
Lab Stroop Data Analysis

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INTRODUCTION:

During last week's lab you used two different tests to assess how well your brain deals with cognitive dissonance (i.e. conflicting information). Based on this data you were able to draw some conclusions about YOUR performance on these tests, but a sample of one does not really lend itself to robust scientific analysis. In order to really study how the human brain works (not just yours) we need more data, so this week we are going to focus on collecting more data and analyzing it using mathematical tools. We are going to use the Stroop Test to study how the brain deals with cognitive dissonance in different populations (or samples). By administering the test to a larger population (the MCS community) we will be able to make better use of the data to draw conclusions.

HYPOTHESIS AND PURPOSE: To help answer the following questions:

How much data is needed in order to be able to draw reasonable conclusions?

I hypothesize that we will need to draw at least a 100 individual test scores in order to draw reasonable conclusions.

How do your Stroop Test results compare with those of people younger than you?

I hypothesize that in observing the people younger than me doing the test that we will find it does not take as long but they make more mistakes because of the maturity of there prefrontal lobe.

How do your Stroop Test results compare with those of people older than you?

I hypothesize that it will take longer for the older people to do the tests we did but they will not make as many mistakes due to the maturity of there prefrontal lobe.

How do your Stroop Test results compare with those of people of the opposite sex?

I hypothesize that my test results compared to my opposite sex will be the same.

MATERIALS & EQUIPMENT:

- ☐ Watch or timer capable of measuring seconds
- ☐ Stroop Test cards 1 & 2

PROCEDURE:

1. *Explain to your test subject that you are going to be conducting a short test that simply requires them to tell you the name of the color of each word on 2 different cards while you time him/her. Explain that he/she is welcome to scan the card left to right or up and down as long as they scan both cards in the same order.*
2. *Remind your subject that he/she is to tell you the color of each word.*
3. *Show your test subject Stroop Card #1.*
4. *Record his/her time in seconds.*
5. *Move quickly to Stroop Card #2.*
6. *Remind your subject that he/she is to tell you the color of each word (NOT THE WORD ITSELF)*
7. *Show your test subject Stroop Card #2*
8. *Record his/her time in seconds.*

Sex	Age	Card 1	Card 2	Observations
Boy	11	12 Seconds	24 Seconds	<i>He's done the test before, he did not hesitate and did not say any wrong answers on the 1st test. "I got mixed up on Orange and Green." He did not misspeak but hesitated a lot. He spoke very clearly. He didn't sleep well, he got around 8:30 hours of sleep. He was not bothered by the light. He was sitting. He seemed to be concentrating well. He continually tapped the word with his pencil as he answered the questions. His mood was average.</i>

<i>Sex</i>	<i>Age</i>	<i>Card 1</i>	<i>Card 2</i>	<i>Observations</i>
<i>Boy</i>	<i>9</i>	<i>7 Seconds</i>	<i>22 Seconds</i>	<i>He spoke very quickly and did not hesitate at all on the first test. On the second test he did well, but one thing I noticed was that he continually hit his hand against the counter as he answered the question. He slept well, he fell asleep at 9:00 and woke up at 6:45. Just distractions bothering him, talking mainly. His mood is good, "had a good start this morning." He was sitting</i>
<i>Boy</i>	<i>10</i>	<i>15 Seconds</i>	<i>26 Seconds</i>	<i>He spoke not so quickly at the beginning, but picked up speed at the end. He was rocking in the chair. Did not make many mistakes but did correct himself. He did not sleep well last night. There were not many distractions. He did feel rushed because he had to leave for a lesson. He spoke very slowly at the second test. The light was fine.</i>
<i>Boy</i>	<i>10</i>	<i>9 Seconds</i>	<i>25 Seconds</i>	<i>He spoke not so quickly at the beginning of the test but picked up speed at the end. He was kneeling. Did not make many mistakes. But read it up and down instead of side to side. He scrambled around a lot. He did not sleep very well. Joey was rocking the test and made it harder. He was yelling the answers and corrected his mistakes. He made more mistakes but he did go fast. The light was fine. No emotional feelings.</i>

<i>Sex</i>	<i>Age</i>	<i>Card 1</i>	<i>Card 2</i>	<i>Observations</i>
<i>Boy</i>	<i>10</i>	<i>14 Seconds</i>	<i>1:01 Minutes</i>	<i>He spoke slowly at the beginning, but picked up speed. He was standing, people were talking. He slept well last night. He did not hesitate at all, he just did a steady answered. There were a few people talking around him that could have altered the results. He hesitated a lot, and made many mistakes. He corrected himself around 25% of the time, but missed the others. A lot of people were talking, he felt pressured. And laughing. A teacher came in and started talking about. He got a good amount of sleep. He was a little tired.</i>
<i>Boy</i>	<i>9</i>	<i>14 Seconds</i>	<i>1:15 AM</i>	<i>He spoke steadily thorough the test and did not hesitate much. He was very accurate and made no mistakes. He got a good amount of sleep. No distractions during the test. Lighting of the room was fine. He started over most of the time when he got one wrong. When he made mistakes he corrected himself. He took very deep breathes. Colin was distracting him. He was having completely unrelated thoughts during the test.</i>
<i>Boy</i>	<i>10</i>	<i>15 Seconds 8 Seconds</i>	<i>33 seconds</i>	<i>He started over after he got one wrong, he spoke quickly. He did not sleep well, he felt pressured. And in the beginning did not want to do the test. He could not concentrate or relax. No major distractions. He messed up almost every time and hesitated a lot. He started over on the second test. He got the hang of it around half way through.</i>

Sex	Age	Card 1	Card 2	Observations
Girl	9	18 Seconds	28 Seconds	Went through the test pretty well, did not make any mistakes. Didn't hesitate very much. Went through the second test very well did not make any mistakes. Good amount of sleep. No distractions. Did well. Went through each questions quickly.

