

## New Statistics Short Course

### Exercise 3: Effect Sizes, Confidence Intervals and Confidence Intervals for Effect Sizes

A researcher is interested in exploring whether individuals who attend church at least once a month (“church” group) score higher than those who don’t attend church regularly (“no\_church” group) on the ‘motivation to apologize’ (MTA, using the *Motivation to Apologize* Scale). The full sample contains 500 individuals in each group. The dataset is called “mta\_church.csv”.

- a) Compute the 80% and 95% CIs for MTA for the “church” group. Which is wider? Why is this the case?
- b) What if the sample only contained 50 cases (e.g., the first 50 cases). Compute the 90% CI for the mean difference in MTA across the groups using: i) the full sample and ii) the first 50 cases in the dataset. Which is wider? Why is this the case?
- c) Provide an interpretation of the 90% CI for the mean difference using the entire sample
- d) Compute the effect size for the mean difference in each of the following formats: 1) raw mean difference; 2) standardized mean difference; 3) percentage of variance explained; 4) correlation ( $r$ )
- e) Compute the 90% CI for the effect size for the standardized mean difference (d) and for the percentage of variance explained. For the percent of variance explained use both a built-in function and simulation
- f) Compute the common language effect size statistic for understanding the difference between the “church” and “no church” groups on MTA. Provide an interpretation of the statistic.