EPSY 8268 HLM Study Critique

***Critique of a Published HLM Study***

To complete this assignment, identify a study employing multilevel, nested data and employing a mixed-effects analysis with at least two random-variance components (an HLM or multilevel analysis with at least one randomly varying slope). Review the *Standards for Reporting on Empirical Social Science Research in AERA Publications* available at the class website.

The elements for this critique are sampled from the AERA reporting standards and are based on class discussions of what should be reported from an HLM study. Provide a brief description and example when possible in response to each element below.

**Critique Tasks**

Report the following elements of the study. You do not need to provide extensive quotes from the study – put your responses in your own words and briefly quote when necessary.

1. Provide a complete APA style reference for the article.
2. State the research problem that was investigated. Include formal research hypotheses if available. Was this clearly described in the article?
3. Briefly address the following standards – describe the extent to which the authors address each of the following standards for reporting research results. Are these standards addressed and achieved by the authors?
   1. [Standard 3.1] clearly describe the units of study (individuals, groups, sites, etc.) and clearly declare how the data are nested to support HLM analyses. What are the levels of nesting? Is HLM the right approach for this study?
   2. [Standard 4.1] clearly define each variable, providing methods of measurement and information about the scale of each variable. What are the variables used in the study?
   3. [Standard 5.1] precisely and transparently describe the procedures for analysis (could you replicate their analyses). Give a brief summary or list of analysis steps they used.
   4. [Standard 5.7] present full descriptive analyses of all variables prior to modeling.
   5. [Standard 5.9] discuss or evaluate the assumptions underlying their analyses. Did the authors describe any other anomalies, regarding extensive iterations, convergence failure, changes in the analysis models needed because of unexpected data patterns?
4. Briefly address the following issues, specific to reporting results for HLMs.
   1. Did the authors completely write out the model used in hierarchical notation, using names of variables, not *Y*s, *X*s and *W*s? Write out the final HLM model they tested in hierarchical notation using the names of the variables.
   2. What is the sample size at each level? Do these samples meet minimum sample size requirements at each level (particularly given the number of explanatory variables at each level)?
   3. Do they discuss the presence of missing data?
   4. Did the authors appear to use a process of model development? Do they discuss modeling decisions as the build each level, considering the role of interaction terms, random-effects variance components, or other decisions?
   5. Evaluate the reporting of statistical results. Do the authors present full information on the fixed-effects coefficients, random-effects variance components, statistical significance of each component? Do they discuss the statistical and practical significance?
   6. Do the authors discuss the reliabilities of coefficients? Are their interpretations correct? Give an example if they do so.
   7. To what extent are the interpretations of these statistical results clear, complete, and correct? Give an example of one good interpretation of a coefficient or variance component – and/or an example of a poor interpretation.
   8. Is there a report of the overall fit of models? Is there comparison of models using fit information? Would this information help support the authors’ arguments?
   9. How clearly do the authors appropriately estimate the intraclass correlation coefficient and report the within and between variances? Does this ICC support the use of HLM analysis?
   10. To what extent do the authors provide an appropriate discussion of the limitations of their HLM models? Do you see limitations that were not addressed?
5. Summary statement.

Considering the overall article, what did the authors do well? What did they do not-so-well? What would you have done differently?