

EPSY 906 / CLDP 948 HW3: Confirmatory Factor Analysis (CFA) on Your Own Data
13 points; due Friday 10/20/2016 by 11:59 PM via email to jtemplin@ku.edu
Please name your file: EPSY906_Firstname_Lastname_HW03.docx

The goal of HW3 is for you to practice conducting confirmatory factor analyses on data you care about (i.e., that you wrote about for HW1). If you have **six or more items measuring a single dimension**, please use only those items that correspond to a single dimension. If you have **fewer than six items** measuring a single dimension, please use enough items for **two dimensions** so that your model will be testable. Once you know how this process works, you will be able to repeat it as needed for your other dimensions of interest, so the idea is to start with a model of limited size for now.

Conduct a series of analyses to test the following hypotheses. Use **MLR** for all analyses and a z-scored factor model identification (factor mean = 0, factor variance = 1). Note that although there is a list of points to be included below, I DO NOT WANT A NUMBERED LIST FROM YOU. Your text should read like a **traditional results section** in a published paper; see the Brown CFA book example results sections or the sample results sections from Example 4 for guidance. Each numbered point below should be answered in a new paragraph. In answering each question, make sure to describe the empirical criteria by which the answer was provided (i.e., what information, output, or model comparisons support your statements). Note that I am not necessarily expecting you to arrive at a well-fitting model—that may not be possible for your data. What I am looking for is to see that you can complete this process and understand the information in the output well enough to make defensible revisions to your model as needed.

1. Begin by summarizing the construct(s) being measured and the items themselves, including how many there are and their response options. Also provide your sample size and briefly describe the sample. Provide all relevant modeling info: program, estimator, how each model was identified, how models will be compared, and what criteria you are using to indicate “good fit” (i.e., cut-off values) both globally and locally. The idea is that a reader should be able to replicate your analyses given the information provided. **(1 point)**
2. Provide and reference a table of descriptive statistics for your items, including columns for N, mean, standard deviation, minimum, maximum, and item-total correlation. Also provide and reference a Pearson correlation matrix for your items (organized by dimension if your indicators belong to more than a single dimension). Note that you should be able to paste output directly into excel in order to make these tables easily (i.e., no typing numbers). Comment on the difficulty and discrimination of your items using these CTT results. Also comment on the size and heterogeneity of your inter-item correlations. **(2 points)**
3. Estimate a CFA model that corresponds to your hypothesized dimensionality. Report the relevant fit statistics and describe by which indices good fit has been achieved globally. Provide the range of effect sizes across indicators (i.e., standardized loadings). Examine and

describe any local misfit. If your model fit is not adequate, considering its sources of local misfit, re-specify your model to try to improve fit. Note that any model modifications should also be theoretically defensible, so provide a rationale for these modifications. Describe the model modification process you followed, and conduct any relevant model comparisons to support your modifications. **(5 points)**

4. Once your fit is as good as it is going to get and your model is still theoretically defensible, you can call it a final model. Estimate omega for each dimension. Provide and reference a table of ALL estimate model parameters, including columns for unstandardized estimates, their standard errors, and standardized estimates. Use the “text to columns” feature in the Data menu of Excel to make this easier, but make sure each parameter is clearly labeled (i.e., do not leave the impoverished labels used by Mplus). **(2 points)**
5. Provide and reference a histogram of your sample’s factor score distribution. Use the function I created within Example04. Also provide and reference a factor–response plot that shows the predicted indicator responses at ± 2 SD of the factor for the two items with the lowest and highest CFA difficulty (see the Example 4 R syntax for help). Comment on how plausible a linear model predicting the indicator responses from your factor is for your data. **(3 points)**