Framing, Fast and Slow: Deliberative thinking increases consistency across frames

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Introduction

Framing effects matter
- How information is presented can be as important to decision making as the information itself
- Violations of “description invariance” (Tversky & Kahneman, 1986) can lead to failure to maximize expected utility
- Acting consistently across frames can improve quality of decisions

Framing effects vary in nature
- Psychophysical: translations of objective stimuli into subjective perceptions
- Valence-based: different valences trigger different associations in people’s minds, affecting perception
- Strategy-based: using heuristics to value options (e.g., pick an option that dominates another on all attributes) can lead to decisions being sensitive to irrelevant alternatives

Example problem:

Positive frame. A man loves to eat desserts. When calculating his daily calorie intake, he found that he gets 80% of his calories from non-dessert foods. How healthy would you say the man is?

Negative frame. A man loves to eat desserts. When calculating his daily calorie intake, he found that he gets 20% of his calories from desserts. How healthy would you say the man is?

Will deliberative thinking help?
- If framing effects derive from intuitive processes, deliberation could aid in exhibiting greater consistency across decision frames
- Interventions?
- Individual differences in reasoning styles?

Seeing multiple frames to form deeper representations?
- Framing effects occur in separate evaluation
- If people saw both frames simultaneously, could they form a deeper representation and consistently act in line with their preferences?

Methodology

Experiment
- 1,846 participants
- 2 sessions at least 24 hours apart
- 3 x 2 full-factorial design (Fast, Control, Slow) x (Opaque, Transparent)

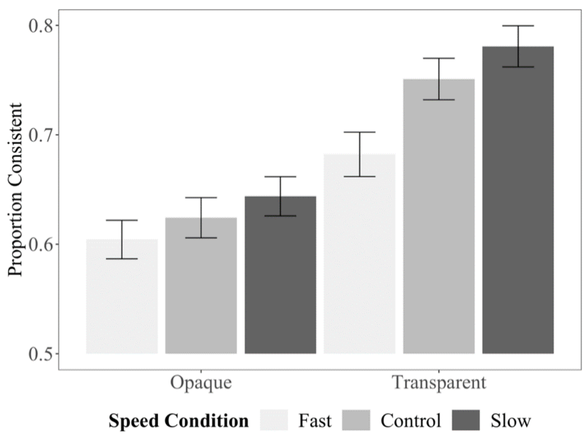
Fast, Control, Slow
- Manipulations of decision speed

Transparent vs. Opaque
- In the Opaque condition, participants answered 1 frame of all the problems on each day
- In the Transparent condition, participants answered both frames of ½ of the problems on each day, presented simultaneously

Dependent variables
- All participants answered both frames of two versions of 6 different types of framing problem (gain-loss risk framing, valence framing, scale expansion, sensitivity framing, decoy effects, and joint vs. separate evaluation)
- Total of 12 measures of each participant’s consistency across decision frames

Individual differences
- Measured CRT (Cognitive Reflection Test), BNT (Numeracy), AOT (Actively Open-Minded Thinking)

Results



Results

2-way ANOVA:
- Two significant main effects ($p < .001$), significant interaction ($p = .005$)
- Opaque: Fast & Slow differ ($p = .013$), neither differs from Control
- Transparent: Fast differs from Control ($p < .001$)

Point 1: Decision speed affects degree of consistency, but Slow does not beat the Control.

Does Transparent presentation help to form deeper representations?
- Separate study manipulated order of presentation of frames of gain-loss risk framing when both on same page
- Presenting gain frame first leads to movement towards certain-certain consistent patterns

Point 2: People are anchored on the first frame they read when they view two frames transparently, does not appear to induce deep consistency.

Effect of individual differences
- Benefit of CRT ($p < .001$) and BNT ($p < .001$) to consistency
- Benefit to CRT even larger when frames presented transparently ($p = .029$)

Point 3: Benefits to reflective dispositions and numeracy even when frames presented on different days.

Variation across specific framing items
- Effects of decision speed, transparent presentation, and individual differences varied somewhat across framing items
- Variation in difficulty computing frame equivalence, and strength of preferences

Point 4: Different cognitive processes that generate framing effects lead to variation in the relationship between deliberative thinking, presentation, and consistency.

Conclusion

We tested three possible avenues to reduce the negative impact of framing effects:
- Decision speed manipulations
- Manipulating the transparency of presentation
- Individual differences in reasoning style and numeracy

Takeaways
Decision speed manipulations affected the degree of consistency exhibited across decision frames, even when these frames were presented on different days (i.e., the Opaque condition).

Transparently presenting both frames increased consistency, but this appears to be driven by people being anchored by the first frame they see and making their second response consistent with that initial impression.

The benefit of numeracy did not depend on presentation style (Transparent vs. Opaque), but the benefit of CRT was strengthened by Transparent presentation.

Future directions

Does the relationship between deliberative thinking and consistency across decision frames vary systematically with the nature of the framing effects?
- E.g., is the benefit of CRT greater in strategy-based vs. valence-based errors?

Can measuring preferences independently from the framing problems themselves help us to interpret the nature of the consistency?
- E.g., if a respondent is risk-averse, what factors help them to act in line with that preference across frames?

What cognitive steps do people take to mitigate the influence of frames?
- E.g., Do people convert the information in frames to a common currency (such as expected utility)? If not, why?