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Effects of Survey Design and Smartphone Use on Response Quality: Evidence from a Web Survey Experiment

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*General Online Research (GOR19), 6 March to 8 March 2019,
TH Köln – University of Applied Sciences, Cologne, Germany*

Suggested citation: Roßmann, Joss. 2019. "Effects of Survey Design and Smartphone Use on Response Quality: Evidence from a Web Survey Experiment." General Online Research (GOR) Conference, Cologne.

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Relevance & Research Question

- Increasing prevalence of respondents answering web questionnaires on their Smartphone (Gummer, Quoß, & Roßmann 2018)
- Challenge: Optimize the design of surveys for the use of specific devices or implementing designs that allow adaptation to the devices used?
 - ▶ Non-adaptive designs might impair response quality on some devices
 - ▶ Adaptive designs may limit the comparability of results between devices used
- Research question: What are the effects on response quality of answering a survey on a Smartphone compared to other devices across four different adaptive and non-adaptive designs?

Methods & Data

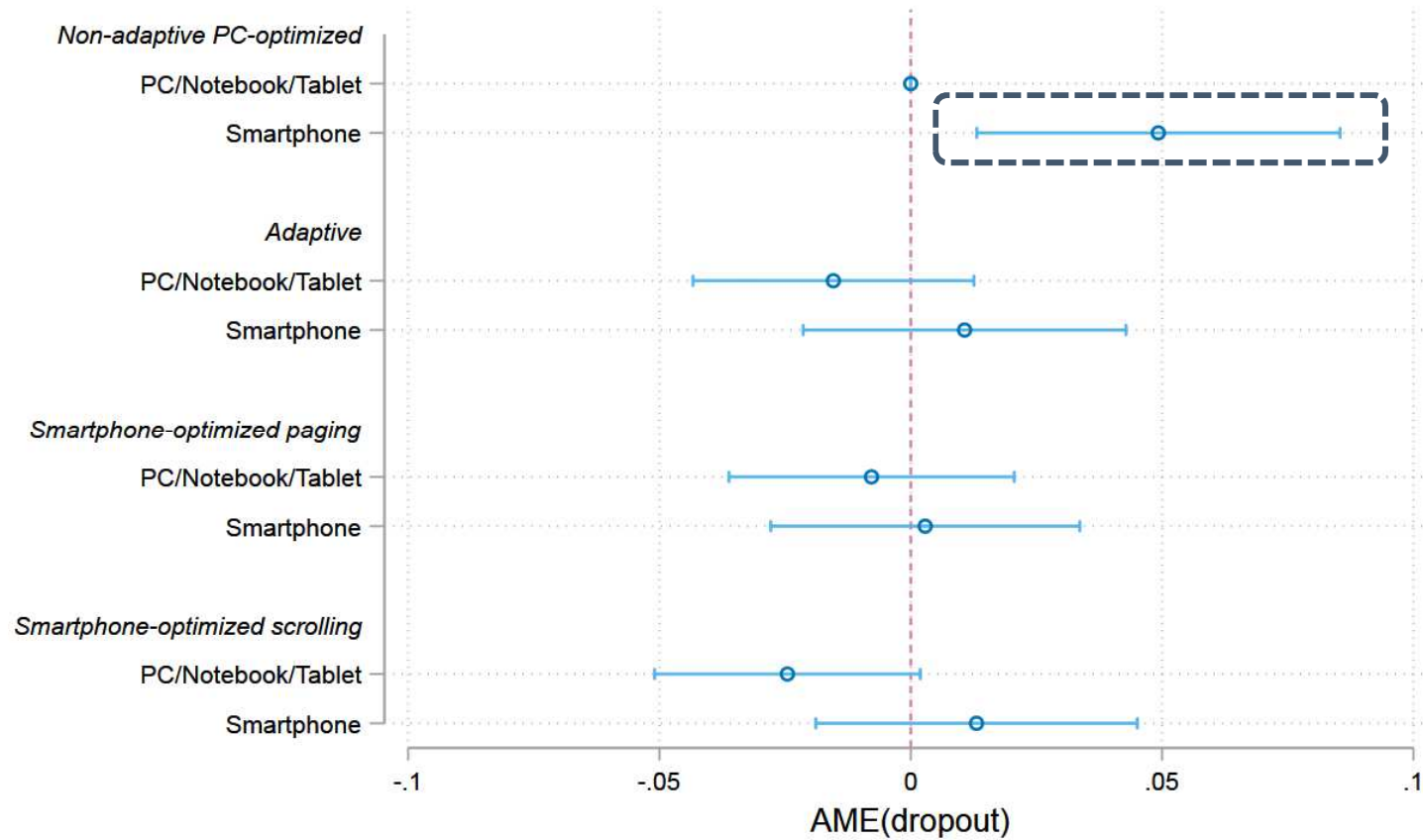
- Sampling frame: Users of a PC/Notebook/Tablet and a Smartphone of a large German opt-in online panel
- 2x4 fully factorial web survey experiment
 - ▶ (A) Randomized invitation to participate either on a Smartphone (group 1) or on a PC, Notebook, or Tablet (group 2)
 - Screening for device used
 - Quotas on sex, education, and age category * device
 - ▶ (B) Randomized selection to answer the survey in one of four designs
 - (1) Non-adaptive PC-optimized
 - (2) Adaptive
 - (3) Non-adaptive Smartphone-optimized with paging layout
 - (4) Non-adaptive Smartphone-optimized with scrolling layout

