1. The independent variables are the congruent and incongruent words because they are the conditions the researchers used as inputs. The dependent variable is time because it is changing and different for every person.

2. H_o: There is no difference in completion time between population means of incongruent and congruent conditions ($u_c = u_I$).

   H_1: There is a difference in completion time between population means of incongruent and congruent conditions ($u_c \neq u_I$).

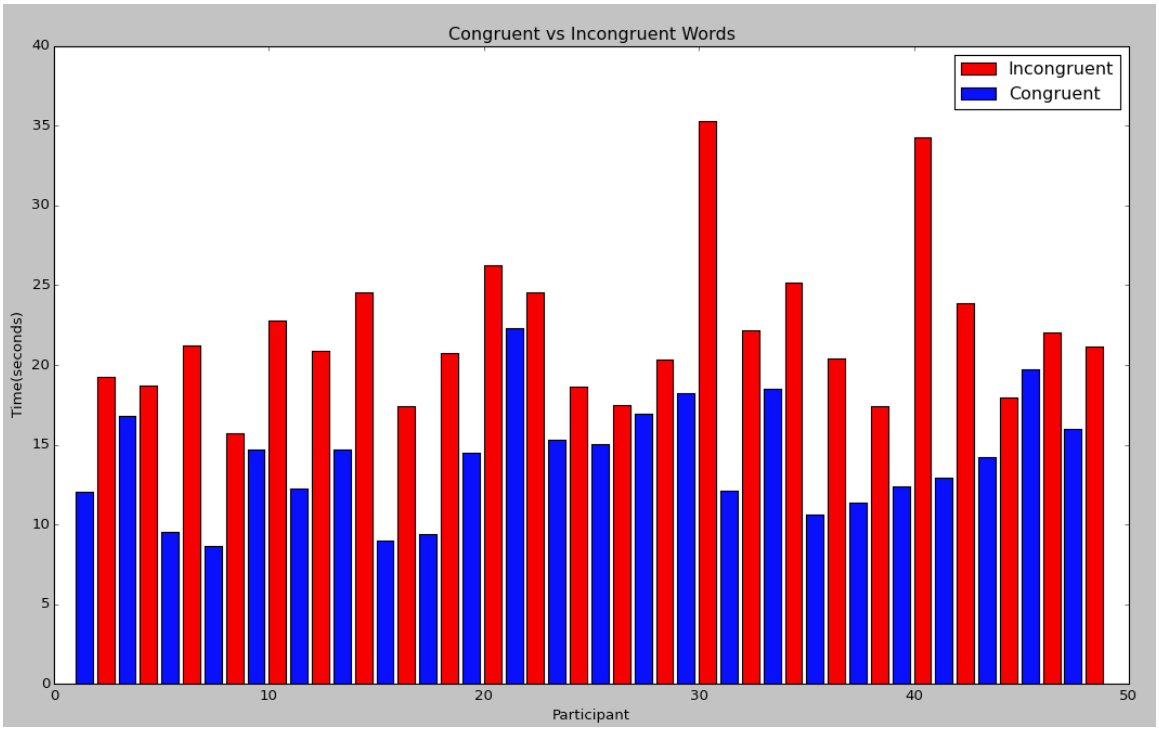
   I would expect to perform a two-tailed paired t-test because the sample size is less than 30 and the samples are dependent. This will tell me if the results of the paired observations are statistically significant.

   My values for the Stroop task for congruent: 12.928 seconds and incongruent: 29.652 seconds.

3.

	Congruent	Incongruent
Mean	14.05	22.02
Median	14.36	21.02
Standard Deviation	3.56	4.80
Standard Error	0.99	0.99

4. Observing the plot below it can be determined that incongruent words take a longer time to say out loud compared to congruent ones because every participant took a longer time. It can also been seen on individual lines that just because a participant took the longest time on one, does not mean they took the longest time on the other. For example, participants 14 and 19 had the highest peaks for incongruent but they did not have the highest peaks for congruent words.



5. $t = (\mu 1 - \mu 2)/(s/\text{sqrt}(n))$

   STD of population = 4.86
   14.05 – 22.02 / (4.86/sqrt (24))

   T-Statistic = +-8.03
   P-Value < 0.0001 (for 23 DF)
   T-Critical = +-2.807
   Confidence level = 99%.

   I reject the null hypothesis because the T-Statistic is less than the critical value of -2.807 (the rejection area) with a 99% confidence. I would accept there is a difference in the sample means and population means, which is not due to chance. The results matched up with my expectations that the populations are different. If the sample size was larger we could test if the values were significant for larger populations. We might have the participant read the words rather than the colors and see if that has the same effect.

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