STROOP EXPERIMENT

1. **What is our independent variable? What is our dependent variable?**

   The **independent** variable in this experiment is the congruent/incongruent word tests. The **dependent** variable is the time it takes to finish each test (the time it takes to identify the congruent/incongruent words)

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

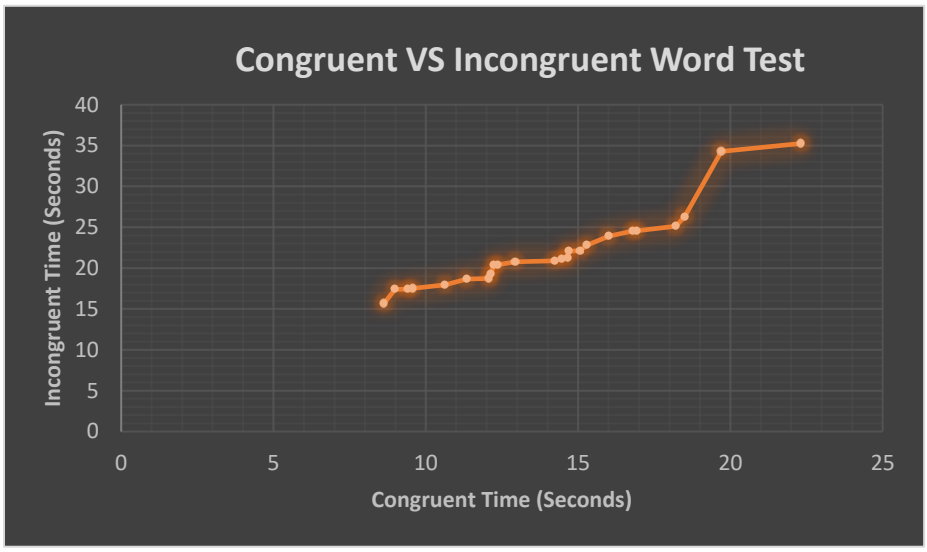
   Null Hypothesis (H0) : **mu_difference = 0** (The difference between the group population means is zero)
   Alternative Hypothesis (HA) : **mu_difference != 0** (The difference between the group population means is not zero)

   I will be performing a paired t-test for two reasons; We have no information regarding the population standard deviation. In addition, our two samples are dependent, utilizing the same people, only altering one variable between the two tests.

3. **Report some descriptive statistics regarding this dataset. Include at least one measure of central tendency and at least one measure of variability.**

   Mean Difference: -7.96
   SD (Standard Deviation: 4.86
   SE (Standard Error) : 0.99

4. **Provide one or two visualizations that show the distribution of the sample data. Write one or two sentences noting what you observe about the plot or plots.**



From the data on this scatter plot, we can conclude that on average, it takes people longer to complete the incongruent word test than it does to complete the congruent word test. Next, we will analyze the t-critical value and the t-statistic to see if the difference is large enough to be considered of *statistical significance*.

5. Now, perform the statistical test and report your results. What is your confidence level and your critical statistic value? Do you reject the null hypothesis or fail to reject it? Come to a conclusion in terms of the experiment task. Did the results match up with your expectations?

Confidence Level: 95%

Alpha Value: 0.05

T-Critical Value (Two-Tailed): +/- 2.069

T-Statistic: -8.02071

R^2: .73

Conclusion: Utilizing this information above, we are able to **reject the null hypothesis (H0)** because our t-statistic value is approximately -8.02, which falls into the negative critical region well beyond -2.069. Therefore, we can also conclude that the mean difference *is* statistically significant. The r^2 value tells us that 73% of the mean difference can be accounted for by the congruent/incongruent word tests. The results did match up with my expectations.