TIME TWO – POST TEST – part of Lab 8

From Computer Lab Worksheet Week 8: Review of Independent & Related t-test Designs

1a. In your own words explain the key difference between a Repeated Measures Design and Independent-Samples Designs. 1b. Next please explain the key differences between Matched Pairs and Independent-Samples Design. (4 pts total – 0-2 for both)

GRADING RUBRIC: KEY DIFFERENCES

1a. Repeated-Measures/Independent:

2 = Independent designs include 2 separate groups of people – Repeated-measures designs include the same people tested twice.

1 = mentions one or the other but not both

0 = includes neither

1b. Matched Pairs/Independent:

2 = two separate groups of people in both designs. –Independent designs people in both groups are not related in any way - but in matched pairs they have been paired based on some pretest score (IQ) or they have some natural relationship to each other (married, siblings, friends)

1 = mentions 1 or 2 of the above aspects – but only partially correct

0 = mentions nothing that clearly explains why they are different.

2. Imagine that you were asked to design a study to determine if exposure to violent video games makes kids more aggressive in a new game situation – playing Wac-A-Mole (hitting a fake mole).

(2 pts total - 1 or 0 both)

1. How could you design a study to test this using an Independent-t test to compare 2 groups

+1 for: randomly assign the children to two conditions – playing violent video game or no video game play then have them all do the Wac-A-Mole test

or

- compare a group of children who normally play lots of violent video games with a group who doesn’t play violent video games – this is quasi-experimental -they are existing groups not randomly assigned – then have them do the Wac-A-Mole test

0 = not a design including two separate groups

1. How could you design this study to use a Related-t test to compare them? (any related design is OK)

+1 Pair or match the children based on amount of video-game play they report – then compare scores on Wac-A-Mole aggresion.

+1 Do a repeated measures design – have child play a non violent game before Wac-A-Mole one day and have the same child play a violent game before Wac-A-Mole the next day.

0 - not a design including paired or repeated measures – not relevant

3. Identifying Research Designs. Listen as your instructor reads descriptions of studies. Identify the type of test statistic appropriate for each one: independent t, related-samples t, or one-sample t. Briefly explain why it is appropriate and whether or not the hypothesis is two-tailed or one-tailed (directional).

(6 points total – Type of test (1 or 0) Why also 1 or 0.

Type of test Why?

Study 1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Study 2 not included in assessment – covers a third t-test.

Study 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Study 3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Study 4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Descriptions used for #3 Identify Research Designs.

1. A research study was conducted to examine the differences between older and younger adults on perceived life satisfaction. Ten older adults (over the age of 70) and ten younger adults (between 20 and 30) were given a life satisfaction test. What type of t-test should you use to compare older and younger adults? Now briefly explain why.

(Independent-sample t. Because they are two separate groups – not same people in both.)

***This one will be included in the lab but not in this assessment.***

1. You wish to determine whether New York City public school students score higher on average than the rest of the country on a standardized math exam. How would you compare the average math score of 5th graders nationally (which is known to be 85) with the average score of 5th graders in NYC? (which this past year was 86.5)? Now briefly explain why.

(One-sample t). Comparing one sample of kids to a known population value (all USA).

1. To improve the study habits of students, nine students were randomly selected to attend a Study skills seminar to teach them better study skills. To test whether it worked, a researcher recorded the hours per week each student studied both before and after the seminar. What type of test should you use to determine if the Study Skills Course changed study time? Now briefly explain why.

(Related-samples t). Because it is repeated-measures – sample people are reporting study time before and after the course. This also has an obvious design flaw – possible confound – demand characteristic that you could discuss with them.)

1. A researcher believes that sleep deprivation will lower cognitive performance. Participants spend the night in his lab and are randomly assigned to get either 3 hours of sleep or 8 hours of sleep. The next morning all take the Cognitive Ability Test with scores ranging from 1-30. How does he test whether the low sleep group did worse than normal sleep group? Now briefly explain why.

(Independent-samples t. These people were randomly assigned to condition – high or low sleep – two separate groups.)

SUMMARY – 12 points possible

#1 – both definitions are graded 0,1,2 so 4 points possible

#2 – both a and b are graded 0 or 1 - correct/incorrect 2 points possible

#3 – type of test and why both graded 0 or 1 6 points possible

NOTE: Study 2 is not included because it covers the third t-test not part of the goals.