PSY 410 – Cognitive Psychology. J. P. Toth.

Example Research Proposal (note: the study describe here is not meant to be perfect, but rather to give you an idea of the level of detail that would be most useful for evaluating & commenting on your proposal).

1. Working Title.

Workouts and working memory: Do brief periods of exercise increase working memory span?

2. Description of research question and your motivation for asking it.

The question to be addressed is whether a brief (~15 minute) period of aerobic exercise increases working memory capacity as measured by the operation-span task. This question is interesting because it would suggest that working memory changes as a function of a person's physiological state, and thus may have applied implications such as whether students should work out immediately before taking an exam.

3. Sample.

I plan to test 32 people, half with BMI < 25 and half with BMI > 25. Half of the people in each group will be assigned to an aerobic work-out condition, the other half to a control (non-aerobic/stretching) condition.

4. Design.

My main IV will be work-out condition (aerobic vs. stretching) and will be manipulated between subjects. My second IV will be BMI level (normal vs. overweight) and will also be between subjects. My DV will be proportion-correct performance on the Coblab version of the Operation-Span test.

5. Procedure.

The study will be conducted at the UNCW rec center. Students entering the center will be asked whether they would be willing to participate in a 25 minute expt. Those agreeing to participate will be randomly assigned to the experimental (aerobic) or control (stretching) control group. Those in the experimental group will then be asked to run on the treadmill for 10 minutes, while those in the control group will be asked to perform general stretching exercises for 10 minutes. Afterwards, all participants will take the o-span test, administered via a laptop computer, and fill out a questionnaire that asks about age, gender, height, and weight (from which I will calculate BMI). Participants will then be thanked for their help and excused.

6. Data Analysis.

The main comparisons will be scores on the o-span test for the aerobic and non-aerobic groups. My hypothesis is that the aerobic exercisers will have significantly higher scores, and this benefit of exercise will be greater for people with high vs, low BMI. The data (O-span scores) will be analyzed with a 2x2 ANOVA with exercise condition (aerobic/stretching) and BMI (low/high) as between-subjects factors.

7. Expected results.

I am predicting a main effect of exercise condition, with those in the exercise group scoring significantly higher on the o-span test than those in the stretching group. I am also predicting a main effect of BMI, with low BMI subjects scoring significantly higher than low BMI subjects. Finally, I am predicting a significant interaction, with high BMI subjects showing a significantly larger effect of exercise than low BMI subjects.

8. References.

Hillman, C. H., Snook, E. M., & Jerome, G. J. (2003). Acute cardiovascular exercise and executive control function. *International Journal of Psychophysiology*, *48*, 307-314.

Sibley, B. A., & Beilock, S. L. (2007). Exercise and working memory: An individual differences investigation. *Journal of Sport & Exercise Psychology*, *29*, 783-791.