Cognitive Interviews without the Cognitive Interviewer

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Background

- Cognitive interviews are typically face to face interviews used for problem identification
- In-depth probing used to explore response strategies
- Small sample sizes are common, though recent research suggests larger sample sizes can improve reliability and results (Blair & Conrad, 2011)
- Traditional cognitive interviews are time intensive

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Research Questions

- Can information typically obtained through cognitive interviews be collected using a self administered web survey?
- How do results compare?
  - Response quantity and quality?
  - Response content?
- Are self administered web interviews an efficient way to collect data about response strategies ?

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Response Strategies

- Study conducted within larger research effort to test three global clothing expenditure questions
  - "In the past 3 months, how much have you spent on clothing? On footwear? On Accessories?"
- Evaluate participant:
  - Response strategies
  - Definitions
  - Interpretation of global terms

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Method

- 19 traditional cognitive interviews
- 54 self administered, web interviews
- Similar protocol for both modes

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Protocol Tasks

- Global think aloud: explain response strategy when answering the global clothing question
- Detailed: identify items and item costs they included in their global response
- Examples: name as many examples from each global category as possible
- CEQ: Answer a series of 20 clothing expenditure questions from the existing Consumer Expenditure Quarterly (CEQ) Survey

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Cognitive Interviews

- Semi-structured cognitive interviews
- One interviewer
- In-depth probing on global clothing question
  - "Please tell me how you arrived at that answer"
  - Additional non-scripted probes asked until response strategy could be identified or participant stopped giving useful information

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Self Administered Interviews

- TryMyUI: remote usability testing service
- Video and audio recording of computer screen and participant comments
- Protocol tasks administered via web survey
- Asked to describe response process for global clothing
  - "Now, please describe out loud how you arrived at your answer for question 2. Explain what you thought about or what you remembered as you answered the question."
  - *[Question 2: "In the past 3 months, how much have you spent on clothing?"]1*

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Order of Tasks

Cognitive Interviews n=19	Web n=54
Global think aloud with non-scripted follow-up	Global think aloud
Detailed	Detailed
Examples	CEQ
CEQ	Examples
	Categorization

Participants

	CI	Web
Gender		
Male	50%	52%
Female	50%	48%
Age		
< 35	30%	50%
36 – 55	45%	35%
> 56	25%	15%
Education		
HS or Less	20%	9%
Some College	30%	33%
College Degree	35%	44%
Graduate Degree	15%	14%

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Analysis

- Transcripts were made of all think aloud responses
  - For cognitive interviews, responses to follow up probes were also transcribed
- Each transcript was coded for key elements:

Word count	Concept count
Mention of specific expenditure items	Mention of general expenditure items
Global response duration	CEQ response duration
Item costs	Total costs
Response strategy	

Results: Response Durations

	Mean	Min.	Max.	St. Dev.
Web Globals	0:51	0:14	2:15	0:25
CI Globals	0:44	0:25	1:35	0:16
Web CEQ	1:52*	0:22	4:40	0:52
CI CEQ	2:51*	1:13	6:17	1:45

*p<.05

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Results: Word Count

	Mean	Min.	Max.	St. Dev.
Web	61.9*	16	288	45.8
CI[1]	31.8	2	96	22.0

*p<.05

[1] Count of only the initial response and does not include responses to follow-up probes.

Results: CI Follow-Up Probes

Number of Follow-up Probes	Number receiving this many probes	Word Count For Each Probe			
		Mean	Min.	Max.	Std. Dev.
Initial	All 19	31.8	2	96	21.9
1 Probes	18	23.3	1	97	28.1
2 Probes	16	15.8	2	37	12.1
3 Probes	10	13.3	2	48	13.2
4 Probes	8	19.8	4	42	13.7
5 Probes	7	18.7	4	52	17.7
6 Probes	6	18.2	7	41	12.6
7 Probes	5	22.2	1	63	27.7
8 Probes	1	7.0	7	7	n/a

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Results: Response Content

	Mean	St. Dev.
Web Concept Count	2.0	1.0
CI Initial Concept Count[1]	1.6	0.9
CI Total Concept Count[2]	3.1	1.3

[1]Count of only the initial response and not responses to follow-up probes.

