Developing a Research Framework for Usability in Online Surveys: Human-Survey Interaction

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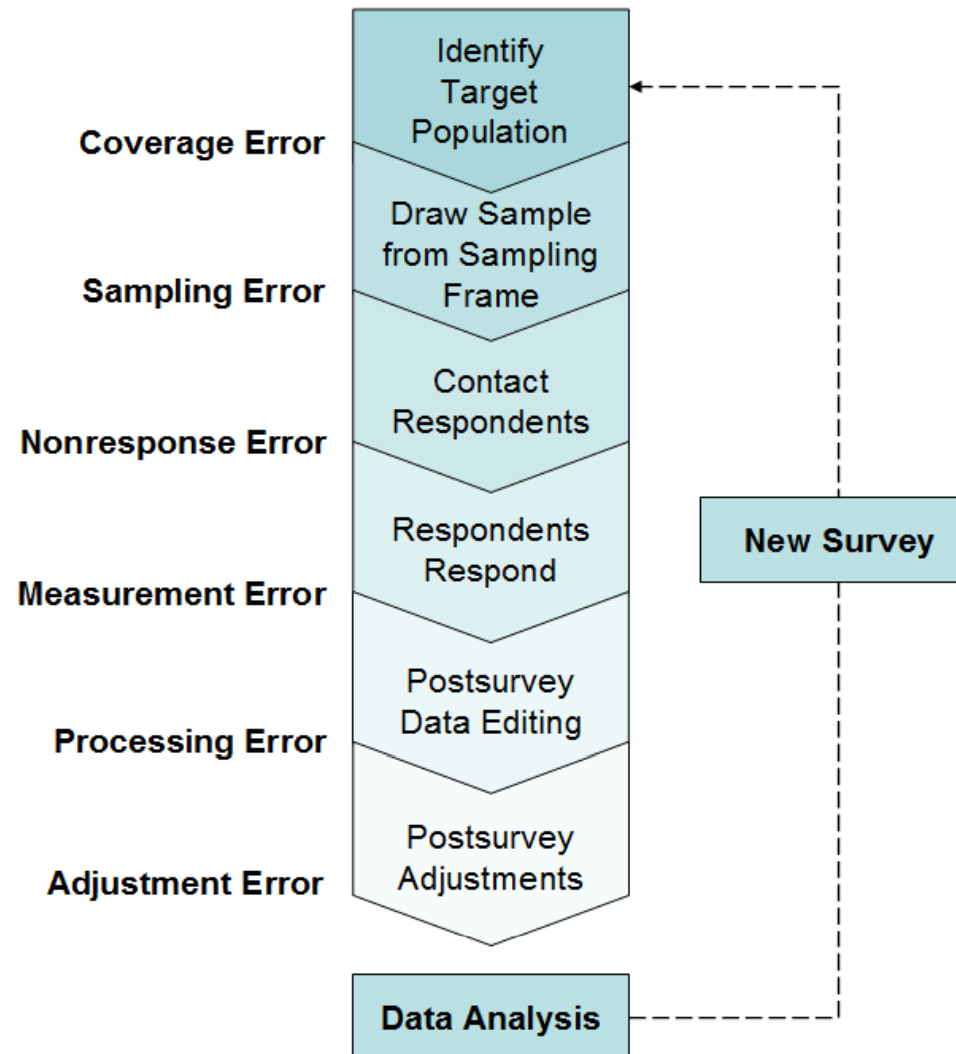
Outline

1. Topic and results
2. Interdisciplinary approach
3. Use of existing theoretical approaches and methods
4. Technological innovation
5. Circumstances that foster new research

1 Topic and Area of Research

The context of this work is in the survey life cycle within the total survey error perspective

Types of
Nonresponse:
1. Unit
2. Item
3. Partial
   (dropout)

Coverage Error

Sampling Error

Nonresponse Error

Measurement Error

Processing Error

Adjustment Error

Identify Target Population

Draw Sample from Sampling Frame

Contact Respondents

Respondents Respond

Postsurvey Data Editing

Postsurvey Adjustments

New Survey

Data Analysis

Improving Human-Survey Interaction
Results Summary

- ➲ Concepts and methods of usability research lead to higher data quality in surveys in terms of reduced nonresponse.

- ➲ High usability fosters successful human-survey interaction, reduces interaction errors, thereby preventing loss of motivation.

- ➲ (1) Avoid additional unit nonresponse and ensure accessibility by relying on widely available technology for online survey implementations.

- ➲ (2) Reduce item nonresponse with visual feedback during the answering process.

- ➲ (3) Reduce dropout with meaningful feedback about the survey progress.

