PROJECT ON TESTING A PERCEPTUAL PHENOMENON

Project Background and Description

Computing descriptive statistics and perform a statistical test on a data set based on a psychological phenomenon Stroop Effect.

Link to Dataset: **Stroopdata.csv**

1. Independent Variable and Dependent Variable

Independent Variable:

- The condition – a **congruent** words and **incongruent** words condition.

Dependent Variable:

- The **Performance of the participant.**

2. Set of Hypotheses and Statistical test

Set of Hypotheses:

The set of hypotheses that, I prefer for this dataset is **Null Hypotheses** and **Alternative Hypotheses**.

Where,

Null Hypothesis is H_0 : μ_C (greater than or equal to) μ_I

Mathematical Expression is H_0: $\mu_C \geq \mu_I$

Alternative Hypothesis is Ha : μ_C (lesser than) μ_I

Mathematical Expression is H_A: $\mu_C < \mu_I$

(where μ is a population mean, the subscript "C" represents the congruent words condition, and the subscript "I" represents the incongruent words condition.)

Statistical test:

The statistical test that, I prefer to perform is **Two-tailed dependent t-test.** Because,

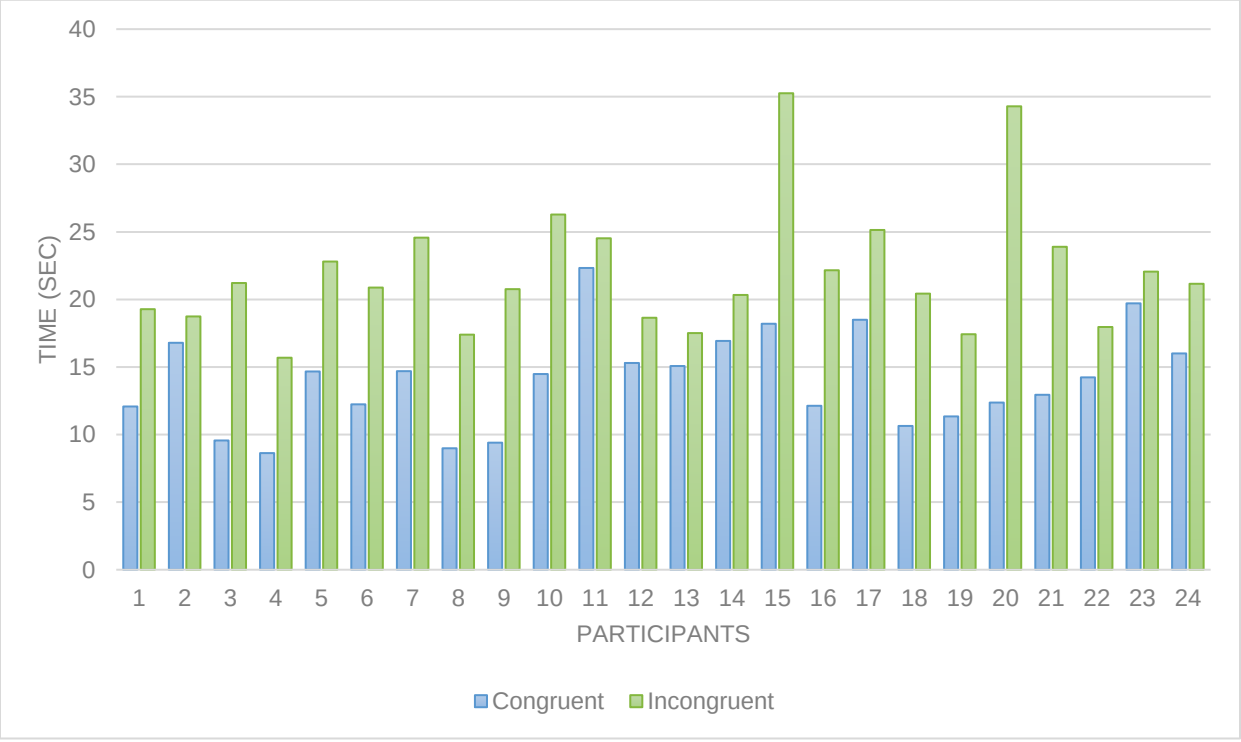
1) The sample size was below 30

2) The population's standard deviation is unknown.
3) To know the difference between the two paired samples.

3. Measure of Central Tendency

	Congruent	Incongruent
Mode	22.328	35.255
Mean	14.051	22.0159
Median	14.356	21.017
N	24	24
Sample Standard Deviation	3.56	4.80

4. Distribution of the Sample Data



Each participant's congruent time Vs their incongruent time.

5. Statistical Test

- Confidence Level on the mean difference 95%; CI = (-18.03, 2.10)
- Critical Statistic value = (-2.069, 2.069)
- d = -1.64
- r^2 = .74

Do you reject the null hypothesis or fail to reject it?

t(23) = -8.02, p < 0.05, two-tailed

Null Hypothesis should be **rejected.** Because, p value falls into the critical region of 0.05.

Did the results match up with your expectations?

Yes, This result match up with my expectation.

References and Dataset

https://en.wikipedia.org/wiki/Stroop_effect
Stroopdata.csv