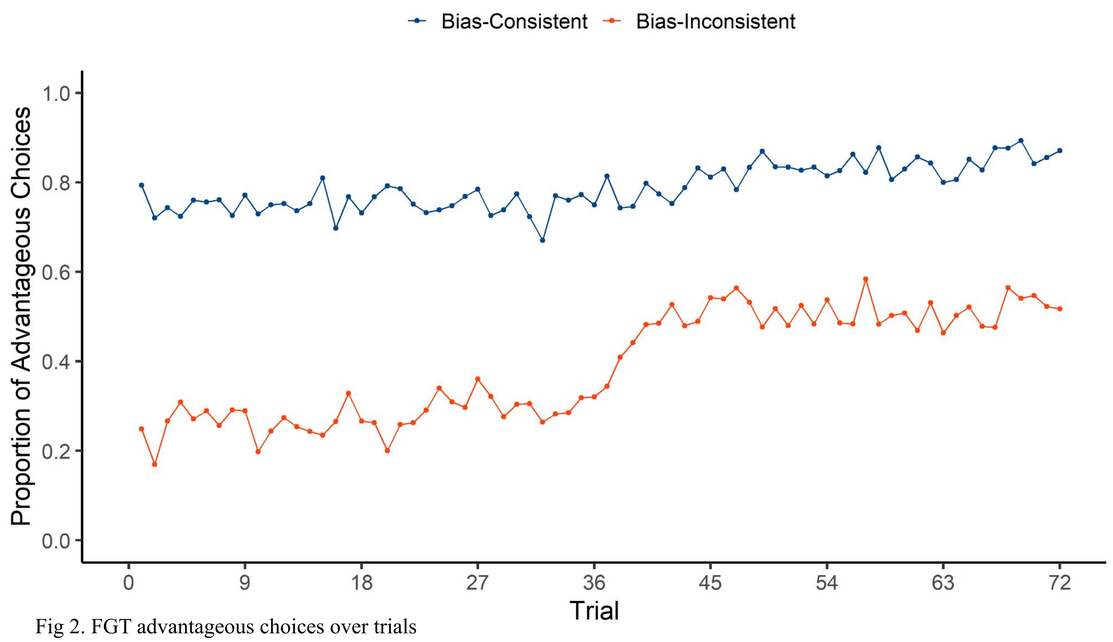

Fig 2. FGT advantageous choices over trials

Participants made more advantageous choices *consistent* with the bias than *inconsistent*, but over time participants learned from feedback to flexibly overcome bias and improve advantageous choices

Contradicting intuitions about more feedback being better, results show that providing additional information in the form of foregone outcomes did not improve performance on bias-inconsistent trials relative to feedback on chosen outcomes only.

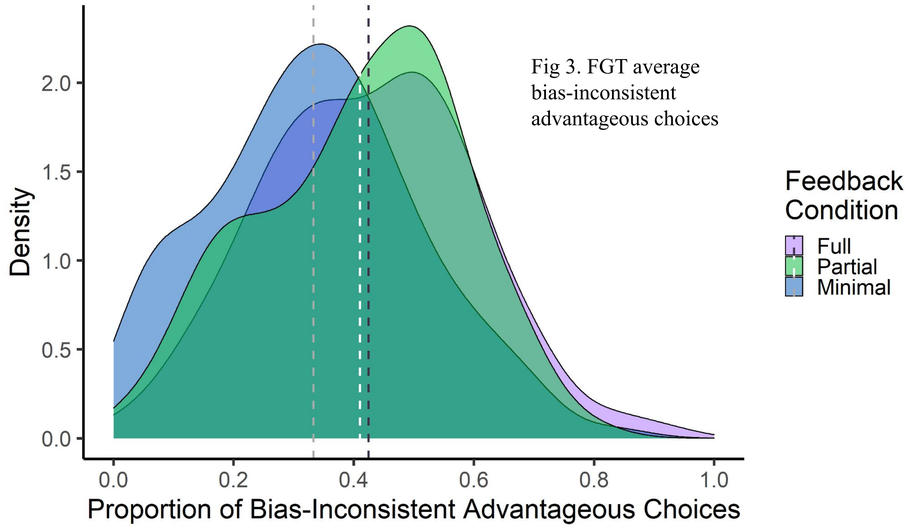

Fig 3. FGT average bias-inconsistent advantageous choices

Discussion

- Overall, it is incredibly hard for people to overcome bias through feedback alone, as shown in Fig 2.
  - Despite improvement in advantageous choices from feedback, bias-inconsistent trials never reach the same level of advantageous choices as the bias-consistent trials.
- There is a large variation in flexible performance across feedback conditions, suggesting that the ideal quantity of feedback differs between individuals, i.e., a goldilocks effect.

References

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2) Otto & Love, 2010. J*udgment and Decision Making, 5*, 1–10.
3) Yechiam et al., 2005. *Journal of Behavioral Decision Making, 18*, 97–110.