Benefits and cost effectiveness

- Fancy flash-design can increase nonresponse by at least 6%.
- Visual feedback increases substantial answers up to 4%.
- Progress indicators show an effect size of up to 8.8% higher response rate compared to problematic but common implementations.
- Usability has a high cost-effectiveness, for example compared with incentives
  - A meta-analysis with lottery (~$115) showed no positive effect (Göritz, 2006).
  - 0,9% higher response with a $10 incentive per person would amount to $10000 for 1000 respondents (cf. Singer, 2002).
- In addition: positive effects on soft factors such as satisfaction, perceived time flow and perceived burden.
- These findings can be extended to online forms

Interaction Example: Auto-Forward

- Should online surveys use an auto-forward feature for questions which only require a single response?

  "I can always manage to solve difficult problems if I try hard enough."
  not at all true, hardly true, moderately true, exactly true

- Assumptions for ‚yes': Respondents would only require a single click instead of an additional click on the next-button. The survey is faster and respondents have a better experience of flow.

- Assumptions for ‚no': Respondents have more difficulty in changing their answer because they have to go back to the previous screen.

What paradata shows: Changes in Answers

- Data: Two grid questions with 10 items each in the LISS panel, n=2488

- Grid A: general self efficacy scale

- Grid B: personality items.

- 40% changed their answer at least once

- 60% = 0

- 21% = 1

- 10% = 2

- 9% > 3

- Auto-forward after a click is not such a good idea after all.

Example: Non-reactive data collection of paradata

- General Social Survey in Germany, ALLBUS 2008 Online-Follow-Up Initial register-based sample and f2f survey
- n=258 (76%) agreed to technical collection, 81 respondents declined
- Data collected March–April 2009, data accuracy +-2.8% or better
- 98,5% had a screen width >= 1024 pixels
- 47% IE, 42% Firefox
- 32% Dialup, 47% DSL
- 69% WinXP, 22% WinVista, <2% MacOSX
- >99% JavaScript, 97% Flash
- 75% Quicktime, 64% Realplayer, 49% Windows Media Video
- 99% Java, 49% VB Script / Active X
- 94% Adobe Acrobat

2 Interdisciplinary approach, Concepts from

- Survey methodology
    - response burden
    - answering process
    - satisficing
- Cognitive psychology
    - Gestalt principles
    - visual design
- Usability
    - human-computer interaction
- Technology
    - online surveys
    - programming languages for Web pages

Resulted in the framework
Human-Survey Interaction
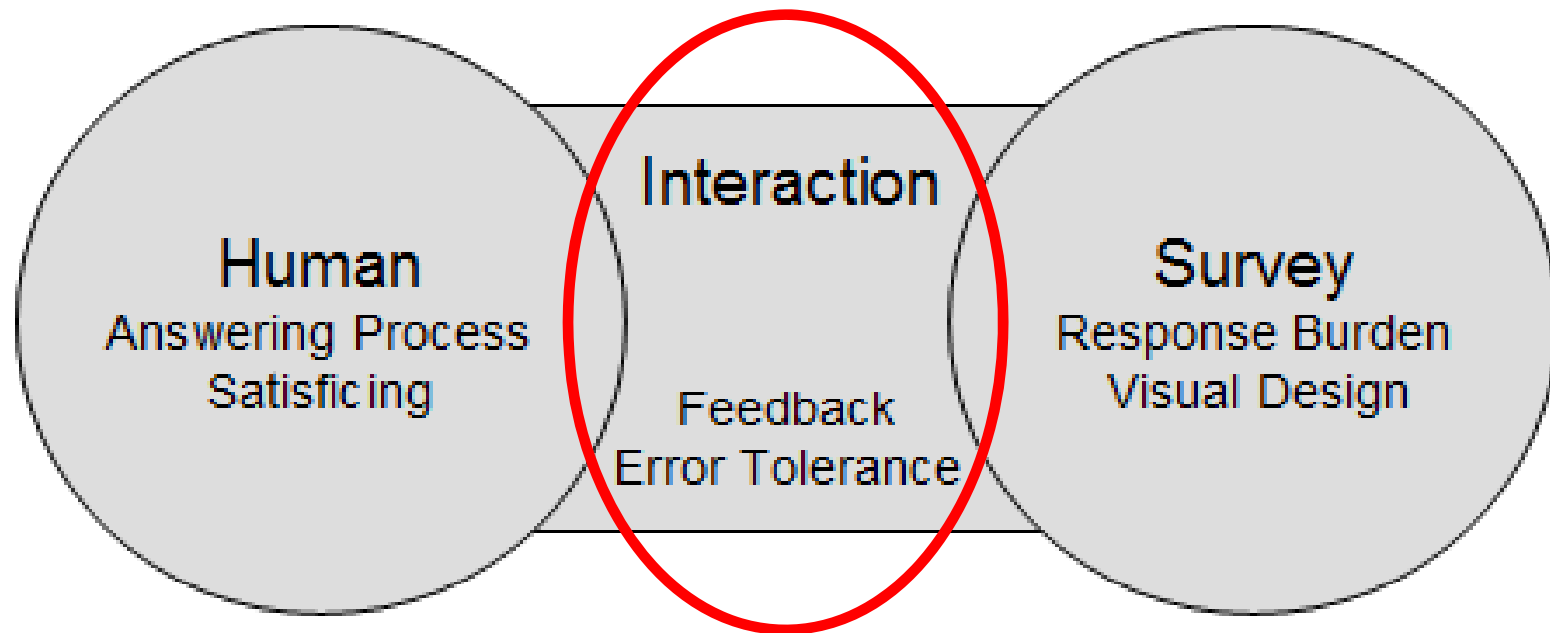
Criteria: nonresponse, changes in answers, nondifferentiation, satisfaction, perceived burden, …

