

LEARNING CHECK

1. Why is it that we can never “prove” a research hypothesis to be true?

A: There will always some possibility, no matter how small, that our sample results were a function of random variation. We can only “suggest” the research hypothesis is correct when there is sufficient evidence from the sample to reject the null hypothesis.

2. A statistically significant outcome is defined as an outcome that has a _____ probability of occurring if the _____ hypothesis is true.

- a) small; null c) small; research
b) large; null d) large; research

A: a

3. If we change our alpha level from .05 to .06, then the Type I error rate will:

- a) decrease. c) remain the same.
b) increase. d) it is impossible to tell without additional information.

A: b

4. You conduct an experiment, analyze the results, and obtain statistically significant effects at an alpha level of .01. Which one of the following statements is true?

- a) You’ve made a Type I error.
b) You’ve made a Type II error.
c) The probability that the statistical result is due to chance is 1% or less.
d) The probability that the difference between the groups is due to a true effect in the population is 1% or less.

A: c

5. Although we said that most researchers think a Type I error is more serious than a Type II error, provide an argument why Type II errors could be considered more serious than Type I errors.

A: To commit a Type II error, we fail to reject the null hypothesis when in fact it should have been rejected. If this happens, future researchers might not conduct additional research because it appears that “nothing is there” from our research. With a Type I error, it appears there is some relationship between variables in the population, which might stimulate additional research.