

**EPSY 906/CLDP 948 HW5: Measurement Models for  
Non-Normal Outcomes on Your Own Data  
13 points; due 1 Dec 2017 by 11:59 PM via email  
Please name your file: EPSY906\_ Firstname\_ Lastname\_ HW05.docx**

The goal of HW5 is for you to practice estimating factor analysis-type models on non-normal data you care about; ideally these are the same data you analyzed for HW3. If you have **six or more indicators of a single dimension**, please use only those indicators that correspond to a single dimension. If you have **fewer than six indicators** for a single dimension, please use enough indicators for **two dimensions** so that your model will be identified. 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. Given the difference in model relative to HW3, please start from your originally hypothesized model and items again.

Conduct a series of analyses to test the following hypotheses. Use a z-scored factor model identification (factor mean = 0, factor variance = 1; otherwise known as anchoring by persons). 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. 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).

1. Begin by summarizing the construct(s) being measured and the indicators 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(s), how each model was identified, and how models will be compared using a given estimator. The idea is that a reader should be able to replicate your analyses given the information provided. You can start with the same text you wrote for HW3, but make sure to revise it so that it correctly describes the current models (their parameters and interpretation). **(5 points)**
2. First estimate a measurement model that corresponds to your hypothesized dimensionality using lavaan's WLSMV and with parameterization = "theta" (also get the residual correlation matrix and standardized parameter estimates). 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 using the residuals for the estimated correlations. 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. As before, your goal whose fit is as good as it is going to get but still be theoretically defensible. Conclude by testing the

assumption of tau-equivalence (equal discrimination) using a model comparison. If the constrained model does not fit worse, proceed using that version. **(5 points)**

- a. Make a table of your final model parameters, including the unstandardized IFA parameters, their SEs, and the standardized IFA parameters. **(3 points)**