Optimizing Response Rates in Online Surveys

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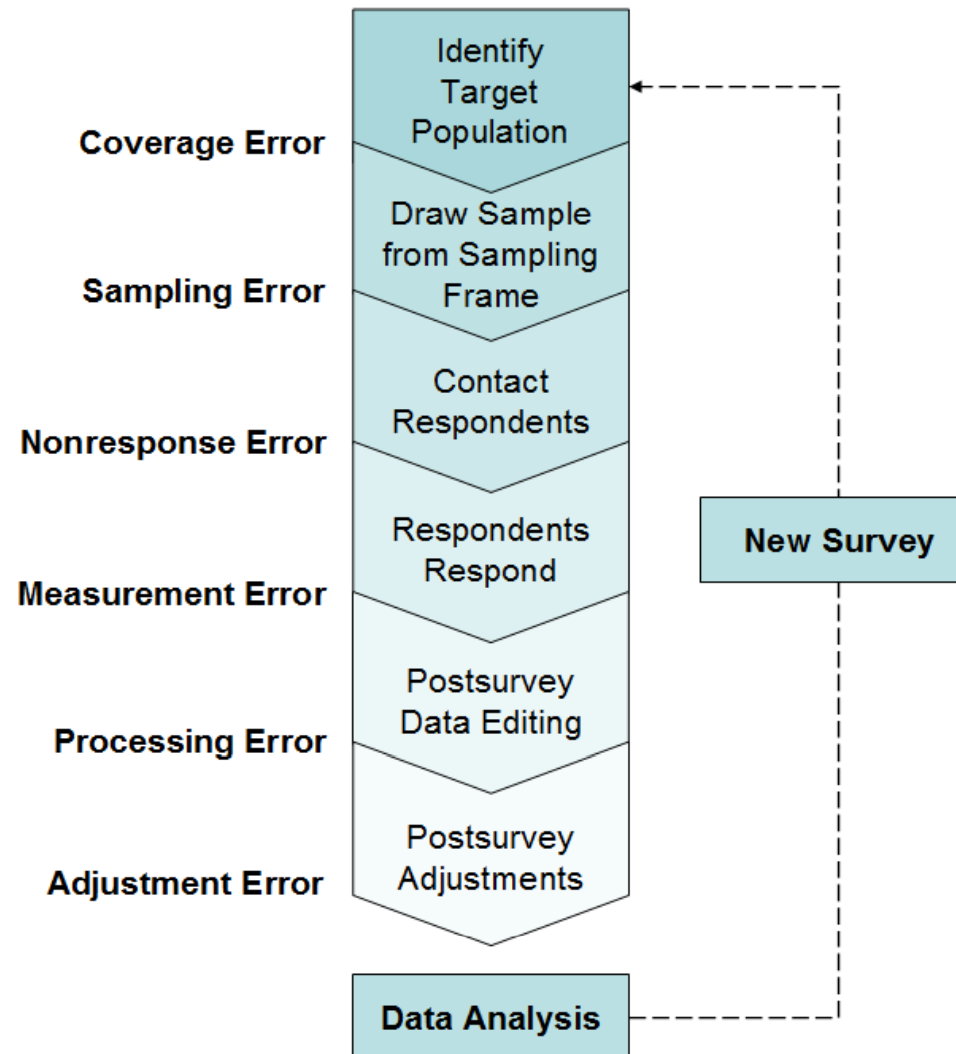
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Acknowledgment

- The results presented today have been 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.
- 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/

- Some of the pages in this pdf are not shown correctly because the original includes animated slides.

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

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

Coverage Error — Identify Target Population

Sampling Error — Draw Sample from Sampling Frame

Nonresponse Error — Contact Respondents

Measurement Error — Respondents Respond

Processing Error — Postsurvey Data Editing

Adjustment Error — Postsurvey Adjustments

New Survey

Data Analysis

Improving Human-Survey Interaction
Take Home Message

- Higher survey usability decreases survey error.
- This talk is about reducing three nonresponse types: unit nonresponse, item nonresponse, partial response (dropout)

- Summary:
    - New technologies can substantially increase nonresponse.
    - Appropriate survey interaction can increase item completion rates by 4% beyond standard procedures.
    However, bad feedback can reduce completion rates by 6%.
    - Progress indicators can cause up to 8.8% higher response rates compared to problematic but common implementations.

