

Psychology 454: Psychological Measurement

Problem set # 2

William Revelle
Swift 315
email: revelle@northwestern.edu

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The following problems assume that you have installed R on your machine and have also installed the **psych** and **sem** packages.

1. Create a data set of raw scores with the **sim.congeneric** function and a factor structure defined by loadings of .6, .5, .4, and .3 for 200 subjects. Draw the scatter plot matrix of correlations for this data set using the **pairs.panels** function.
2. For the following figure (Fig 1) , what are the implied correlations?
3. Simulate a congeneric correlation matrix using the default values using the **sim.congeneric** function
4. Find the factor structure for this using the **factanal** function.
5. Do a confirmatory factor analysis using the **sem** function.
6. Repeat the previous three items for sample sizes of 100, 200 and 400 cases.
7. What are the implied correlations in Figure 2

Structural model

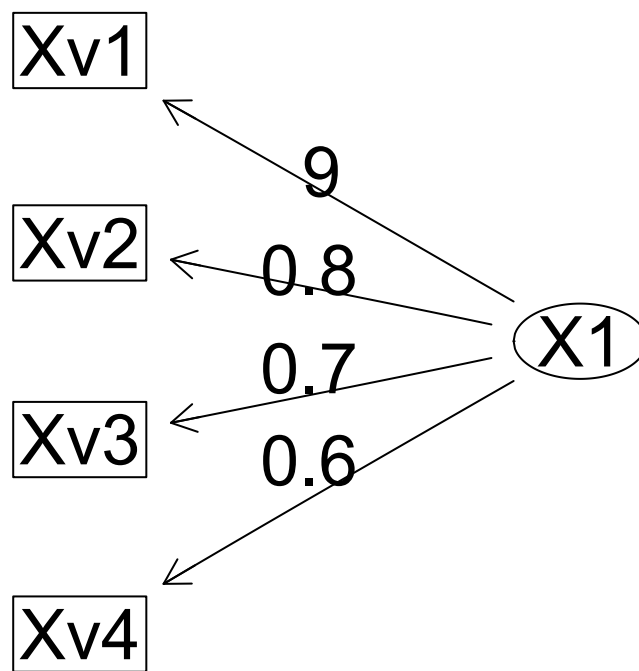


Figure 1: A congeneric model

Structural model

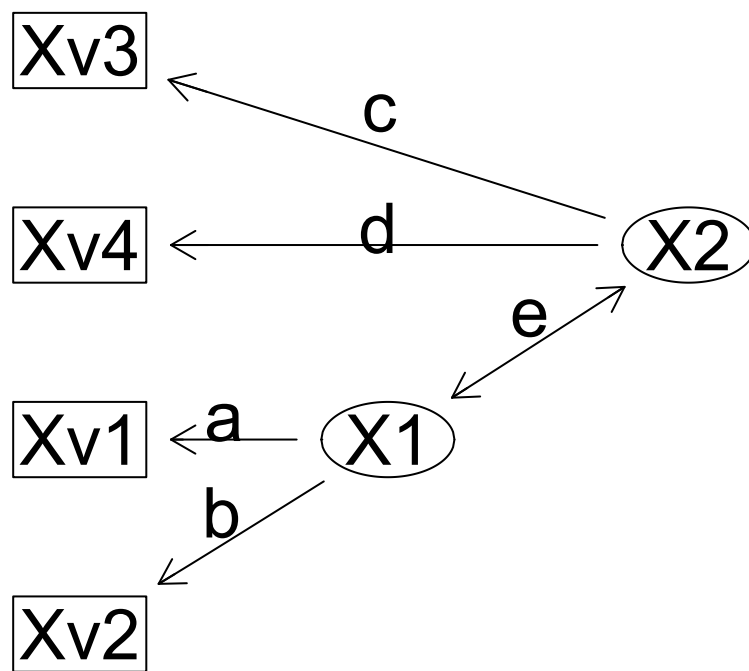


Figure 2: Two correlated factors