The Role of Respondent Motivation on Item Nonresponse for Split-Ballot Survey Data

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ESRA23 Conference
Boost that respondent motivation! 2

Milan Italy
July 20, 2023

Respondent motivation in surveys

- Respondent's willingness to participate surveys
- Respondent's understanding of survey questions
- Providing complete and accurate/truthful answers

are among the key factors for the quality of data as well as quality of surveys.

Respondent motivation in surveys

- Survey outcomes/estimates may be affected from respondent's feelings during the interview.
- A few studies focused on the close relationship between respondent motivation and quality of survey estimates (Blom and Korbmacher, 2013; Schaeffer et al., 2010; Groves et al., 2004).
- The impact of respondents in surveys is mostly observed in questions to measure attitudes, values, beliefs, and opinions rather than factual and knowledge questions.
- **Split-ballot designed questions may be more prone to item-missing data** while shortening the interview duration (Axenfeld et al., 2022).

Objectives

- To investigate the potential impact of respondent motivation on the item-nonresponse for a set of questions designed with the split-ballot technique
- (If any) to determine the size and direction of this relationship
- To present methodological suggestions to reduce item-missing and increase quality

Data source

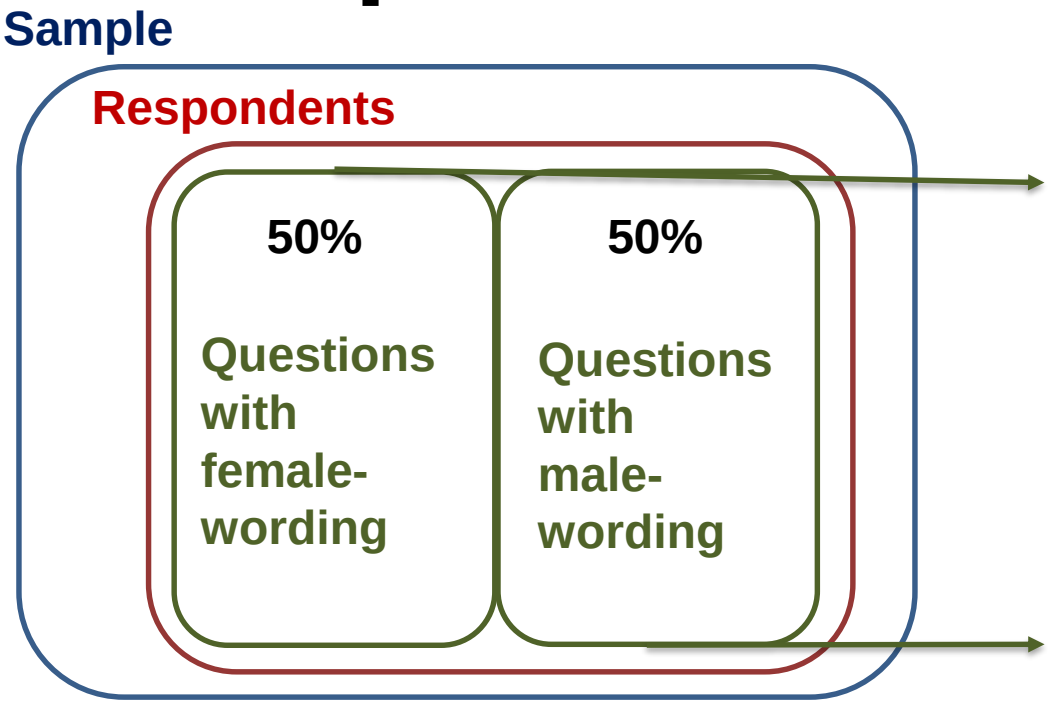
- The data comes from the ESS-Round 9 (2018)
- A biennial, cross-national, large scale social survey carried out in 29 European countries
- A wide range of topics (political attitudes, voting behaviors, immigration, religion, well-being etc.) (ESS, 2018).

- Complex sampling design (multi-staged, stratified, cluster surveys)

Data source

- In addition to individual data set, interviewer data set was also used for this study.
- Socio-demographics of the interviewers, information on interview settings and observations for respondents
- Merged data set through key variables; country codes and respondent identification numbers
- Selected countries are France, United Kingdom, Norway, Netherlands, and Portugal where strong relationships were found.