3 Use of existing theoretical approaches and methods

- Identifying overlap and central topics
- Identifying research areas

Usability in Online Surveys

- Usability is a part of surveys (Dillman, 2007; Hansen & Couper, 2005)
- Usability principles proposed by authors from different fields
    - Design of everyday things (Norman 1988)
    - User interface design (Shneiderman 1998)
    - Website usability (Nielsen 1993, 2005)
    - Usability in computer-assisted interviewing (Couper 1994)
    - Dialogue Principles (ISO 9241-110, 2006)
- All approaches overlap in terms of
    - **Error tolerance**
    - **Feedback**

4 Technological innovation

- New features in online surveys are often technically driven and programmed by people without methodological education
- Survey methodologists have to catch up with existing practices
- Research is needed to convince that some common practices produce less than satisficing data quality
- Review and assessment of features in online survey software
  (Kaczmirek, L., 2008, Internet Survey Software Tools, in N. Fielding, R. Lee, & G. Blank (eds.), *The Sage Handbook of Online Research Methods*, London: Sage, pp. 236-254.)

- The need for robust and non-reactive criteria of data quality lead to the development of a universal client-side paradata (UCSP) collection tool
  - Easier and faster implementation allows faster research cycles
  - Standardized output variables
  - Also collects behavioral data which was not anticipated, e.g. missed clicks on non-existing elements on a Web page

5 General circumstances that foster research

- Living the output stages: report, conference, manuscript
- Networking in professionel associations, conference organization, reviewing, several book projects
- Consultation services and teaching
- Peer colleagues in the same career position
- Mentoring and research team
- Further training and special courses
- People that keep work of others away from you
- Informal but regular meetings, tea time
- Available student assistant
- Administrative and infrastructure support, e.g. funding for presentations

How can methodological research be innovative?

- **Many research cycles**

  Instead of conducting a few big surveys, online surveys allow for very fast research cycles, e.g. from programming to data in SPSS within one week.

- **Thinking in experiments**

  Trial and error approach is feasible, many more experiments than make it into papers, e.g. 6 surveys with experiments out of 16

  A single survey can include many methodological experiments

- **To be open for cooperation with others is key**

  methodological research can be conducted in cooperation with topical research: A single survey but 2 research goals

- **Utilize methods and data collection modes that grow**

  The share for online interviewing grew from 5% in 2002 to 31% in 2008 for the generated turnover of member institutes of the German market research association (ADM, 2008)

  Online research is the least expensive mode of data collection in most of Western Europe, the United States, Japan, and Australia (Global Prices Study, ESOMAR 2007)

Acknowledgment

- The research is published in
    - Kaczmirek, L. (2009). *Human-Survey Interaction: Usability and Nonresponse in Online Surveys*. Cologne: Halem Verlag.
    - Das, M., Ester, P., & Kaczmirek, L. (Eds.). (in print, 2011). Social and Behavioral Research and the Internet: Advances in Applied Methods and Research Strategies. Oxford: Taylor and Francis.
    - Kaczmirek, L. (2008). Internet Survey Software Tools, in N. Fielding, R. Lee, & G. Blank (eds.), *The Sage Handbook of Online Research Methods*, London: Sage, pp. 236-254.
- Related work can be found at www.kaczmirek.de

- Several of the studies were only possible with the cooperation and help of many others. The full acknowledgment can be found in www.kaczmirek.de/ebook2008/