

Envisioning the Survey Interview of the Future

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Background

- Presumptuous to assume we can see the survey interview of the future
 - besides, there probably will be many interviews of the future
- New communication technologies are arriving almost daily and many of these are worth at least considering as interviewing technologies
 - but there has not been much crosstalk between survey research and communication technology communities
 - recently Michael Schober and I have been trying to promote this kind of cross-talk

History

- Conrad and Schober organized:
 1. Workshops in Ann Arbor, MI (2005) and Southampton, UK (2007)
 - to bring together survey methodologists, communication technologists and practitioners
 - funding from NSF plus UMich Survey Research Center (and ESRC)
 2. Edited volume: *Envisioning the Survey Interview of the Future* (Wiley, 2008)
 3. AAPOR panels/roundtable (2006, 2007, 2008), ASC panel (2007)

Orientation

- Be visionary
 - e.g., it's legitimate to take seriously a possible interviewing technology even if sampling and coverage issues seem intractable, even if expensive
 - we can assume this will get worked out -- or maybe not -- but this enterprise is about possibilities and how to think about possibilities

Outline

- Four new directions in which interviewing technology might go
- Four ideas to think about when considering a new data collection technology
- Examples
 - interactive web surveys
 - virtual interviewers
- Uncharted territory
 - control characteristics of automated interviewing systems

New Directions (I): Mediation

- Instant messaging, texting
 - The first word about the massive earthquake in China did not come from the news media. In China, some 300 million people have cell phones, and when the quake hit, many reached for them -- but not to talk. Instead, they used the most popular form of communication -- text messaging (SMS, 140-by-160).
- The video phone is here
 - desktop video applications like Skype and iChat enable interviewers and respondents to see as well as hear each other in real time

New Directions (2): Blurring distinction between self- and interviewer-administration

- Systems that react to *R*'s cues of cognitive and communicative difficulty, evidence of satisficing
 - can offer help, encourage more vigilance
 - e.g. interactive web (textual) questionnaires
- Speech dialog systems
 - very smart IVR
 - on phone, in web browser
- Recorded video of interviewer embedded in web browser
 - web version of what has been called Video-CASI (Mark Fuchs)
- Animated/virtual interviewers
 - Cassell and Miller: "Is Self-Administration if the Computer Gives you Encouraging Looks?"

New Directions (3): Multi-modal

- Easy to imagine an interface with
 - an interviewer (live or recorded) in a video window who asks questions via speech
 - textual questions, graphical response options
 - images, maps
 - recognition of *R*'s spoken answers, clicks, typing, gestures (e.g., circling options)

New Directions (4): Mobile

- *R*s can be contacted by voice, email, video message on hand-held device and interviewed live or given link to on-line questionnaire
- *R* might be anywhere and location might be better suited to some than other modes
 - textual questionnaire might provide enough privacy to complete while commuting on the train but speech might be better while walking

Adopting new technologies

- How and when should which technologies be adopted?
- Emergence (and abandonment) so rapid that criteria cannot be technology-specific
- Are there general principles beyond particular technologies?

Four ideas to think about when considering a new technology

1. Satisficing
2. Conversational Grounding
3. Social Presence
4. Deception and Honesty

Satisficing

(Simon, e.g., 1956)

- Simon's original idea
 - decision making in organizations is suboptimal, i.e., does not consider all available information, but good enough (satisfy + suffice = satisfice)
 - theory illustrated by hypothetical organism which lacks sensory/ cognitive ability to obtain all possible food sources but can stay alive (satisfice)
- Krosnick's (1991) adaptation to survey responding
 - Weak Satisficing: *Rs* can answer questions without complete retrieval and integration of relevant information, e.g. primacy effects, acquiescence
 - Strong Satisficing: *Rs* can answer without any retrieval and integration of information, e.g., non-differentiation, "Don't Know"
 - Has come to mean any shortcut taken by *Rs*

Conversational Grounding

(Clark, 1996; Clark & Wilkes-Gibbs, 1986)

- Clark's (e.g., 1991) original idea:
 - speaker and listener go "back and forth" until they believe they understand each other well enough for current purposes
- Schober & Conrad's (1997) adaptation to interviews
 - standardized interviews prevent grounding
 - Interviewers administer neutral probes like "whatever it means to you"
 - conversational interviews promote grounding
 - Interviewers can use any words to make sure R understands as intended
 - Improves accuracy for ambiguous situations but requires more time
- Grounding differs in different media (Clark & Brennan, 1991)
 - e.g., easier to engage in clarification dialog by clicking than speaking

