



Using the anchoring heuristic can lead to errors in judgements under uncertainty. People commonly anchor on available information. These so-called self-generated or experimenter-provided anchors are processed intuitively, quickly and automatically, often leading to judgmental biases towards the anchor value. In order to counteract this anchoring effect, we focus on the dual processing model, which distinguishes between two different internal decision systems, supporting either quick, unconscious (system 1) or slow, elaborated decisions (system 2). A reduction of the anchoring effect was expected by encouraging people to consider system 2 and thus taking into account more detailed information. Therefore we tested the efficacy of two simple interventions, e.g. prospective hindsight vs. writing down one's implicit plausible range, both inducing deeper elaboration of given information. The experiment has been carried out using an online survey, created on the basis of a 2x2x2 mixed-design. A total of 123 participants (mainly students of Chemnitz University of Technology) took part in the study. The results show that both interventions did not reduce the anchoring effect. We discuss potential reasons for that and propose other variables to be considered in following studies before the interventions should be declared ineffective.

## Theoretical Background

- People tend to rely on heuristics by making decisions under uncertainty
- Numeric judgments are often influenced by focusing on an available reference value ("anchor")
- Adjustments from these initial anchors are insufficient, resulting in anchor biased estimations <sup>(2), (3), (5)</sup>
- According to the *Dual Process Model* there are two different cognitive processes <sup>(1)</sup>:
  - System 1: operating unconsciously, i.e. fast and without effort → more susceptible to biases such as narrowed thinking <sup>(4)</sup> → improvement expected by substituting system 1 with slower system 2 decisions
  - System 2: running slowly, requiring conscious control and effort → more reliable as considering information in a comprehensive style
- Two promising methods for encouraging system 2 decisions:
  - (1) If people are supposed to reflect their estimations in the light of new future knowledge (Prospective hindsight), they tend to reconsider their estimations <sup>(4)</sup>.
  - (2) Also, driving awareness on an implicit plausible range around the anchor, may result in adopting to more appropriate estimations <sup>(2)</sup>.

**Aim of the study:** Providing a setting which offers the opportunity to focus on the quality of estimations by taking into account additional information



<https://www.aria.org/emerald/articles/anchored-down-by-words-how-to-reconcile-and-avoid-anchoring-bias>

### Hypotheses:

Raising awareness to potential misjudgments via...

- 1) Prospective hindsight or
- 2) Focusing on implicitly assumed plausible ranges

... reduces the anchoring effect, thus improving the re-assessed estimation.

## Method

**Sample:** N = 123

### Independent Variables:

- 1) Time of measuring (before vs. after the test)
- 2) Type of anchor (external vs. self-generated)
- 3) Intervention method (prospective hindsight vs. focusing on implicit plausible range)

### Dependent Variable:

Standardized difference between estimation 1 and estimation 2

### Research design:

2 x 2 x 2 Mixed-Design

### Measure:

Estimations via Online Survey (LimeSurvey)

### Items

**Question 1:** How many days does it take Mars to orbit the sun?

(expected self-generated anchor: 365)

**Question 2:** What is the freezing point of vodka?

(expected self-generated anchor: 0°C)

**Question 3:** What is the height of Cologne Cathedral?

(external anchor: 230 m)

**Question 4:** What is the actual population of Chicago?

(external anchor: 200.000)

## Results and Discussion

A repeated measures analysis of variance in between groups showed that both interventions were not able to reduce the anchoring effect.

Neither type of anchor ( $F(1,426) = .334; p = .563; \eta^2 = .001$ ) nor intervention method ( $F(1,426) = .015; p = .903; \eta^2 = .000$ ) indicate a significant estimation improvement.

In line with these results is the missing interaction effect of the independent variables

( $F(1,426) = 2.501; p = .115; \eta^2 = .006$ ).

- Contrary to our expectations neither focusing on "Implicit plausible range", nor imposing the method of "Prospective hindsight" was successful
- The anchoring effect still remained robust. Assumably most participants still relied on system 1, so that the interventions were not sufficient to cause any sensitivity for changing their minds
- Remarks made by the participants suggest a lack of understanding for being asked the same questions repeatedly, which may be eliminated by involving the participants in the study's goal right from the beginning
- Further studies are recommended to explicitly sign up as a training intervention thus revealing more transparency to the participating estimators
- Appropriate feedback concerning their discrepancies from the correct answer may contribute to an increased awareness for the emergence of anchoring biases. Hence, readiness and cooperation for committing in kind of a strategy training may be enhanced

## References

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