An introduction to Item Response Theory Models with R

Dr. Ottavia M. Epifania

According to Item Response Theory (IRT) models, the observed response of a person to an item is a function of the characteristics of the person (i.e., the latent trait) and of the characteristics of the items, as described by both person's and item parameters. Different IRT models are available according to the number of parameters used for describing the functioning of the items and to the nature of the analyzed responses. This course provides an introduction to IRT models for dichotomous (e.g., "true" vs. "false") and polytomous responses (e.g., agreement on a 5-point Liker-type scale), with a main focus on the former ones. The assumptions for the application of the models, the evaluation of the fit of the models, and the implications and meaning of the item parameters will be supported by their guided application to simulated data with the `TAM` package in `R`. Moreover, the potential of these models for a thorough investigation of the item functioning will be presented under two different perspectives. Firstly, the methods for detecting the differential item functioning are presented. Then, the item information function is illustrated, which allows for obtaining a measure of the precision with which the items assess different levels of the latent trait. This information can also be exploited for the development of short test forms. A basic knowledge of the `R` language is preferred but it is not mandatory.

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