

# PSYC 5316: Advanced Quantitative Methods

Tarleton State University

Lab 2.3 – Analyzing the Flanker Data

Fall 2019

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1. Compute and report descriptives for demographic data, specifically mean and SD for age and frequency counts for genders.
2. Import the performance data for the 56 subjects. If you're working along with the video, be sure to update your loop index to 56! How many trials were collected overall?
3. Filter out the "practice" trials using the method of Heitz and Engle (2007). How many trials were removed? How many trials remain?
4. Construct a plot that shows separate density plots for congruent and incongruent trials. Export this plot as a JPEG with resolution 600 x 400 and include it in your Word/OpenOffice document.
5. Construct an APA-formatted table that shows mean RT, SD, and percentage correct for congruent and incongruent trials. If you don't know exactly what "APA formatted table" means, take a look at this excellent video by my colleague Jim Grange, which you can view here: [https://www.youtube.com/watch?v=RM8Qj8KB\\_CI](https://www.youtube.com/watch?v=RM8Qj8KB_CI)
6. Filter out incorrect trials and collapse the data down to two measurements for each subject - mean RT for congruent trials, and mean RT for incongruent trials. Then, perform and report a paired samples *t*-test on these mean RTs. Be sure to report the following:
  - the results of the test (e.g.,  $t(55) = X.XX$ ,  $p = 0.xxx$ ). Note, if  $p$  is *really* small, just write  $p < 0.001$ .
  - the 95% confidence interval for the size of the effect in milliseconds, and also a standardized effect size (e.g., Cohen's  $d$ ).
7. Perform and report a Bayesian *t*-test for the same data. If the Bayes factor is very large (i.e., larger than 1000, use scientific notation to report it). Note - examples of writeups for both the traditional *t*-test as well as the Bayesian *t*-test can be found on pages 394-395 of the paper posted here: <https://bit.ly/2oyVsXf>
8. Construct a plot of the conditional accuracy function (CAF) for the complete dataset (including errors, of course!). Export the plot as a JPEG with resolution 600 x 400 and attach. What does this plot tell us?