Outline

1. Usability in online surveys
2. Unit nonresponse: Error tolerance and accessibility
3. Item nonresponse: Using feedback to increase item response rates
4. Dropout: Using feedback to increase survey completion rates
5. Summary
6. Discussion

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**

Human-Survey Interaction
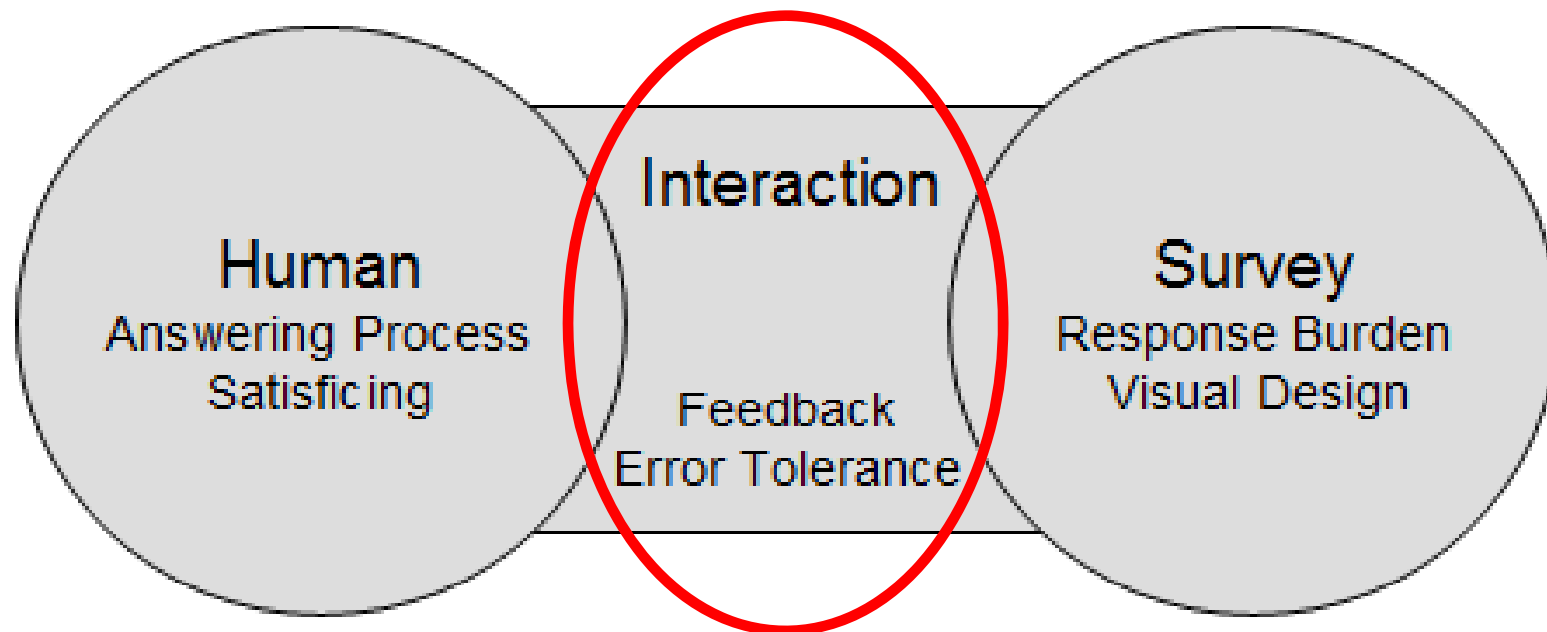
Interaction Example: Changes in Answers