Methods & Data

- Questionnaire on elections in Germany (~ 20 min)
- Fieldwork: June 27 to July 13, 2018
- Response: 3.993 out of 4.299 respondents completely answered the web questionnaire
 - ▶ Break-off rate of 7.1%
 - ▶ 1.956 PC/Notebook/Tablet and 2.037 Smartphone respondents
 - ▶ ~ 25% of the respondents in each of the four designs
 - ▶ Between 471 – 527 respondents per experimental group (11.8% – 13.2%)
- Data quality: Survey break-offs, interview duration, straightlining in grids, item nonresponse, item means of questions on political attitudes and behaviors, survey evaluation

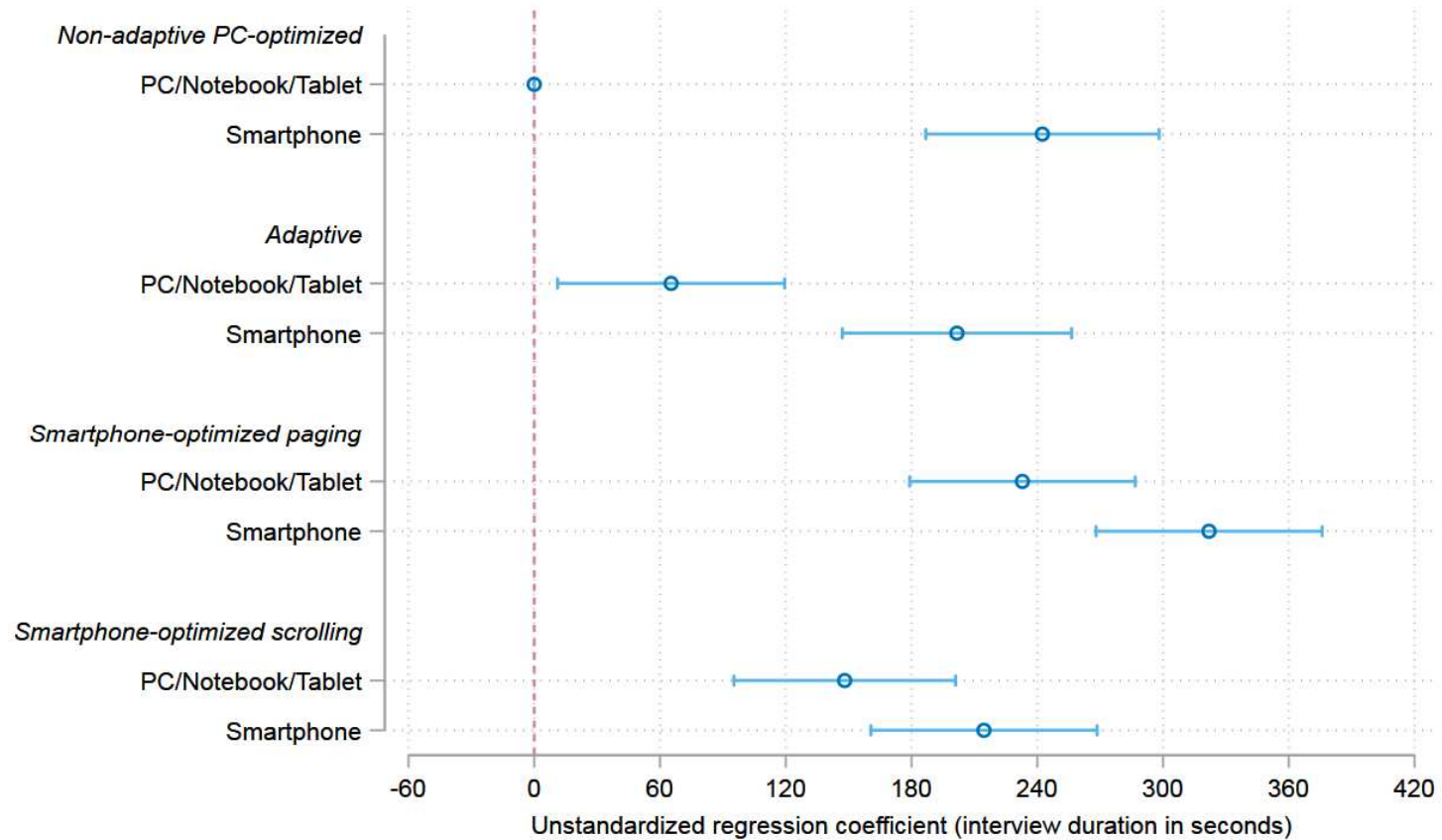
Results

Survey break-offs



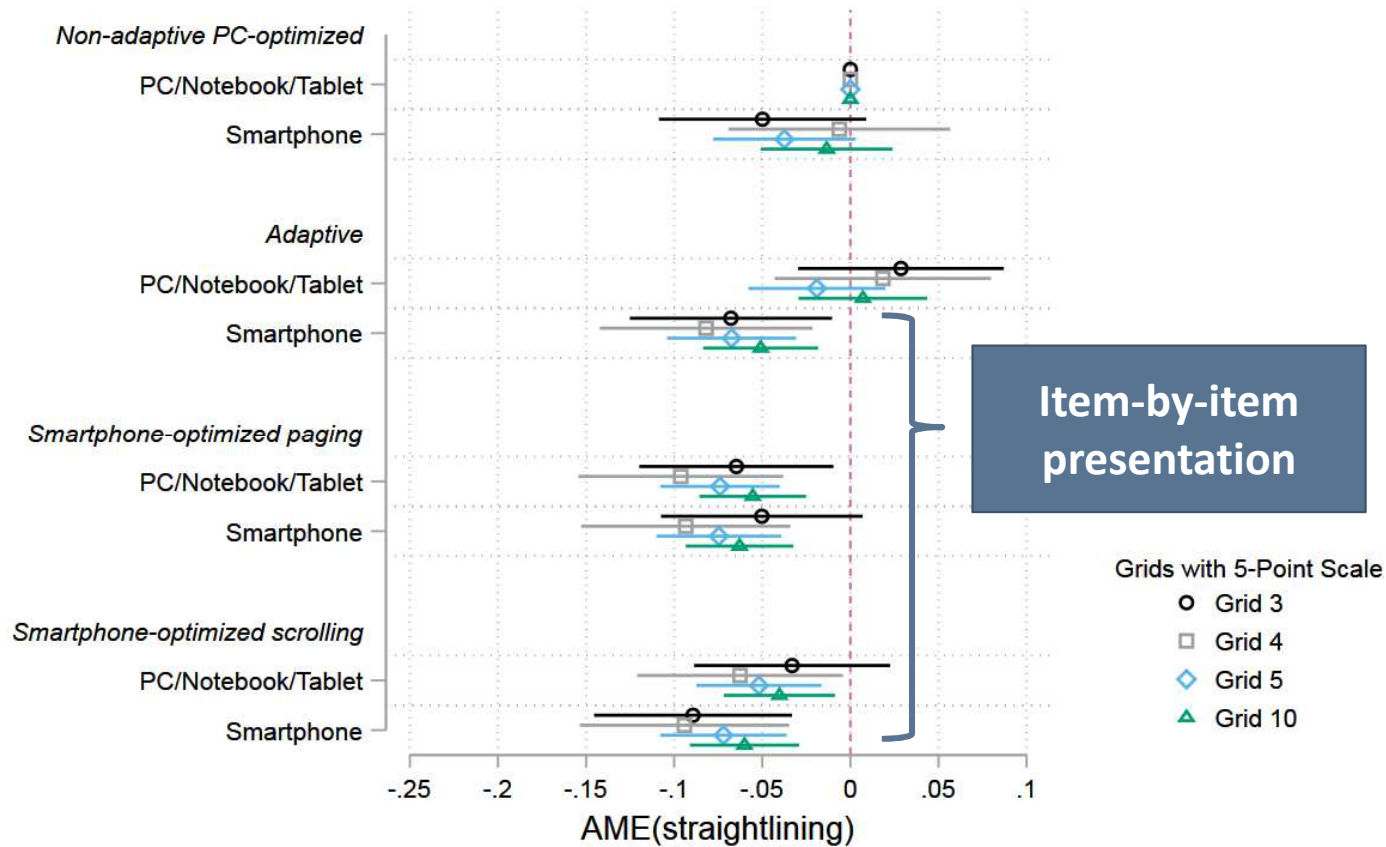
Results

