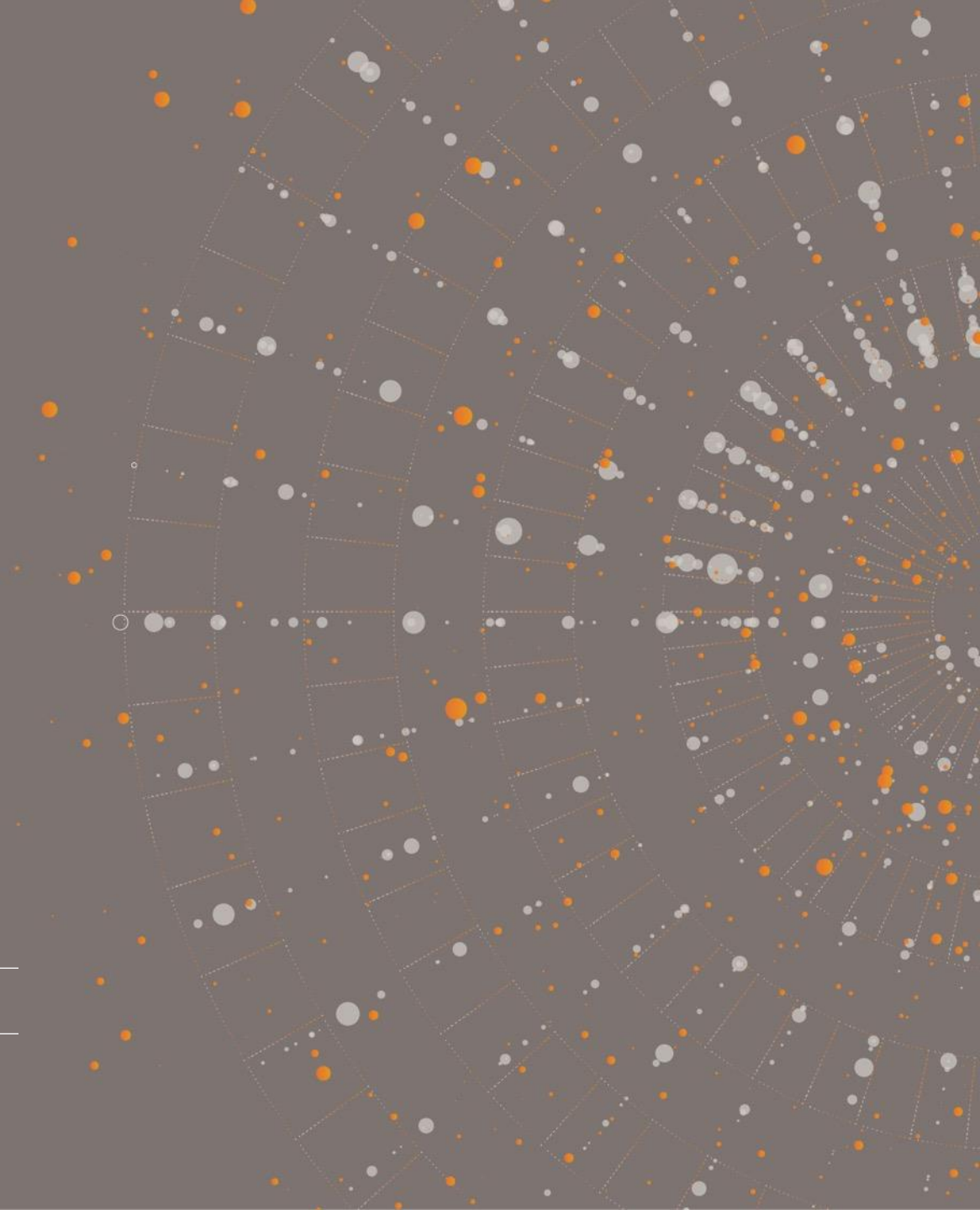


Effectiveness of Question Format to Reduce Motivated Misreporting Within and Across Waves of a Longitudinal Survey

