

Investigating the impact of violations of the left and top means first heuristic on response behavior and data quality in a probability-based online panel

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Interpretive Heuristics I

- Web surveys use written language and visual cues/material.
- Particularly, visual cues/material can affect response behavior.
 - *“Cooperative communicators” (Schwarz, 1996).*
- Application of interpretive heuristics in survey responding.
- Tourangeau et al. (2004) proposed five interpretive heuristics in survey responding:
 - *(1) Middle Means Typical, (2) Left and Top Means First, (3) Near Means Related, (4) Up Means Good, and (5) Like means close.*

Interpretive Heuristics II

- Left and Top Means First (LTMF):
 - *It corresponds to the reading direction in most Western languages.*
 - *For example, English, French, Spanish, and German.*
- Respondents expect ...
 - *... that the first option of a scale represents the first one.*
 - *... that the successive options follow in a logical order.*
 - *... that the lowermost option represents the last one.*

For example: Very good, Good, (...), Bad, Very bad

Interpretive Heuristics III

- Tourangeau et al. (2004) varied the order of the options.
 - *Experiment 4: Order of the response options (pp. 381-384).*
- The authors report the following results:
 - *Response times increased with the order discrepancies (see also Holbrook et al., 2000).*
 - *The selection of the middle option depends on its position.*
 - *The findings suggest the application of the LTMF heuristic.*

Empirical evidence on data quality is still pending.

Research Questions

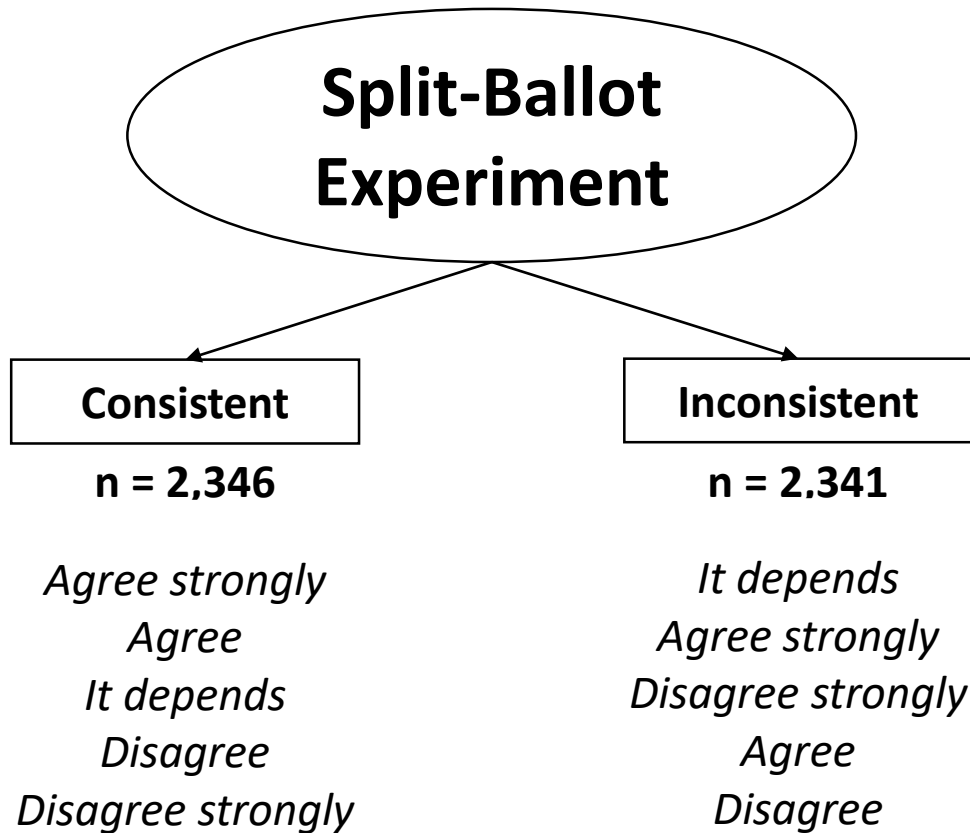
How do violations of the LTMF heuristic affect ...

