

# PSYC 5301: Research Methods

Tarleton State University

Homework 9

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Note: the data files for the problems below are available on Canvas in the file `hw9data.zip`. When you download the file, you should be able to “unzip” the file into a directory which contains 3 separate CSV files.

In each of the problems below, you will conduct a full mediation analysis, using the following steps:

- Draw a path diagram for the direct model ( $X \xrightarrow{c} Y$ ) and estimate the total effect  $c$ .
  - Draw a path diagram for the mediation model ( $X \xrightarrow{a} M \xrightarrow{b} Y$ ) and estimate the effects  $a$  and  $b$ .
  - Use the estimates obtained in parts (a) and (b) to calculate the direct effect  $c'$  (i.e., the effect of  $X$  on  $Y$  after controlling for the mediator  $M$ ).
  - Use Sobel’s (1982) method to test the mediation model. That is, test  $\mathcal{H}_0 : ab = 0$  (i.e., no mediation occurred) against  $\mathcal{H}_1 : ab \neq 0$ . Report both a  $p$ -value and a Bayes factor and interpret the results of the test.
1. The data in the file `mediation1.csv` is from a study designed to test whether rumination mediates the relationship between stressful life events ( $X$ ) and anxiety ( $Y$ ).
  2. The data in the file `mediation2.csv` is from a study designed to test whether need for self enhancement mediates the relationship between altruism ( $X$ ) and concern for nature ( $Y$ ).
  3. The data in the file `mediation3.csv` is from a similar study as Problem #2, but from a different population. What do you notice about this mediation that is perhaps different from Problems #1 or #2? (hint – here, self enhancement serves as a *suppressor* variable).