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Panel conditioning is a form of measurement error ubiquitous to longitudinal surveys

Better respondents

- **Increased reliability (Kroh et al., 2016)**
- **More accurate reports (Yan and Eckman, 2012)**
- **Less don't know answers (Waterton & Lievesley, 1989)**
- **Less rounding (Eckman and Bach, 2021)**

Worse respondents

- **Motivated misreporting**
 - Learning to say “no” to avoid additional questions (Bailar 1989; Mathiowetz and Lair, 1994; Kreuter et al., 2011)

Interleafed Format

- **Filter question 1**
 - **IF YES:**
 - Follow-up question 1
 - Follow-up question 2
 - Follow-up question 3
- **Filter question 2**
 - **IF YES:**
 - Follow-up question 1
 - Follow-up question 2
 - Follow-up question 3
- **Filter question 3**
 - **IF YES:**
 - Follow-up question 1
 - Follow-up question 2
 - Follow-up question 3

Grouped Format

- **Filter question 1**
- **Filter question 2**
- **Filter question 3**
- **IF YES to filter question 1**
 - Follow-up question 1
 - Follow-up question 2
 - Follow-up question 3
- **IF YES to filter question 2**
 - Follow-up question 1
 - Follow-up question 2
 - Follow-up question 3
- **IF YES to filter question 3**
 - Follow-up question 1
 - Follow-up question 2
 - Follow-up question 3

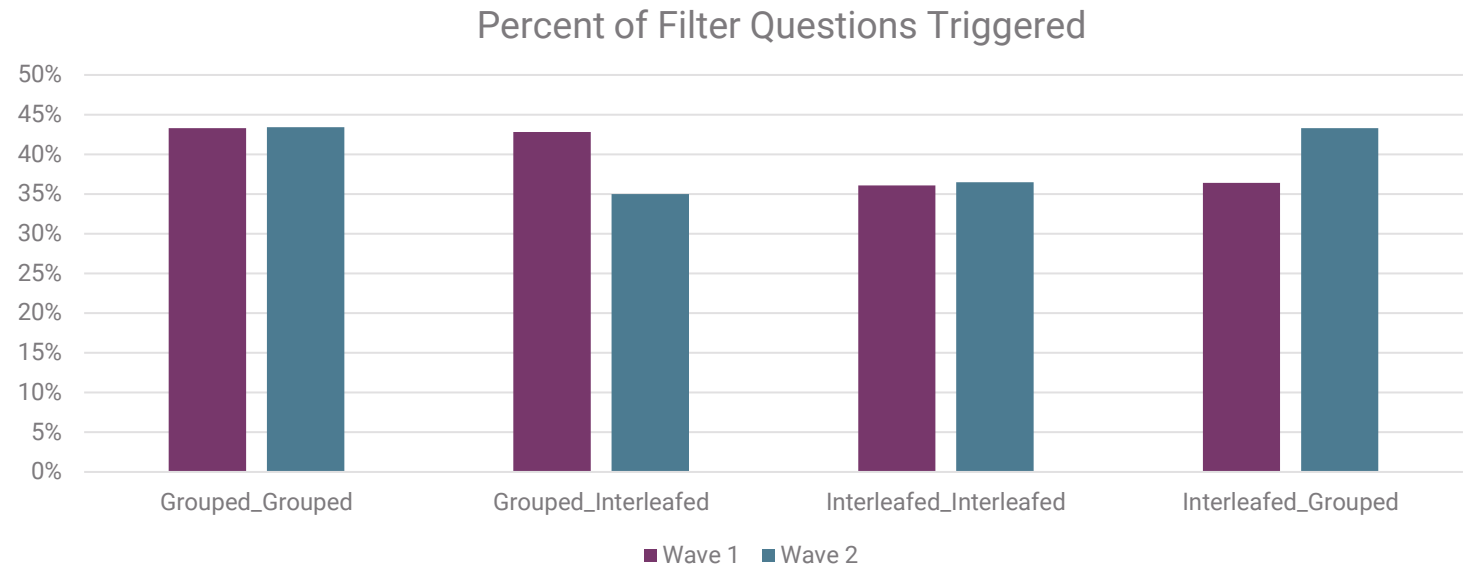
Compared to interleaved format, grouped format