- 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

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

Nonresponse 1, unit nonresponse: Accessibility and error tolerance

- How high is nonresponse for different technologies?
- Sample: all student applicants at the University of Mannheim between 2005 and 2006 (n=29014)
- JavaScript   99.5%
- Java   95.6%
- Flash   93.7%

48

0   100
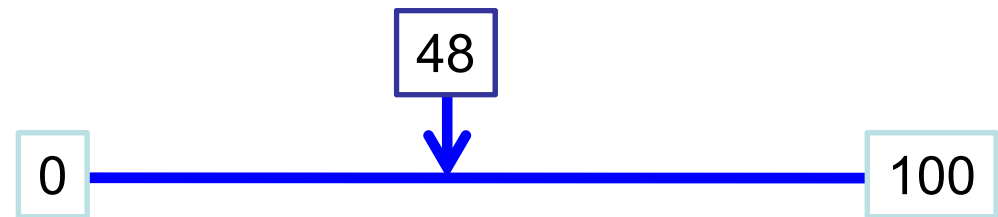
e.g., implementing a visual analog scale

➲ Using low coverage technology increases nonresponse
➲ JavaScript should be preferred

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
- Non-reactive data collection with www.etracker.com
- 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
- 95% German browser, 3% English browser

- >99% JavaScript, 97% Flash
- 75% Quicktime, 64% Realplayer, 49% Windows Media Video
- 99% Java, 49% VB Script / Active X
- 94% Adobe Acrobat

Validation in other samples

- 2nd sample: Online-follow-up of the face-to-face General social survey in Germany (probability sample)
- ➲ JavaScript 99.7%, n=386

- 3rd sample: Market research panel, number of respondents chosen according to known distributions of gender, age and education in full population
- ➲ JavaScript 99.1%, n=588

- 4th sample: LISS panel in the Netherlands (probability sample)
- ➲ JavaScript 99.4%, i.e. 15, n=2405

- ➲ The recommendation for JavaScript holds in a variety of settings.

Nonresponse 2, item nonresponse:
Using feedback to increase item response rates

Experiment: Focusing on Available Answers

- Goal: Enhance visibility of available answers

- Manipulation 1: A blue cross highlighted the row and column at the position of the mouse pointer

- Manipulation 2: For an answered item, the whole row turned into a darker grey.

Condition 1: white background

	sehr wichtig	
E-mails verschlüsseln	○	◉
Festplattendaten verschlüsseln	◉	○
Javascript deaktivieren	○	○
Popups verhindern	○	○

Legend

① lightgrey color
② lightblue color
③ darkgrey color

without focus cross

Condition 2: striped layout, no feedback
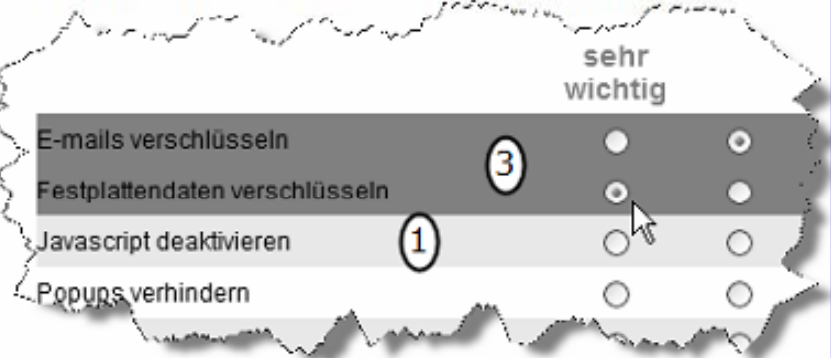
without greyout

		sehr wichtig	
E-mails verschlüsseln	①	○	◉
Festplattendaten verschlüsseln		◉	○
Javascript deaktivieren		○	○
Popups verhindern		○	○