CALCULATIONS:

1. Calculate the difference between the times for the Stroop 1 and Stroop 2 tests for each subject.
2. Type that number into column F of the spreadsheet. The spreadsheet will calculate the % difference for you.

Class (A= adult, LE, Lower EL, UE= Upper EL, P=Primary, AC=Adolescent)	Sex(Female=1, Male=2)	Age	Stroop 1 (time in seconds)	Stroop 2 (time in seconds)	Difference between Stroop 1 and Stroop 2	% Diff.
A	1	41	6	13	7	117%
A	1	37	6	17	10	162%
A	2	45	6	24	18	282%
A	1	32	10	22	11	106%
A	2	59	9	22	13	146%
A	1	54	15	30	15	102%
A	1	59	8	31	23	299%
A	1	56	7	16	9	122%
A	1	36	8	14	6	79%
A	1	23	11	19	8	76%
A	1	41	6	13	7	113%
A	1	37	6	17	10	156%
A	1	45	9	17	8	90%
A	1	41	7	20	13	176%
A	1	47	8	22	14	167%
A	1	30	6	11	5	84%
A	2	31	7	15	8	120%
A	1	31	8	15	8	106%
A	1	50	9	18	9	100%
A	1	38	6	19	13	204%
A	1	43	7	23	15	203%
A	2	34	6	18	12	203%

LE	1	7	10	47	37	370%
LE	1	7	9	32	23	256%
LE	1	6	15	48	33	220%
LE	2	7	9	35	26	289%
LE	1	6	10	30	20	200%
LE	2	8	12	27	15	125%
LE	1	7	10	32	22	220%
LE	2	8	9	40	31	344%
LE	1	7	25	43	18	72%
LE	1	6	45	39	-6	-13%
LE	1	8	10	28	18	180%
LE	2	6	13	48	35	269%
LE	2	6	10	32	22	220%
LE	2	6	12	37	25	208%
LE	1	7	14	42	28	200%
LE	2	7	13	28	15	115%
LE	1	7	56	67	11	20%
LE	1	6	39	41	2	5%
LE	2	6	13	20	7	54%
LE	1	6	27	61	34	126%
LE	1	7	29	69	40	138%
LE	1	6	32	58	26	81%
LE	1	8	10	32	22	220%
LE	1	7	20	54	34	170%
LE	1	9	25	26	1	4%
LE	1	7	55	82	27	49%
LE	2	6	42	79	37	88%
LE	1	6	19	51	32	168%
LE	1	8	12	41	29	242%
LE	2	7	17	51	34	200%
LE	1	7	19	70	51	268%
LE	2	7	22	48	26	118%
LE	2	7	14	43	29	207%
LE	1	7	12	33	21	175%
LE	1	7	36	62	26	72%
LE	1	8	10	30	20	200%
P	2	5	25	48	23	93%
P	1	5	14	53	39	270%
P	2	6	23	30	7	31%
P	2	5	47	47	1	2%
P	2	5	19	28	9	47%
P	2	3	32	40	8	25%
P	1	5	48	33	-15	-31%
P	1	4	30	47	17	57%
P	2	4	46	70	24	52%
P	1	3	84	56	-28	-33%

<i>P</i>	1	2	136	197	61	45%
<i>P</i>	1	5	40	40	0	0%
<i>P</i>	1	5	40	39	-1	-3%
<i>P</i>	2	5	37	38	1	3%
<i>P</i>	2	4	43	51	8	19%
<i>P</i>	2	3	41	53	12	29%
<i>P</i>	2	3	50	53	3	6%
<i>P</i>	2	4	39	36	-3	-8%
<i>P</i>	1	3	44	54	10	23%
<i>P</i>	1	2	59	49	-10	-17%
<i>P</i>	1	4	53	78	25	47%
<i>P</i>	2	4	47	47	0	0%
<i>P</i>	2	5	26	28	2	8%
<i>P</i>	1	5	31	84	53	171%
<i>P</i>	1	5	31	43	12	39%
<i>P</i>	2	5	36	47	11	31%
<i>P</i>	1	4	82	77	-5	-6%
<i>P</i>	2	3	70	66	-4	-6%
<i>P</i>	1	3	83	43	-40	-48%
<i>P</i>	1	3	59	55	-4	-7%
<i>P</i>	1	4	24	25	1	4%
<i>P</i>	1	5	23	49	26	113%
<i>P</i>	2	5	22	22	0	0%
<i>P</i>	1	5	32	65	33	103%
<i>P</i>	1	4	48	38	-10	-21%
<i>P</i>	2	5	30	53	23	76%
<i>P</i>	1	4	165	38	-127	-77%
<i>P</i>	2	3	51	51	1	2%
<i>P</i>	1	4	25	30	5	20%
<i>P</i>	2	3	43	43	0	0%
<i>P</i>	1	4	15	22	7	47%
<i>P</i>	2	5	23	26	3	13%
<i>P</i>	2	4	54	53	-1	-2%
<i>P</i>	2	5	66	45	-21	-32%
<i>P</i>	2	6	22	41	19	86%
<i>P</i>	1	5	29	43	14	48%
<i>P</i>	1	5	36	29	-7	-19%
<i>P</i>	2	5	39	51	12	31%
<i>P</i>	2	4	63	51	-12	-19%
<i>P</i>	2	3	26	45	19	73%
<i>P</i>	1	4	30	62	32	107%
<i>P</i>	2	4	52	66	14	27%
<i>P</i>	1	4	34	39	5	15%
<i>P</i>	1	4	64	38	-26	-41%
<i>P</i>	1	4	41	36	-5	-12%
<i>P</i>	1	4	31	35	4	13%