... response distributions? (RQ1)

... response times as an indicator of response effort? (RQ2)

... data quality in terms of criterion validity? (RQ3)

Methods: Research Design



- The experiment builds on the study by Tourangeau et al. (2004).
- The two groups received 4 questions on political efficacy (target).
 - Two on internal and two on external political efficacy.
- They also received one question on political interest (criterion).
- We used 5-point, fully-labeled response scales (vertical alignment).
- Each question was presented individually.

Methods: Participants

The experiment was conducted in the probability-based German Internet Panel in July 2019.

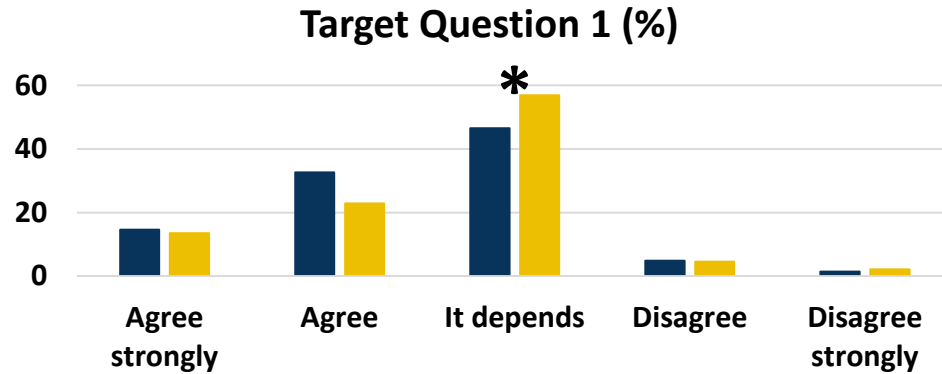
Final Sample Size:	<i>N = 4,687</i>
Gender:	<i>48% female</i>
Age (in years):	<i>Mean = 52</i>
Education:	<i>18% lower secondary school</i>
	<i>31% intermediate secondary school</i>
	<i>51% at least college preparatory secondary school</i>

Note. Chi-square tests revealed no significant differences between the two groups with respect to gender, age, and education.

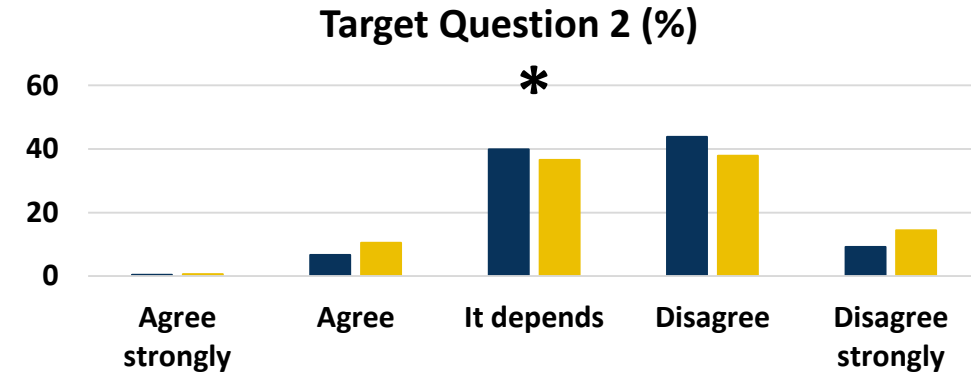
Methods: Analytical Strategy

- Comparing response distributions between the two groups.
 - *Chi-square tests for all four (target) questions.*
- Comparing response times between the two groups.
 - *Server-side response times in seconds.*
 - *Mann-Whitney U tests for all four (target) questions.*
- Comparing criterion validity between the two groups.
 - *Strength of associations between target and criterion questions.*
 - *OLS regressions with unstandardized regression coefficients.*
 - $CM = b_0 + b_1(TQ) + b_2(EG) + b_3 ((TQ)X(EG))$
CM: Criterion Measure; TQ: Target Question; EG: Experimental Group