with focus cross

Condition 4: pre-selection feedback

		sehr wichtig	
...üsseln	①	○	◉
...en verschlüsseln		◉	○
...aktivieren	②	○	○
...dern		○	○
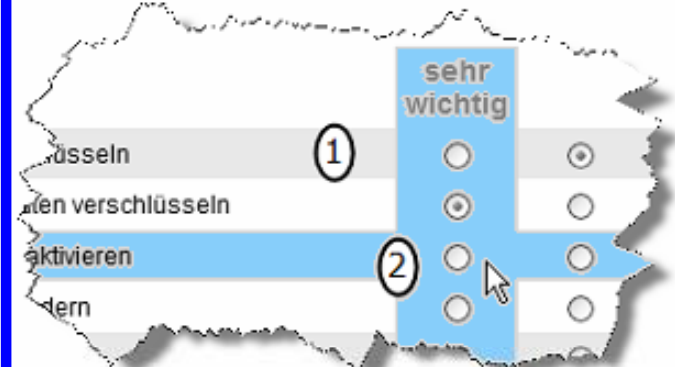
Condition 3: post-selection feedback

with greyout

		sehr wichtig	
E-mails verschlüsseln	③	○	◉
Festplattendaten verschlüsseln		◉	○
Javascript deaktivieren	①	○	○
Popups verhindern		○	○

Condition 5: pre- and post-selection feedback

		sehr wichtig	
...chlüsseln	③	○	○
...en verschlüsseln		◉	●
...aktivieren	②	○	○
...indern		○	○

Experiment: Study Profile

- Topic: Security in the Internet
- Language: German
- Length: Short, 13 pages, 47 items
- Sample: 4987 invitations to selfrecruited panel Sozioland of the Respondi AG
- Response: 2003 started, 1581 completed (78.9%)
- Manipulation: Randomized assignment to 5 conditions
- Exp. questions: grid layout, rate the importance of 16 possible measures to enhance the security in the Internet, 2 warm-up grids before
- Gender: female 54.5%
- Average age: between 25 and 29 years

Experiment: Results

	Standard					
	White	**Striped**	**Grey**	**Cross**	**Both G&C**	Total
Completed	303	317	351	279	347	1597
% within	83.0%	86.1%	88.2%	80.6%	86.1%	84.9%
Total	365	368	398	346	403	1880

White vs. Greyout: n = 763, χ2 = 4.2, p = .04

- The previous experiment used strong feedback techniques and big visual changes

- This might have interfered with the task

- The next experiment followed a more subtle approach and combined pre-click and post-click feedback

Experiment: Enhancing Answer Options

- Goal: Test the combined effect of enhanced usability

- Manipulation: Pre- and post-selection feedback

- Combining pre-selection light-blue highlighting with post-selection greyout and enlarged clickable area

Experiment: Study Profile

- Topic: Age Differences in Relationships
- Language: German
- Length: Short, 17 pages, 20 questions
- Sample: unrestricted online poll
- Response: 459 completions (64.8%)
  708 clicked on invitation
- Manipulation: Randomized assignment to 2 conditions
- Exp. questions: grid layout, 2 questions with 8 items each on a 5-point agree-disagree scale
- Gender: female 64.6%
- Age: mean age was 50.8

Experimental Design and Results

Bitte geben Sie auch zu den folgenden Aussagen an wie sehr Sie diesen zustimmen oder diese ablehnen.
Jeder Satz bezieht sich auf Beziehungen mit großem Altersunterschied, unabhängig davon welcher der beiden Partner der Jüngere ist. Geben Sie bitte eine Antwort pro Aussage.

	stimme sehr zu	stimme zu	teils/ teils	lehne ab	lehne sehr ab
Ein jüngerer Partner kann im Krankheitsfall den Älteren länger unterstützen.	⊙	○	○	○	○
Ein älterer Partner bietet finanzielle Sicherheit.	○	⊙	○	○	○
In einer Beziehung mit einem großen Altersunterschied haben die Partner zu unterschiedliche Interessen.	○	⊙	○	○	○
In Beziehungen mit großem Altersunterschied sind tiefgehende Gespräche nicht möglich.	○	○	○	○	⊙
Ein jüngerer Partner ist unternehmungslustiger, offener und ausgelassener als Partner gleichen Alters.	○	○	⊙	○	○
Jüngere Partner sind körperlich attraktiver.	○	○	⊙	○	○
Wenn die Frau jünger ist als der Mann, ist es besser für die Beziehung.	○	○	○	○	○
Ältere Männer erfahren mit einer deutlich jüngeren Partnerin Bestätigung durch die Gesellschaft.	○	○	○	○	○