Split-Ballot method



e.g., *Before what age would you say a boy or a man is generally too-young to leave full-time education?*

e.g., *Before what age would you say a girl or a woman is generally too-young to leave full-time education?*

In the ESS9, the split-ballot design was used for the questions about social norms that may be affected from gender.

Selected questions

Ideal ages (7)	Too young/old ages (8)	Attitudes towards social norms (5)
Becoming adult	Leaving full-time education	If a person chooses never to have children
Reaching middle-age	Starting living with a partner without marriage	If a person lives with a partner not married to
Reaching old-age	Getting married	If a person has a child with a partner not married to
Starting living with a partner without marriage	Becoming a mother/father	If a person has a full-time job while children aged under 3
Getting married	Retiring permanently	If a person gets divorced while children aged under 12
Becoming a mother/father	Still, be living with partners	
Retiring permanently	Consider having more children	
	Working 20 hours or more per week	

Item-missingness

«Refused to answer», «Don't know», «No answer»

$$y_i = \begin{cases} 1, missing\ for\ i-th\ question\ (7(77), 8(88) or\ 9(99)) \\ 0, no\ missing\ for\ i-th\ question \end{cases}$$

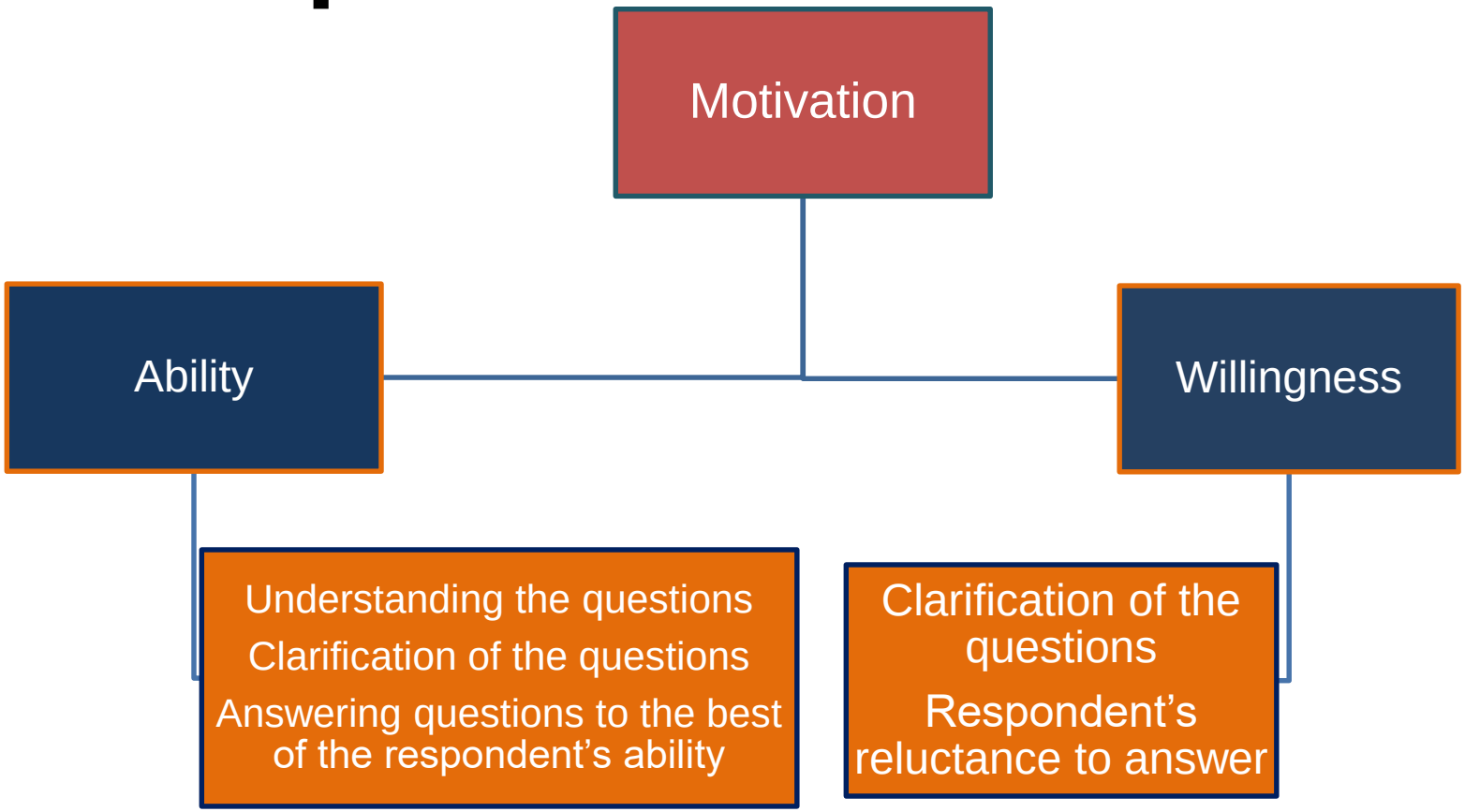