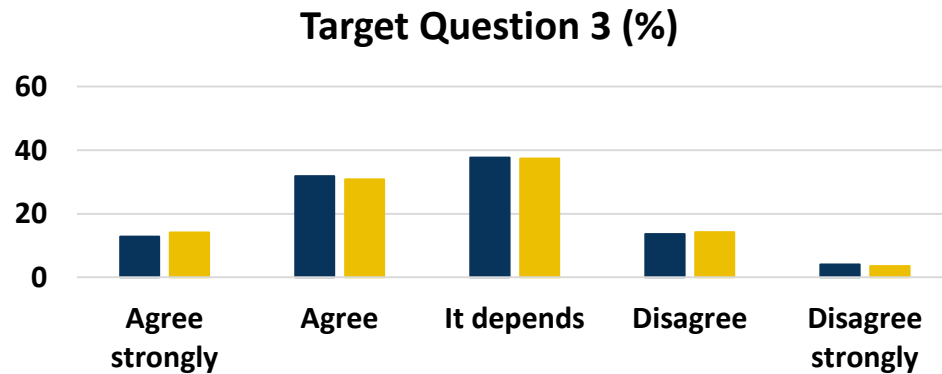
Results: Response Distributions (RQ1)



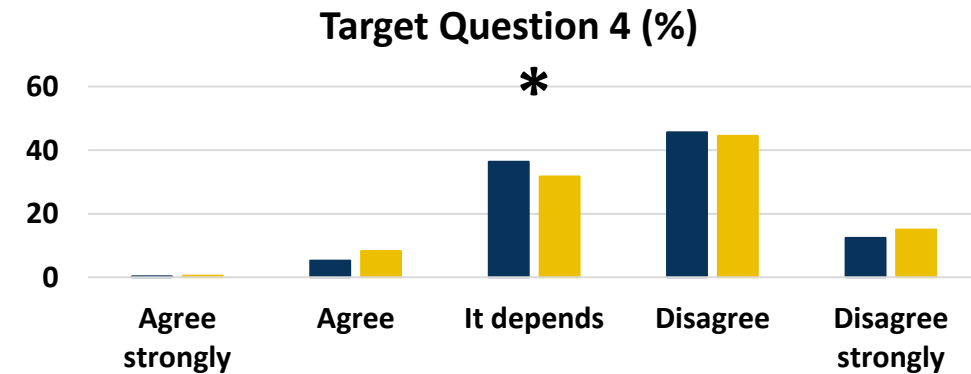
*p < 0.05. Inconsistent order was recoded. Consistent: blue.