- **Increased the number of yes answers to filter questions in cross-sectional studies (Duan et al., 2007; Kreuter et al., 2011; Eckman et al., 2014; Bach et al., 2019)**
- Effect depends on
 - Position of filter questions within the group (Kreuter et al., 2011)
 - Difficulty of follow-up questions (Kreuter et al., 2011)
 - Number of follow-up questions (Kreuter et al., 2016)
 - Repetitiveness of follow-up questions (Kreuter et al., 2019)
- **Led to more accurate answers to filter questions (Eckman et al., 2014)**
- **Led to more item nonresponse to follow-up questions (Kreuter et al., 2011; Daikeler et al., 2022); fewer endorsements for multiple-choice follow-up questions (Daikeler et al., 2022)**
- **Led to fewer breakoffs at the beginning (Chen et al., 2022)**

Bach & Eckman (2018)

First study to examine impact of question format in a longitudinal survey

Grouped > Interleafed in both waves 1 and 2



Does the observed question format effect persist over waves?

Does the difference between question formats decrease across successive waves?

Does the impact of question format vary by order of filter questions, the number, and difficulty of follow-up questions?

National Study of Social, Economic, and Health Experiences (NSSEHE)

- Tracks changes in opinions, lifestyle, and health of Americans
- Experiments to investigate mechanisms accounting for panel conditioning

A sample of 8000 registered voters in two states

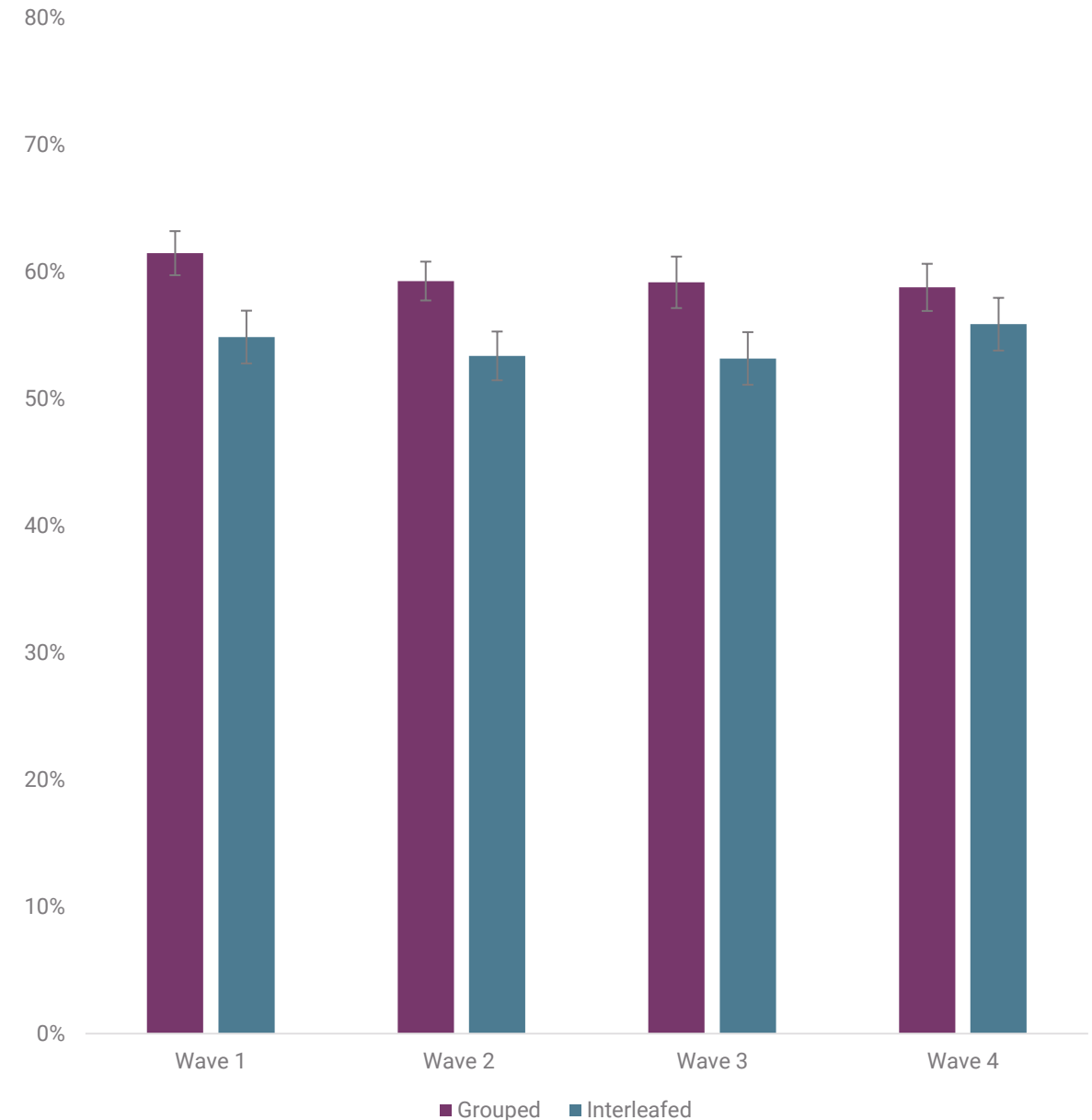
- Invited to participate in four waves of web surveys through mailings, emails, and text messages

