**You are going to design an experiment with a few other classmates! You will not actually be conducting these experiments, but I believe designing them will help you understand what goes into psychological research. Pick a topic of interest to you and your group, remember the ethical considerations and make sure you control for all confounding variables.**

**Factors that must be considered when designing an experiment:**

1. Determine **who should be included in your study**. The larger group of people from which your samples are drawn is known as your **population**. If you are studying some aspect of general human behavior, you will want your subjects to represent a wide variety of people. If you are studying people with dementia, you will only use people with dementia in you study.

\_\_\_\_ Study included an appropriate sample

1. Make **operational definitions of your variables**. An operational definition is a statement of the specific procedures you will use to measure your variables. For example, let’s say you are testing the following statement: People who exercise regularly sleep better at night. To conduct your study, you will need to define exactly what you mean by “exercise regularly” (at least 30 minutes, 3 times a week, for example) and what will indicate “better” sleep (more hours of sleep per night, waking fewer times during the night, self-reported feelings of restfulness). Whenever possible, your operational definition should be **quantifiable**. For example, say you are studying the following statement: Watching violent television increases aggression in children. You can measure aggression in a number of ways: have an objective observer rank the aggressiveness of the subjects based on a predetermined scale of 1 to 5, count the number of times specific aggressive behaviors occur during a set period of time, or have the subjects self-report the number of times they have exhibited aggressive behavior. It is import that whatever method you use is decided on and well-defined prior to the experiment in order to avoid confirmation bias.

\_\_\_\_ Study includes an operational definition (a specific method for how it will be measured).

\_\_\_\_ Measurement is quantifiable.

1. **Control for** **confounding variables** – Confounding variables are any variables besides the independent variable that could influence the results of your study. For example, if you are testing the effect of sugar consumption on mood and you have your control group (no sugar) rate their mood in the morning and your experimental group (sugar) rate their mood in the afternoon, than time of day will be a major confounding variable. The following list includes several methods you should use to control for confounding variables:

**Random sampling** – all members of the population you are studying must have an equal chance of participating. If your sample is large enough, random sampling will assure that your sample is representative of the population you are studying. This helps to assure that your study will be generalizable to the population at large and not specific to one subgroup.

\_\_\_\_ Participants for study are chosen randomly

**Random assignment** – each subject has an equal chance of being in the control or experimental group. Again, this should be done systematically (every person chooses a bead as they walk in the door; red beads become the control group and blue beads become the experimental group). This serves to equalize individual differences between the groups.

\_\_\_\_ Participants are randomly assigned to control and experimental groups. (Also, groups must be treated alike except for the treatment)

**Placebo** – people’s behavior can change if they believe they are being given treatment. A placebo helps to control for psychological factors.

\_\_\_\_ Control group is given a placebo.

**Large sample size** – your sample must be large enough so that chance events don’t interfere

\_\_\_\_ Included many subjects in study

**Single blind** – subjects don’t know if they are in control group or experimental group. If subjects aren’t “blind”, you will not be able to control for placebo effect.

\_\_\_\_ Subjects were unaware that they were receiving a placebo.

**Double blind** – Neither the subjects nor the scientist know who is in control group and who is in experimental group. This prevents confirmation bias.

\_\_\_\_ Scientists were unaware who received placebo and who received medication.

**Repetition** – You should repeat the experiment to assure that unidentifiable conditions did not influence your results.

\_\_\_\_ Experiment was replicated.

1. **Ethics**

**\_\_\_\_**The study meets all ethical guidelines set up by the APA and is approved by the IRB. This includes informed consent, debriefing, minimal risk, etc.

1. **Analysis of results (Remember, you will not actually be conducted research, but you must tell me what you’re going to do to analyze your results. Be specific)**

Make sure that you have something to compare your results to (a control group, for example). Be explicit about how you will compare them (will you find the average of the two groups and compare them? Which do you expect to be higher if your hypothesis is supported?)

\_\_\_\_ Results of experimental group is compared to that of control group.

\_\_\_\_ Some statistical method of comparing groups is mentioned (using the average of each, for example)

\_\_\_\_ Stated that score for experimental group should be higher than control group.

Use **statistical techniques** to determine if the difference between your control group and experimental group is big enough to be significant (not caused by chance).

\_\_\_\_ Mentioned the need to use statistics to determine if results are conclusive.

What do you mean, “**statistically significant**”? Experimental results are said to be statistically significant if the difference between the two groups is not likely to be caused by chance. When reading a journal article, you may see “**p<0.05**” written in the results section. “p” is the likelihood that one might get similar results simply by chance. Thus, if p<0.05, then results like these only happen by chance less than 5% of the time. In other words, you are 95% sure these results reflect a real difference. Results are generally considered significant if p<0.05. However, the smaller the value for p, the more reliable the conclusion that there is a difference between your two groups.

Score: \_\_\_\_\_\_\_\_\_/ 15

13-15 Expert level! Are you sure you haven’t taken this course already?

9-12 Excellent! You must have had some really good teachers ☺

4-8 Not bad. You seem to understand the basics of experimental design, but need to review the specifics.

0-3 Everybody has a bad day.

I will then double your score to make it out of 30. Everyone in each group will receive the same grade. Please see me with any issues.