

PSYC 2021 – Statistical Methods I
Assignment #2

Due Date: November 24, 2016 (Please submit a hard copy)

Please ensure that your name and student number are included on your submitted assignment.

Note: Solve all questions using *R*, unless it is specified that they must be completed by hand. Where it is necessary to show R code and output, please copy and paste from the *Console* window.

Question 1

- a) Create a normally distributed population of 100000 cases with a mean (μ) of 80 and a standard deviation (σ) of 15, and call it 'pop'.
- b) Take a sample of size $N = 15$ (without replacement) from the population, and call it 'samp'.
- c) Pretend to give your sample an intervention. More specifically, add a normally distributed variable with $\mu = 7$ and $\sigma = 5$ (call it 'pop2') to your sample ('samp'). Call this new variable 'inter_samp'.
- d) Use null hypothesis testing (all steps, $\alpha = .01$) to determine if the fake intervention was effective at increasing scores. Be sure to interpret (even if it is purely subjective) the effect size and confidence interval width, and include a general summary of the results.

Question 2

Dr. Black asked 300 students to choose between four characteristics of a partner that they find most important. The characteristics that they had to choose among were (dataset codes in parentheses): i) physical attractiveness (attractive); ii) personality (personality); iii) intelligence (intelligence); or iv) socioeconomic status (socstat). The dataset (available on Moodle) is entitled 'ass2_q2.csv'. Use $\alpha = .05$ for the questions below.

- a) Use null hypothesis testing (all steps) to determine if physical attractiveness, personality, intelligence, and socioeconomic status are not equally important in selecting a romantic partner. Be sure to interpret the effect size (again, even if it is purely subjective) and include a general summary regarding the results.
- b) What Dr. Black was really interested in was whether physical attractiveness was more important than personality as a characteristic that students value in a partner. Using only students who chose one of these two options (attractiveness or personality), use R to generate a table of frequencies for each of the two options. Then, BY HAND, use null hypothesis testing (all steps) to determine if students were more likely to choose physical attractiveness over personality as their most important characteristic (i.e.,). Calculate the p-value and/or critical value using R. Be sure to (subjectively) interpret the effect size and include a general summary statement regarding your results.