**PSQF 6249 HW3: Confirmatory Factor Analysis (CFA) on Your Own Data
14 points; due Monday 10/19/2020 by 11:59 PM via ICON

Please submit this HW3 in an editable format (e.g., .docx or .rtf extension) using
this file-naming convention: PSQF6249\_Firstname\_Lastname\_HW3**

The goal of HW3 is for you to practice conducting confirmatory factor analyses on data you care about (i.e., ideally using item responses from the instrument that you wrote about for HW1). If you have **six or more items measuring a single dimension**, please use only the 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 analytic 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 answer the following questions. Use **MLR** (or analogous robust maximum likelihood estimator) 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 (2015) 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 output content 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. I do not expect you to eliminate items based on R2 as in HW3—that was just an exercise designed to give you practice interacting with the syntax. Likewise, it may not make sense for you to move from one to two factors as I did in Example 4. What I want to see is that **you can understand the information provided by your analysis well enough to make \*defendable\* revisions to your model as needed**. If you are not sure what to do about a poorly-fitting model, please ask me for help!

You do NOT need to submit any data, syntax, or output with this assignment. However, it’s fine with me if you’d like to include output in order for me to answer any questions you might have.

**Items to be included in your results section (contiguous text, but each in a new paragraph):**

1. Begin by summarizing the construct(s) being measured and the items themselves, including how many items there are and what their response options are. 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 a table of item descriptive statistics, including columns for each item’s sample size, mean, standard deviation, minimum, maximum, and item–remainder correlation. Also provide 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 manual typing of rows of numbers should be required). Comment on your items’ difficulty and discrimination, as well as the size and heterogeneity of your inter-item correlations. **(3 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 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. **(4 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 retained 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 FSCORE distribution. Note that Mplus in Windows will do this for you as a PLOT option; otherwise, import the saved FSCORE file into another program to do so. 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 spreadsheet for help). Comment on how plausible a linear model predicting the indicator responses from your factor is for your data. **(4 points)**