On The Stress Function of Asymmetric Triangulation Scaling

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Abstract. Asymmetric triangulation scaling (or ATRISCAL) proposed by Shojima (2009, 2010) is a kind of asymmetric multidimensional scaling for analyzing test data. The analysis objective of the ATRISCAL is a conditional correct response rate (CCRR) matrix made by the test items. The ATRISCAL is the method to extract an interitem dependency structure underlying the CCRR matrix and visualize the structure in a 3D model space. In this study, a penalty term was added to the conventional stress function of the ATRISCAL. The penalty term made it more efficient that the coordinates of an item pair with a strong dependency relationship were located close to each other in the model space and the coordinates of an item pair with a weak dependency relationship were plotted in different directions from the origin of the space.

References

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Keywords

ASYMMETRIC MULTIDIMENSIONAL SCALING, STRESS FUNCTION, CONDITIONAL CORRECT RESPONSE RATE MATRIX, TEST DATA