

1. The number of colored words (list size) is an independent variable. Also the number of used colors is an independent variable. Because we choose them and manipulate them in the experiment.
The recorded time is a dependent variable. Because we measure it during the experiment.
2. I used two-tailed t-test: $H_0=0$ and $H_a \neq 0$. Because we suppose that a participant can read the same list of words using approximately the same time.
- 3.

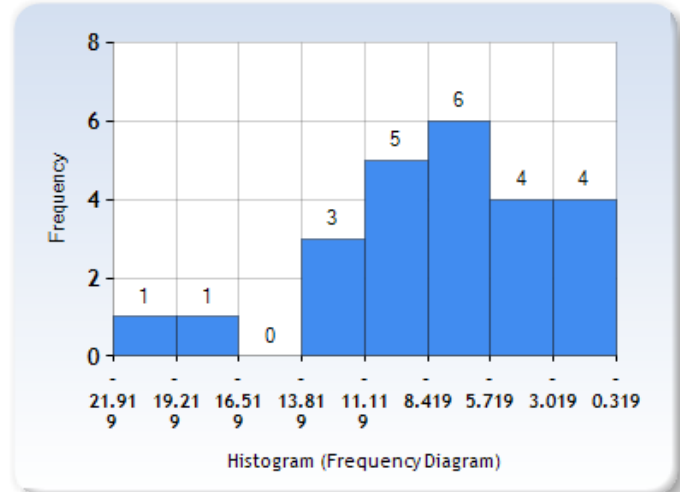
Mean	-7.96
Min	-21.919
Q1	-10.2585
Median	-7.6665
Q3	-3.6455
Max	-1.95

SD of Differences
4.86

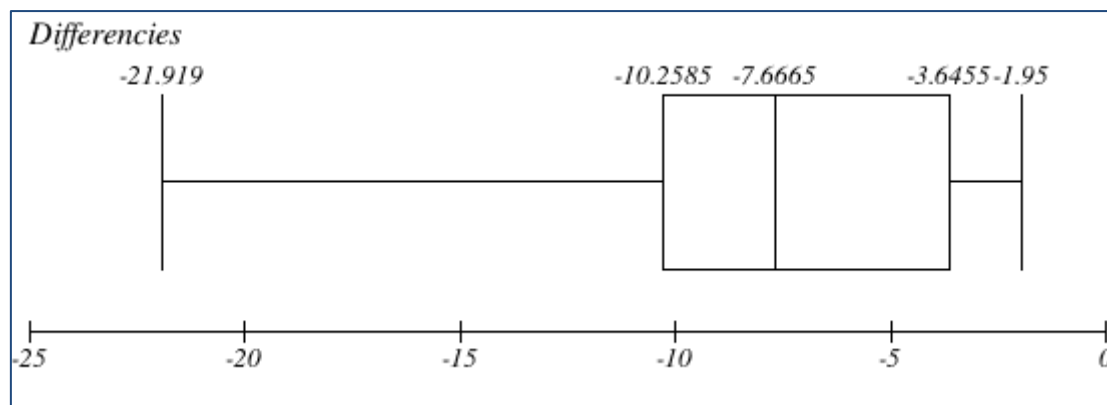
4. First is a histogram. Shows that we have negatively skewed distribution of the sample data. Also we can see that the mean is probably in the mode (-8.419; -5.719).

Frequency Table	
Class	Count
-21.919–-19.22	1
-19.219–-16.52	1
-16.519–-13.82	0
-13.819–-11.12	3
-11.119–-8.42	5
-8.419–-5.72	6
-5.719–-3.02	4
-3.019–-0.32	4

Your Histogram	
Lowest Score	-21.919
Highest Score	-1.95
Total Number of Scores	24
Number of Distinct Scores	24
Lowest Class Value	-21.919
Highest Class Value	-0.32
Number of Classes	8
Class Range	2.7



The second is a boxplot. Because it is a negatively skewed we assume that the mean is left of the median.



5. We have:

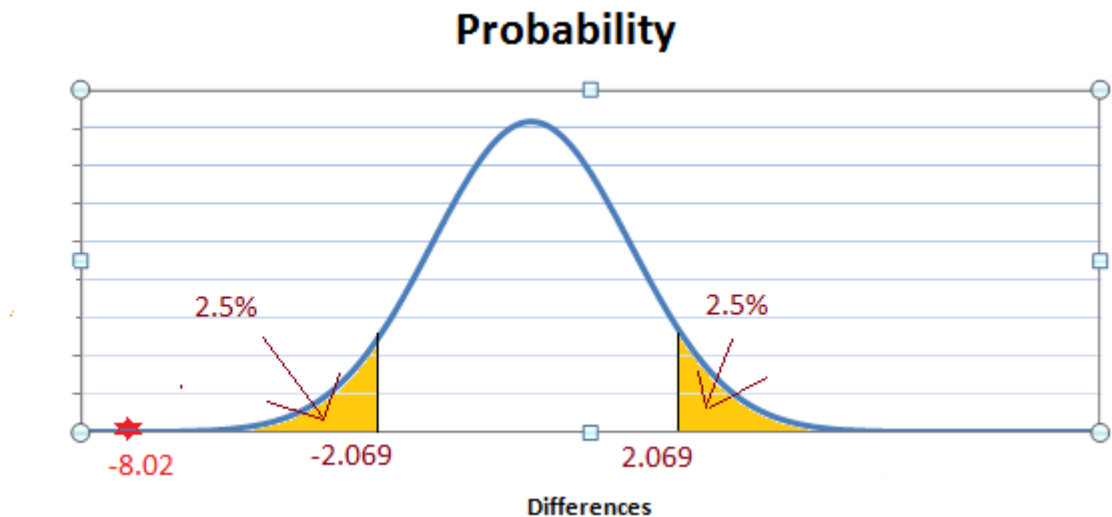
$n=24$
 $df=n-1=23$
 $\alpha=0.05$
 $t\text{-critical} = \pm 2.069$

$H_0: \mu_1 = \mu_2$
 $H_a: \mu_1 \neq \mu_2$

We got after the test:

Mean or Point Estimate or $\Delta\mu$
-7.96

SD of Differences	t-statistic	Cohen's d	CI	
4.86	-8.02	-1.64	-10.02	-5.91



Here we see that t-statistic (-8.02) is much less than left t-critical (-2.069). What means that the probability to get the mean of sample -7.96 is in the left yellow zone, $\mu_1 < \mu_2$.

So we **reject** the **H₀**.

The result matches up my expectation because I knew about the Stroop effect.

6. My point is that the size of the list of colored words have the most effect to the measured time. A number of used colors has also significant effect. And off course it is critical that a participant has no idea about the Stroop effect.

There might be easier task: use only black, grey and white. I think it will show less differences of time.

7. The list of used resources:

- The Lesson 10 “t-tests” of the current project.
- PDF files from the recourses tab of the project.

- <http://www.imathas.com/stattools/boxplot.html> for BoxPlot
- <http://www.socscistatistics.com/descriptive/histograms/> for Histogram
- MS Excel to draw the normal distribution of samples.