LEARNING CHECK

1. How are the one-way, between subjects ANOVA and one-way, repeated-measures ANOVA similar? How are these two analytic tools different?

   A: They are similar in that they both compare differences among three or more group means. They are different because in a between-subjects ANOVA, each person contributes data to one and only one group being analyzed. In a repeated-measures ANOVA, each person will have contributed data to each group being analyzed. In Bernard et al.'s (2104) research, each participant provided 15 datapoints, one for each student organization to which he or she allocated money (even if he or she did not allocate any money to a student organization, it was still a datapoint of $0).

2. What is the primary advantage of using a one-way, repeated-measures ANOVA instead of the one-way, between-subjects ANOVA?

   A: The repeated-measures ANOVA contains less within-group variability than does the between-subjects ANOVA. Because each person contribute data to all groups being analyzed, participant individual differences are less influential in a repeated-measures ANOVA than they are in a between-subjects ANOVA.

3. Given this advantage of the one-way, repeated-measures tool, why would a researcher ever use the one-way, between-subjects ANOVA?

   A: It may not be practical to use a repeated-measures design. For instance, if you wanted to study how exposure to physically attractive models influences how much people are willing to pay for a product that the model is advertising, it would probably not be a good idea to have the same participants respond to the same product being advertised by an attractive model and again by a less attractive model. Doing so will make it easy to guess the purpose of the research, something researchers don't want to have happen.

4. By using symbols, state the null (H_o) and research (H_r) hypotheses in Bernard et al.'s (2014) research.

   A:

$$H_o: \mu_{agricultural} = \mu_{architecture} = \mu_{Black\ Student\ Union} = \mu_{College\ of\ Business} = \mu_{Dairy\ Science} = \mu_{Engineering} = \mu_{Arts\ \&\ Sciences} = \mu_{History} = \mu_{Int'lBuddies} = \mu_{Kinesiology} = \mu_{Economics} = \mu_{Math} = \mu_{Intlhonorpsychology} = \mu_{Socialwork} = \mu_{Unionprogram}$$

$$H_r: \mu_{Black\ Student\ Union} < (\mu_{agricultural} = \mu_{architecture} = \mu_{College\ of\ Business} = \mu_{Dairy\ Science} = \mu_{Engineering} = \mu_{Arts\ \&\ Sciences} = \mu_{History} = \mu_{Int'lBuddies} = \mu_{Kinesiology} = \mu_{Economics} = \mu_{Math} = \mu_{Intlhonorpsychology} = \mu_{Socialwork} = \mu_{Unionprogram})$$

5. Referring back to the previous question, just as a refresher, what does μ stand for?

   A: This is the symbol for the population mean. We use sample data to draw conclusions about the population because it is ultimately the population that we want to learn about and, hence, make hypotheses about.