Hindsight bias in the absence of outcome knowledge

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Zoom room
Please join me here.

MAIN TAKEAWAYS

- Hindsight bias can be produced without outcome knowledge
- Providing relevant domain knowledge is sufficient to produce hindsight bias
- Providing numerical information that cannot be used to update knowledge does not produce hindsight bias
- These findings support the hypothesis that knowledge updating plays an important role in the emergence of hindsight bias

THEORETICAL BACKGROUND

Hindsight bias is the phenomenon that after learning about the correct answer to a question, people tend to overestimate what they knew in about the question before feedback[1]. In the context of numerical judgment, it has been proposed that hindsight bias is a **by-product of knowledge updating**[2].
Alternatively, **anchoring processes**[3] could underly the bias**.**

Hypotheses

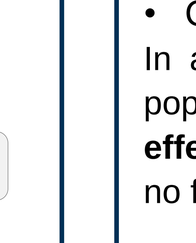
Based on the knowledge updating hypothesis, any **relevant feedback** that leads to knowledge updating should **produce hindsight bias**. Relevant feedback can either be direct feedback (the correct answer) or indirect feedback (feedback to other items from the same domain).
Irrelevant feedback should **not produce hindsight bias**.

Conversely, based on the anchoring theory, any numerical feedback (relevant or irrelevant) should produce hindsight bias.

METHODS

N = 292, age = 18 – 45, online experiment on Prolific
Design: blocked design, three phases, 32 items (country populations) per phase

OJ – Original Judgment
How many people live in Spain?



Feedback
4 experimental groups

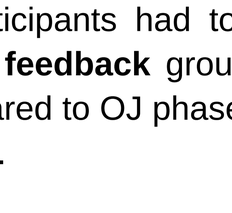
Direct feedback
Population of Spain

Indirect feedback
Population of France

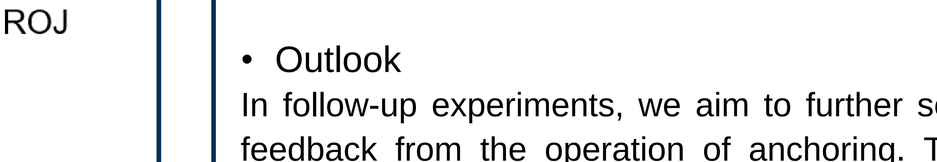
Irrelevant feedback
Population of Spain declared as movie budgets*

No feedback
Read a text about tea

ROJ – Recall of OJ
How many people live in Spain? What was your original judgment?



Dependent variable: estimation error → OME (order of magnitude error)[4]
OME = $|\log_{10}(\text{judgement}) - \log_{10}(\text{correct judgment})|$



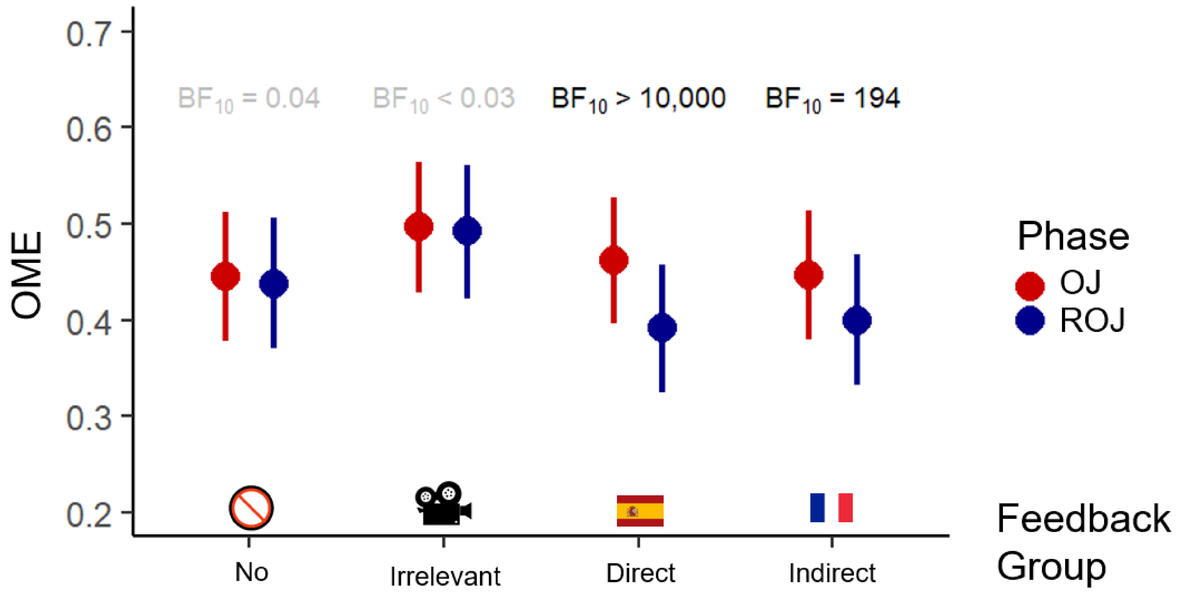
Hindsight bias
Difference between OJ-error and ROJ-error

* The irrelevant feedback group saw the same numbers as the direct feedback group but was led to believe that these were movie budgets.

RESULTS

Analytic approach: Bayesian mixed-effects modeling
Bayes Factor (BF) > 3 indicates evidence for hindsight bias

Estimation error (OME) for all feedback groups. Means with 95% credible intervals.



All **hypotheses were confirmed:** ✓

- Relevant feedback (direct and indirect) → hindsight bias
- No feedback and irrelevant feedback → no hindsight bias

DISCUSSION

- Objection 1: Knowledge updating was insufficient

In an additional fourth phase all participants had to judge new country populations. The **direct and indirect feedback** groups showed **learning effects** (improved judgments as compared to OJ phase). The irrelevant and no feedback group showed no learning.

- Objection 2: Effect is driven by anchoring

Yes and no. There was no hindsight bias for the irrelevant feedback group, who saw the same numbers as the direct feedback group but couldn't use these numbers to update knowledge. But we cannot rule out that additional, more elaborate processes were at play, such as using the answers of comparable countries as anchors.

- Outlook

In follow-up experiments, we aim to further separate the effect of indirect feedback from the operation of anchoring. To that end, we will provide **relevant, non-numerical feedback**. If knowledge updating contributes to hindsight bias, this manipulation – that due to the non-numerical feedback cannot produce anchoring – should also lead to hindsight bias.

CONTACT

If you have any questions, comments, or simply want to connect, please don't hesitate to contact me:
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References
1 Blank et al., 2007; 2 Hoffrage et al., 2000;
3 Tversky & Kahneman, 1974; 4 Brown & Siegler, 1996

For further information and full references please click here.