**EPSY 8225: Operational Measurement**

**Equating Assignment-B**

This Equating Assignment includes IRT equating. The assignment will be completed with two forms of a test estimating a common construct, Form X and Form Y, with common items. The task is to equate scores of Form X to the scale of Form Y. To complete the IRT Equating assignment, follow these steps:

1. **Part One**
2. Using an IRT model (you can elect to use a 1, 2, or 3-PL model), calibrate the items on Form X and the items on Form Y items independently. Report the means and standard deviations for the two forms. You can report raw score (number correct) means and standard deviations and the theta score means and standard deviations. What do you observe from these results?
   * Report *M*s and *SD*s for total number-correct scores and theta scores on Form X and Form Y (based on all 30 items).
3. Looking at the common items only, report the means and standard deviations for each of the item parameters estimated on Form X and on Form Y (potentially the a-, b-, and c-parameter estimates).
   * Report *M*s and *SD*s for common items for Form X and Form Y separately.
4. Using the item parameter estimates for the common items, create scatterplots to evaluate the functioning of the common items on the two forms X and Y. Do you observe any outliers?
   * Include the scatterplots in your report. If it is easy to do, add the best fitting line to the scatter plot (might help identify outliers).
5. Estimate the equating constants A and B using the Mean/Sigma method using all common items, even if some appear to be outliers.
   * Show your work in estimating the equating constants.

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|  |  | θ*Ji* = *A* θ*Ii* + *B* |

1. **Part Two**
2. Select one additional method or modification to complete the IRT equating of scores on Form X to the scale of Form Y and report the results as you did in Part I. This could include one of the following options, or an option that you identify – be creative.
3. Leave out one or more of the common items (those that appear to be more like outliers), and estimate the equating constants with fewer common items.
4. Use a different IRT model, for example, if you used 3-PL for the first part, try the 2-PL model for the second part.
5. Use the Haebara or Stocking-Lord method to estimate the equating constants.
6. Use the Mean/Mean method (kind of boring).
7. Try equating scores on Form Y to the scale of Form X.
8. Identify some other modification to the IRT equating process for these two forms.