Homework 3
Due Thurs Dec 5 10 AM

For all questions, please show your work or include a copy of the output, whichever is relevant. Please type your answers in report form, as if you were describing results in a published study. Include the relevant statistical values in the text. Your answers should be in your own words and most answers should be approximately one paragraph.

For the following questions, use an expanded version of the positive psychology intervention study (pospsych2.sav), which can be downloaded from http://web.pdx.edu/~newsomj/data.htm. This data set has four positive interventions (intervention) conditions: 1=“Using Signature Strengths,” 2 = “Three Good Things,” 3= “Gratitude Visit,” and 4=“Recording early memories” (used as the control condition). The data set also includes the 20 individual items (cesd01 to cesd20) of the Center for Epidemiologic–Depression scale (see the labels in the SPSS data set for items). Each question is answered on a four-point frequency scale from 1 to 4 (“never” to “most or all of the time”). A total scale score of depression (cesd), a sum of the 20 items, is also included in the data set.

1. Investigate the internal reliability of the CES-D scale, using SPSS to compute Cronbach’s alpha (be sure to obtain the mean inter-item correlation and alpha-if-item-deleted information). If there are any items that should be removed, delete them one at a time and rerun the analysis until the reliability can no longer be improved. Report and interpret your findings, choices, and justifications for the changes made to the scale. Include only the printouts and results write-up for the initial and final analysis.

2. Below are hypothetical data from a sample of employees of three call center agencies (N = 18): Instant Sales Partnership (ISP), Advanced Targeted Calling (ATC), and the Badgering Cell Associations (BCA). Each score represents employee perceived stress level ratings (1 = “Not at all stressful” to 6 = “The most stressful of any job I have had”). Using the data from the table below, compute an ANOVA by hand to determine whether employees from the three agencies differ significantly on their perceived stress levels. Please show your work. Report and interpret your results, including the relevant means and statistics and magnitude of effect ($\eta^2$) in your write-up.

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3. Enter the data from the previous problem and use SPSS and R to conduct an ANOVA and explore your results further by requesting Tukey (or Games-Howell, if appropriate) post hoc tests to check which agencies differ from one another on employee stress. Report and interpret your post hoc test findings (omit the ANOVA results) in terms of the research problem.

4. Using the data from the new positive psychology data set, conduct an ANOVA to test whether intervention groups differ on depression scores in SPSS or R (please use the pre-computed index that uses all items, cesd). Then explore your results further by conducting an ANOVA and requesting Tukey (or Games-Howell, if appropriate) post hoc tests to check which interviewing
groups differ from one another on employee quality. Report and interpret the results from the ANOVA, effect size, and the post hoc test findings in terms of the research problem.

5. Use SPSS or R to conduct a planned contrast to discover whether the "Using signature strengths" group (group 1) and "Recording early memories" group (group 4) significantly differ on depression. (Note that, in practice, you would never do both post hoc tests and a priori contrasts after an ANOVA). Report and interpret your results.

For the next problems, download a new data set, touch.sav, from the data page, http://web.pdx.edu/~newsomj/data.htm. This data set comes from an experimental study on whether a touch on the shoulder from a female experimenter helped elevate anxiety about death.¹ There are three variables in this data set, an indicator for the experimental variable (touch: 0="no touch", 1="touch"), relationship status (status: 0="single", 1="partner"), and a measure of death anxiety (death), which is an average of five questions such as "I'm afraid of death, because then I will have to part with life." on a five-point response scale, ranging from "not at all" to "very much."

6. Use SPSS and R to test whether there is a significant interaction effect between touch and relationship status on participants' death anxiety. Report and interpret your findings, being sure to include the means, statistical test values, significance, and partial eta-squared values.

7. Use SPSS and R to obtain the appropriate follow-up test that will answer whether there was a significant difference between single and partner groups on death anxiety among those in the touch experimental group. Report and interpret your findings, being sure to include means, statistical test values, significance, and eta-squared values.

Download another version of the positive psychology intervention data set, pospsychlong.sav. This version has measurements of the Authentic Happiness Inventory taken at five time points (ahi1, ahi2, ahi3, ahi4, ahi5) as well as the variable for the original two intervention groups (int; 0=control, 1=three good things). Use this data set to answer the following questions.

8. Conduct a repeated-measures ANOVA in SPSS and R to compare the five happiness measurements to see if respondents' happiness levels changed over time. Examine and report the recommended type of repeated-measures ANOVA test for this situation. Conduct an appropriate follow-up test to compare the first and second waves of happiness. Report and interpret your findings, being sure to include means, statistical test values, significance, and eta-squared values.

9. Use SPSS and R to conduct an ANOVA to determine whether change in happiness differs in the two intervention groups. Examine the portion of the repeated-measures ANOVA output most appropriate for the data characteristics. Report and interpret your findings, being sure to include means, statistical test values, significance, and eta-squared values. No follow-up tests are required, but state what an appropriate follow-up test might be for this set of results.

10. Read one of the following articles (password protected copies are available from the class website http://web.pdx.edu/~newsomj/) and write two paragraphs summarizing the article. First, describe the study design (e.g., randomized experiment, non-equivalent control group design, cross-sectional survey; for a quick refresher, see http://sphweb.bumc.bu.edu/otlt/mph-1 Data are from one of the studies reported by Koole, S. L., Tjew A Sin, M., & Schneider, I. K. (2014). Embodied terror management: interpersonal touch alleviates existential concerns among individuals with low self-esteem. Psychological science, 25(1), 30-37. Full data set is available from: https://openpsychologydata.metajnl.com/articles/10.5334/jopd.ahv
modules/programevaluation/ProgramEvaluation7.html) and purpose of the study in your own words. Be sure to include who/what was studied (e.g., who were the participants?) and the number of cases. Then, choose one statistical test used in the article that you have learned about in the course in this section (i.e., one-way ANOVA with follow-up tests, two-way ANOVA, within-subjects ANOVA, mixed ANOVA, or loglinear analysis), and, in your own words, describe the hypothesis that is being tested, the results obtained, and what the findings mean. Be sure to include the relevant statistical values and whether the results were significant. If there were follow-up tests conducted, describe those results (if not, indicate that there were no follow-ups and whether or not you think this was appropriate in this case). Write your paragraphs as if you were describing results in a published article and reporting someone else’s results as in a review article.