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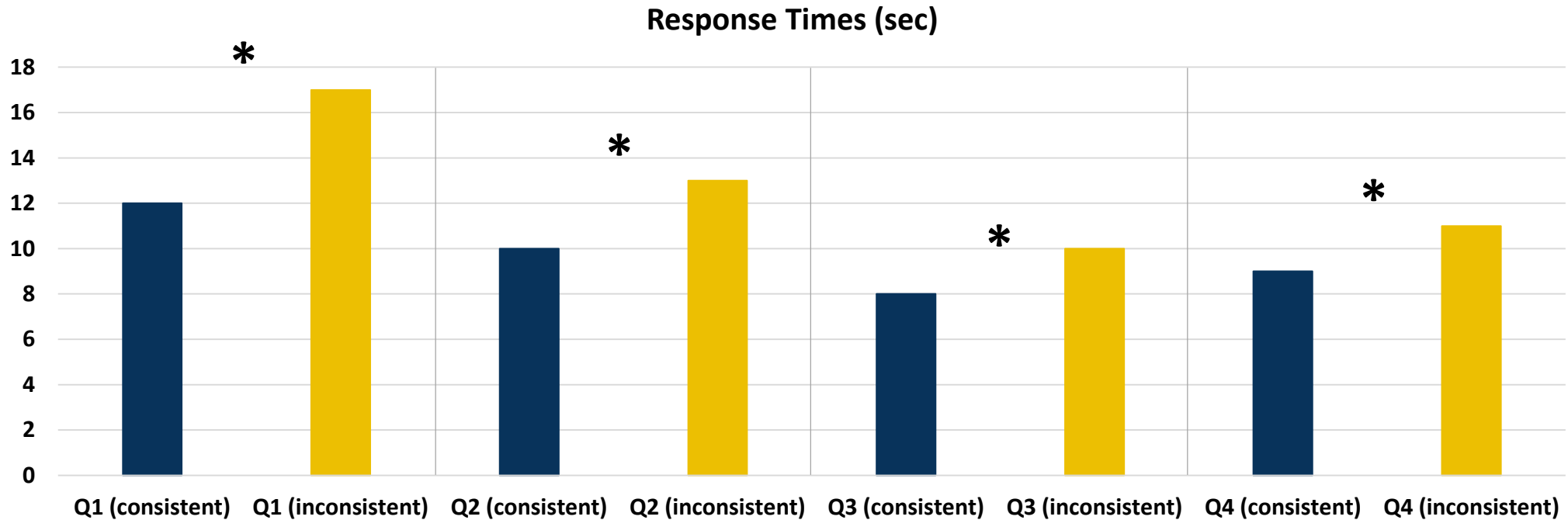


Inconsistent order was recoded. Consistent: blue.



*p < 0.05. Inconsistent order was recoded. Consistent: blue.

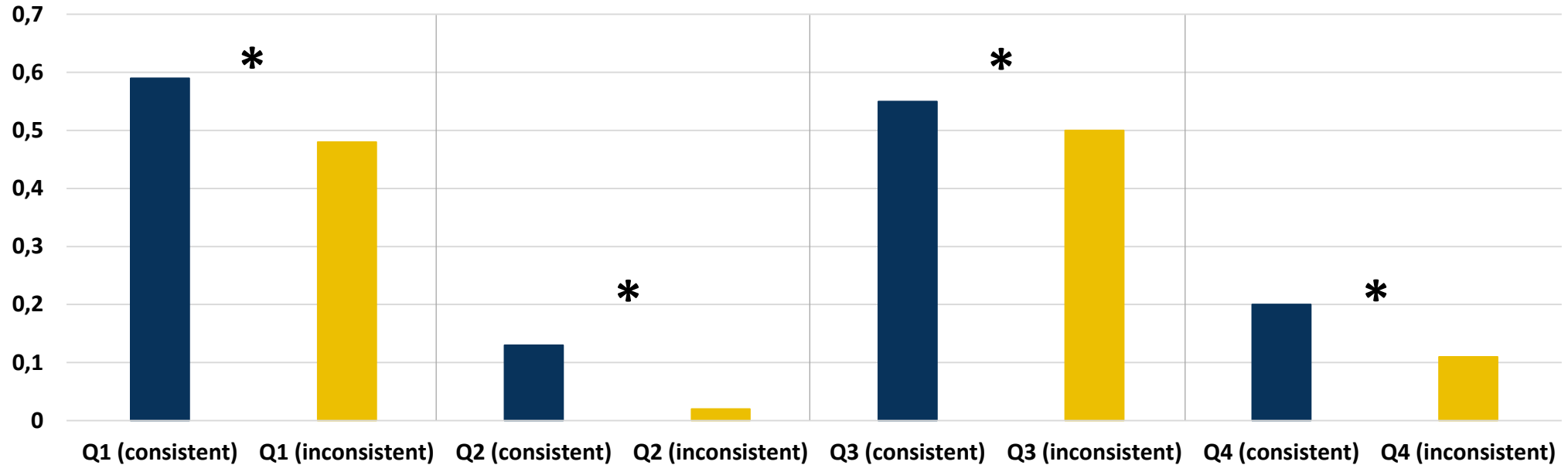
Results: Response Times (RQ2)



Note. * $p < 0.05$. Target questions 1 to 4. Server-side response times.