<i>P</i>	1	4	26	36	10	38%
<i>P</i>	2	4	23	63	40	174%
<i>P</i>	1	4	24	25	1	4%
<i>P</i>	2	5	23	36	13	57%
<i>P</i>	1	4	25	80	55	220%
<i>P</i>	2	4	30	35	5	17%
<i>P</i>	2	5	16	29	13	81%
<i>P</i>	1	5	36	30	-6	-17%
<i>P</i>	2	4	52	32	-20	-38%
<i>P</i>	1	3	113	150	37	33%
<i>P</i>	1	6	27	35	8	30%
<i>P</i>	1	3	64	73	9	14%
<i>P</i>	1	3	70	70	0	0%
<i>P</i>	2	4	30	64	34	113%
<i>P</i>	1	4	18	89	71	394%
<i>P</i>	2	4	100	98	-2	-2%
<i>P</i>	2	4	50	44	-6	-12%
<i>P</i>	2	5	28	28	0	0%
<i>P</i>	2	4	35	33	-2	-6%
<i>P</i>	1	3	46	51	5	11%
<i>UE</i>	2	11	12	24	12	100%
<i>UE</i>	2	9	7	22	15	214%
<i>UE</i>	2	10	15	26	11	73%
<i>UE</i>	2	10	9	25	16	178%
<i>UE</i>	2	10	14	61	47	336%
<i>UE</i>	2	11	11	37	26	236%
<i>UE</i>	2	9	14	75	61	436%
<i>UE</i>	2	10	15	33	18	120%
<i>UE</i>	1	9	18	28	10	56%
<i>UE</i>	1	10	10	17	7	68%
<i>UE</i>	1	11	8	30	22	265%
<i>UE</i>	1	11	9	26	17	190%
<i>UE</i>	1	9	9	31	22	237%
<i>UE</i>	1	9	12	21	9	73%
<i>UE</i>	1	11	7	19	12	173%
<i>UE</i>	1	9	8	30	22	270%
<i>UE</i>	1	10	7	22	15	202%
<i>UE</i>	1	10	9	32	23	270%
<i>UE</i>	1	10	18	20	2	11%
<i>UE</i>	1	10	8	26	17	201%
<i>UE</i>	1	11	7	24	17	238%
<i>UE</i>	1	10	9	17	8	93%
<i>UE</i>	1	9	8	26	17	205%
<i>UE</i>	2	9	7	27	20	279%
<i>UE</i>	2	9	6	25	19	309%
<i>UE</i>	1	10	10	41	30	290%

UE	2	9	7	23	16	217%
UE	2	9	7	19	12	170%
AC	1	12	8	27	19	238%
AC	1	13	10	20	11	112%
AC	1	12	10	20	10	97%
AC	1	13	9	16	8	91%
AC	1	13	8	18	10	125%
AC	1	13	17	23	6	35%
AC	1	12	8	16	8	102%
AC	1	12	8	22	14	173%
AC	2	13	8	26	18	228%
AC	2	13	8	27	19	240%
AC	1	12	7	17	10	143%
AC	2	13	9	24	15	167%
AC	2	13	10	29	19	195%
AC	2	12	7	26	19	271%
AC	2	12	14	20	7	51%
AC	1	13	10	31	20	195%
AC	1	12	7	15	7	94%
AC	1	12	7	18	11	157%
AC	2	13	9	20	11	117%
AC	1	13	9	28	19	211%
AC	1	12	9	16	7	78%
AC	1	14	10	20	11	114%
AC	1	12	10	27	17	176%
AC	2	13	9	16	7	78%
AC	2	12	8	24	16	195%
AC	2	13	11	17	6	54%

3. Why would you want to look at the % difference as opposed to the absolute difference?

Because the absolute difference is going to change from age group to age group due to the maturity of the pre-frontal lobe. But it's the proportion between the numbers that is going to give an example of how much faster the different age groups differed.

4. How do the % differences compare from class to class?

This are average percentage for each age group:

