

## Chapter 8: Sampling Distributions and Hypothesis Testing

1. What is a sampling distribution?
  - a. The distribution of a statistic over repeated sampling.
2. What is sampling error?
  - a. The variability of sample estimates of some statistic, such as the mean.
3. What is the standard error of the mean?
  - a. The standard deviation of the sampling distribution of the mean
4. What do we mean by hypothesis testing?
  - a. We are referring to testing some hypothesis about the relationships between population parameters.
5. What is a research hypothesis?
  - a. This is the hypothesis that there is a true difference or a true relationship between variables.
    - i. Ex. Interference condition vs. Control condition
6. What is the null hypothesis?
  - a. This is the hypothesis that the apparent difference or relationship is due to chance. It suggests that there is not difference or relationship between variables.
7. Why do we test the null hypothesis instead of the alternative hypothesis?
  - a. The alternative hypothesis is too vague, whereas the null hypothesis is specific. Also, if we can reject it, we can argue that the alternative hypothesis is true.
8. What is another term for the rejection level?
  - a. The significance level.
9. What is Type II Error?
  - a. It refers to rejecting the null hypothesis when the null is actually true
10. What is a critical value?
  - a. It is the value of the test statistic beyond which you reject the null hypothesis.

## Chapter 12: Hypothesis Tests Applied to Means: One Sample

1. What 3 things does the central limits theorem tell us?
  - a. The mean = population mean
  - b. The standard error = population standard deviation divided by the sqroot of N
  - c. The distribution approaches normal as N increases
2. Why do we care about the standard error of a statistic?
  - a. It tells us how variable that statistic is over repeated sampling
3. How does the formula for t differ from the standard formula for z?
  - a. We replace X with X-bar (sample mean)
  - b. We replace  $\mu$  with the mean under the null hypothesis
  - c. → We replace  $\sigma$  with the standard error of the mean (SEM)\
4. Why is the sampling distribution of the variance relevant to the use of t-tests?
  - a. The sampling distribution is positively skewed, especially for small samples, so any particular sample standard deviation is more likely to underestimate  $\sigma$  (population standard deviation) than to overestimate it
5. When we are dealing with one set of scores, the degrees of freedom for t will be \_\_\_\_\_?
  - a. N-1
6. Name 3 things that affect the size of the t we calculate:
  - a. The size of the difference between variables
  - b. The size of the variance
  - c. The sample size
7. What do we mean when we speak of an “effect size measure”?
  - a. We refer to some measure that tells about how large a difference is, in a meaningful metric, rather than whether or not it is statistically significant
  - b. it describes how big the difference is between two variables
8. What do we mean by a confidence interval?
  - a. We are specking about an interval that is calculated in such a way that it has a particular probability (often .95) of including the true population value of a parameter (often the population mean)
9. What do we mean by Cohen’s effect size mean,  $d$ ?
  - a. It is a measure of how far the sample mean differs from a population mean when expressed in terms of standard deviations
10. What is the sampling distribution of t?
  - a. This is the distribution that the t statistic would take on over repeated sample if the null hypothesis is true

### Chapter 13: Hypothesis Tests Applied to Means: Two Related Samples

1. What do we mean by matched or dependent samples?
  - a. The observations come in pairs, such that the two items in the first row of the data come from the same person or are related in some way
2. The major advantage of matched samples is that \_\_\_\_\_?
  - a. They allow us to remove extraneous variance before calculating our t
3. What is the usual null hypothesis with matched / dependent samples?
  - a. The null hypothesis is that the population mean difference from one measurement to another, on the same person, is equal to zero. Said another way, there is no differences between the two conditions.
4. Give 2 advantages of matched/dependent-samples study over a study with independent groups?
  - a. Matched samples control for individual differences
  - b. They reduce the influence of extraneous variables
5. What is a carry-over or order effect?
  - a. This refers to a situation in which something about the first measurement influences the second