$$i = 1, \dots, 20$$

Rate of item-missing for each respondent

$$R_i = \frac{n_i}{20} = \frac{\sum_{i=1}^{20} y_i}{20} \qquad R_i \epsilon [0,1]$$

where n_i is the total number of missing cases among 20 questions designed with split-ballot technique.

Respondent motivation



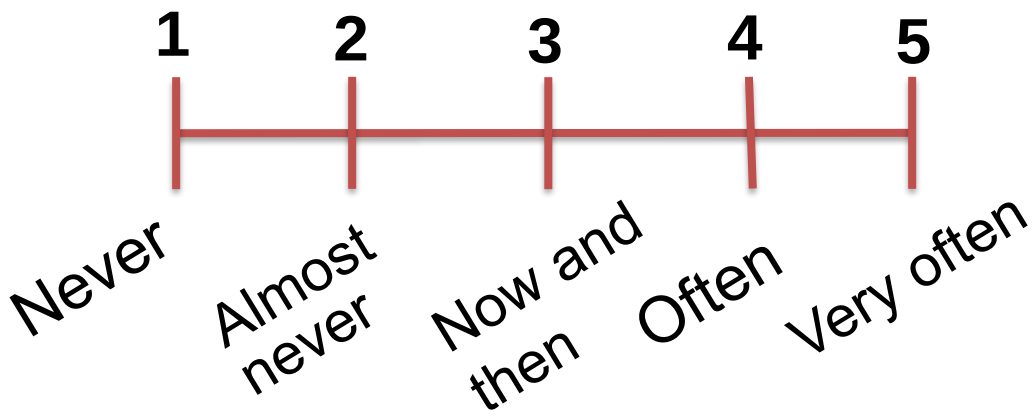
Respondent's willingness and ability were also established in various forms previously (Rogelberg et al., 2006; Wenemark et al., 2010)

Respondent motivation

The motivation score per respondent

$$ms = \sum_{i=1}^{4} z_i, \qquad z_i = 1, \ldots, 5 \qquad ms \in [4,20]$$

where z_i is the point-scale given by respondent for the i-th item, ranging from 1 to 5.



Analyses

Descriptive analyses

- *Correlation analysis* to examine the relationship between respondent motivation and item-level missingness (Pearson's correlation, Kendall's tau, Spearman's rho)

Multivariate analyses

- *Multiple linear regression modeling* with TSL estimation technique, adjusting the complex sampling design feature of the ESS9 (*svydesign*, *svyglm*)-country-based models and overall model
- *Wald-F test* and *regTermTest* to test bivariate relationships between predictors and item-level missingness
- Complex sampling design, R-Studio

Predictors

Motivation score

Low (4-11)
Middle (12-17)
High (18-20)