Adults: 146%

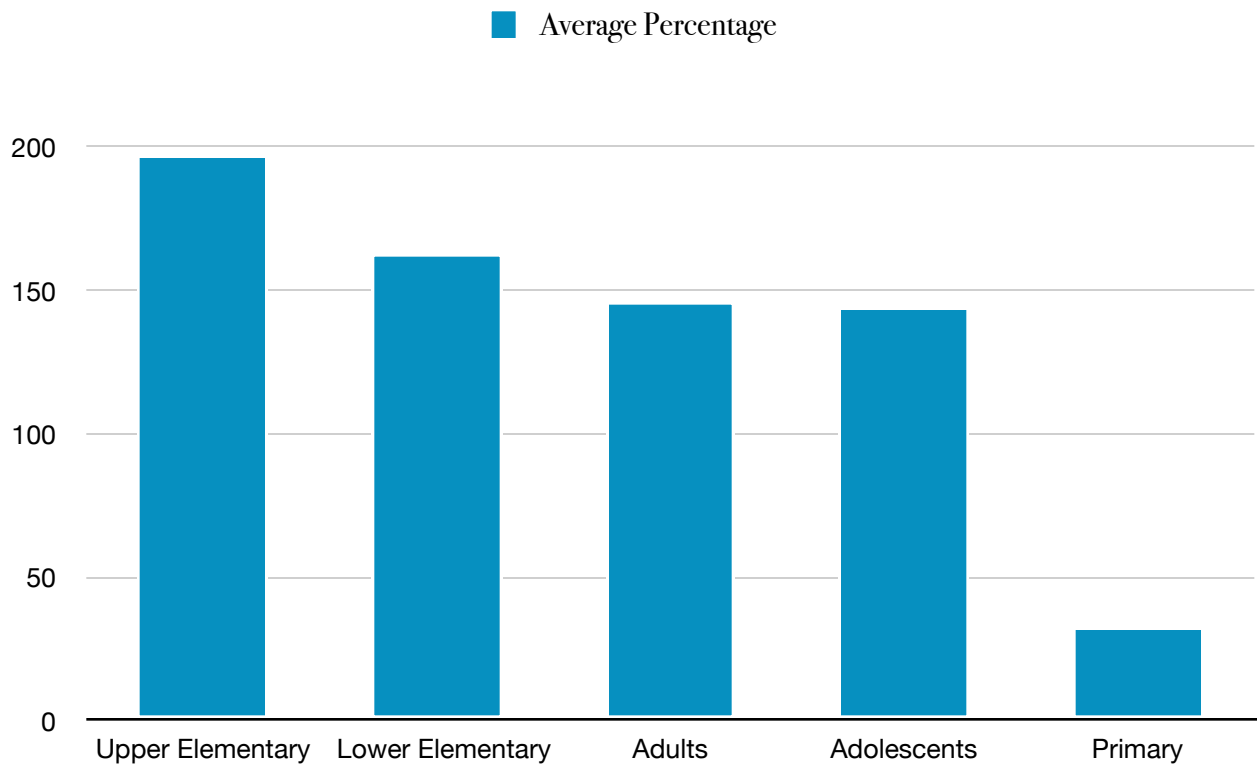
Adolescents: 144%

Upper elementary: 197%

Lower elementary: 163%

Primary: 33%

As you can see it takes the Upper elementary a lot longer than any other age group and it takes the primary the least amount of time.



5. *Could a graph help you to show these relationships more clearly?*

Yes, that's why I made one.

6. *If you were going to make a graph, what type of graph would you use (line, bar, pie, scatter) and why?*

I used a bar graph because I tend to find looking at things linearly easier.

7. *How could you make your graph persuasive (i.e. what would you do in order to communicate these relationships clearly and effectively)?*

I put the order from greatest to least and had the labels to make the decline more dramatic and kept everything clear and neat to help the reader understand it better.

8. *What would your graph's title be and what would be on each axis?*

I think that the title would be "Average Percentage of each Age Group." On the Y axis I put the number of percentage, and on the X axis I put the name of each age group.

DATA ANALYSIS:

In this lab I measured the time it took for each classroom in the MCS community, and the Adults on campus that we considered in the MCS community to do Stroop test one and two. We did this without warning the students so that their knowledge of the test did not affect our results. We recorded any observations that could help explain our results. Before the first Stroop test we explained to them that they were to say the word and ignore the color, as to get there brain used to doing the test this way. We had them preform the test and timed them. Recorded there results and observations. We only did one trial for each Stroop test, instead of three trials like we did in the Adolescent classroom.

After doing the first Stroop test and asking questions about any distractions that could have affected there test results. We immediately explained the second Stroop test, and had them preform it so that there brains were still accustomed to saying the word and not the color. We had them preform the test and then asked them if there was anything distracted them first so that they would be able to recall it. Then the routine questions like if they had slept well last night, if the lighting of the room was bothering them etc. We recorded these observations and told them to make sure that they did not tell any of their classmates what they did in the test, because it could alter their results.

The Data that I gathered allowed me to better understand how different ages process the same information in different ways and have different results. How the Adolescents brain process' and compares to other age groups. How age groups differ based on the information given, and how one age group may be better in one type of test and another age group do better in another type of test. The comparison of male and female test results. And finally when dealing with a population, how to determine the most efficient and most accurate way to find a solution.

I was able to calculate the percent difference of Stroop test 1 and Stroop test 2 by plugging in this formula into Numbers: (the application I use with the same function of Excel)

