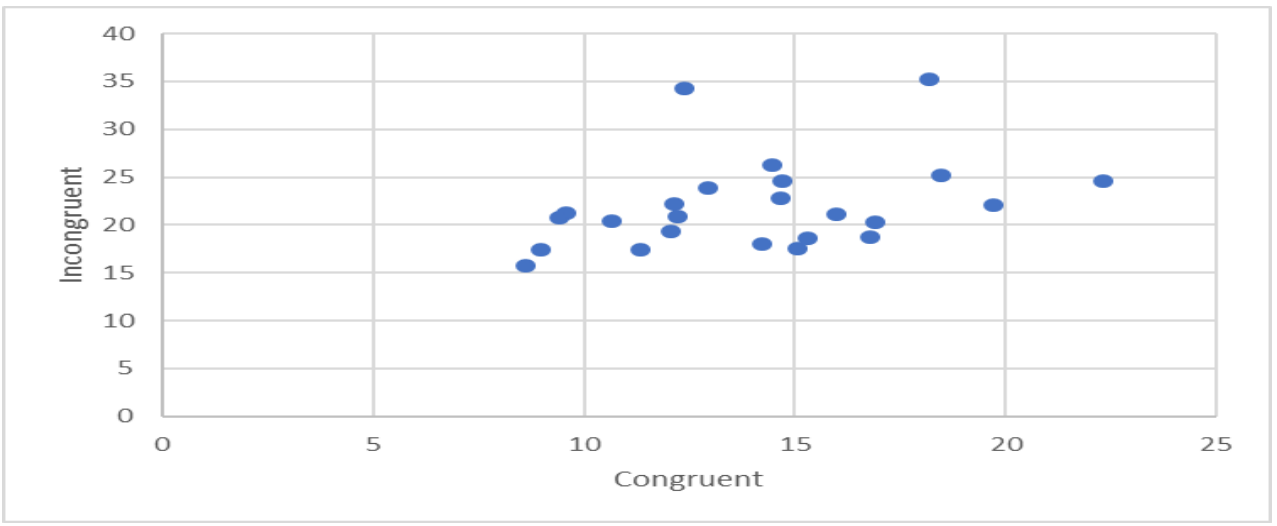
Question 1: Identify variables in the experiment	Independent variables: the words are congruent with the colors or incongruent Dependent variables: the amount of time it takes to name with the color in which the words are displayed.	
Question 2a: Establish hypotheses	μ0 = Time(the mean time with congruent), μ = Time(the mean time with incongruent) H0: μ - μ0 = 0, the mean difference is zero versus H1: μ - μ0 > 0, the mean difference is positive α=0.01	
Question 2b: Establish a statistical test	There is one sample with two tests with different conditions, and got two samples' tests data, make sure they are dependent and paired. The sample size below 30, is 24, and with an unknow population standard deviation. If use a z-test, must know population SD and sample size above 30. So, the test statistic for the T Test is comparing the values of t-statistic and t-critical. The appropriate t-critical value for the T Test can be found in the table of t values. To determine the appropriate t-critical value we need the sample size (or number of matched pairs, n=24), and our one-tailed of significance α=0.01. The t-critical value for this one-tailed test with n=24 and α=0.01 is 2.5, and the decision rule is as follows: Reject H0 if the values of abs(t-statistic) greater than t-critical.	
Question 3: Report descriptive statistics	Min(Congruent)=8.63 Median(Congruent)=14.3565 Max(Congruent)=22.328 μ(Congurent)=μ0=14.051125 size(Congruent)=24 σ(Congruent-sample)=3.559357958 SE(Congruent-sample)=0.726550901	Min(Incongruent)=15.687 Median(Incongruent)=21.0175 Max(Incongruent)=35.255 μ(Incongruent)=μ=22.01591667 size(Incongruent)=24 σ(Incongruent-sample)=4.797057122 SE(Incongruent-sample)=0.979195185
	z-score=2.33	
	Cong_CI(95%) = (12.3582614, 15.7439886)	Incong_CI(95%) = (19.73439189, 24.29744145)
	As the values, especially μ and CI tell μ > μ0	
Question 4: Plot the data	 According to the graph, every point's x-axis value smaller than y-axis, that means everyone's congruent test took shorter time than incongruent test.	
Question 5: Perform the statistical test and interpret your results	The samples are dependent and paired. Decision: T-test (some values reference Q3) S=4.8648269 t-statistic=-8.02071 According to t-table with α=0.01, t-critical = 2.5, abs(t-statistic) > t-critical, abs(t-statistic)=8.02071, it is out of the range in t-table, the greatest value with df=23 is 3.768 in t-table, the prob is 0.0005, so the p-value < 0.0005. For more precision, I used a formula in MS Excel called T.TEST(array-congruent, array-incongruent, one-tailed, paired), then p-value = 2.0515E-08. Because of abs(t-statistic) > t-critical, result reject H0, the mean difference is positive, which conclude that it takes significantly longer to complete the incongruent test than the congruent test.	
Question 6: Digging deeper and extending the investigation	Primary simultaneous interpretation(two languages stroop) and numbers stroop that to count the number of words in each box, which Do NOT say what the word says and so on are similar to this test.	

Refer

https://en.wikipedia.org/wiki/Stroop_effect
http://baike.baidu.com/link?url=4t-mAs3S2dULT_8hZZr57s8lgmykHTs0Qmr27ikvBbAbEk5cZCyYCGvMfb3QwEVP9gA4gW2FHXjp4TJxKq4JPjF6zrd
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