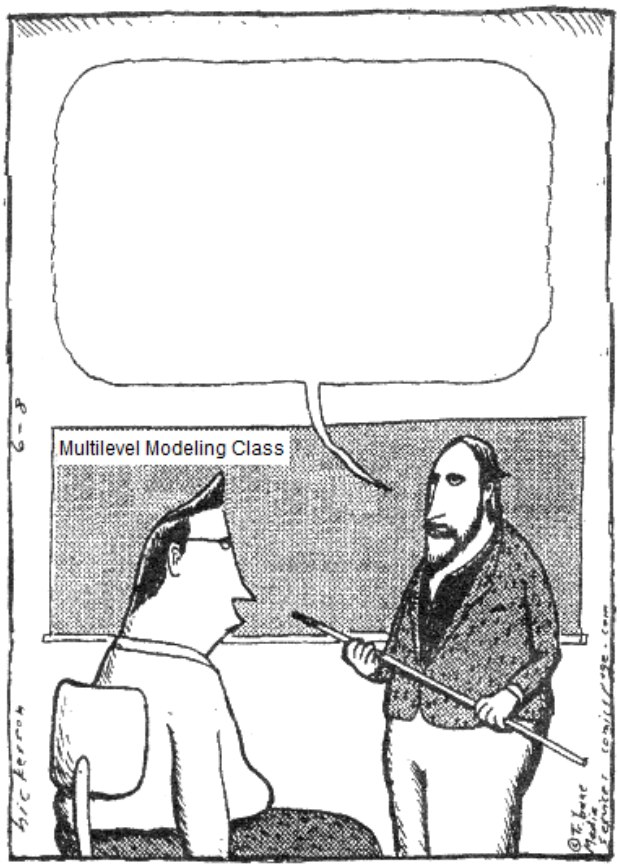
Document each step with SPSS output (*not* the entire file—just the important parts; and yes, use SPSS!). I have posted the data and basic code on the website to get you started. As always, discuss and interpret the results, considering the pros and cons of each approach. Point values (total = 60) are in brackets, and are awarded based on the completeness and correctness of your answers.

Use the JSP data (jsp.sav) for exercises 1 and 2. This study assessed 1192 children nested in 49 schools. The truncated data set contains data on school type, gender (male=1), Ravens IQ, and English and Math scores across three occasions.

1. Model MATH2 and ENG2 using the "multivariate trick" we discussed in class. Predict both DVs with gender. Use random intercepts and slopes. Report and interpret the level-2 correlations of the random effects. (A correlation is a covariance divided by the square root of the product of the two variances.) **[15]**

2. In the context of a multivariate random-intercepts / random-slopes model, test the hypothesis that the gender difference in MATH2 is the same as the gender difference in ENG2. There are at least two strategies to accomplish this; use both. Do you get the same result? Note: this problem is probably harder than you think. One of the solutions involves comparing nested models, but those models must differ by *only one parameter*. **[15]**

Use the Hawkley, Preacher, & Cacioppo data (hawk1.sav) for exercises 3 and 4. This study followed 133 people for 7 days (STUDYDAY = 2 ... 8). Participants were "beeped" 9 times per day (BEEPNUM = 1 ... 9). At each beep, participants were asked to rate their current positive and negative affect (POSAFF, NEGAFF) and the positivity and negativity of their most recent interpersonal interaction (POSINT, NEGINT). Predictors in the data set include STUDYDAY and BEEPNUM (two nested metrics of time), person-level measures of trait loneliness (UCLASRV), and whether the day was a weekend day (WEEKEND = 1).



3. Run 3-level null models for each outcome to partition the variance. For each outcome variable, how is the variance partitioned across the three levels? **[15]**

4. Run a 3-level model with POSAFF as the outcome. Build the best model you can with POSINT, UCLASRV, and WEEKEND as *potential* predictors of intercepts and/or slopes using one of the model-building strategies we've covered. Interpret. **[15]**

Extra Credit: Supply a caption for the cartoon above. Make me proud. **[+3]**