**UCT MA Psychology Multivariate Statistics**

**Assignment 10 2018**

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There is only one question for this assignment, worth 100 marks.

Q1 The data set ylperu.dat contains data for nearly 2000 children, measured at five time points. We are interested in the growth in receptive vocabulary (ppvtraw), and whether this can be predicted by economic well-being (wi, in the ylperu.dat file), and rural/urban status at round 1 (typesite, in the data file).

1. Build and test a latent growth model in which economic well-being at Round 1 is a covariate of both the slope and the intercept latent variables making up the growth model. What does the model tell us?
2. Consider refinements of the model you have developed in A) to improve the degree of fit. You could consider various possibilities, e.g., including the wi measure for rounds 2 through 5, setting variances and covariances for these additional wi measures to be equal, and so on.
3. Construct a diagram with ggplot that shows the relation between economic well-being, at each round, rural/urban status at round 1, and performance on receptive vocabulary at each round. If you can get this to be person-period plot, all the better (i.e., all individual children shown in a single plot, along with economic well-being, and receptive vocabulary, over time).
4. Construct a diagram that shows the model you computed in D), along with key results (coefficients, fit indices, etc.)

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