

Assignment 4: Simulation in R (Summer 15)

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Most structural equation modeling experts have different opinions on the minimum number of indicators for each factor. To find the optimal number of indicators, we have to look at different aspects, such as the accuracy of parameter estimates, power, or model fit. In this assignment, we will focus on only the accuracy of the estimate of factor correlation.

Please conduct a simulation to show the properties of factor correlation for models with different numbers of indicators per factor. In the data generating model, two correlated factors should be created first. Then, indicators are created by the combination of factors and measurement errors. Confirmatory factor analysis is used to estimate the factor correlation. In this simulation, the biases in and standard errors of factor correlation estimates are investigated. The estimates of factor correlation should be unbiased. The standard error of factor correlations typically decreases when the number of indicators increased. However, what is the optimum number of indicators that the increase in the number of indicators does not provide nontrivial decrease in the standard error of factor correlation? This simulation should be able to answer this question. Choose at least two of the following design conditions: (a) the number of indicators per factor, (b) sample size, (c) the amount of standardized factor loadings, and (d) the amount of factor correlation.

Run this simulation in the HPC. Please also attach the 'e' and 'o' files when you turn in this assignment.