Social presence

(Short, Williams & Christie, 1976)

- Does it feel like someone else is there?
- Social presence should be greater when medium allows exchange of more social cues
 - FTF > video > phone > text
- Benefits of self-administering sensitive questions explainable (at least in part) by reduced social presence
 - R's seem to be less honest when talking with a person (i.e., live) than clicking in a CASI application (e.g., Tourangeau & Smith, 1998)
- However, Nass & colleagues (e.g., 1996) demonstrate people (can) react socially to inanimate objects like computers -- even line drawings
- R's seem to be no less honest when interface includes voice or photo of researcher than when reading (Tourangeau, Cooper & Hooper, 2001)
 - Why? Lack of motion? Lack of animacy?

Deception and self-disclosure

- "...a successful or unsuccessful deliberate attempt, without forewarning, to create in another a belief which the communicator considers to be untrue" (Vrij, 2000).
- People seem to lie differently in different media (e.g., Hancock, 2004)
 - telephone > FTF > IM > email
 - clearly lies do not increase with reduced social presence
 - One explanation is that text leaves a reviewable trace that could lead to discovery
- True vs. actual self (Bargh et al. 2002):
 - on-line interaction increases accessibility of "true self" (attributes one would like to express to others but is unable to) relative to "actual self" (attributes one believes one possesses and expresses to others); opposite true for FTF

Example 1: Survey Satisficing by Web Panel Members

- Web volunteer panels, now widely used, may promote R shortcuts
 - single digit response rates
 - veterans R
 - high break-off rates, especially on first page
 - many R complete as quickly as possible with minimal effort to earn rewards
- Interactivity of web may allow designers to reduce this less-than-optimal performance
 - on-line questionnaires make it possible to monitor R's performance
 - and provide feedback to motivate R and promote more conscientious behavior

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Web Intervention Experiment

(Conrod, Tourangeau, Couper & Kennedy, 2008)

- If R's answer too quickly to read questions,* given prompt:

"You seem to have responded very quickly. Please be sure you have given the question sufficient thought to provide an accurate answer. Do you want to go back and reconsider your answer?"

- RT = 100 msec per word

Experimental Design

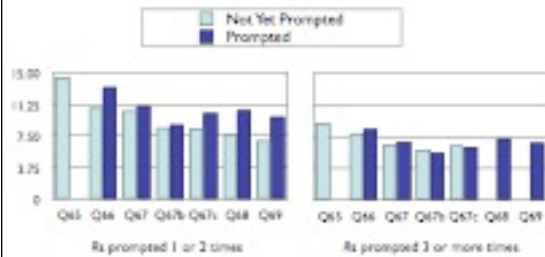
- R's (2563) randomly assigned to one of 3 conditions
 1. Prompts once (first time)
 2. Prompts every time
 3. No prompt
- Prompt based on RT for each of 7 questions requiring frequencies or other quantities:
 1. Overnight trips past 1 year
 2. Calories per day in past year
 3. \$\$ on alcohol per month
 4. # drinks last 7 days
 5. Binge drinks last 30 days
 6. Days in bed per year in past year
 7. Traffic tickets last 10 years
- Then 3 grid questions (self descriptions) to see if effect of prompt transfers to other less-than-optimal behavior

Prompting slows down responses



Rs vary in responsiveness to feedback:

Response Time in Seconds

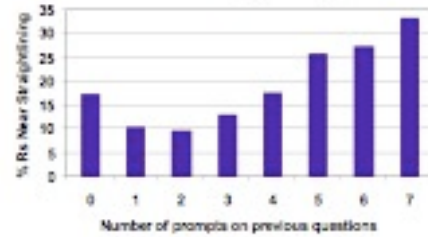


This group more likely to explain participation: "for the money"
(6)

Do effects of prompt transfer to other response tasks?

- Straightlining is tendency to select same response option (column) for all items (rows) in a grid format question
- Does chastening effect of prompt on RT transfer to straightlining?
 - ↳ If so, Rs receiving prompt should exhibit less straightlining

Effect of prompts after earlier questions on later straightlining



- Effect of earlier prompting on later straightlining is diminished if many items intervene between prompts and grids

Example 2: Conversational Grounding and Virtual Interviewers

- Does interviewing agent's ability to clarify meaning of questions affect accuracy?
 - do R's expect a virtual interviewer to be capable of providing clarification?
- Will virtual interviewer's visual realism affect R's?
 - likelihood of requesting clarification?
 - display of cues that clarification is needed?
 - engagement?