Respondent characteristics

Age

15-24
25-34
35-44
45-54
55-64
65 and older

Gender

Female
Male

Educational level

No educ./less than 11 years
11-14 years
15 years and higher

Interviewer characteristics

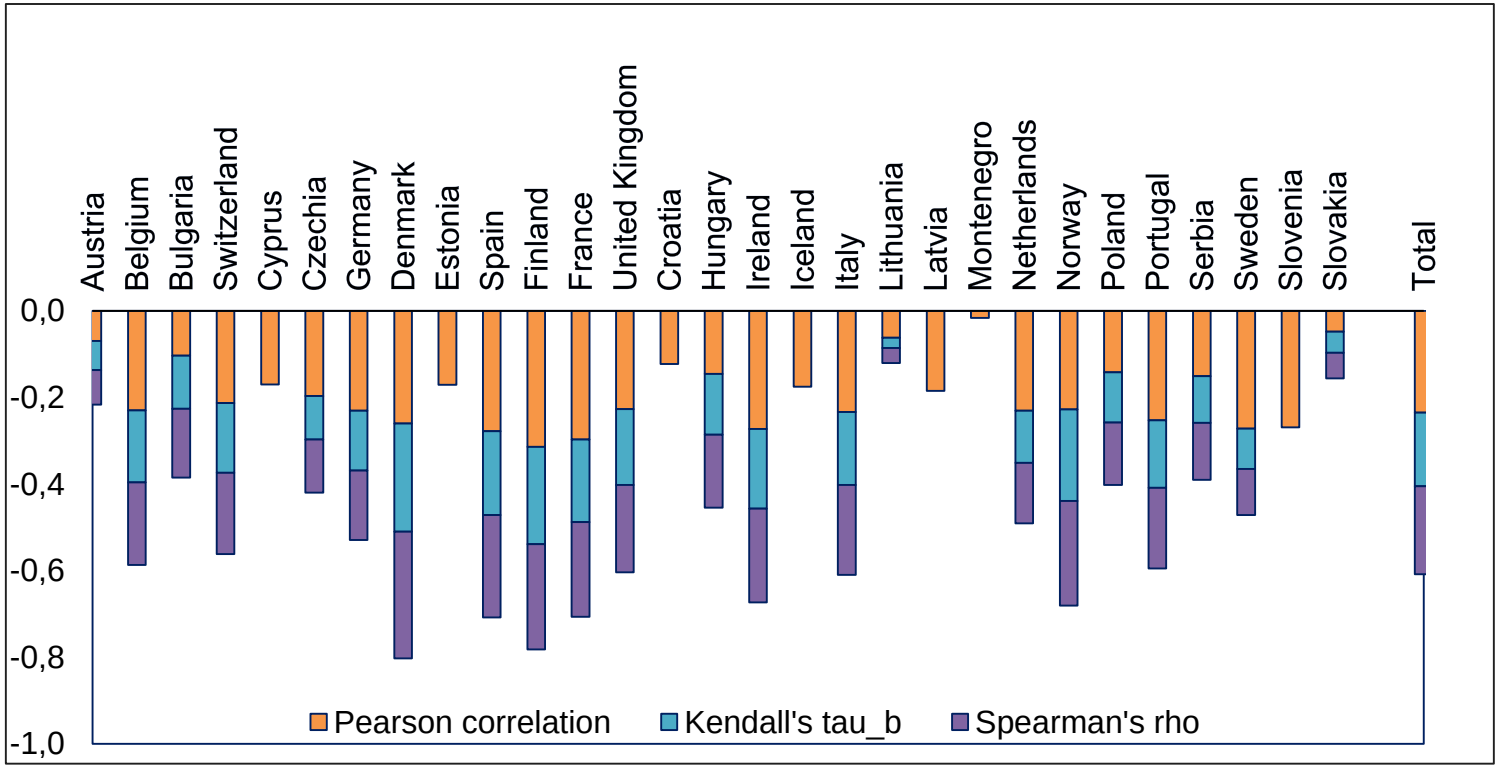
Age

17-25
26-31
32-37
38-43
44-60
61 and older

Gender

Female
Male

Results



There is a significant, negative and moderate relationships between respondent motivation and item-level nonresponse. **The level of item-nonresponse for split-ballot questions reduces while respondent motivation score increases**.

Results

The strongest relationships were found in France, the United Kingdom, Norway, the Netherlands and Portugal ($p<0.01$).

Countries	Pearson correlation	Kendall's tau	Spearman's rho	Number
France	-0.297**	-0.191**	-0.219**	2,010
United Kingdom	-0.227**	-0.175**	-0.202**	2,204
Norway	-0.228**	-0.211**	-0.242**	1,406
Netherlands	-0.231**	-0.120**	-0.140**	1,673
Portugal	-0.253**	-0.156**	-0.186**	1,055

Overall model effects

Predictors	Regression coefficient (se)	Wald-F test	Predictors	Regression coefficient (se)	Wald-F test
Respondent			**Interviewer**		
Motivation					
Low (ref)	-				
Middle	-1.29** (0.24)	p<0.01			
High	-1.81** (0.25)				
Age			**Age**		
15-24 (ref)	-		17-25 (ref)	-	
25-34	-0.09 (0.06)		26-31	0.27. (0.15)	p<0.01
35-44	-0.16** (0.06)	p<0.01	32-37	0.21. (0.12)	
45-54	-0.12* (0.06)		38-43	0.39** (0.13)	
55-64	-0.14* (0.06)		44-60	0.24* (0.10)	
65 and older	0.02 (0.06)		61 and older	0.07 (0.10)	
Sex			**Sex**		
Male (ref)	-	p<0.1	Male (ref)	-	p<0.01
Female	-0.08** (0.03)		Female	0.02 (0.05)	
Education					
Less than 11 years (ref)	-				
11-14 years	-0.21*** (0.05)	p<0.01			
More than 14 years	-0.24*** (0.05)				

