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What is the impact of mode effect on non-response survey usability?

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Content

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  - Non-response surveys in the Swiss context
- Data:
  - 4 international surveys conducted in CH (ESS2006 and 2010, EVS 2008 and MOSAiCH (ISSP) 2011)
- Methods and approach to test the usability of NR-surveys
- Results
- Conclusion

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Non-response surveys in the Swiss context

- Surveys conducted after the main surveys (more or less 2 to 6 months later)
- Questionnaires sent by mail to non-respondents (+control groups of respondents)
- Can be filled rather rapidly, contains questions from the main survey
- Problem: Before comparing respondents and non-respondents, take into account the different modes (CAPI / mail survey, social desirability) and other possible effects (time,changes/inversion of the scale)

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Data

- ESS 2006 and 2010 (European Social Survey)
- EVS 2008 (European Values Study)
- MOSAiCH 2011 (Measures and Sociological Observations of Attitudes in Switzerland- Comprising the Swiss version of the International Social Survey Programme)

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Data – Differences and similarities

- Differences between the studies:
  - Topics
  - Time framework (summer/winter),length of the fieldwork
  - Sampling frame and design(telephone numbers, postal addresses, Person register from the SFOS, two-stage cluster sampling vs simple random sample)
- Similarities:
  - CAPI, length of questionnaires, same survey agency
  - Fieldwork strategy (refusal conversion, Telephone contact after 5 face-to-face attempts for non-contacts)

Data – Response rates

Comparison of sample sizes, percentage of ineligibles and response rates for the main surveys

	ESS2006	EVS2008	ESS2010	MOSAiCH2011
Sample units	3710	2970	2850	2409
Ineligibles	257 (7%)	113 (4%)	37(1%)	129(5%)
Completed Interviews	1804	1271	1506	1212
Response rates/without ineligibles	52.2%	44.5%	53.5%	53.2%

Data – NR-surveys some numbers

Composition of the respondent group to the non-response survey and response rates

	ESS2006	EVS2008	ESS2010	MOSAiCH2011
Non-respondents (w invalids)	1906	1699	1344	1197
Sent questionnaires	1792(1492)	1854(1654)	1347(1047)	1195(995)
Questionnaires returned	1008	921	850	653
Ineligibles	25	9	1	37
Completed Interviews	249(300)	159(200)	267(300)	179(200)
Non-respondents	724	753	582	436
Response rates to NR-survey all	56.3%	49.7%	63.3%	62.4%
Response rates to NR-survey non-resp.	50.2%	45.0%	55.7%	47.5%
Cumulative RR/without ineligibles	73.5%	70.8%	74.2%	72.3%

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Methods

- As a first step, we recode the different variables (going from yes/no to 11-scale answer) in variables with 2 or 3 categories
- We can then compare results from the respondents to the main survey to the results from the non-respondents who returned the non-response survey questionnaires.

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Differences between respondents and non-respondents

	ESS 2006		EVS2008		ESS2010		MOSAiCH2011	
	NR	R	NR	R	NR	R	NR	R
Alone: yes	26.2	30.9*	28.9	18.4***	20.0	17.9	19.1	18.0
Partner							66.2	93.6***
Fix: yes					83.7	90.6***	82.7	88.3**
Registered in directory					79.5	94.8***	74.7	90.8***
Importance friends			51.2	63.1***				
Survey useful					81.2	94.6***	47.3	74.4***
Work: yes	54.4	54.6	70.5	63.6**	57.0	57.8	66.3	61.3
Full time							83.1	73.6***
Education : High	21.3	24.5	19.0	24.2**	32.2	29.4	35.8	28.6**
Social activity: more often	57.8	63.8**			18.0	18.0		
Gender: Male	45.7	45.2	49.3	46.1	45.2	51.3*	43.9	50.9**

Differences between respondents and non-respondents statistically different: *p<0.05, **p<0.01,***p<0.001