Wave 1	Wave 2	Wave 3	Wave 4
5/13- 6/28/2022	8/15- 9/27/2022	11/14- 12/29/2022	2/13- 3/24/2023
8000 invited	1411 Wave 1 completes invited	1329 Wave 1 completes invited	1327 Wave 1 completes invited
RR1=17.7%	RR1=67.5%	RR1=72.9%	RR1=71.4%

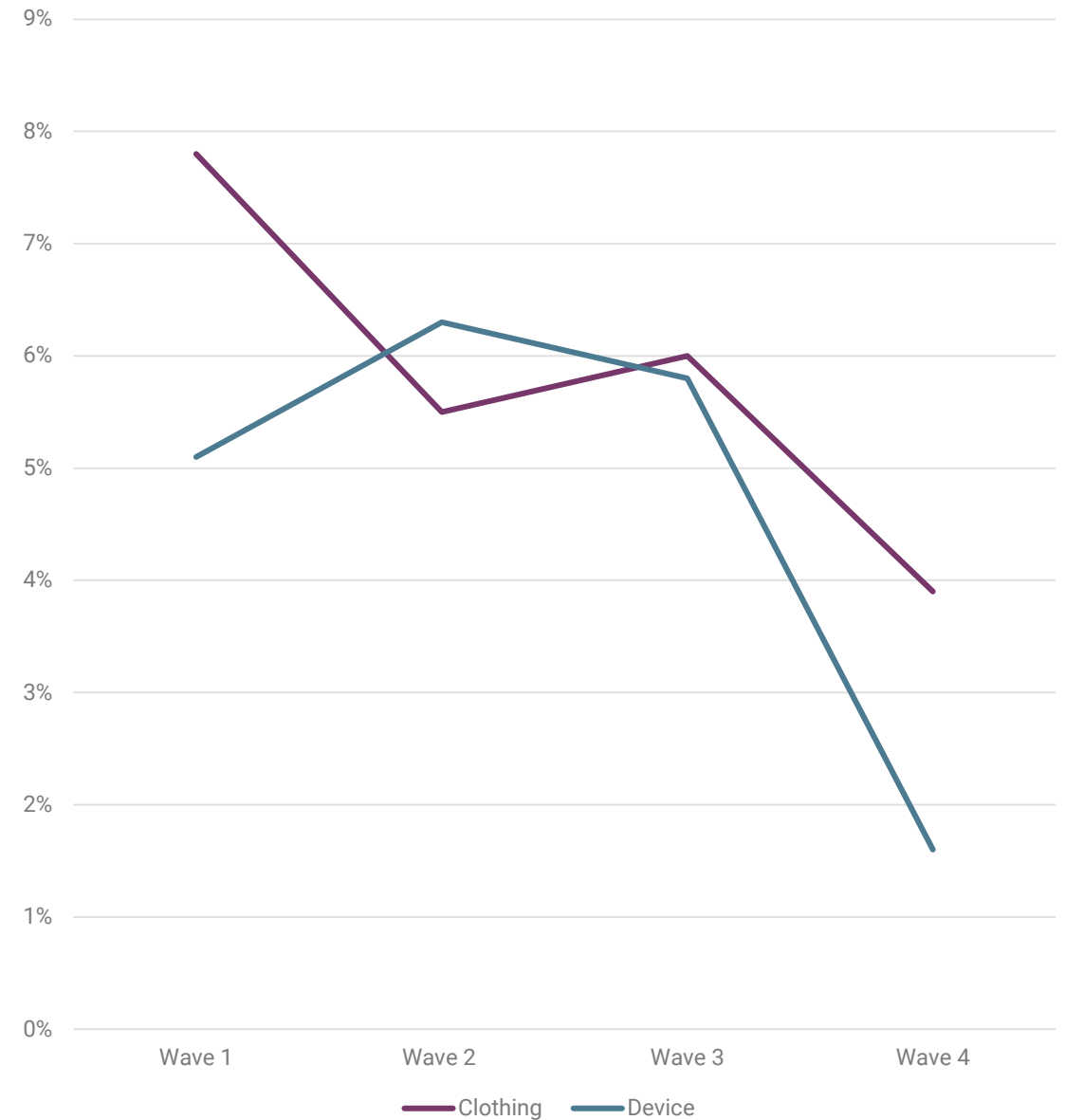
2 (question format) * 2 (number of followed-up questions) * 2 (difficulty of follow-up questions) experiment

- Question format: grouped vs. interleaved
- Number of follow-up questions: 2 vs. 4
- Difficulty of follow-up questions:
 - Easy: closed-ended questions (e.g., satisfaction);
 - Hard: open-ended numeric (e.g., how much...? How long...?) and open-ended text (what? For whom?)
- Fully-crossed for each wave
- Same assignment across waves

