General Feedback on PSQF 6249 HW3

optional revisions due Monday 11/16/20 by 11:59 PM under "assignments" in ICON
Please use track changes, retain all comments, and name your revision as:
PSQF6249_Firstname_Lastname_HW3R

1. My instructions asked you NOT to provide a list, and instead to write a contiguous results section containing all of the required elements. My rationale is that I want you to get practice with all aspects of technical writing, including transitions between sections, contextual phrasing, and describing tables and figures, not just with answering my specific questions. For example, in a real results section for publication purposes, you would need to introduce each table and tell the reader what information it provides. You would need to provide and interpret the different types of results (i.e., beginning with descriptive analyses, transitioning into latent trait analyses) and maintain enough context for the reader to follow you. APA style should be used for all tables and figures—you would not paste in unformatted program output and call it a table in a real paper. Please take this opportunity to practice these important skills. Btw, tables can start in excel so that you can use the number formatting options to control how many digits show after the decimal consistently within columns, but then you'd bring the table into your document and provide a proper title (with font large enough to be legible).

2. In writing results sections, you should use not use the same short dash for everything dash-like. Instead, you should use the proper punctuation marks. For instance, − is a real minus sign (used for all negative numbers), – is an en-dash (used for all compound phrases, such as item–remainder correlation), and — is an em-dash (used to set off phrases that clarify the previous phrase). I have added keyboard shortcuts on all my machines to make this easier (through the *insert symbol* menu in Word). Paying attention to these small details can help your writing look more professional.

3. Use past tense throughout when describing how the data were obtained and how the analyses were conducted. Present tense is ok if you are referring to the current tables and figures (e.g., "Table 1 shows…").

4. In tables of correlations, if you have complete data, it can be more efficient to provide the lower boundary for the value of correlation after which all higher correlations would be significant in a note rather than starring almost every value. You could also use bold-face type to denote significant correlations (and explain that in a table note) to reduce visual clutter. In practice you'd only show each correlation value once (either below or above the diagonal).

5. In describing the software you used, give the exact version (e.g., Mplus 8.4, not just Mplus 8). Things change quickly enough to where subversion differences can matter! You would also want to provide a reference for your software in a real paper. You can borrow the language I gave you in Example 4 to describe your model identification, which parameters were estimated, and how global and local fit was assessed, but you should change it as needed to fit your data (i.e., number of items, number of factors, and what their latent traits are supposed to be).

6. If you are reporting the fit of multiple models, it can be more efficient to do so in a table, and the same is true for model comparisons (see Model Fit Table 1 and MLR comparisons Table 2 in the Example 4 spreadsheet). Otherwise, for just 1–2 models, reporting their fit and comparisons thereof in the text is fine, but make sure you include all relevant fit stats: χ^2 test, CFI, TLI, RMSEA, and SRMR. For LRT fit comparisons, give the difference in −2LL, DF, and *p*-value.

7. In your tables of model parameter estimates, ALL estimated parameters need to be included—this means the loadings, the intercepts, the residual variances, and any factor covariances. Given that you

should have fixed factor means to 0 and factor variances to 1, these rows do not need to be included in the table. You do not need to report the z-value column or the p-value column. You should provide unstandardized estimates and their standard errors, and standardized estimates at a minimum (and preferably standard errors for the standardized estimates, too). See Model Estimates Table 3 in the Example 4 spreadsheet for a template. In practice, however, you would not need to give the R^2 values, given they are the squared versions of the standardized loadings (which you would have already included).

8. In refining your model, many of you added multiple error covariances. The more you add, the more undefined multidimensionality you are introducing into your model. This practice would definitely get flagged as problematic by reviewers. You need to provide justification for each error covariance based on its content. Stay tuned for more principled ways of addressing these extra relationships through additional factors (such as random intercept factors, bifactor models, and methods factors), which will be needed in HW5!

9. I do not want you to drop items with $R^2 < .33$ in your real data. I asked you do to this in HW2 to give you practice modifying the syntax (USEVARIABLES in particular). You would only want to remove items that do not measure the factor (i.e., zero or unexplained negative loadings) or that show lots of problematic misfit with other items. Otherwise, removing items will reduce your reliability.

10. You CANNOT compare the fit of models with different numbers of items—their heights for what "tallest" could be are not comparable. Instead, you can refer to the fit of the reduced model in isolation (i.e., it shows good fit or it does not, but its fit is not relative to a model with more items).

11. In plotting estimated factor scores, Mplus gives a bar chart for factor scores by default (i.e., a plot of the frequency of each unique score, where the x-axis is categorical, not numeric). To make a histogram instead, under the *Plot* menu in our output, select *view plots*, then *histograms*, under *plot properties* (left tab) scroll down until you see the name of your factor. Then under the center tab *display properties*, pick the second option of *histogram/density* plot and hit *ok*. Under the *Plot* menu, select *axis properties* and *edit settings*, and then you can customize your axes and titles.

12. In creating a factor–response plot using my Example 4 excel spreadsheet, you should have entered the unstandardized intercepts and factor loadings (as the slopes), and then predicted item responses for ± 3 SDs should have been calculated and plotted for you, as well as the lowest and highest item responses. You can check to see if the plot is correct by noting the predicted item response when Factor=0, which should match the intercept, or else something is wrong. To change the x-axis labels, right-click on the plot, choose *select data*, and then select *edit under horizontal (category) axis labels*. You should be able to highlight the cells holding the values to be plotted on the x-axis.

13. The factor–response plots were designed to illustrate whether a linear relationship between the factor and the predicted items responses were plausible. I also wanted you to link these results to the distribution of the predicted factor scores. Btw, on your reading list, Fernando (2009) provides the derivations for the trait level at which predicted item responses will go out of bounds, as well as an analogous version of item difficulty for CFA models (like b_i in IRT models).