Differences between respondents and non-respondents

	ESS 2006		EVS2008		ESS2010		MOSAiCH2011	
	NR	R	NR	R	NR	R	NR	R
Happy					36.7	26.2***		
Unhappy					32.3	38.2***		
Happy last 4 weeks							74.0	83.0***
Satisfy in democracy:no	53.6	35.5***					20.5	14.2**
low					8.8	5.7***		
high					57.4	69.7***		
Immigration: better	30.1	36.5**			26.1	29.2***		
worse	32.5	25.4**			29.1	11.8***		
Too many foreigner			81.1	65.1***				
Better chanc. for foreigner							28.5	43.9***
Swiss							41.8	19.6***
Political interest	54.9	57.7			58.2	58.9	52.0	58.2*

Differences between respondents and non-respondents statistically different: *p<0.05, **p<0.01,***p<0.001

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Difference between respondents and non-respondents

- Many variables show statistically different results between respondents and non-respondents in their social live(Household composition, working hours) and mainly their opinion (survey useful, immigration, etc).
- Assumption: These differences are due to the different characteristics between respondents and non-respondents.
- BUT these differences could also be due to mode or other effects . Ex. Survey useful, trust in others suffer from social desirability

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Methods

- We can use the control group of respondents to the main and to the non-response survey to assess the consistency of the answers.
- Therefore:
  - Compare the distribution of answers between main and non-response surveys (paired t-test)
  - Check the correlation between answers to the main and non-response surveys

Paired t-test

We report here only the mean of the differences for the variables for which the paired t-test showed a statistically significant difference between the results of the main and the non-response survey

	ESS 2006	EVS 2008	ESS 2010	MOSAiCH 2011
Education	-0.02	0.03	0.06*	0.12**
Voluntary work	0.11**			
Immigration	0.00	0.09**	-0.10*	
Better chances for foreigners				-0.27***
Survey useful			<0.01	-0.12**
Happy			-0.16**	
Health			-0.13***	
Health in the last 4 weeks				-0.13**
Registered landline			0.08***	-0.04
Support in daily task				0.10*
Importance Friends		-010**		
People stick to own affairs		-0.11**		
Safe at night	-0.02		-0-08**	

Differences between response to the main and non-response survey: *p<0.05, **p<0.01,***p<0.001

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Paired t-test

- These “shifts” in the response patterns of the respondents can be explained by a mode effect (e.g., social desirability), sometimes a change of scale in the categories, time effect (e.g. political events), etc
- Correct these shifts by recoding the original answer to the NR-survey in a appropriate way.(If the categorical variables can be considered as having an underlying continuum)

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Paired t-test

- In multiple cases, we cannot correct for the shift:
  - The categorical variables cannot be considered as continuous: “Feeling safe at night”, “Registered in directory”, “Political interest”, ”Survey useful”, “People stick to own affairs”, “Importance of friends”, ”Immigration” (EVS). All those variables were yes/no answers or 4/5-levels categories.
  - The categories used in the main and non-response survey differed: ”Education” ,”Trust”(EVS)
- These variables have to be used with extreme caution when comparing respondents to non-respondents

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Correlations

- To complete our consistency check, we calculate the correlation (Spearman) between the main surveys and the non-responses survey data.
- In case, a shift has been corrected we used the corrected variables

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Correlations

	ESS 2006	EVS 2008	ESS 2010	MOSAiCH 2011
Age	>0.9	>0.9	>0.9	1
Alone	0.8	0.9	0.8	0.9
Children				>0.9
Work	0.8	0.7	0.8	0.8
Education	0.8	0.5	0.5	0.6
Fix phone			0.6	0.8
Importance family		0.7		
Unsafe at night	0.7		0.4	
Importance religion		0.6		
Political interest	0.5	0.6	0.6	0.4
Registered in directory			0.6	0.6
Health			0.6	
Full time				0.6
Trust in others	0.5	0.1		0.5
Immigration	0.4	0.4	0.5	
Importance work		0.5		
Importance leisure		0.5		