Virtual Interviewers

- Aka: Animated Agents, Embodied Conversational Agents
 - graphical interface objects usually with human-like form that can interact verbally with user, sometimes can gesture
 - e.g., Cassell, Sullivan, Prevost & Churchill (2000)
- Already in use in a number of production applications
 - Higher education: AutoTutor project
 - Help facilities on some web sites, e.g. IKEA's "Anna"
 - Gaming
 - Virtual environments like Second Life
 - WUs

IKEA's Anna



Dialog Capability vs. Visual Realism Experiment

(Conrad, Schober, Jans, Nielsen, Orłowski, Leverstein, 2008)

- 12 fact-based Qs from US gov't. surveys about housing, work and purchases
 - mundane, non-sensitive topics
- Rs answer on basis of fictional scenarios allowing us to assess accuracy
- Rs answer by speaking

Experimental Design

		Visual Realism	
		Low	High
Dialog Capability	Low	18	18
	High	18	19

number Rs per condition

Low Visual Realism



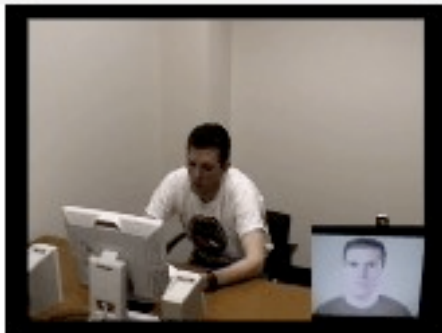
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High Visual Realism



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Low Dialog Capability

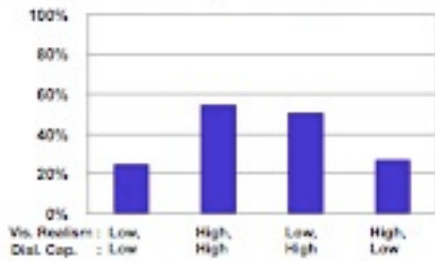


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High Dialog Capability

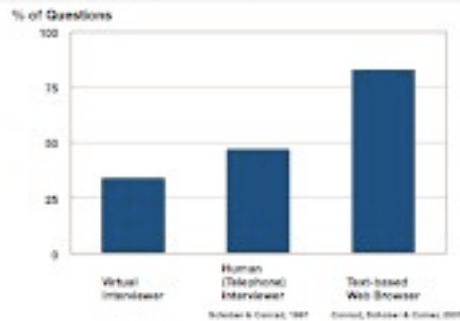


Response Accuracy for "Complicated" Cases



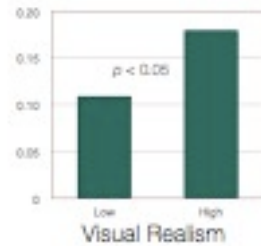
n = 18 or 19 Rs per condition

Requests for clarification from human IIs, virtual IIs and a text-based web browser



Visual Realism and Back Channels

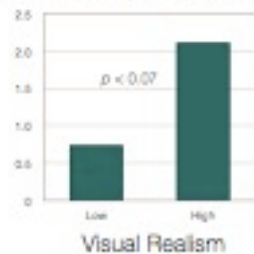
proportion Back Channels per turn



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Visual Realism and Smiles

Mean number of smiles per interview



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Example 3: Social Presence and Deception

- Does a Virtual Interviewer (VI) in a browser interface create social presence?
- If so, does it feel like a human interviewer is present?
- Are RIs as candid with VI as they would be under conditions of "pure" self-administration
 - e.g., textual web survey (e.g., Kreuter, Pressler & Tourangeau, 2009) or A-CASI (e.g., Tourangeau & Smith, 1996)
- or are answers more socially desirable when the questions posed by a VI than presented in text or recorded audio
- and if answers are affected by the presence of a VI is the effect as great as with a human interviewer

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Experimental design for study

Lind, Schaber & Conrad (2008)

- Between subjects design
- Four conditions
 - 1) Human interviewer, FTF
 - 2) Higher-end animated interviewing agent
 - 3) Lower-end animated interviewing agent
 - 4) A-CASI (Audio-only in browser)

