Dear editors,

I am writing to submit our manuscript entitled,“Getting a Step Ahead: using the Regularized Horseshoe Prior to Select Cross Loadings in Bayesian CFA,” to be considered for publication in the British Journal of Statistical and Mathematical Psychology.

The manuscript describes a study on the Regularized Horseshoe Prior in Bayesian Confirmatory Factor Analysis. To our knowledge, this is the first study in which the performance of the Regularized Horseshoe Prior in regularizing cross loadings in a confirmatory factor model is investigated. The manuscript includes a brief review on regularization, particular in the context of Bayesian SEM. The Regularized Horseshoe Prior is introduced thoroughly. Subsequently, a Monte Carlo simulation study is described, in which the Regularized Horseshoe prior is compared to the classical Bayesian CFA approach where a Small Variance Normal Prior is used to regularize cross loadings. The two priors are compared in terms of their levels of bias in estimating the model parameters, as well as their performance in correctly selecting cross loadings as (non-)zero.

We have not submitted this study, nor a study showing overlap with this manuscript to another journal. All code is available at https://github.com/JMBKoch/1vs2StepBayesianRegSEM. A preprint is available here as well. All co-authors are aware of the current submission. There are no conflicts of interest.

Thank you for considering our manuscript for publication.

Kind regards,

The authors,

Michael Koch (corresponding author) and Dr. Sara van Erp