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Correlations

	ESS 2006	EVS 2008	ESS 2010	MOSAiCH 2011
Importance Politics		0.5		
Partner				0.5
Better chanc. for foreigner				0.5
Satisfy in democracy	0.4		0.5	0.2
Social activity: more often	0.4		0.4	
Survey useful			0.4	0.0
Happy			0.4	
Duty to follow Police orders			0.3	
Health last 4 weeks				0.2
Happy in the last 4 weeks				0.1

- Variables with a correlation of less than 0.4 are considered not reliable enough
- The level of variation can differ from survey to survey. This can be due to: different sample design or fieldwork, more or less time between main and NR survey, scale inversion or not for NR survey, external events, topic of the survey

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Reliability of non-response variables

- Some of the variables which displayed a statistically significant difference between respondents and non-respondents have shown after to suffer from inconsistency in the answers given to the main and the non-response survey.
- It is impossible to disentangled if the difference comes from “real” difference between the respondents and non-respondents or is due to the mode/time effect…These variables should not be used.

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Do we loose usability?

- We compare for each survey the Nagelkerke R^2 of the logistic regression with dependent variable y=whether the individual responded (=1) or not (=0)
- ESS 2006: y ~ **satisfy in democracy**, **immigration**, trust in others, political interest, watch tv, **trust in politics**, **safe at night**, **social activity**, **age**, education, **alone,** gender, work, voluntary work

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Do we loose usability?

- EVS2008 ~ **gender**, **age, education, work, alone, trust, political interest, immigration, importance of work,** importance of family, **importance of friends, importance of leisure, importance of politic**, importance of religion, report to justice, **stick to own affairs**
- ESS2010 ~ **satisfy with democracy**, **immigration**, trust in justice, political interest, **survey**, **science cam solve environmental problem**, **happy**, **health**, social activity, **safe at night**, work, age, **education**, alone, **gender, fix, directory**

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Do we loose usability?

- MOSAiCH2011~**gender**, age, **education**, work, **alone**, personal trust, political interest, satisfy in democracy, **immigration**, trust in education, **trust in health**, **worry about environment**, science has a positive effect, **survey**, **health**, happy**, support in day task**, **registered phone**, emotional support, **partner**, **full time job**, influence own life, **fix phone**

Do we loose usability?

Nagelkerke R^2

	All variables		Variables deemed reliable	
	Full model	Reduced model	Full model	Reduced model
ESS 2006	0.05	0.07	0.06	0.05
EVS 2008	0.28	0.27	0.08	0.08
ESS 2010	0.20	0.20	0.18	0.17
MOSAiCH 2011	0.44	0.41	0.28	0.28

- Depending on the study the lost in explaining power is more or less drastic.
- We can note that for EVS, a lot of the variables which had a statistically strong explaining power presented a shift that could not be corrected.
- MOSAiCH has the most variables with a low correlation

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Conclusion/questions?

- Summarized: gender, education*, work/full time, alone/partner, “social live”, immigration, satisfy in democracy, fix phone, registered fix phone
- When designing a non-response survey, one should keep in mind that some variables suffer from mode effect. Ex. Immigration or Duty to follow police order. When should we define a variables as not reliable?
- Having more questions on a same “theme” to construct latent variables rather than a lot of different variables which refer to different themes?
- Keep the answer categories the same and in the same order as far as possible?
- Keep a dimension related to the topic of the survey which could influence the composition of the respondent pool?

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Conclusion

- When designing a non-response survey, one should keep in mind that some variables suffer from mode effect. Ex. Immigration or Duty to follow police order.
- Having more questions on a same “theme” to construct latent variables rather than a lot of different variables which refer to different themes
- Keep the answer categories the same and in the same order as far as possible
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Thank you!