- With feedback 95.5% complete answers vs. 92% without feedback

- $n = 459$, $\chi^2 = 3.0$, $p = .04$

⮕ Visual feedback during the answer process eases survey participation and increases the number of complete answers

Experiment: Full-factorial design in 2008

- Goal: Decision experiment

- Manipulation:

    - Pre-Selection Feedback: None, Box, Row

    - Post-Selection Feedback: None, Box, Row

- Response rate 71.5%

- For analysis 9 conditions, with approx 250 per condition, n = 2488

- Data: LISS panel, CentERdata, the Netherlands (probability sample)

Implemented Design

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

Better highlight a complete row than a single cell

Pre-Selection Feedback	None	None	None	Box	Box	Box	Row	Row	Row
Post-Selection Feedback	None	Box	Row	None	Box	Row	None	Box	Row
Item Nonresponse	9.6	7.9	5.7**	12.2**	12.9	9.8	7.7	8.6	**5.6**
Changes in Answers	37.6	42.9	37.4	51.0***	38.4	55.3	**31.6***	39.4	**31.8**
Nondifferentiation A	64.6	66.0	67.8*	68.9*	66.3	64.7	67.0	63.0	**63.5**
Nondifferentiation B	34.6	34.2	33.7	34.5	33.9	34.1	**33.2**	35.1	**33.2**

Nonresponse 3, dropout: Using feedback to increase survey completion rates

Feedback to Increase Survey Completion Rates

- Feedback on progress of the survey should motivate
- Examples:

54%	

8 / 16		50%

- progress = current page / amount of pages
- Until recently contradicting results in experiments with progress indicators were published
- No effect (Heerwegh, 2004)
- Negative effect (Crawford, Couper, & Lamias, 2001)
- Positive effect (Couper, Traugott, & Lamias, 2001)
- Visual jumping progress bars due to filter questions are problematic

Solution

- A dynamic calculation approach to progress indicators

The value of providing feedback, theoretically…

1. True feedback on progress should be best, i.e. result in highest completion rates.
2. Dynamic calculation approach: not perfectly true but without jumps
3. No progress indicator is better than
4. Jumping progress indicators, i.e. misleading feedback.

Experiment: Study Profile

- Topic: Cooking
- Language: German
- Length: Short, 30 pages, 2 times a 5 page skip = 20 p.
- Sample: Sozioland
- Response: 1091 started, 620 completions (56.8%)
 759 in the experiment
- Manipulation: 4 types of progress calculation
- Gender: female 66.5%
- Age: 19-29 (35%), 30-39 (26%)

Experimental Design

Survey with 30 pages, including two filter jumps

True progress, continuous, not possible in real surveys

Dynamic calculation, increasing

No progress bar

Jumps, current standard, progress bar jumps over filter questions

True progress, continuous, not possible in real surveys

Dynamic calculation, increasing

No progress bar

Jumps, current standard, progress bar visibly jumps over filter questions

Results as expected

n=759	Jumps	No progress	Dynamic	True
dropout	47	32	33	24
complete	158	158	161	146
dropout	22.9%	16.8%	17.0%	14.1%
complete	77.1%	83.2%	83.0%	85.9%
Total	205	190	194	170

- 8.8% difference is significant, $\chi^2 = 4.7$; p = 0.03
- ➲ Hitherto contradicting experimental results can now be explained with different implementations
- ➲ Investment in good progress indicators pays off in terms of higher completion rates

Summary of Studies

- ⮑ 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.

Discussion

- 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