Live Session 3 Rosenthal and Jacobson Pygmalion Data

The term “Pygmalion Effect” originated with the 1960’s work of psychologist Richard Rosenthal and elementary school principal Lenore Jacobson, who conducted a randomized block experiment on the children in Jacobson’s elementary school. In each classroom, they assigned roughly 20% of the students to a “likely to excel” treatment group and the remainder to a control group. After all students took a standardized test at the beginning of the school year, Rosenthal and Jacobson identified to teachers those students that had been indicated by the test as very likely to excel in the coming year. This was false information, since the “likely to excel” students had actually been identified via random assignment. The researchers fed the teachers false information to create artificial expectations and to explore the effect of those expectations on student test score gains.

The data for this study is in ex1321.csv available in the file “liveSession3Data.zip” in the Files folder on the course website. Use the data to summarize the evidence that teachers’ expectations affect student test score gains.

Analysis Questions for Pygmalion Data

1. Name the factor (or factors) and its (their) levels.
2. Is there a block variable? If so, name it and its levels.
3. Run an analysis of variance. Which effects are significant? Explain what the significant effects mean in plain English.

/\* Example ANOVA Code: You supply names of Fac1, Fac2, and Response \*/

**proc** **glm** data=anova;

class Fac1 Fac2;

model Response = Fac1 | Fac2;

output out=resids p=yhat r=resid;

**run**;

**quit**;

1. How many sources of error are there for the model? Name them.
2. Examine the residuals. Interpret what you see. Do we need to transform the data? Explain. If so, go ahead and transform the data. Use the transformed data for the rest of the exercise. Check the residuals for the transformed model before making your choice!
3. With either the transformed or untransformed data (your pick based on residual analysis), is the interaction effect statistically significant? Explain. What do we do next?
4. Create an interaction plot for the data you have chosen to use. To do this, we will need the means for each of the 9 combinations of the factors. Paste your plot below and interpret it.
5. If your data are balanced, create a data set in which one or more of the cells has a different number of observations, then run an analysis of variance like we did previously. If your data is already unbalanced, then just examine the Type I and Type III sums of squares. The procedure is the same as far as SAS is concerned. SAS automatically reports both Type I and Type III sums of squares. Explain the different interpretations of Type I and Type III sums of squares.