

Methodological differences between formative-measured and composite variables: a case study using mixed SEM techniques

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Poster

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Abstract

An essential step in psychometric analysis is the choice of the correct modeling approach (i.e. common factor or composite) and the type of indicators (i.e. reflective and/or causal-formative) of the variable(s) of interest. However, formatively-measured constructs (i.e. variables whose indicators are all or partially causal-formative, FMCs) and composite variables are still commonly confused. In the context of structural equation modeling (SEM), the literature on models in which a FMC occupies a structural endogenous position could serve as a nice example of differences between FMCs and composite variables. Furthermore, a number of different techniques were proposed to simultaneously estimate latent and composite variables. This study compared several models in which: a) indirect (correct) and direct (incorrect) specifications of variables influencing endogenous FMCs, b) variance-based and covariance-based (CB-SEM) techniques; and c) common factor, composite and mixed (CB-SEM with the Henseler-Ogasawara specification and consistent PLS) approaches are used. The sample consisted of 362 students (12-17 years old) in compulsory secondary education. The results included a) a comparison between loadings, weights and path values; and b) coefficients to assess the overall fit of the models. The conceptual coherency of each model was also examined. Further studies, specially simulation studies, are needed to analyse the behavior of these models in this context.

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