EPSY 8268 Assignment 6

***Assessing the Quality of HLMs***

To complete this assignment, I recommend using the analysis you completed in Assignment 2, a simple 2-level HLM analysis. You may use another data set, but know that more complex models results is more complex analysis of assumptions.

**Assignment Tasks**

Follow the guidance for assessing assumptions provided in *HLM Assumptions* and *Checking Assumptions Examples* documents at the class website (which are more fully described in Raudenbush & Bryk). Provide evidence of meeting each of the five assumptions:

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| *Level-1 assumptions:* |
| 1. Variance Normality & Homogeneity: *rij* ~ N(0, σ2) [*iid*]; H0:
 |
| 1. Predictors *Xqij* are independent of *rij* (no confounding variables): Cov(*Xqij*, *rij*) = 0 for all *q*
 |
| *Level-2 assumptions:* |
| 1. Variance Normality & Homogeneity: (*u*0*j*, *u*1*j*, …, *uQj*)′ ~ N(0, **T**)
 |
| 1. Predictors *Wsj* are independent of *uqj* (no confounding variables): Cov(*Wsj*, *uqj*) = 0 for all *s*
 |
| *Cross-Level assumption:* |
| 1. Errors at both levels are independent: Cov(*rij*, *uqj*) = 0
 |

Report the following:

1. Write out the model in hierarchical notation, using names of variables, not *Y*s, *X*s and *W*s.
2. Include the final table of fixed effects and random effects variance component (put this in a publishable table format) with p-values where available.
3. Select one method of assessing each of the five assumptions above. For each assumption, report the following:
	1. State the assumption;
	2. Report the results of the analysis with a full description of the elements in the analysis (describe all variables, residuals, variances used) – leave nothing undefined, including graphical display when appropriate;
	3. Make a brief statement about the defensibility of the assumption – your conclusion.