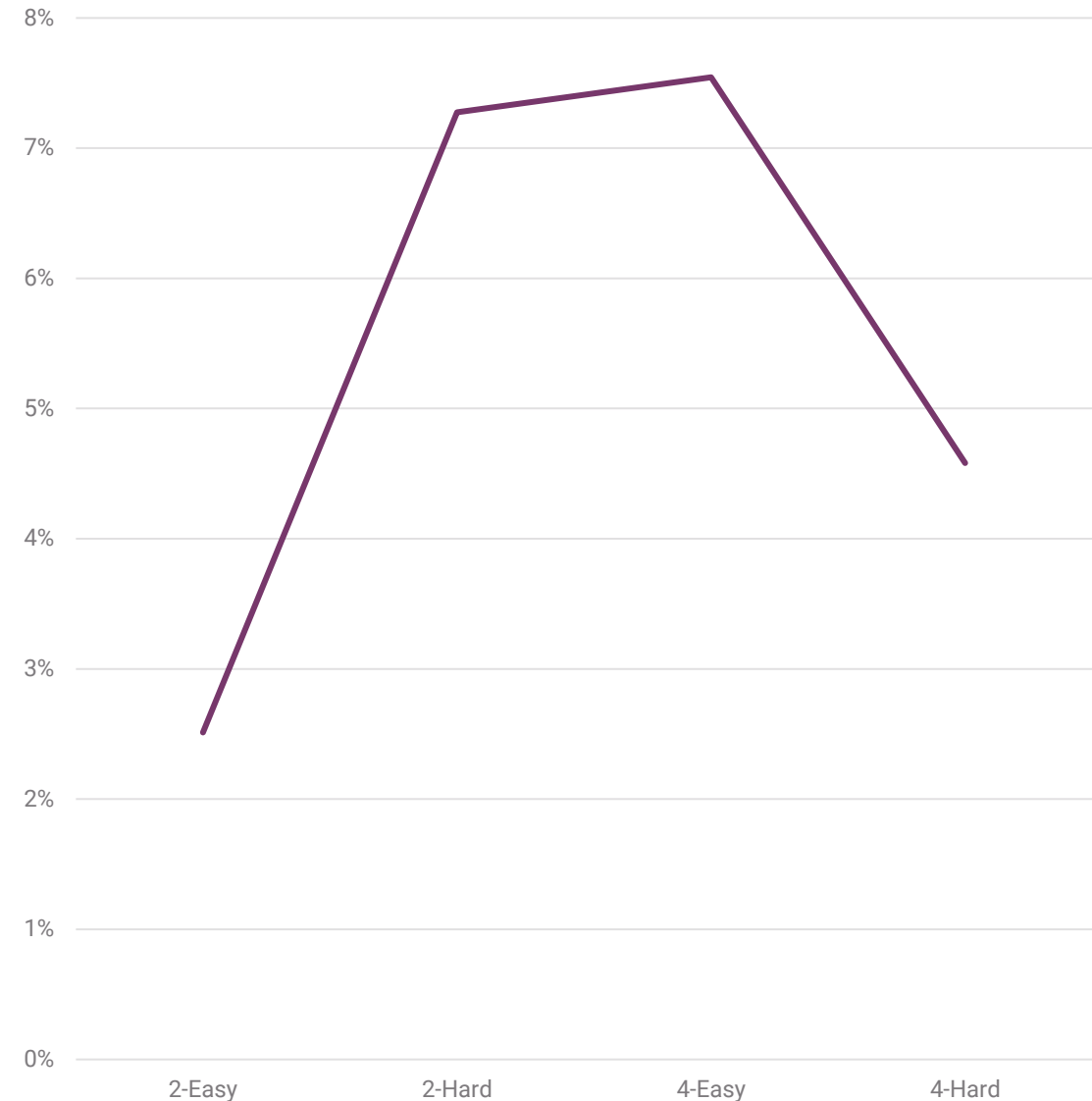
- Grouped format led to more filters to be triggered than interleaved format
- Difference between format sig. in the first three waves, but no longer sig. in the last wave
- Trend of smaller format difference across waves
 - 6.6% at Wave 1, 5.9% at Wave 2, 6.0% at Wave 3, 2.9% at Wave 4