[2]Count of all information provided, to the initial question and all follow-up probes.

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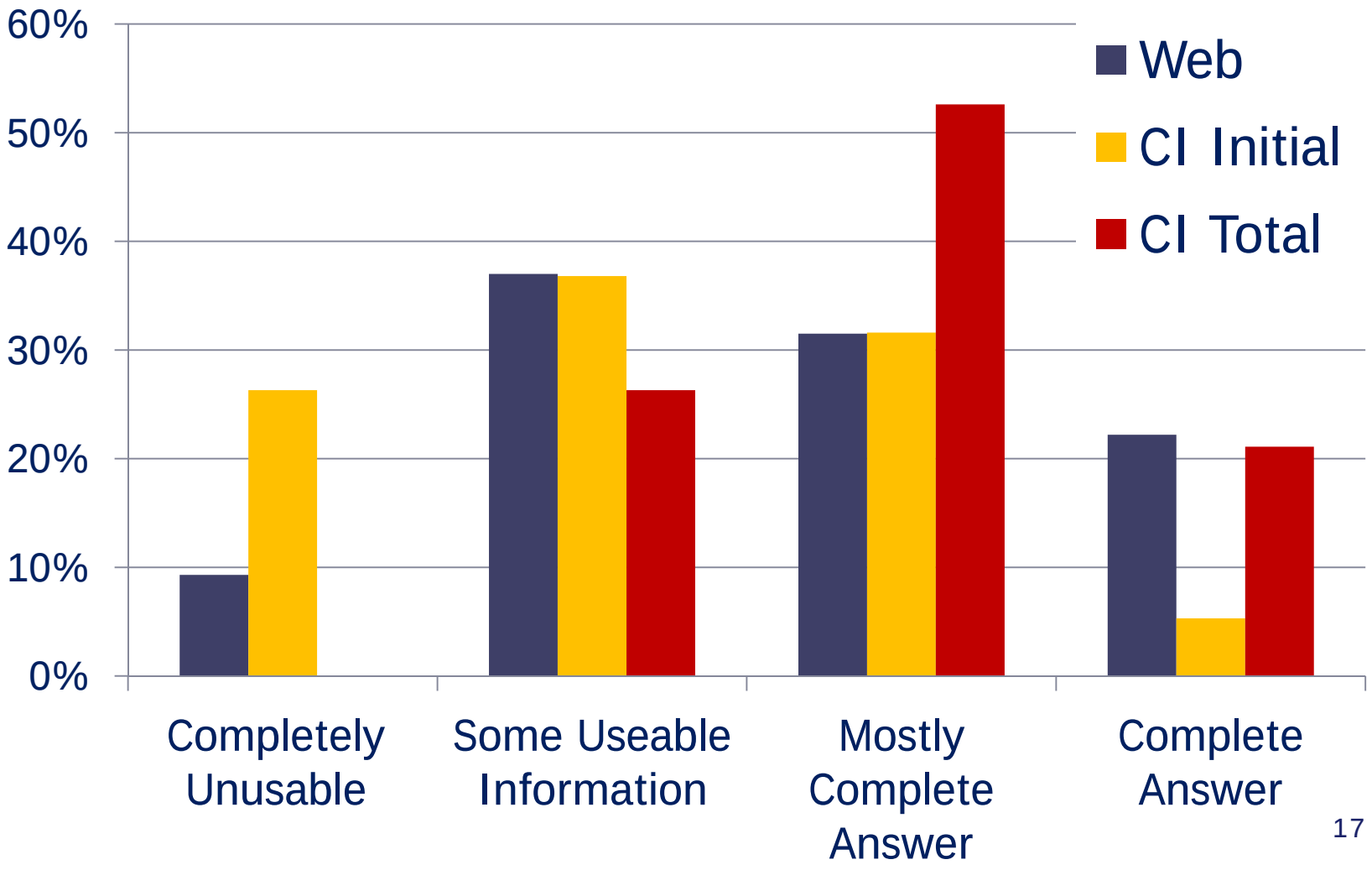
Results: Response Strategy

