1. Name and contact information of PI.

2. Name of the study.

3. Due date for the analysis.

4. What is the general purpose of this study/analyses? (exploration, hypothesis confirmation, quality improvement, learning, other) What are the implications for how test-wise and study-wise error rates, inferences from tests, and generalizability of results are handled?

5. What are the research questions for this study? Field 15.3

6. What are the research hypotheses for the research questions?

7. What is the study design? (Can a specific design described in a study design text like Experimental and Quasi-Experimental Designs for Generalized Causal Inference by Shadish, Cook, and Campbell be identified?) What threats to validity may be applicable to this study design? Are there any procedures that can be put in place to address these threats?

8. What were IRB status and procedures? Any other ethical considerations necessary for this study?

9. When was study data collected?

10. How was the study data collected?

11. What were the data handling procedures?

12. What are the variables in the dataset and the level of measurement for each one?   
Are those set correctly in the dataset?

13. Describe data accuracy. Any issues? If so, how will they be addressed? (Some potential things to check about data accuracy might include: data types match levels of measurement, typographical errors in data entry, values which don’t make sense for the phenomena represented by the variable, categories which don’t make sense for the phenomena represented by the variable, decisions about how to address problems identified)

14. Describe any additional data manipulation needed before analysis? (Do any variables need to be reverse coded? Do summary scores for instruments need to be calculated? Are there any other data transformations that need to be done to help meet statistical assumptions?)

15. Describe missing data. Any issues?

16. Describe outliers. Any issues?

17. After initial data cleaning and review, have needed descriptive statistics been calculated before proceeding with analysis? What descriptive statistics will be needed for the study report?

18. Will any participant information be included in the study report? (APA Methods Participants section)

We don’t need to identify this for this learning exercise.

19. What statistical test(s) will be conducted? Which variable(s) will be used in those test(s)?

20. What are the assumptions for the statistical tests employed?

21. Do the data meet those assumptions?

a. Compare the results for Tests of Sphericity with Field’s results in Output 15.2.

22. NHST steps (for each test):

a. State the null and alternative hypothesis.

b. Establish the criteria for rejection (alpha level).

c. Calculate the test statistic.

d. Draw conclusion about the null.

e. Conduct post-hoc analyses if any.

f. Report results.

a. What is the null and alternative hypotheses for the RMANOVA

b. What is the criteria for rejection?

c. Calculate the RMANOVA

i. This video may be helpful. https://www.youtube.com/watch?v=Rwl1Pbr-2I8

ii. Analyses – ANOVA – Repeated measures ANOVA

iii. Click on the heading RM Factor 1 in the Repeated Measures Factors box. Rename it to Food.

iv. Click on the heading Level 1. Rename it to stick.

v. Click on the heading Level 2. Rename it to testicle.

vi. Click on the heading Level 3. Rename it to eye.

vii. Click on the heading Level 4. Rename it to witchetty.

viii. Change the name in the Dependent Variable Label to Seconds.

ix. Add the variables to the appropriate cells in the Repeated Measures Cells box.

x. Select an effect size under Effect Size

xi. Check everything under Assumption Checks except Homogeneity test. (No Levene’s test needed since we don’t have a factor included.)

xii. In Post Hoc Tests move Food to the box on the right. Check Bonferroni.

xiii. In Estimated Marginal Means move Food to Term 1 in Marginal Means, check Marginal means plots and Marginal means tables under Output. Check Equal cell weights under General Options

xiv. What are the results for Food in the RMANOVA table?

d. What is your decision about the null hypothesis for the RMANOVA?

e. How do your post-hoc tests compare to Field?

i. Compare the results of Within Subjects Effects with the output in Field Output 15.4

ii. Compare the results of Post Hoc Comparisons – Food with Field Output 15.9

iii. Compare the results of Estimated Marginal Means – Food with Field Output 15.1

f. Look at how Field reports results in section 15.12

We won’t fit RMANOVA as a linear model because the model is more complex than we will address in this course. See Field chapter 15.4 for a brief explanation. Field shows how to calculate his preferred effect size omega squared using output from the RMANOVA tables. Calculate omega squared in RStudio. Compare your results with the result reported by Field in chapter 15.11.