S1= Time for Stroop Test 1

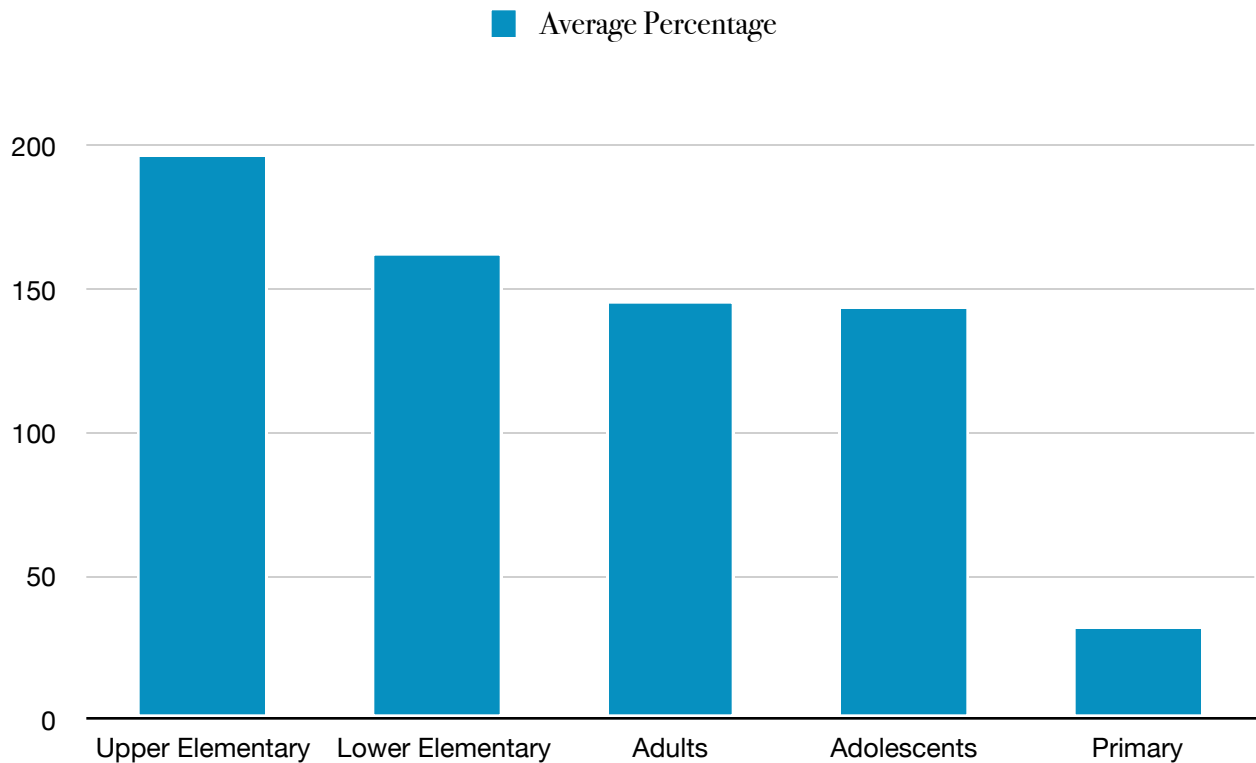
S2= Time for Stroop Test 2

% Difference= Percent- (S1-S2) age Difference

$$\% \text{ Difference} = \frac{(S1-S2)}{S1} \times 100$$

In doing this I found out how much longer it took the student or adult to do the second Stroop test than the first Stroop test. For instance if a student scored 30 seconds on the first Stroop test and scored 60 seconds on the second Stroop test his percentage difference would be 100% because it took him twice as long to do the second Stroop test than the first Stroop test. If someone scored 10 seconds on the first Stroop test and 20 seconds on the second Stroop test the percent difference would also be 100% because the percent difference is based on the relationship between the first and second test results and not the difference between them.

Once we had calculated the difference between the test results for all the subjects and the percentage difference for each of the subjects I created a graph to help understand the comparison between the test results.



NOTICE: *Percentage Difference units are in percentage.*

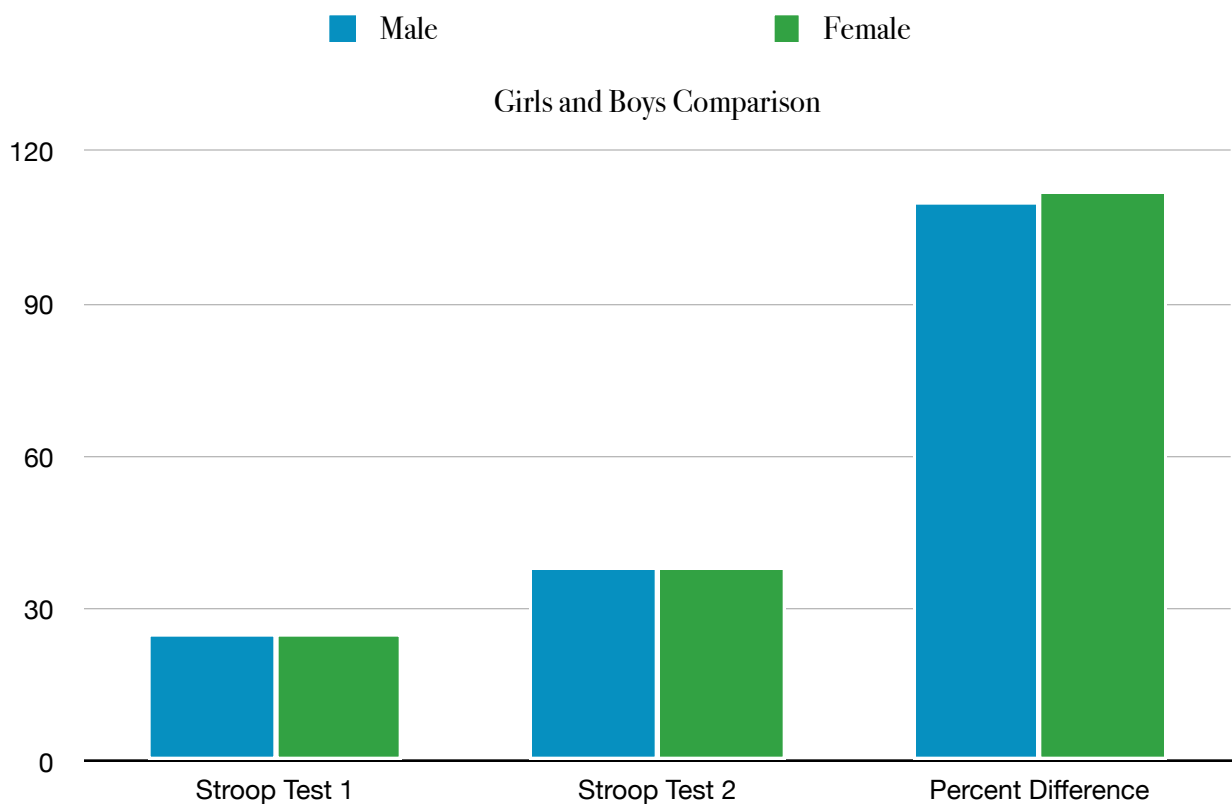
This graph indicates that on average in the MCS community it takes almost four times as long for the Upper Elementary students to do the second Stroop test than the first Stroop test. On average it takes the Lower Elementary students a little more than three times as long to do the second Stroop test than the first test. On average the Adults and Adolescents take a little less than three times as long to do the second Stroop test than the first. And on average it takes a little more than half as long for the primary students to do the second test than the first test.

