

Chapter 21—Choosing the Appropriate Test

[N.B. Please review the disclaimer concerning these answers at the beginning of Chapter 21. There are many different ways to think about a study.]

21.1 This test involves comparing two proportions, and the easiest way to do that is to set up a 2×2 contingency table with Group on one dimension and Mastery on the other.

21.3 Probably the most appropriate approach is simply to correlate the difference in times between the two swims with the swimmer's optimism score. Alternatively you could break the subjects into groups on the basis of their optimism scores (e.g. Optimists, Neutral, and Pessimists) and run an analysis of variance on the difference scores.

21.5 This is a t test for two independent groups—children of divorced families and children of intact families.

21.7 Here is the situation that I described in answer Exercise 21.3, and we would have an analysis of variance with three groups, using the difference score as the dependent variable.

21.9 Here we have two independent groups with three different dependent variables. The author could run three separate t tests for independent groups, but we might want to use a more stringent level of significance (e.g. $\alpha = .01$) to avoid a high familywise error rate.

21.11 This could be treated as a two-way analysis of variance if we break the data down by race and by Afrocentric facial features. A problem with this is that we would presumably have more Afrocentric features for black inmates, which would lead to unequal sample sizes (i.e. an unbalanced design).

21.13 The authors simply want to compare the performance of three groups. They could use a one-way analysis of variance on the MFFT scores for the second administration. They should probably also run it on the scores for the first administration to check the experimental hypothesis that the groups started out together.

21.15 The most important thing to do would be to plot the data over time looking for trends. A repeated measures analysis of variance would tell you if differences are significant, but it is the direction of differences, and whether they return to baseline, that is likely to be most informative. The authors further broke down the participants in terms of their preoccupation with 9/11 and looked at differences between those groups. Interestingly, even the least preoccupied group showed changes over time.

21.17 This is a difficult one, partly because it depends on what Payne wants to know. I assume that she wants to know how rankings of characteristics agree across sexes or across years. She could first find the mean rank assigned to each characteristic separately

for each sex and year. Because the raw data were originally ranks, I would probably be inclined to then rank these mean values. She could then calculate Spearman's r_s between males and females for each year or between years within each sex. The correlations would be obtained for the ten pairs of scores (one per characteristic).

21.19 This is a 2×4 analysis of variance with two levels of sex and 4 levels of occupation. The major emphasis is on the occupations, so multiple comparisons of those means would be appropriate.

21.21 There are two independent groups in this experiment. The authors should use a Mann-Whitney test to compare average locus of control scores.

21.23 This is a situation for a chi-square goodness-of-fit test. The conditions are Rotated versus Stationary, and the count is the number of subjects choosing that condition as giving stronger contours. The expected values would be $37/2 = 18.5$. The data are sufficiently extreme that a test is superfluous.

21.25 This is another complex repeated-measures analysis of variance. The comparison of recall of the two lists (one learned before administration of the drug and the other learned after) is a repeated measurement because the same subjects are involved. The comparison of the Drug versus Saline groups is a between-subjects effect because the groups involve different subjects.

21.27 This is basically a correlational study, where we separately correlate the two dependent variables with amount of alcohol consumed. Given the 14 year gap, and all of the other factors that affect development, we should not expect very strong correlations even under the best of conditions.