lavaan: an R package for structural equation modeling and more

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In the social sciences, latent variables are ubiquitous, and many software packages have been developed that implement multivariate latent variable techniques such as confirmatory factor analysis (CFA), structural equation modeling (SEM) and growth curve modeling. However, perhaps the best state-of-the-art software packages in this field are still closed-source and/or commerical.

The **lavaan** package is developed to provide useRs, researchers and teachers a free, open-source, but commercial-quality package for latent variable modeling. The long-term goal of **lavaan** is to implement all the state-of-the-art capabilities that are currently available in commercial packages, including support for various data types (numeric, categorical, censored), discrete latent variables (aka mixture models) and multilevel datasets.

During the presentation, I will first briefly review the field of structural equation models. I will provide a bit of history (both about theory and software) and a couple of well-known examples to set the scene. Next, I will discuss the design of **lavaan**, its current features, and our plans for the near future. By using several examples, I will illustrate the use of **lavaan** for the analysis of various types of latent variable models, including confirmatory factor analysis (CFA), structural equation modeling (SEM), and growth curve modeling. Finally, a comparison with other related R packages will be made, and I will briefly touch on the ability of **lavaan** to mimic the behavior of some well-known commercial packages.