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A class of multidimensional latent class IRT models for ordinal polytomous item responses.

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Summary: We propose a class of multidimensional Item Response Theory models for polytomously-scored items with ordinal response categories. This class extends an existing class of multidimensional models for dichotomously-scored items in which the latent abilities are represented by a random vector assumed to have a discrete distribution, with support points corresponding to different latent classes in the population. In the proposed approach, we allow for different parameterizations for the conditional distribution of the response variables given the latent traits, which depend on the type of link function and the constraints imposed on the item parameters. Moreover, we suggest a strategy for model selection that is based on a series of steps consisting of selecting specific features, such as the dimension of the model (number of latent traits), the number of latent classes, and the specific parameterization. In order to illustrate the proposed approach, we analyze a dataset from a study on anxiety and depression on a sample of oncological patients.

MSC:

62H99 Multivariate analysis
62P15 Applications of statistics to psychology

Keywords:

graded response model; hospital anxiety and depression scale; partial credit model; rating scale model; unidimensionality

Software:

MultiLCIRT

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