

This is due on Monday, April 1 by 2pm, via Blackboard, preferably as an R file.

- 1) Researchers¹ typically find that people perceive their own group as more variable (i.e., heterogeneous) than other groups. In an imaginary study, researchers were interested in understanding the mechanism behind this effect. Participants all rated a target group on a variety of characteristics. Student participants were randomly assigned to rate members of an ingroup (i.e., others who had the same major as them) or an outgroup (i.e., others who had a different major than them). In the [outgroup.dat](#) file (use the tidyverse function `read_delim` to import this, or look around to try to figure out another way to do so; it's a data-importation adventure), there are several variables of interest, including *condition* (1 = ingroup, 2 = outgroup; be sure to treat this as a factor or to code it usefully), *heterog* (the main outcome, how variable the participants perceived the target group, such that higher numbers indicate more heterogeneity), and some potential mediators, one of which is the focus here: *subgr* (the number of subgroups the participant named within the target group, e.g., clinical, social, cognitive, etc. within psychology).
 - a. Fit a model to test whether this research has findings consistent with existing research (i.e., that the ingroup is perceived as more heterogeneous than the outgroup). Draw a brief conclusion, citing descriptive and inferential statistics in support.
 - b. Test if the number of subgroups named mediates the relationship between ingroup/outgroup and heterogeneity. Do this two ways. First, use the Baron & Kenny causal steps approach, and then use a bootstrapped mediation analysis. Draw a brief conclusion citing the results of both methods used to test for mediation.

- 2) The data in [salary2.csv](#) are (fictitious) salary data from three academic departments, along with information about: years since PhD, number of publications, and sex. Suppose we are interested in whether the number of publications has an equivalent (or different) influence on salary across the three departments.
 - a. Perform an analysis to answer the question, "Do publications have the same influence on salary across departments?" Use dummy coding and make the psychology department the reference group. Consider whether to center publications. (Include only the variables of interest in your model. That is, ignore sex and years since PhD.) In answering the question, be sure to say which department has a stronger/weaker relationship than which other department, citing whatever statistics you can muster to support your claims.
 - b. Perform an analysis or analyses that allow you to answer this question: For each department separately, is there a significant relationship or not between publications and salary?
 - c. Your analysis in part a might have left you without information about whether the publications-salary relationship differs between a pair of departments. Figure out a way to compare those two departments. (You might have done so already in answering part a.)

¹ This question is modified gently from a question used by a prior instructor for this course, Patrick Forscher.