I think that it takes the Upper elementary a lot longer to do the second test than the first test because, in my experience one of the main focusses in the upper elementary classroom is to become comfortable with reading, thus the classroom introduces a lot of reading material. So a tendency of an upper elementary student is to read, and as you can see in the first tests results for the upper elementary students, they did very well compared to other age groups because their main focus is reading.

I think that the same rule applies to the Lower elementary students as well, however their reading skills are not as developed as the upper elementary and thus have lower test scores on Stroop test one but their percentage difference was lower. I think the reason that the adults had an even lower percentage difference was because their pre-

frontal lobe was very developed and had an easier time altering from doing the test one way to doing it the other. I think that the reason the Adolescents had a lower percent difference was because their reading skills were very high compared to the other classrooms and gave them a better score on the first Stroop test, and they were able to alter the way that their brain processed the information much like the adults.

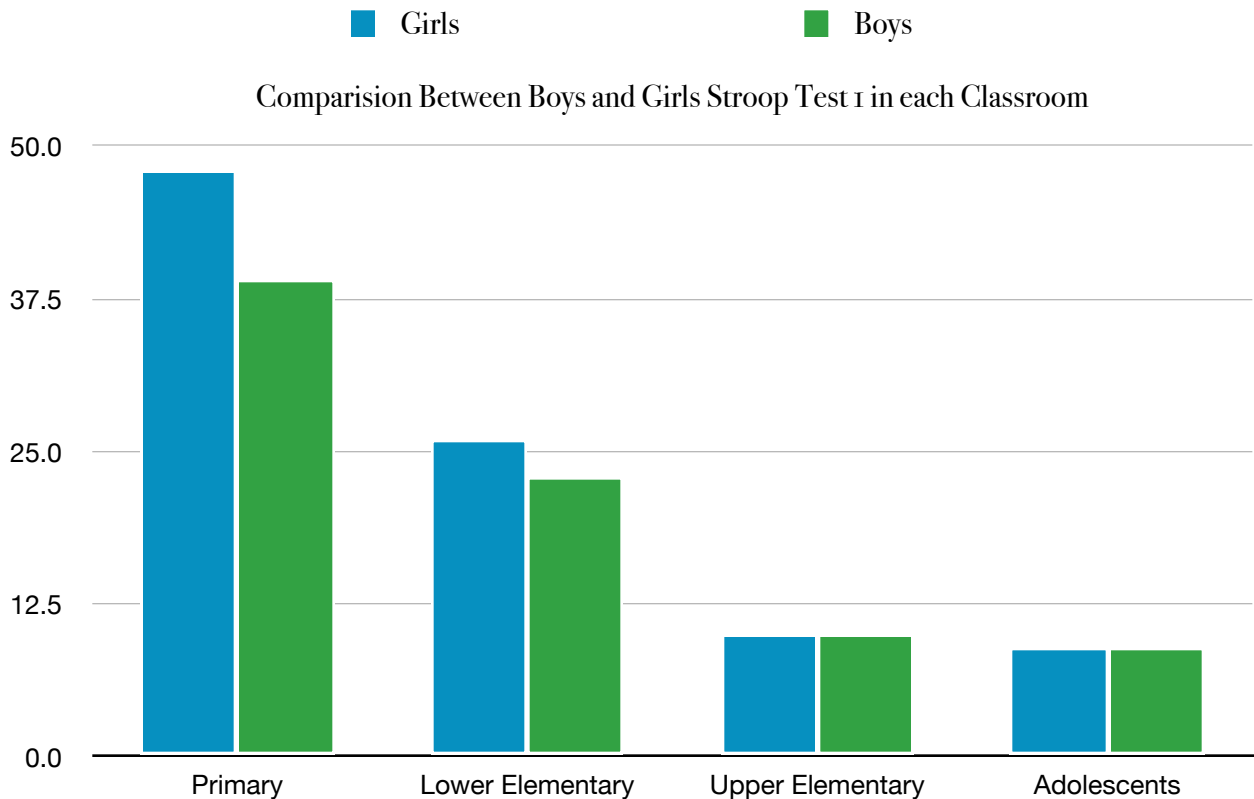
The reason I think that the primary took more time to do the first test than the second test is because I'm sure that most of the younger students in the primary classrooms were not fully capable of reading so they had to identify the word by the color, and it would take longer for them to do the first test. In the second test they got around the same score that they did on the first test because their brains prefrontal lobe which at that stage is not very developed did not conflict with the back of their brain. So it took them around the same amount of time to do the first Stroop test if not more than the second.