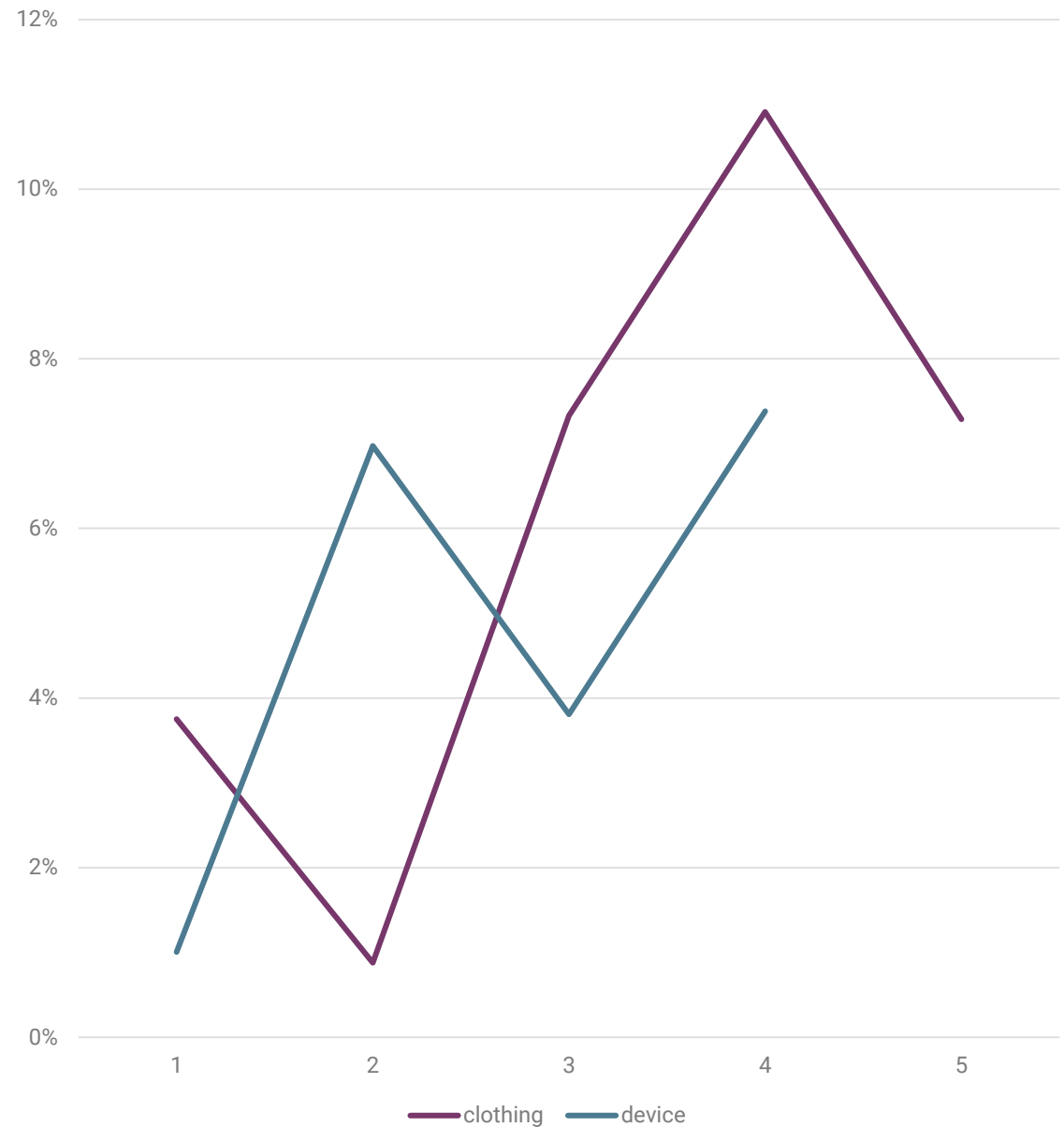
- Grouped format led to more filters to be triggered for both types of questions
- Difference between format gets smaller over time for both topics



- Significant three-way interactions
 - Difficulty of follow-up questions increased format effect when there were two follow-up questions
 - Number of FU questions increased format effect for easy FU questions
 - Question format effect is smaller for 2 easy FUs and 4 difficult FUs



- Significant two-way interactions
 - Larger effect for later filter questions



Grouped format is effective in reducing motivated misreporting

Effect of question format on reducing motivated misreporting

- **Persists for three waves, but no effect at the 4th wave**
- **Same for clothing and device items**
- **Larger for later filter questions**
- **Smaller for easy and challenging situations**

Future research

- **Moderating impact of respondent characteristics**
 - Perceived burden, cooperativeness, age, and education

Thank you!

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