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

   The independent variable is whether it's congruent words condition or incongruent words condition
   The dependent variable is time to name the ink colors in the lists

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

   I assume that it takes longer time to recognize color of ink in which word is printed in the incongruent word condition than in the congruent word condition.
   The null hypothesis is that the average time is equal on two conditions.
   The alternative hypothesis is that the average time in the incongruent words condition is longer than in the congruent words condition.

   - We have less than 30 samples.
   - We don't know the population's standard deviation.
   - We assume that the distributions are Gaussian.

   And now, I expect to perform the dependent samples t-Test (paired two-sample t-test), because both tasks are performed by each participant.

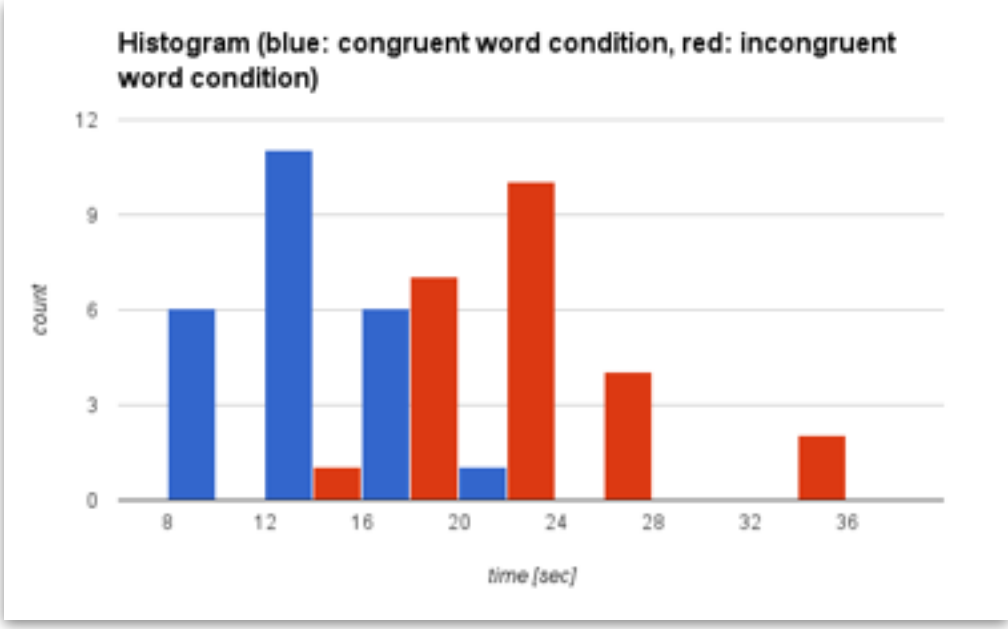
3. Report some descriptive statistics regarding this dataset. Include at least one measure of central tendency and at least one measure of variability.

   In the congruent word condition, the mean of time is 14.0511 sec, and the standard deviation of time is 3.559 sec.
   In the incongruent word condition, the mean of time is 22.016 sec, and the standard deviation of time is 4.797 sec.

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.

   I show the histogram of time in the congruent word condition (blue) and in the incongruent word condition(red). It's clear that the peak of histogram of blue is differ to red, and then it's longer time of the peak of histogram in the incongruent word condition than in the congruent word condition.

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?

The confidence level is 0.05.
The t-value is 8.0207. It's higher than 2.069 which is t-critical value.
Additionally, the two-tailed P value is less than 0.0001
By conventional criteria, this difference is considered to be extremely statistically significant.
So I reject the null hypothesis.
I can accept the alternative hypothesis that the average time in the incongruent words condition is longer than in the congruent words condition.
This result matches up with my expectation.

6. Optional: What do you think is responsible for the effects observed? Can you think of an alternative or similar task that would result in a similar effect? Some research about the problem will be helpful for thinking about these two questions!

   I think that one of the reason for this effects observed called as snoop effects is that two difference advance processes of color information and semantic information in a brain are processing at same time, and they cause conflicts when you answer one.

Regards,
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