NOTICE: Stroop Test 1 & 2 units are in seconds, and Percentage Difference units are in percentage.

This graph indicates that the average amount of time to do both tests for both male and female subjects are identical. This means that the sex of a subject does not have anything to do with how much time it takes them to do either tests. The comparison of the average percentage difference for male and female are slightly difference though. This means that it takes the males a slightly less number of times to do the second test than the first test compared to the females.

NOTICE: Stroop Test 1's units are in seconds.



This graph compares the times of boys and girls for Stroop test 1 in all classrooms. This graph obviously indicates that as you age through these time periods (in the order of Primary-Adolescents) whether you are a boy or a girl it takes you less time to do the first test. Based on the graph when you are a primary girl you are more likely to take more time to do the first test than if you were a boy. The same principle applies in the lower elementary classroom but the difference of time is smaller. But when you are in an upper elementary classroom or an adolescent classroom you are more likely to take the same amount of time as your opposite sex.

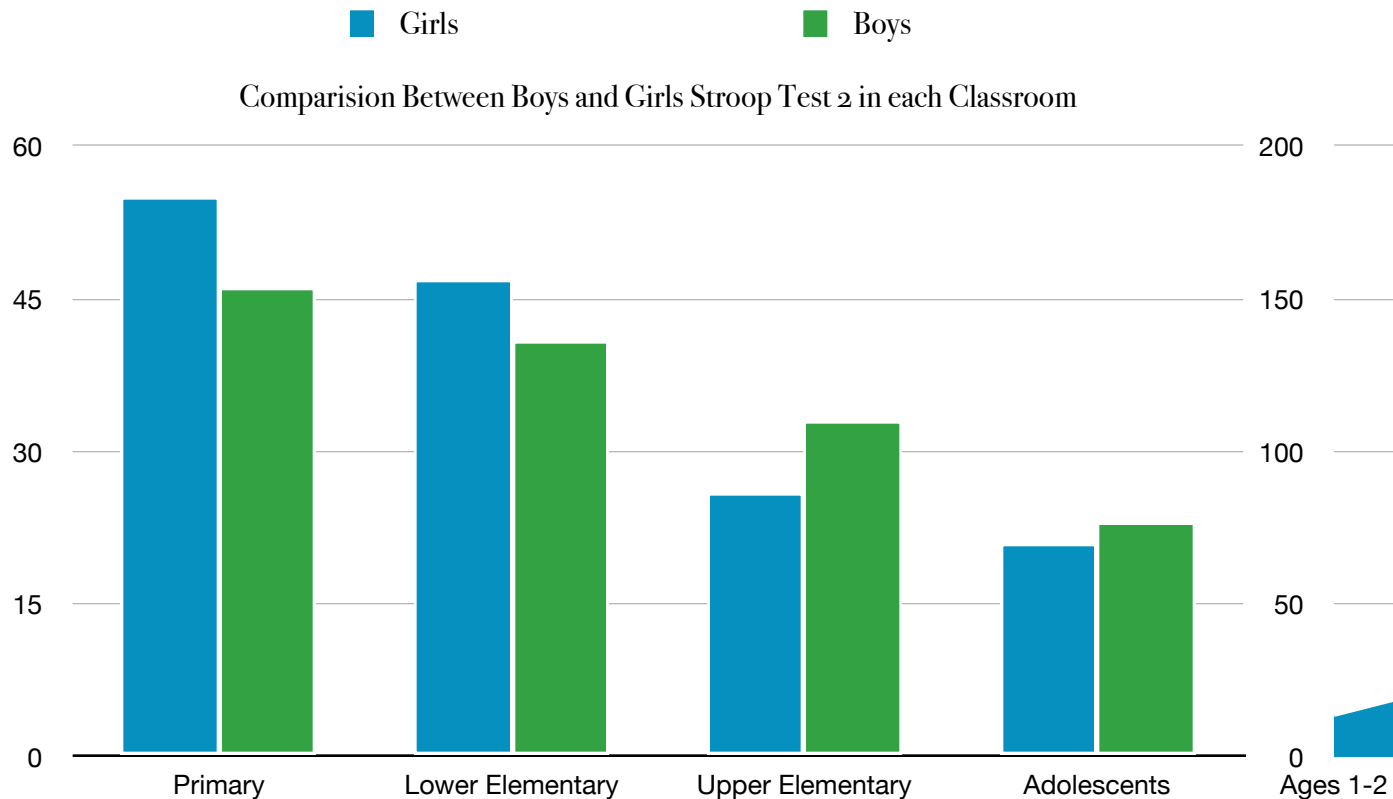
NOTICE: Stroop Test 2's units are in seconds.

This graph compares the times of boys and girls for Stroop test 2 in all classrooms. This graph indicates that as you age regardless of your sex your test results of the second Stroop test will decrease. Based on this graph I have come to the conclusion that when you are in Primary and Lower elementary boys test results of the second stroop test tend to be better than girls. But if you look at the upper elementary classroom and the adolescent classroom it takes less time for the girls to complete the test than the boys. The opposite of the results for the lower grades.

NOTICE: The units of the numbers on the Y axis are Percents.

This graph indicates that as you age from 1-10 years the percentage difference rises, but begins to fall from ages 11-14. I was not able to draw any data from ages 15-19 because we don't have anyone that age in our MCS community. But as you age from 20-50 the percentage difference begins to rise again, but not nearly as quickly.

