

- c. Conduct the appropriate analysis.
 - d. Should H_0 be rejected? What should the researcher conclude?
7. Imagine that the researchers in exercise 6 want to conduct the same study as a within-subjects design. Participants rate both the green and red sauces by indicating the tastiness on a 10-point scale. As in exercise 6, researchers are concerned that the color of the green sauce will adversely affect tastiness scores. Tastiness scores tend to be skewed. The scores follow.

Participant	Red Sauce	Green Sauce
1	7	4
2	6	3
3	9	6
4	10	8
5	6	7
6	7	5
7	8	9

- a. What statistical test should be used to analyze these data?
 - b. Identify H_0 and H_a for this study.
 - c. Conduct the appropriate analysis.
 - d. Should H_0 be rejected? What should the researcher conclude?
8. You notice in your introductory psychology class that more women tend to sit up front, and more men sit in the back. To determine whether this difference is significant, you collect data on

the seating preferences for the students in your class. The data follow.

	Men	Women
Front of the Room	15	27
Back of the Room	32	19

- a. What is χ^2_{obt} ?
 - b. What is df for this test?
 - c. What is χ^2_{cv} ?
 - d. What conclusion should be drawn from these results?
9. Identify the statistical procedure that should be used to analyze the data from each of the following studies:
- a. A study that investigates whether men or women (age 16 to 20) spend more money on clothing. Assume the amount of money spent is normally distributed.
 - b. In the (a) study, it has since been determined that the amount of money spent really is not normally distributed.
 - c. A study that investigates the frequency of drug use in suburban versus urban high schools.
 - d. A study that investigates whether students perform better in a class that uses group learning exercises versus a class that uses the traditional lecture method. Two classes that learn the same information are selected. Performance on a 50-item final exam at the end of the semester is measured.

CRITICAL THINKING CHECK ANSWERS



10.1

1. Effect size indicates the magnitude of the influence of the experimental treatment, regardless of the sample size. A result can be statistically significant because the sample size is very large, even if the effect of the independent variable is not so large. Effect size indicates whether this is the case because, in this situation, effect size should be small.
2. In the long run, it means that the obtained t is more likely to be significant. In terms of the formula used to calculate t , increasing the sample size will decrease the standard error of the dif-

ference between means ($s_{\bar{X}_1 - \bar{X}_2}$). This, in turn, will increase the size of the obtained t . A larger obtained t means that the obtained value is more likely to exceed the critical value and be significant.

3. Decreasing variability also makes a t test more powerful (likely to be significant) because decreasing variability also means that $s_{\bar{X}_1 - \bar{X}_2}$ (the standard error of the difference between means) will be smaller. Again, this increases the size of the obtained t , and a larger obtained t means that the obtained value is more likely to exceed the critical value and be significant.

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