Survey questions

- 42 questions selected from ongoing US government and social scientific surveys
- 7 domains
 - health and fitness
 - sexual health and behaviors
 - alcohol use
 - leisure activities
 - political activism
 - personal finances
 - altruistic behaviors

Questions

- Of the 42 questions:
 - 11 chosen because they had produced mode effects in large-scale surveys
 - more socially desirable answers when interviewer present (phone, FTF) than not
 - 15 chosen because Rs had been shown to engage in socially desirable responding when answering them
 - plausible that we would see mode effects
 - 16 “filler” Q’s included so that the survey felt cohesive
 - No mode effects expected

Participants

- 236 participants
- recruited from the NYC area
- 132 women and 103 men
- randomly assigned to 4 experimental conditions (~60 participants per condition)
- Mean age 31 years
- No significant differences among the groups for race, level of education, or experience with computers

VI with More Facial Movement (Social Cues)



Results

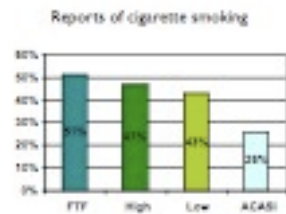
- Examine only Q's where FTF and ACASI reliably differ (13 of 26 possible)
- Three patterns
 - 1) Face-based conditions (i.e. FTF, high-end, and low-end) look similar to one another, but different from ACASI
 - 2) Linear trends, where answers in the virtual interviewer conditions fall in between those given in FTF and ACASI
 - 3) High social cue conditions (i.e. FTF and high-end) and low social cue conditions (i.e. low-end and ACASI) look different from one another

Face-based conditions produce similar -- probably more socially desirable -- results



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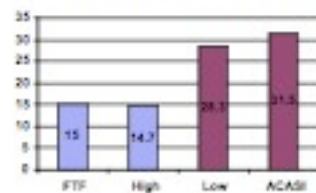
Answers to VIs fall in between FTF and A-CASI



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More Social Cues Produce Similar -- probably more socially desirable -- data;
 Fewer Social Cues Produce similar -- probably more truthful data

Number of sex partners since age 18



Uncharted territory

- Characteristics of automated interviewing systems are under researchers' control
 - demographics (age, race, gender), attractiveness, visual realism, vocal qualities (pitch), vocal realism, dialect
 - this is not the case with human interviewers -- you deploy the interviewers you have
- Makes it possible to match (or not) characteristics of interviewing agent to those of R
 - depending on your theory of social distance and how this affects answers
- How do these design decisions affect quality of answers?
 - Work currently underway (Conrad, Scholer, Nielsen & Jam)

Ability to control characteristics of virtual interviewer



Control over Characteristics of Interviewing System

- Possible to vary attributes such as race and gender and voice of virtual interviewer in deliberate way
 - ▶ e.g. to match – or mismatch – R's characteristics



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Virtual interviewer can be made similar to R

- Will reduced social distance lead to more honest answers to sensitive questions?
- Is there a tipping point after which too much similarity inhibits responding?
- I might be honest to a virtual interviewer who would be sympathetic to me
- Alternatively, I might be less likely to ask myself about this, that being different
- The point is, we need to investigate interviewing systems for which there is little precedent from existing practice or theory



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More Possibilities

- We can assign interviewing agents to R's that we believe will create a certain feeling for them
 - ▶ e.g., R will be more comfortable the more similar he/she is to I
- but what if R chooses I? Possible will be more comfortable with VI that looks/sounds different
 - ▶ interviewer effects literature has not addressed this
- Raises new questions about standardization:
- Much like the debate about standardizing words or meaning, we now can standardize the stimulus or the experience by tailoring interviewer system to each R
 - ▶ selecting the characteristics that create the same internal state for all R's
 - ▶ how might this affect their motivation and candor?

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Conclusion

- **Hard to predict what communication technologies will be available in a year or two**
 - human interviewers will never go away, e.g. certainly data collection situations like exit polls must be done FTP and require human judgment
- **but almost certainly our current notions of data collection mode will not be adequate**
 - e.g. if the interface is multi-modal, what is a mode effect?
- **Thinking theoretically about new technologies may help guide their adoption**
 - e.g. does the technology create a sense of social presence?
- **but our theoretical tools lag behind what new technologies will allow us to do**
 - e.g. what is the likely impact of allowing fb to choose appearance and voice of interviewing system?

Conclusion (2)

- **Those of us who evaluate methods can try to envision where interviewing will be in several years**
- **Those of you who design and implement methods will build the future of interviewing**

Thank You!