Results: Criterion Validity (RQ3)

Unstandardized OLS Regression Coefficients



Note. * $p < 0.05$. Dependent variable: political interest (1 = very interested; 2 = fairly interested; 3 = somewhat interested; 4 = hardly interested; 5 = not at all interested). Coding of the independent variables on political efficacy (1 = agree strongly; 2 = agree; 3 = it depends; 4 = disagree; 5 = disagree strongly). Inconsistent order was recorded.

Summary & Conclusion

- Order of response options affects response distributions.
- Inconsistent order slows respondents down.
 - *Represents higher response effort.*
 - *Respondents must make sense of inconsistently order options.*
- Inconsistent order affects data quality.
 - *Systematically lower criterion validity.*
- Contribution to current state of research:
 - *Replication of findings on response distributions and response times.*
 - *New evidence on data quality.*
- Supporting evidence that LTMF heuristic is at work.

This talk is based on:

Höhne, J. K., & Yan, T. (in press). Investigating the impact of violations of the left and top means first heuristic on response behavior and data quality in a probability-based online panel. International Journal of Social Research Methodology. DOI: 10.1080/13645579.2019.1696087

Many thanks for your attention!

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Literature

- Holbrook, A., Krosnick, J.A., Carson, R.T., & Mitchell, R.C. (2000). Violating conversational conventions disrupts cognitive processing of attitude questions. *Journal of Experimental Social Psychology*, 36: 465–494.
- Schwarz, N. (1996). *Cognition and Communication: Judgmental Biases, Research Methods, and the Logic of Conversation*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Tourangeau, R., Couper, M.P., & Conrad, F.G. (2004). Spacing, position, and order. Interpretive heuristics for visual features of survey questions. *Public Opinion Quarterly*, 68: 368–393.

Appendix: Examples of Conditions

Do you agree or disagree with the following statement?
Politicians strive to keep in close touch with the people.

Consistent

- agree strongly
- agree
- it depends
- disagree
- disagree strongly

Inconsistent

- it depends
- agree strongly
- disagree strongly
- agree
- disagree

Appendix: Screenshots of the Questions

Gesellschaft im Wandel Hilfe

Inwieweit stimmen Sie der folgenden Aussage zu oder nicht zu?

Wichtige politische Fragen kann ich gut verstehen und einschätzen.

Stimme voll und ganz zu

Stimme zu

Kommt drauf an

Stimme nicht zu

Stimme überhaupt nicht zu

[Zurück](#) [Weiter](#)

Note. Consistent order (target).

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Kommt drauf an

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Stimme nicht zu

[Zurück](#) [Weiter](#)

Note. Inconsistent order (target).

Gesellschaft im Wandel Hilfe

Wie stark interessieren Sie sich im Allgemeinen für Politik?

Sehr stark

Stark

Mittelmäßig

Wenig

Überhaupt nicht

[Zurück](#) [Weiter](#)

Note. Criterion.

Appendix: Question Wording

Do you agree or disagree with the following statement? I am good at understanding and assessing important political issues. (Target)

Do you agree or disagree with the following statement? Politicians strive to keep in close touch with the people. (Target)

Do you agree or disagree with the following statement? I have the confidence to take active part in a discussion about political issues. (Target)

Do you agree or disagree with the following statement? Politicians care about what ordinary people think. (Target)

agree strongly, agree, it depends, disagree, disagree strongly (consistent only)

In general, how interested would you say you are in politics? (Criterion)

very interested, fairly interested, somewhat interested, hardly interested, not at all interested