

Handling missing data in educational research

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Goals:

- Introduce participants in available theory on missing data
- Discuss the advantages and disadvantages of traditional and modern missing data techniques
- Provide participants with some basic tools and tips to deal with missing data in their own research

Description:

Missing data are almost inevitable in quantitative educational research. Nonetheless, published journal articles often do not contain information on the occurrence of missing data in the reported study and do not describe how the authors have dealt with missing data in their analyses.

Moreover, the majority of studies that do report on missing data actually use inadequate missing data techniques. Hence, Peugh and Enders (2004) conclude that “missing data [are] a dirty little secret of educational research”.

In the first part of this seminar on missing data in educational research, participants will be offered an introduction to the available theory on missing data. Different types of missing data will be discussed and illustrated through the use of some real-data examples. Furthermore, different approaches to collecting information on the missing data mechanisms in a particular data set are enumerated.

The second part of the seminar will review a number of traditional missing data techniques which are commonly used in educational research (e.g., listwise deletion, mean imputation, regression imputation). Following this review, two modern missing data techniques (multiple imputation and maximum likelihood) will be introduced and the (dis)advantages over the traditional approaches will be discussed.

In the final part of the seminar, some practical issues on missing data handling will be discussed by elaborating a concrete research example. Thereby, the use of multiple imputation and the maximum likelihood-based approach will be illustrated using SAS and Mplus, respectively. In general, this seminar intends to offer an applied view on missing data by combining a theoretical introduction to the topic with the discussion of some practical issues and real-data examples.

Prior knowledge or experience required:

Participants may benefit most from the content offered in this seminar if they have at least some basic knowledge on quantitative research and related methodologies. However, prior knowledge or experience is not strictly required.

Reference:

Peugh, J.L. & Enders, C.K. (2004). Missing data in educational research: A review of reporting practices and suggestions for improvement. *Review of Educational Research*, 74, 525-556.