Interview duration



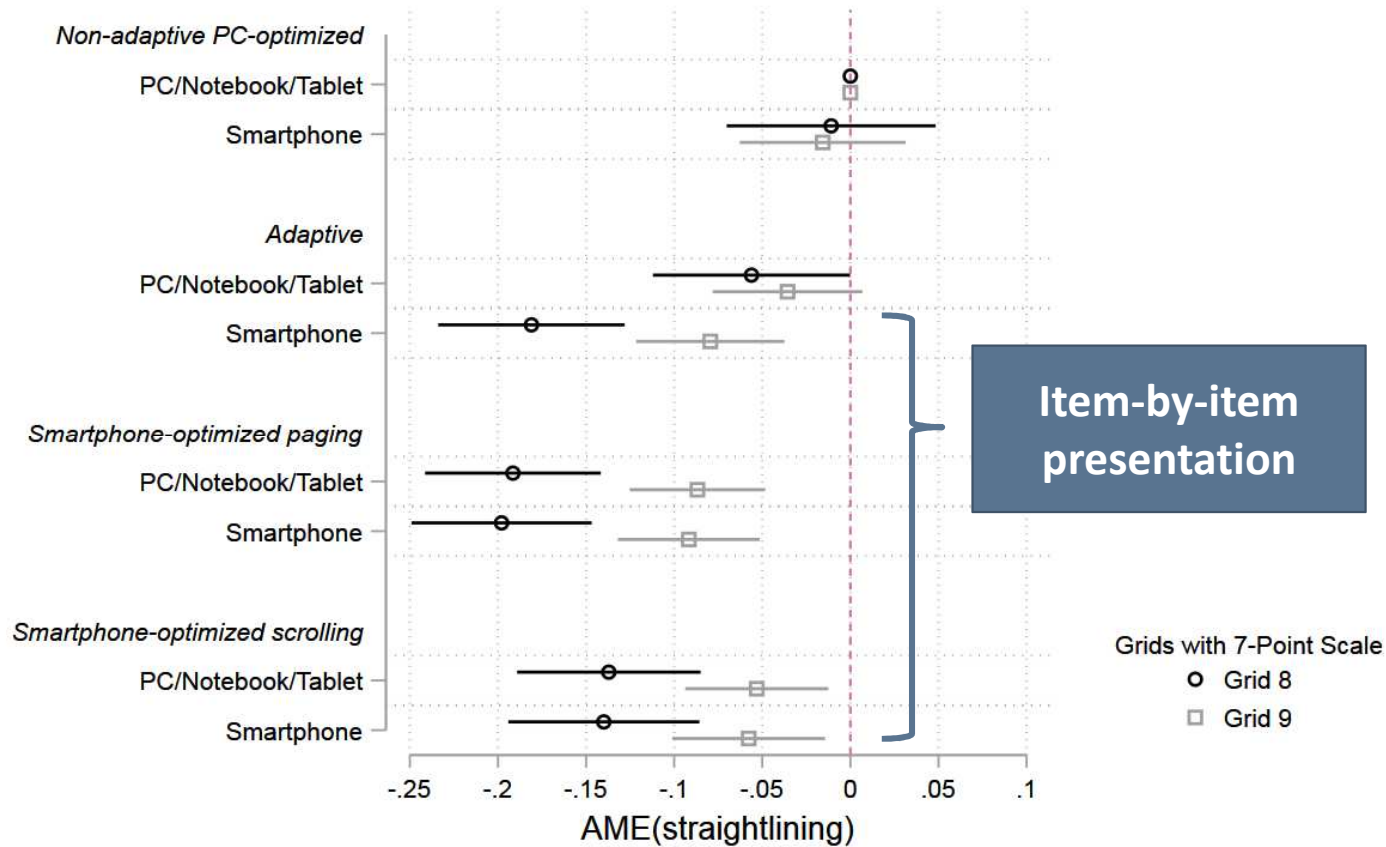
Results

Straightlining in grids with 5-point rating scales



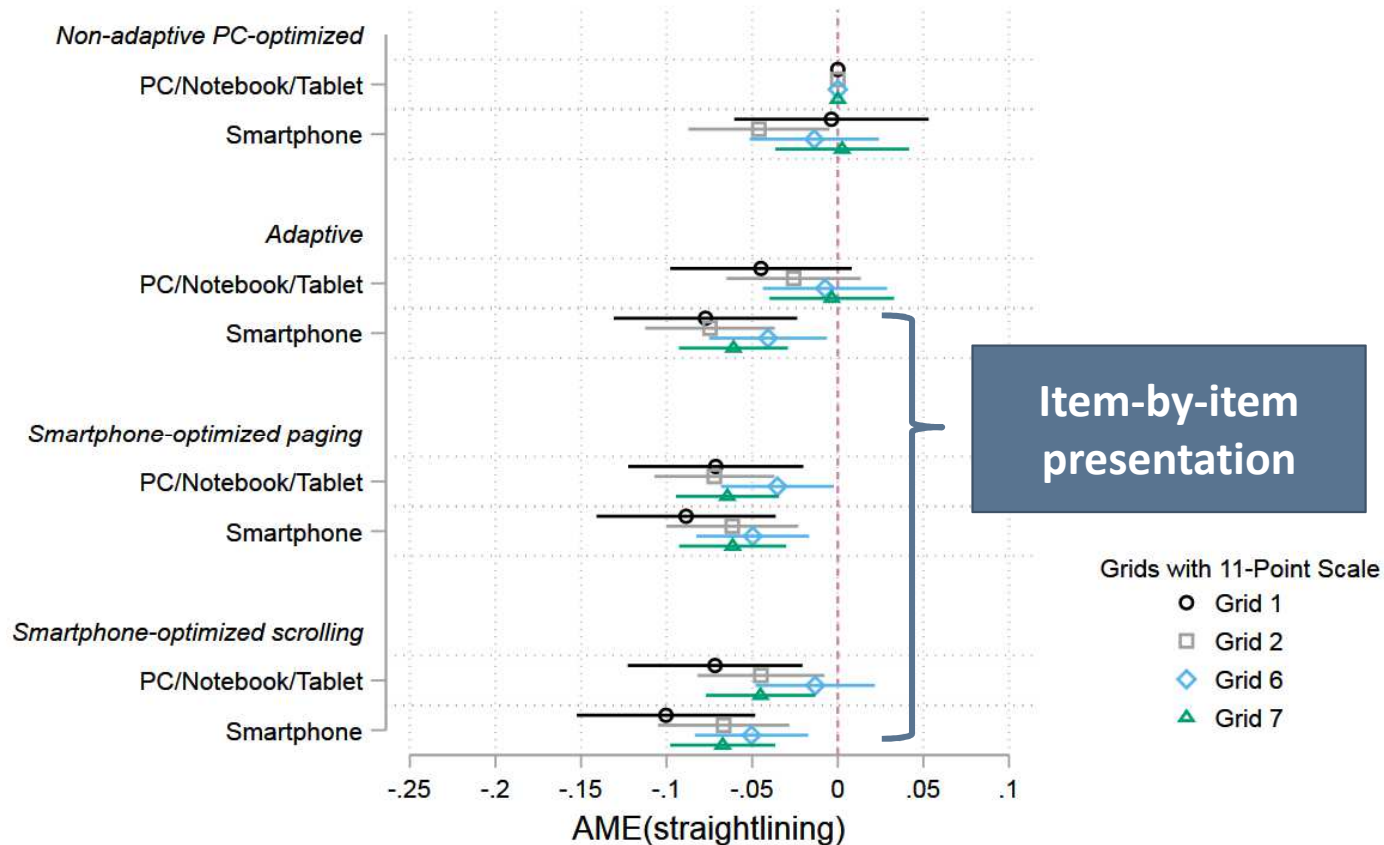
Results

Straightlining in grids with 7-point rating scales



