PSY 653 Module 09: Introduction to Multilevel Modeling

Try it Yourself Activity

The data file "popularity.csv" is simulated data for 2000 pupils in 100 schools. It simulates pupil popularity in relation to their extraversion scores. Retrieved from: https://github.com/MultiLevelAnalysis/Datasets-third-edition-Multilevel-book/tree/master/chapter%202/popularity

- pupil - The personal ID number of the pupil.
- class - The class number
- Cextrav - pupil extraversion (10-point scale). Centered at the mean (0 = Mean value).
- popular - a popularity rating on a scale of 1–10 derived by a sociometric procedure.

Demo Activity

1. Download the "popularity.csv" dataset from the module 09 lab module on Canvas
2. Create a new R notebook from your project file and name it "Multilevel modeling notebook"
3. Create a first level header: "Load Libraries"
    a. In a new R chunk load in the lme4, lmerTest, MuMIn, psych, olsrr, & tidyverse packages
4. Create a first level header: "Import Data"
    a. Read in the "popularity.csv" data.
5. Create a first level header: "Factor class variable"
    a. Factor the class variable. Name the newly factored variable "class.f". *NOTE:* You can just use as.factor() to have R do the factoring for you.
6. Create a first level header: "Describe the data"
    a. Use any method to describe the dataset.
7. Create a first level header: "Run MLMs"
8. Create a second level header: "Random intercept only model"
    a. Run a model with class.f as your random intercept.
    b. In the white space below, interpret this model. What does the fixed intercept represent? What is the random intercept telling you?
9. Create a third level header: "Calculate ICC & Pseudo R^2"
    a. Create a new chunk and calculate the ICC and pseudo R^2 values
10. Create a second level header: "Random intercept and fixed slope model"
    a. Run a model adding in Cextrav as a fixed slope
    b. In the white space below, interpret this model. What is the newly added fixed slope telling you?
11. Create a third level header: "Calculate ICC & Pseudo R^2"
    a. Create a new chunk and calculate the ICC and pseudo R^2 values

12. Create a second level header: “Random intercept, Random slope and fixed slope model”
    a. Run a model adding in Cextrav as a random slope
    b. In the white space below, interpret this model. What is the newly created random slope telling you?
13. Create a third level header: “Calculate ICC & Pseudo R^2”
    a. Create a new chunk and calculate the ICC and pseudo R^2 values