

Worse than Measurement Error? Consequences of Mistaking the Measurement Model in SEM

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Abstract: The promise of latent variable models lies in their capacity to account for measurement error. This promise has led researchers across many disciplines to use latent variable structural equation models with little awareness of the assumptions of the reflective measurement model. But the choice of measurement model carries implications about the structure of data and about data-construct relationships: An incorrect model can change the meaning of the construct and render structural relations uninterpretable. Through a series of hypothetical examples and an empirical re-analysis, I will demonstrate the consequences that can arise when a common factor model is mis-applied. In particular, structural model coefficients can be highly biased, and this bias can arise even when model fit is perfect. In some situations, composite models (i.e., using sum scores to represent constructs) are more stable and less biased. These demonstrations point to a need for model choice to be justified on substantive, theoretical bases, in addition to statistical ones.



Bio: Mijke Rhemtulla develops and studies methods and models within the SEM framework, focusing on practical issues such as how to fit models to ordinal and incomplete data, how to optimize planned missing data designs for SEM models, and how to use item parcels to minimize bias. She also studies theoretical problems, such as how to interpret latent variable representations of psychological constructs, and what theoretical implications arise from competing (e.g., network) models of psychological constructs. Dr. Rhemtulla moved from the psychological methods group at the University of Amsterdam to take up an academic appointment in the UC Davis Department of Psychology. She received her doctorate in psychology from the University of British Columbia, where she studied early language and concept development. She was a postdoctoral fellow at the Center for Research Methods and Data Analysis at the University of Kansas before becoming an assistant professor at the University of Amsterdam.