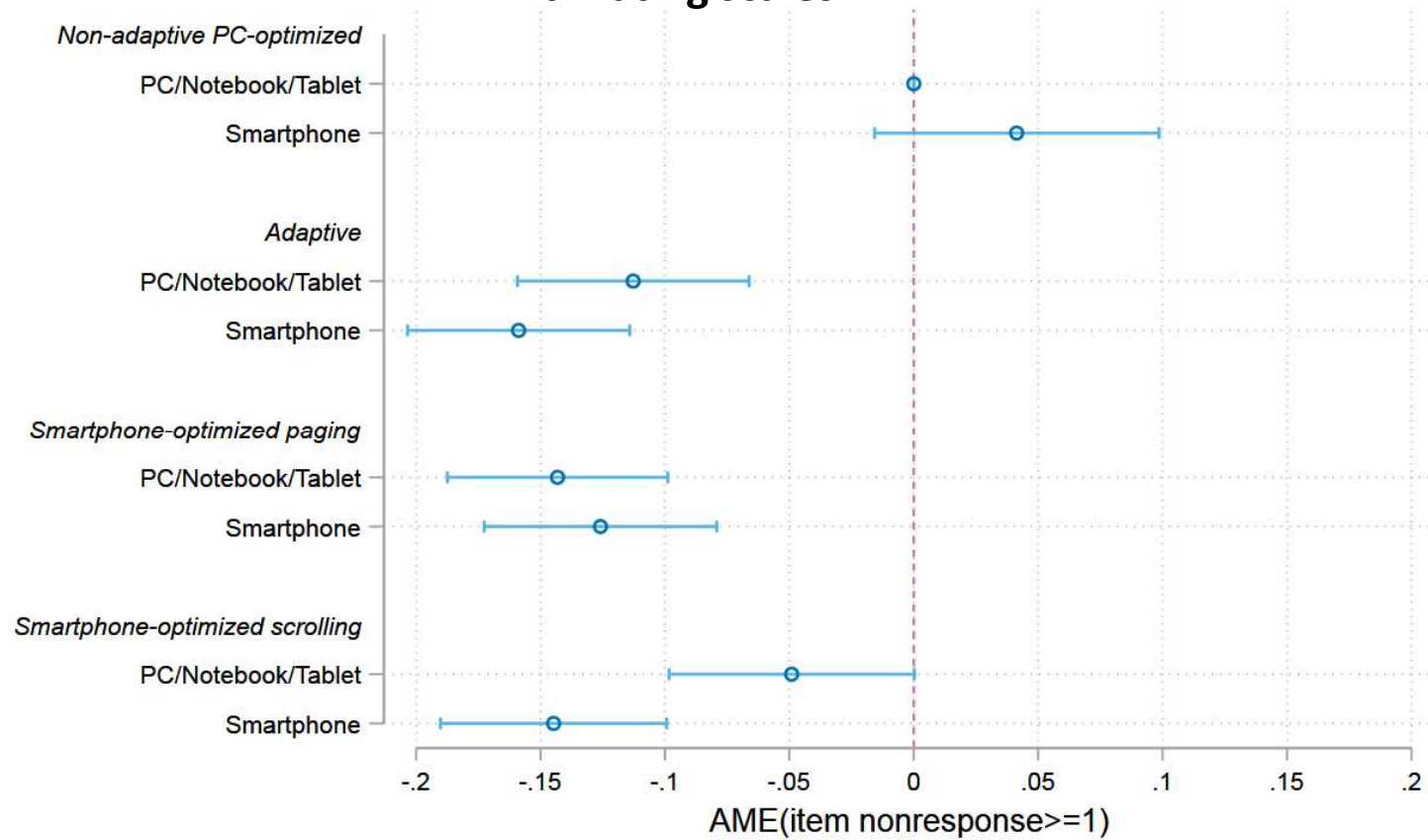
Results

Straightlining in grids with 11-point rating scales



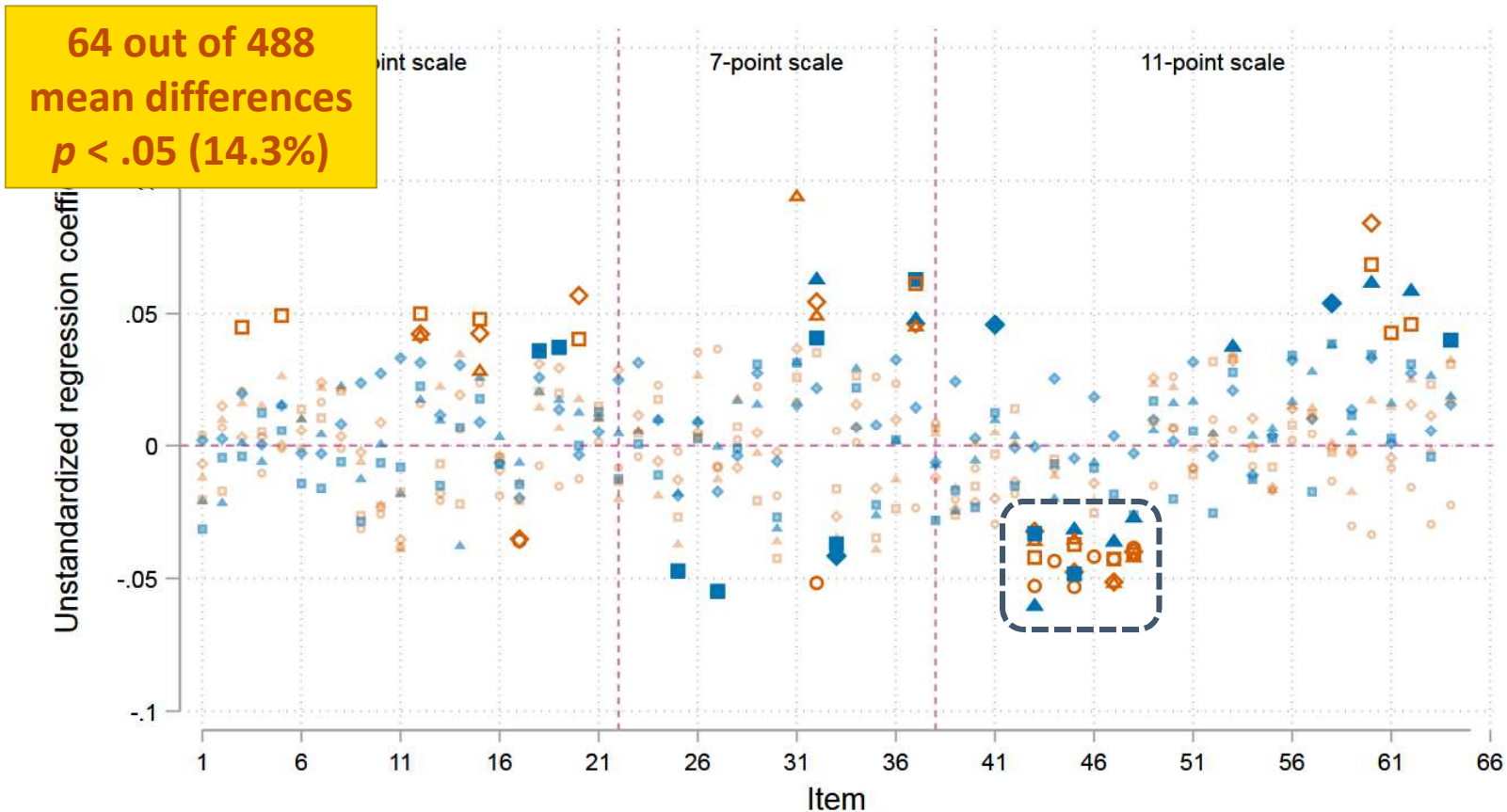
Results

Item nonresponse (at least one missing) to single-item and grid questions with rating scales