*** p<0.001, ** p<0.01, *p<0.05, .p<0.1 significance levels

Model effects for countries

Predictors	France	United Kingdom	Netherlands	Norway	Portugal
Motivation					
Low (ref)	-	-	-	-	-
Middle	-2.65** (0.92)	-1.88 (1.39)	-1.76 (1.16)	-1.48 (1.72)	-1.34* (0.60)
High	-3.25*** (0.92)	-2.18 (1.40)	-2.02. (1.16)	-2.19 (1.71)	-1.65** (0.59)
Age					
15-24 (ref)	-	-	-	-	-
25-34	-0.21 (0.16)	-0.01 (0.16)	0.16 (0.19)	-0.11 (0.16)	-0.08 (0.28)
35-44	-0.25. (0.15)	-0.09 (0.16)	-0.07 (0.13)	-0.19 (0.15)	-0.23 (0.24)
45-54	-0.09 (0.18)	0.19 (0.17)	0.00 (0.12)	-0.12 (0.16)	-0.29 (0.23)
55-64	-0.10 (0.19)	-0.03 (0.16)	-0.08 (0.12)	0.00 (0.17)	-0.15 (0.27)
65 and older	0.20 (0.17)	0.06 (0.16)	-0.05 (0.14)	0.07 (0.18)	0.15 (0.25)
Sex					
Male (ref)	-	-	-	-	-
Female	-0.18. (0.11)	0.07 (0.07)	-0.03 (0.07)	-0.29** (0.09)	0.00 (0.12)
Education					
Less than 11 years	-	-	-	-	-
(ref)	-0.01 (0.14)	-0.19* (0.09)	-0.60*** (0.09)	-0.16 (0.15)	-0.19 (0.16)
11-14 years	0.08 (0.12)	-0.11* (0.11)	-0.54*** (0.14)	-0.13 (0.14)	-0.01 (0.22)
More than 14 years					
Sex (i'wer)					
Male (ref)	-	-	-	-	-
Female	-0.05 (0.12)	-0.05 (0.07)	-0.06 (0.08)	0.38*** (0.11)	0.23 (0.14)
Age (i'wer)					
17-25 (ref)	-	-	-	-	-
26-31	0.87*** (0.19)	-0.33 (0.71)	-0.08 (0.20)	-0.37** (0.14)	-0.01 (0.22)
32-37	1.06** (0.41)	-1.07*** (0.25)	-0.50** (0.19)	-0.62*** (0.15)	-0.07 (0.18)
38-43	0.52** (0.16)	-0.55*** (0.14)	-0.43* (0.18)	-0.55*** (0.12)	0.94* (0.41)
44-60	0.83*** (0.20)	-0.68*** (0.09)	-0.16 (0.18)	-0.06 (0.14)	0.16 (0.18)
61 and older	0.75*** (0.18)	-0.79 (0.07)	-0.06 (0.08)	-0.38** (0.13)	0.52 (0.33)
Intercept	2.96** (0.94)	3.22* (1.40)	4.02*** (1.18)	2.88. (1.72)	2.05*** (0.61)

*** p<0.001, ** p<0.01, *p<0.05, .p<0.1 significance levels

Conclusions

- The **negative impact of low respondent motivation on the level of item-nonresponse**.
- This may due to respondent's unwillingness to respond and trying to finalize interview quickly.
- Highly motivated respondents may answer questions by doing their best ability.
- Interviewers should keep the respondent's motivation at a high level during the interview.
- Alerts for split-ballot questions should be designed in the questionnaire according to the mode of data collection in the ESS.

Conclusions

- Importance of interviewer evaluations to measure respondent motivation.
- The utilization of interviewer observations, as a type of paradata would be insightful for such examinations, as West (2013) suggested.
- Surveys should consider the different dimensions that could affect motivation (interview environment, observable response reliability, interaction with the respondent, etc.) as well as their design in the questionnaire.
- Study results also refer to less-item nonresponse included interviews with females, adults (older than 35), and highly educated respondents due to their high level of willingness and ability.

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