Identifying the Correct Statistical Test

This assignment uses the same research scenarios as in assignment 2. Look back at your graded assignment 2.

If the scenario was describing an experiment or quasi experiment (i.e. blue box), then for **each DV** indicate the FULL name of the test you would use to analyze the data to answer the research question (e.g. 1 way independent ANOVA, not ANOVA). If you suspect you need to use a 2 way mixed ANOVA, you must also specify with factor is between subjects and which factor is within subjects.

If the scenario was describing a descriptive research study (i.e. green box), then tell me whether you would use correlation, regression, or chi-square goodness of fit to answer the research question.

PLEASE type your answers! This assignment is to be completed by only one person – yourself!

**Tip:**  Use the decision tree helper posted to the class web page to help you pick the correct test.

1.  A researcher wants to know if men and women respond differently to the sound of a crying infant. She has participants listen to 3 min of a crying infant while recording their galvanic skin response (GSR levels are an indication of stress. GSR measures electrical skin conductance in micro ohms. Higher GSR levels indicate more stress). She then compares mean GSR for men to mean GSR for women.

2.  Do magnetic bands really improve balance and flexibility? To find out, a researcher blind folds a group of people. Half of them are fitted with a magnetic band, the other half with a non-magnetic band (type of band was determined at random). For each participant, he records how long (in sec) they can balance on their right leg. He also records how far (in cm) each participant can reach past their toes while in a sitting position with their legs out in front of them. He then compares the mean balance time for the two groups, and the mean reach distance for the two groups.

3.  Does whether someone loves or hates horror movies depend on gender? A researcher goes around campus and asks 50 men and 50 women whether they love or hate horror movies. He counts the number of people falling into each of the resulting 4 categories (men-love, men-hate, women-love, women-hate).

 4.  Is smell really important to taste? To find out, a researcher takes a group of 50 people and places a small bowl of chili in front of them. Half the people have nose plugs on. The other half do not. Group assignment was determined at random. All participants are asked to 1) rate how “tasty” the chili is, on a scale of 1-10, and 2) correctly identify the spices/herbs in the chili (there were 5 spices/herbs in the chili, so they could score anywhere between 0-5). The researcher then compared the mean “tasty” score for the two groups, as well as the mean i.d. score for the two groups.

5.  Are final grades in statistics dependent on attendance? The “notorious” Dr. White keeps track of daily attendance for each student and records their final grade in stats at the end of the semester. She suspects that as the number of absences increases, final grades will decrease.

6. Is the ability to focus attention dependent on gender? Does it also depend on stress levels? To find out, a researcher randomly assigns half the men and half the women to a low stress group. The remaining participants are assigned to a high stress group. All participants are then given the “bells test”… participants are shown a matrix of 120 of various shapes… they are given 60 seconds to circle all the bell shapes they can find (there are 15 bells total). Each participant thus receives a score between 0-15. The researcher compares the mean “bell” score for men vs women, and for low stress vs. high stress.

7. Do Canadians watch more hockey than U.S. Americans? A researcher randomly surveys 1000 Canadians and 1000 Americans and records the number of hours each spends watching hockey (either on TV, internet, or in person) over a typical hockey season. Mean number of hours spent watching hockey was then compared between the two groups.

8. Does diet (normal vs gluten free) affect cholesterol levels and promote weight loss? Does a person’s health status (healthy vs celiac disease) also affect cholesterol levels and promote weight loss? People with and without celiac disease were randomly assigned to either a gluten free or non-gluten free diet for 6 months. The amount of weight lost (or gained) was recorded for each participant, as was the net decrease (or increase) in cholesterol levels. The researcher then compared the mean cholesterol levels for people in the normal vs gluten-free groups, and the mean cholesterol levels for people with and without celiac disease. He then made the same group comparisons, but this time for the amount of weight lost or gained.

9. Do expectations of pain increase as fear of needles increase? Fear of needles was assessed on a 10 point scale (zero fear to extreme maximal fear). Expectation of pain was assessed on a 10 point scale (zero pain to extreme, maximal pain).

10. Are junior science fair judges’ scores influenced by the manner in which the research is presented? In a mock junior science fair, judges are randomly assigned to one of two groups. One group of judges is asked to score (from 0-100%) projects presented on trifold cardboard displays. The second group of judges score the same the identical projects, only this time, the projects are presented as printed, powerpoint posters. Mean judging scores are then compared for the tri-fold and powerpoint presented projects.