LEARNING CHECK

1. Here are the null hypotheses that Clayton et al. (2013) tested:

   #1. H_o: Loneliness and Facebook intensity will be uncorrelated.

   #2. H_o: Anxiousness and Facebook intensity will be uncorrelated.

   #3. H_o: Alcohol use and Facebook intensity will be uncorrelated.

   #4. H_o: Marijuana use and Facebook intensity will be uncorrelated.

Take a look at the correlation matrix of their results (Table 12.2). For each hypothesis, (a) state the correlation between the two variables in the hypothesis; (b) state whether the hypothesis was rejected or not rejected; and (c) state the *p* value associated with each correlation used to test that hypothesis.

A: #1: $r = .11$; not rejected because the *p* value was greater than .05

#2: $r = .18$; rejected because the *p* value was less than .01

#3: $r = .16$; rejected because the *p* value was less than .05

#4: $r = -.05$; not rejected because the *p* value was greater than .05

2. Explain why a restricted range makes a correlation coefficient smaller than it would have been had the range of values for one or both variables not been restricted.

   A: To detect patterns in data, there must be a range of the values (or scores) of the variables we are studying. It becomes progressively more difficult to detect relationships as the amount of variability declines. Imagine we want to study how the number of hours that students sleep correlates with performance on a quiz in class the next morning. If every student scored the same on the quiz, it would be impossible to detect any relationship between these two variables.

3. Why is it the case that no matter how strong the correlation is between two variables, we can NEVER, EVER conclude that a change in one variable CAUSED a change in the other variable?

   A: There is always the possibility that both variables being correlated are each related to some third, unmeasured variable. It is this third, unmeasured variable that ultimately is responsible for the correlation we found.

4. Why is it a fact that the more ice cream cones that are sold correlates to more people who drown in backyard pools?

   A: Think about the time of year during which people tend to eat ice cream cones and the time of year people swim in an outdoor pool. Both events tend to occur during the summer months; hence, it is the time of year that is the factor responsible for the relationship between ice cream cone sales and the number of drownings in backyard pools.

5. Which of the following is the **weakest** correlation coefficient?

   a) .49 c) .07

   b) −.86 d) −1.00

   A: c

6. Explain why choice c was the best answer to question 5.

   A: The strength of a correlation is determined by how close the coefficient is to 1.0, regardless of whether it is +1.0 (a perfect positive correlation) or −1.0 (a perfect negative correlation). Therefore, choice c provides the coefficient furthest from 1.0, and hence, why it is the weakest correlation coefficient.