MIRT Package of R for Multivariate Item Response Modelling*

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Abstract

in measurement, our main interest is focused in estimating an individual's underlying true score on a construct or a latent variable. Item response theory (IRT) is a modern statistical method for analysing dichotomous, politomous and ordinal item responses based on latent trait or construct. Multidimensional item response models are used to measure multiple complex items that measure multiple latant traits simultaneously. Such models explain the probability of a correct response to a given item as a function of a vector of latent traits.

In this paper we provide the background, theory and graphical presentation of multidimensional item response models. Moreover, we present mirt package and mirt function for multidimensional item response analysis based on real test data. We present comparative analysis, parameter estimation and testing the goodness of fit of models, and we present item characteristic curve and surface for one- and two-factor item model. The analysis covers an interesting topic in the area of item analysis and covers an existing gap in the area of social sciences.

Keywords: Item Response Theory, Measurement Theory, Discrimination, Difficulty.