Results

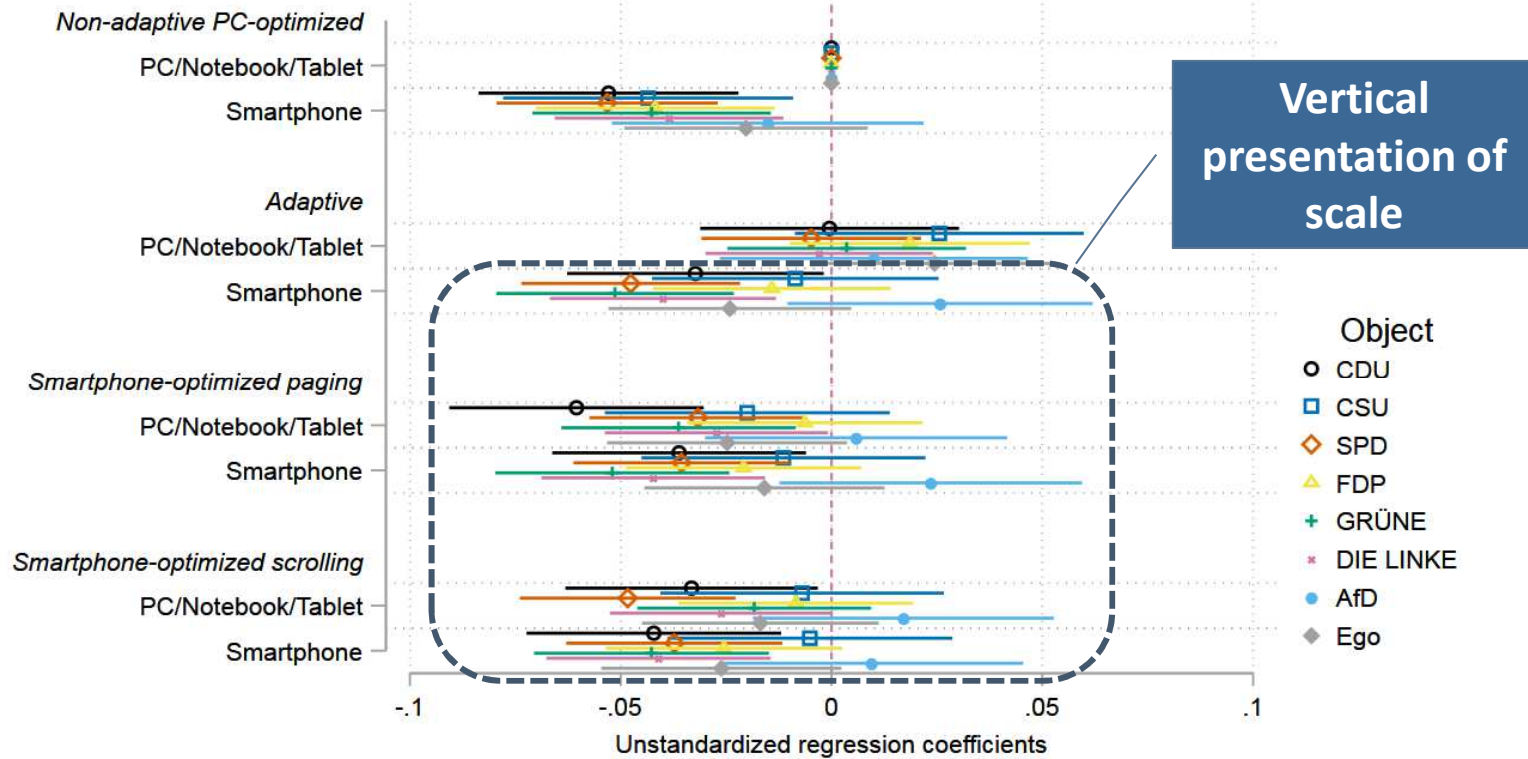
Effects on means of 64 items on political attitudes and behaviors



Note: circle = non-adaptive PC-optimized, diamond = adaptive, triangle = Smartphone-optimized paging, square = Smartphone-optimized scrolling; blue = PC/Notebook/Tablet, orange = Smartphone; larger symbols = $p < .05$