Response Strategy	Web	CI[1]
Item Retrieval	38.9%	20.0%
Event Retrieval	22.2%	25.0%
Retrieval and Adjustment	14.8%	10.0%
Budget	3.7%	25.0%
General Impression	9.3%	5.0%
Receipts	3.7%	10.0%
Guess	1.9%	5.0%

[1]After all probing

Results: Response Quality



Results: Study Costs

	Total Cost Per Participant	Participant Incentive
Web	$27.30	$10
CI	$42.66	$40

Results: Study Times

Task	CI	Web
Requesting participants	20 minutes; explaining criteria to recruiter	30 minutes total; specifying test groups and criteria
Screening	10 minutes per participant	0 minutes; done by TryMyUI
Scheduling & confirming	15 minutes per participant	0 minutes; study done at participant convenience
Preparing for interviews	10 minutes per participant	60 minutes total; setting up Web survey and tasks
Conducting interviews	45 minutes per participant	0 minutes, self-administered
Total	**31.7 hours**	**1.5 hours**

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Analysis Comparison

- For this study, web analysis was much more time consuming
- On the fly analysis done in CI, taking notes of key points and issues
  - Audio recordings of CIs only used to get quotes or supplement notes
- All analysis of web data had to be done from watching each video, or from transcripts made from the videos
- Studies with other objectives, other researchers, may analyze data differently

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Conclusions

- The primary objective of the data collection effort in this study was to identify response strategies, which was able to be done in both modes
- CI participants did tend to give more elaborate answers than web participants,
  - After scripted and un-scripted probing
  - There was no difference after only the initial, scripted, probe
- There were no mode differences in the substantive conclusions by mode
- Web data was collected significantly faster, and cheaper, than CI data

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Study Limitations

- Traditional cognitive interviewing studies seek to identify problems with questions, an outcome not explored here
- A single, simple, think aloud instruction was used on the web and can likely be improved
- Order of tasks differed by modes, but was constant within modes, resulting in concerns about order effects
- These web participants were experienced in the think aloud technique, and may not be representative

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Conclusions: Effectiveness

- Using the web is an effective way to collect CI-type data
- Web participants were able to provide detailed explanations and useful information about their response process
- Even taking into account the unusable data, and the slightly lower content levels in the data collected over the web, the ability to collect much larger sample sizes is promising

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Conclusions: Generalizability

- Web participants spent significantly less time answering the questions than the CI participants.
  - May be more representative of production respondents, who likely speed through the questions
  - Traditional CI's may identify 'false problems' in the lab by over-thinking
- Participants on a web panel may differ systematically from the target sample
  - Younger, more educated, web-savy
  - May react differently to tasks than other participants

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Conclusions: Advantages

- Self administered interviewing saves time and money
- There is no interviewer effect on the web
- Large amounts of data can be easily collected
  - Making the potential ‘bad’ data less important as those cases are easily replaced

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Conclusions: Disadvantages

- Potential for bias, if participants systematically differ by mode
- Instructions must be clear and work for everyone
- Cannot provide probes to follow up on participants' comments
  - All probes must be scripted and therefore must be applicable to all participants
- No way to bring participants 'back on track' if they start to digress during their "think aloud"
- Analysis is time consuming

Potential Applications

- Some CI studies use a majority of straight forward tasks, these could be easily done on the web
  - Define key terms
  - State question in your own words
  - Name what kinds of things you include/exclude
- Sensitive questions may be better tested in a self-administered mode
- Combination of standard CI and web studies is likely an effective approach

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Next Steps

- This was a first step, purely exploratory
- Future studies need to look at:
  - How well web data can be used for problem identification
  - Different types of tasks
  - Different wording of think aloud probes
- Larger CI samples are also planned, to allow for more in-depth comparison of results

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