

# Answers to Application Activities in Chapter 5

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## 5.12 Application Activity for Choosing a Statistical Test

1a: Chi-square, because gender is categorical and so is the politeness variable.

1b: *T*-test, because there is one categorical variable with only two levels (gender) and one continuous variable, resulting in only 2 mean scores (and these are independent samples because the people in the groups are different).

2a: One-way ANOVA, because there is one categorical variable with 4 levels (treatment) and one continuous variable.

2b: Repeated-measures ANOVA because the same people are tested at more than one time, and there is a categorical variable of treatment group as well (if we only wanted to see whether one group of people differed at time 1 versus time 2 we would need a paired-samples *t*-test).

3: Paired-samples *t*-test, because there are only two mean scores that involve the same people at two different times.

4a: A one-way ANOVA, because there is one categorical variable with 3 levels (treatment) and one continuous variable.

4b: A correlation, because there are two continuous variables and we are looking for the relationship between them.

5a: *T*-test, because there are only 2 mean scores, those of each group (and this is independent-samples because the people in each group are different).

5b: One-way ANOVA, because there is one categorical variable with 3 levels (group) and one continuous variable (score on question-formation test)

5c: Repeated measures ANOVA, because the same people are tested at more than one time, and there is a categorical variable of group as well

6a: Correlation because there are two continuous variables and the researcher wants to know the strength of the relationship between them.

6b: Multiple regression because there are 3 continuous variables and the researcher wants to know how much the independent variables of aptitude and motivation explain the variance of the tonal test scores (the dependent variable).

7a: A repeated measures ANOVA because there are three independent, categorical variables and one dependent continuous variable (reaction time), and the researchers want to know how the groups (age, language background, type of task) affect reaction times. Repeated measures are

needed because each person did BOTH congruous and incongruous tasks (so this measure is repeated).

7b: An ANCOVA would be able to factor out the effects of intelligence from the other factors (actually, it would need to be a repeated measures ANCOVA).

8: A chi-square test, since both variables are categorical (you are either an English language learner or not, and you are either put into a talented and gifted program or you are not).

9a: A paired-samples *t*-test, since there are two scores taken from the same group of people but at different times (pre-test and post-test)

9b: A repeated-measures ANOVA would have to be used since there are more than two variables (there are 3 sets of scores) and since they are not independent (because they are taken from the same group of people). The one variable in the test would be Time, with 3 levels.

9c: A *t*-test, because there are only 2 mean scores, those of each group (and this is independent-samples because the people in each group are different).

10: A correlation because there are two continuous variables and the researcher wants to know about the relationship between them.