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

Independent variable is the variable that represents the input or the reason for possible variation in the dependent variable. In turn, the dependent variable is the variable who's output or variation is being studied.

In the Stroop task case we have 3 variables: time to name the ink color, the congruent and incongruent words. Since the task is to name the ink color, the time it takes to name the color is the dependent variable and the words are the independent variables.

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

Hypotheses set:

H_0: The time it takes to name congruent and incongruent word ink color is the same; time_mean_incongruent == time_mean_congruent

H_1: It takes more time to name the ink color of incongruent words; time_mean_incongruent > time_mean_congruent

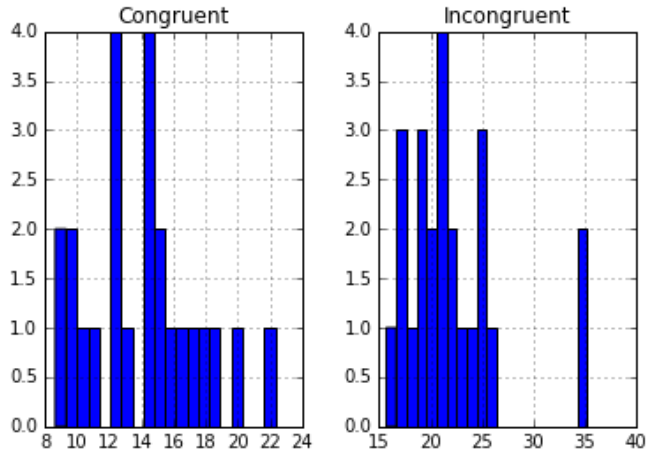
The statistical test that I expect to perform is either z-test (if sample is > 30 or sample < 30 but standard error of the population is known) or t-test (if sample is < 30 and standard error of the population is unknown)

The type of test should be done on dependent samples as each test (congruent and incongruent) is done on the same person once.

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

	Congruent	Incongruent
count	24	24
mean	14.051125	22.015917
std	3.559358	4.797057
min	8.63	15.687
25%	11.89525	18.71675
50%	14.3565	21.0175
75%	16.20075	24.0515
max	22.328	35.255

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.*



The congruent data seems more spread out around the mean, whereas with exception of the 35s bucket, congruent data is clustered more around the mean.

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?*

CI – 99%

t-statistic = -8.02070694

p-value= 4.10300059e-08

Since the p-value is ~ 0 I reject the Null hypothesis of equal means. Therefore, I reject the Null hypothesis at 99% confidence level

The results matched my expectations.

Sources:

https://www.khanacademy.org/