

## **Test dimensionality assessment: a general approach based on the use of complementary statistical methods**

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In the field of psychometrics, the study of the dimensionality of the items that make-up a test represents a major issue for the validation of the targeted theoretical dimensions. To question test dimensionality, we do propose a general approach based on the use of a set of statistical methods available in the literature: factor analysis, item response theory, non-parametric methods, cognitive diagnostic models, regression methods. The complementarity of these different methods enables to consider the dimensional structure of the test in all its aspects. These methods differentiate themselves for instance depending on the type of analysis (exploratory or confirmatory), the supposed nature of the structure (simple or complex) or the type of associations (only inter-items or with other constructs). The relation between dimensionality and differential item functioning among different groups of test-takers is also addressed. An application to data from a primary school testing program in reading comprehension is presented.

**Key Words:** test dimensionality, item factor analysis, item response theory, cognitive diagnostic models