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Extending Mixture Multigroup Structural Equation Modeling to deal with ordinal variables

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The recently proposed Mixture Multigroup Structural Equation Modeling (MMG-SEM) efficiently compares groups by clustering them based on their structural relations while accounting for the reality of measurement (non-)invariance. Currently, MMG-SEM relies on maximum likelihood (ML), which assumes continuous and normally distributed observed indicators. However, this can introduce bias when applied to ordinal data, which is often used in social sciences. In this paper, we extend MMG-SEM to accommodate ordinal data relying on the Structural-After-Measuremt stepwise estimation approach. In the first step, we implement a multigroup categorical confirmatory factor analysis (MG-CCFA) with diagonally weighted least squares (DWLS) to estimate the measurement model (MM). The second step uses ML to estimate structural relations and perform clustering. A simulation study evaluates the performance of this approach compared to traditional ML-based MMG-SEM under various conditions. The results show a better recovery of MM parameters with DWLS, particularly with fewer response categories, whereas both approaches perform similarly in structural model recovery.

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