**PSY 611 Oral Exam Questions**

You will be asked to answer three of these during your oral exam. You may use a whiteboard, if it is helpful to communicate ideas with figures or equations.

1. Why do we study statistics?
2. What is construct validity, and how can we establish it?
3. How is internal validity different from external validity?
4. What is the replication (reproducibility/credibility) crisis?
5. What are (some of) the goals of the open science movement? How can we try to meet those goals?
6. What is a *p*-value and how is it used in research?
7. What does “statistically significant” mean?
8. How is probability used in (frequentist) statistics?
9. What is the difference between frequentist and Bayesian probability philosophies?
10. How do you interpret the confidence interval around a statistic?
11. Describe the process of conducting a null hypothesis significance test.
12. What are null and alternative hypotheses?
13. What kind of errors can you make under NHST and what do they mean? Which is worse?
14. What is statistical power? How can we increase it?