

# Statistics: The Science of Decisions Project Instructions

## 2. What is an appropriate set of hypotheses for this task? What kind of statistical test do you expect to perform? Justify your choices.

The null hypothesis ( $H_0$ ): the time it takes to name the ink colors in the congruent words condition in the **population** is not different from the incongruent words condition (i.e.  $U_{\text{time\_congruent}} = U_{\text{time\_incongruent}}$ ).

Given that theoretically it should take more time when the word and ink color is incongruent, the alternative hypothesis ( $H_A$ ) can be that the time used to name the ink color in the congruent words condition in the **population** is less than the incongruent words condition (i.e.  $U_{\text{time\_congruent}} < U_{\text{time\_incongruent}}$ ).

The dependent t-test for paired sample I will expect to perform. Because the **sample** dataset includes 24 participants who have time records from both congruent and incongruent words conditions, this is considered as a repeated measure. In another word, the time records from the two different conditions within the same participant are paired. Because we only sampled 24 participants in the population, t-test will be used instead of the z-test.