

## **Questionnaire design and correction for measurement errors (12h)**

### **Description of the course:**

We hope to show with this course how important is the design of a questionnaire for the results, and how difficult it can be. The main goal is to highlight the very high number of decisions to be made, and the impact that each of them can have on the answers, but also how all these decisions interact with each other, and thus the necessity to use a tool that takes into account all these interactions to help us designing good questionnaires.

The design of a questionnaire does not start with questions. It starts with the definition of the concepts of interest. From the concepts, assertions can be made, and then requests for an answer. This is the so-called "3-step procedure" proposed by Saris and Gallhofer (2007). This course will begin by a detailed presentation of this procedure. Then, we will introduce many other decisions that need to be taken when designing a questionnaire: decisions about the scale format, the use of a "don't know" answer, the grouping and ordering of the items, the mode of data collection, etc. All these decisions can affect the answers of the respondents and therefore the results of the study. However, how can we know which formulation is the most accurate? Because all these decisions can interact with each other, it is difficult to decide what the best formulation for a question is, i.e. the formulation which will give highest quality data. One tool available to help us in this decision is the Survey Quality Predictor (SQP) software. We will show how the program works and how it can be used during the questionnaire design stage.

In addition, even if the questionnaire is designed very carefully, measurement errors are always still present (at least random errors, due to mistakes). Therefore, in order to draw non biased results, it is crucial to correct for measurement errors. We will explain how we can correct correlations or SEM models for measurement errors and how this can affect the results. We will finish by some practical applications.

**Course prerequisites:** Some bases in statistics and familiarity with the use of survey data and structural equation modeling are preferable.

**Software used:** We will introduce the software SQP. Participants should know how to get a correlation coefficient between two or more variables in any basic statistic software (Stata, SPSS,...).

### **Main references:**

- 1) Saris, W.E., and Gallhofer, I.N. (2014) *Design, Evaluation and Analysis of Questionnaires for Survey Research*. New York: Wiley. Second Edition.
- 2) Revilla, M., Zavala Rojas, D., and W.E. Saris (2016). "Creating a good question: How to use cumulative experience". In Christof Wolf, Dominique Joye, Tom W. Smith and Yang - Chih Fu (editors), *The SAGE - Handbook of Survey Methodology*. SAGE. Chapter 17, pp.236-254.

- 3) Saris, W.E., and M. Revilla (2016). "Correction for measurement errors in survey research: necessary and possible". *Social Indicators Research*, 127(3): 1005-1020. First published online: 17 June 2015. DOI: 10.1007/s11205-015-1002-x Available at: <http://link.springer.com/article/10.1007/s11205-015-1002-x>
- 4) De Castellarnau, A. and W.E. Saris (2014). A simple way to correct for measurement errors. European Social Survey Education Net (ESS EduNet). Available at: <http://essedunet.nsd.uib.no/cms/topics/measurement/>

### **Suggestions for further reading:**

- Alwin, D. F. (2007), *Margins of Errors: A Study of Reliability in Survey Measurement*, Hoboken, NJ: Wiley and Sons, Inc.
- Belson, W. (1981), *The Design and Understanding of Survey Questions*, London: Gower.
- Billiet, J. (2016). "What does measurement mean in a survey context?" In Christof Wolf, Dominique Joye, Tom W. Smith and Yang - Chih Fu (editors), *The SAGE - Handbook of Survey Methodology*. SAGE.
- Converse, J. M., and S. Presser (1986), *Survey Questions: Handcrafting the Standardized Questionnaire*, Beverly Hills: Sage.
- Lilleoja, L., & Saris, W. E. (2015). Does correction for measurement error have an effect on the structure and comparability of basic human values? *Survey Research Methods*, 9(3), 169–187. <http://doi.org/10.18148/srm/2015.v9i3.62>
- Revilla, M. (2015). "Effect of using different labels for the scales in a web survey". *International Journal of Market Research*, 2015, 57(2):225-238. First published online on June 1, 2014. DOI: 10.2501/IJMR-2014-028
- Revilla, M. (2015). "Comparison of the quality estimates in a mixed-mode and a unimode design: an experiment from the European Social Survey", *Quality and Quantity*. 2015, 49(3): 1219-1238. Published online first June 2014. DOI: 10.1007/s11135-014-0044-5
- Revilla, M., and W.E. Saris (2013). "The Split-ballot Multitrait-Multimethod Approach: Implementation and Problems." *Structural Equation Modeling: A Multidisciplinary Journal*, 20(1): 27-46. <http://dx.doi.org/10.1080/10705511.2013.742379>
- Revilla, M., Toninelli, D., Ochoa, C., and G. Loewe (2016). "Do online access panels really need to allow and adapt surveys to mobile devices?" *Internet Research* 26(5): 1209 - 1227. Available at: <http://www.emeraldinsight.com/doi/abs/10.1108/IntR-02-2015-0032>

Saris W. E., D. Oberski, M. Revilla, D. Zavalla, L. Lilleoja, I. Gallhofer, and T. Gruner (2011), *The Development of the Program SQP 2.0 for the Prediction of the Quality of Survey Questions*, RECSM Working Paper 24: [www.upf.edu/survey/\\_pdf/RECSM\\_wp024.pdf](http://www.upf.edu/survey/_pdf/RECSM_wp024.pdf)

Saris, W. E., A. Satorra, and W. Van der Veld (2009), Testing Structural Equation Models or Detection of Misspecifications, in: *Structural Equation Modeling: A Multidisciplinary Journal*, 16, 561–582

Scherpenzeel, A. (1995), *A Question of Quality: Evaluating Survey Questions by Multitrait-Multimethod Studies*, Amsterdam: Nimmo

Schuman, H., and S. Presser (1981), *Questions and Answers in Attitude Survey: Experiments on Question Form, Wording and Context*, New York: Academic Press.

Sudman, S., and N. M. Bradburn (1983), *Asking Questions: A Practical Guide to Questionnaire Design*, San Francisco: Jossey Bass.

Tourangeau, R., L. J. Rips, and K. Rasinski (2000), *The Psychology of Survey Response*, Cambridge, MA: Cambridge University Press.

#### Detailed schedule of the course by day/time slot:

	Time	Topic
Day 1	9h-10h45	From concepts to request for an answer: the 3-step procedure
	10h45-11h00	Break
	11h00-13h	Other decisions: scale, don't know answer, position and order of the questions, etc. Exercises.
Day 2	9h-11h00	Defining reliability validity and quality / MTMM approach / What is SQP / Using SQP to improve the questions
	11h00-11h15	Break
	11h15-13h	From questions to questionnaire / Mode of data collection / Exercises - Apply by yourself
Day 3	9h-11h00	How to do correction for measurement errors / Impact on the results
	11h00-11h15	Break
	11h15-13h	Conclusions / Exercises - Apply by yourself

#### Instructor:

Melanie Revilla is a researcher at the Research and Expertise Centre for Survey Methodology (RECSM) and an adjunct professor at Universitat Pompeu Fabra (UPF, Barcelona, Spain). She received her PhD from UPF in 2012, in the areas of statistics and survey methodology. She graduated in statistics and economics at the 'Ecole nationale de la statistique et de l'administration économique' (ENSAE-Paritech, Paris, France) and holds a Master of Science in Economics from the Barcelona Graduate

School of Economics (Spain). Her main research interests are: measurement errors, data quality, questionnaire design, web surveys, mobile devices, experiments, passive measurement.

<https://www.upf.edu/web/survey/entry/-/-/67233/adscricion/melanie-audrey-revilla>