Results

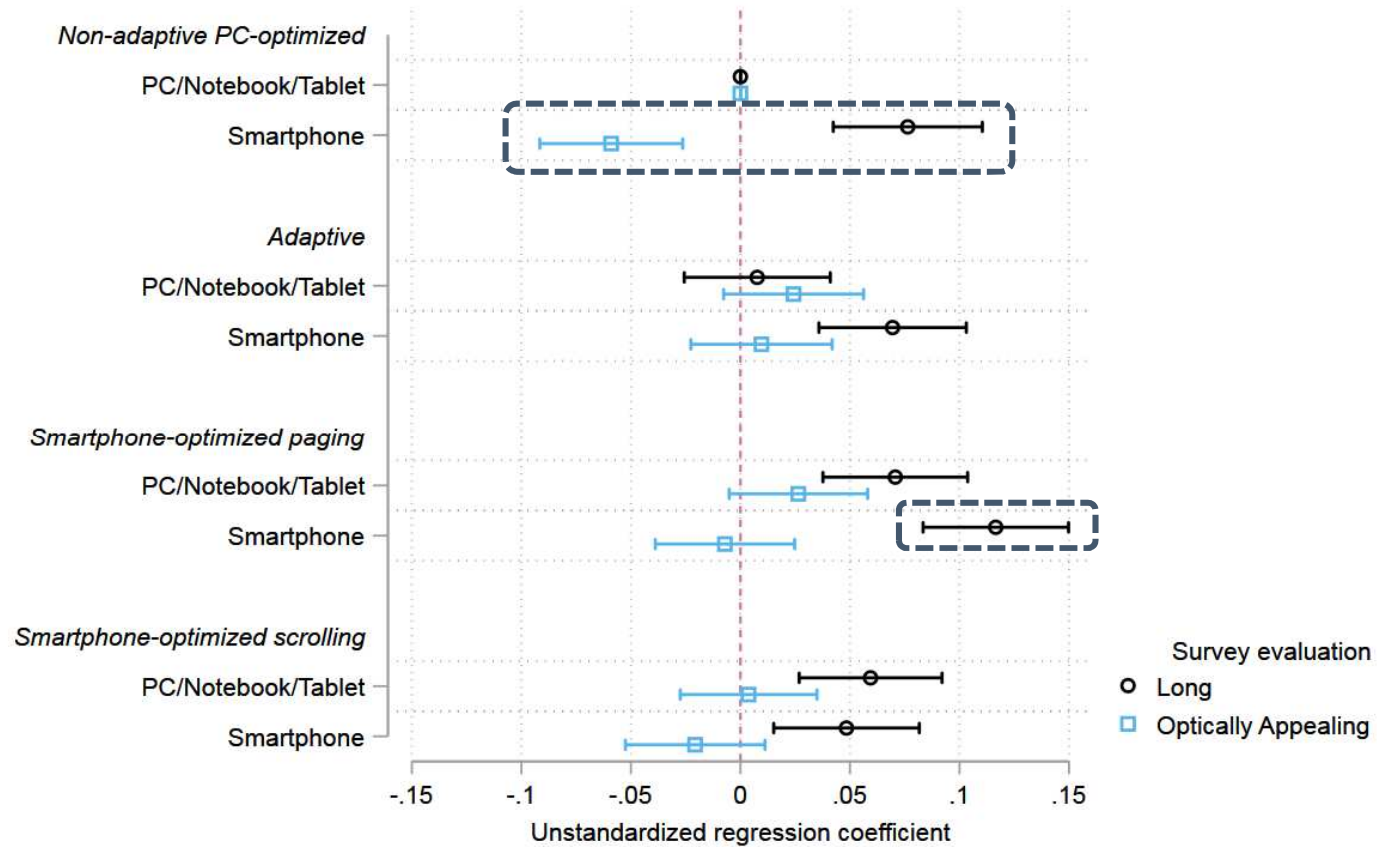
Left-Right Classification of Political Parties and Ego



Note: All variables were rescaled to range from 0 to 1.

Results

Survey evaluation



Added Value

- A non-adaptive PC-optimized design is the least good option for surveying samples with non-ignorable numbers of Smartphone respondents
 - ▶ impaired the respondents' survey experience
 - ▶ increased the perceived and actual interview duration
 - ▶ higher number of survey break-offs

Added Value

- Based on the findings of our study we recommend implementing either *adaptive* or *non-adaptive Smartphone-optimized* designs.
 - ▶ No negative effects of Smartphone-optimization on response quality on either type of device
 - ▶ Effects of the survey design on item means were mostly small and insignificant
 - ▶ Non-adaptive Smartphone-optimized design with scrolling layout was slightly less burdensome to answer compared to a paging layout (i.e. lower interview duration)

Added Value

- However, survey practitioners should pay attention to the following issues in their design decision:
 - ▶ In general, non-adaptive Smartphone-optimized designs produced longer interviews on average compared to the non-adaptive PC-optimized and adaptive design
 - ▶ Response quality and item means may slightly differ between devices in an adaptive design
 - ▶ Pay regard to possible interactions between the content and visual presentation of questions (e.g., effect of vertical presentation of left-right scale)

Thank you very much for your attention!

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