This graph indicates that there are more people who score in the percentages -100%-50% than any other range. So this means that if you were to randomly choose someone in the MCS community it is more likely that they

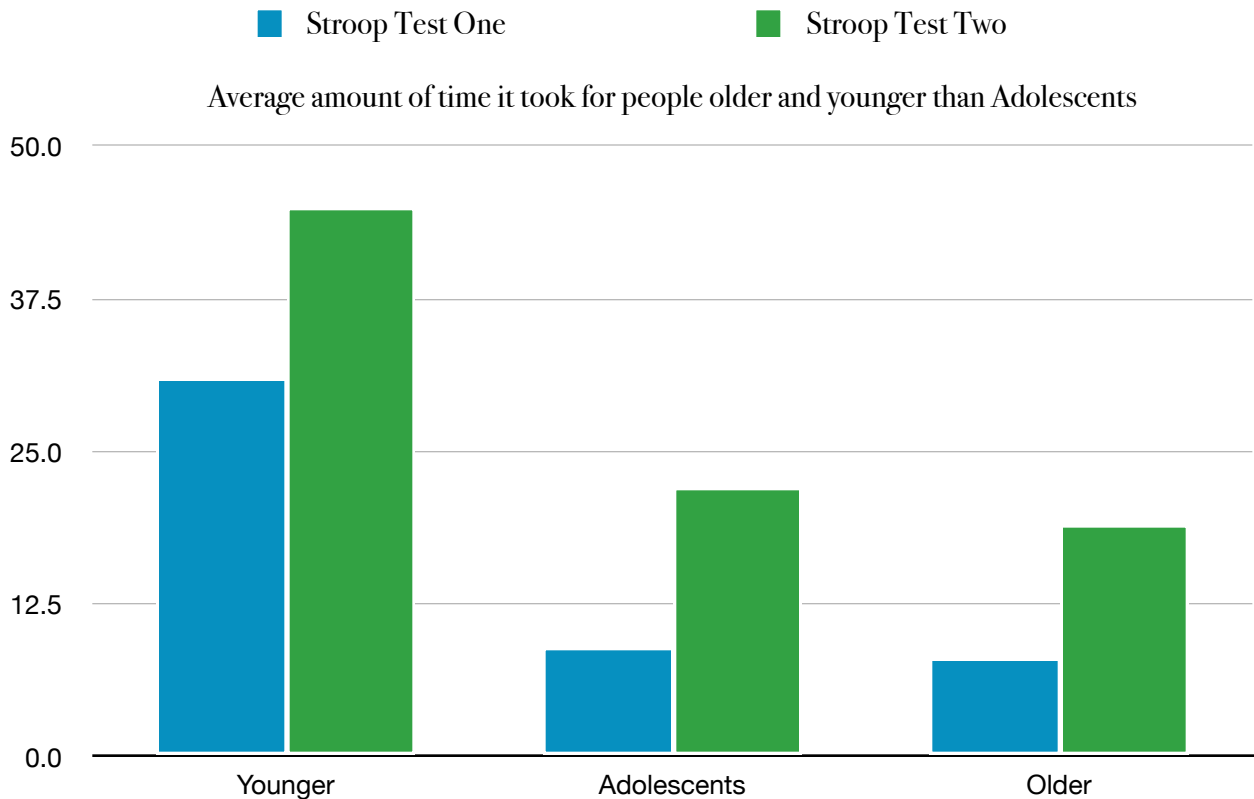


are going to have a percentage difference ranging from -100%-50% and it is less likely that they will have a percentage difference in any other range.

My conclusions based on this graph are that if you are younger than an adolescent (12-14) and you take the first stroop test you are more likely to take more time than an adolescent would. And if you were younger than an Adolescent it would take more time to do the second test. My conclusions based on this graph also show that it would take an adult less time to do both tests than an adolescent.

In reviewing my observations I noticed that often when we were testing someone they would start out slow and pick up speed as they went on. That often the case with the upper elementary students I was testing was that were younger would tend to go fast but make more mistakes. But for those who were older their time was a little slower but hardly made any mistakes. And based on a movie we watched last week about the maturity of the pre-frontal lobe, it concluded that as you are younger you tend to make more mistakes when dealing with these types of tests, such as switching from saying the word to saying the color. But when you are older you tend to have a slower time but make less mistakes. So the results of the test done in the movie support my observational data.

Also in reviewing my observations I noticed that some sort of repetition or rhythm was often noticed when the subject was doing the test. Such as taping the test with a pencil as they answered it, or gently tapping the table with the palm of there hand. Or what I noticed in some cases rocking back and forth. In my own personal experience I have found that a sign of anxiety is found in repetition. But I have only noticed this before a test or before an event that is making me anxious is occurring, and not during it. It could be that the repetitious motions are still taking place but I am not noticing them. So I think that the reason for this repetition is anxiety.



I also noticed in reviewing my observations that feeling pressured or rushed can affect the test results. For instance one of my subjects had to go to a lesson, and felt rushed. And based on the comparison of his and other children his age's test results I found that his were remarkably lower. Another example of a student that could have had different test results if he was in a different environment was when one of our subjects later reported that he felt pressured because there were many students around him watching the test taking place. And I think that this affected his results.

It would be interesting to conduct further research and test the same person in different environments and see how if at all it affects his/her results. It would also be interesting to compare information of the same person taking the same test only when they were taking one of the tests they were in a good mood and when they were taking the test a second time they were in a bad mood and see how that affected if at all the results. It would also be interesting to find out how sleep can affect the test results.

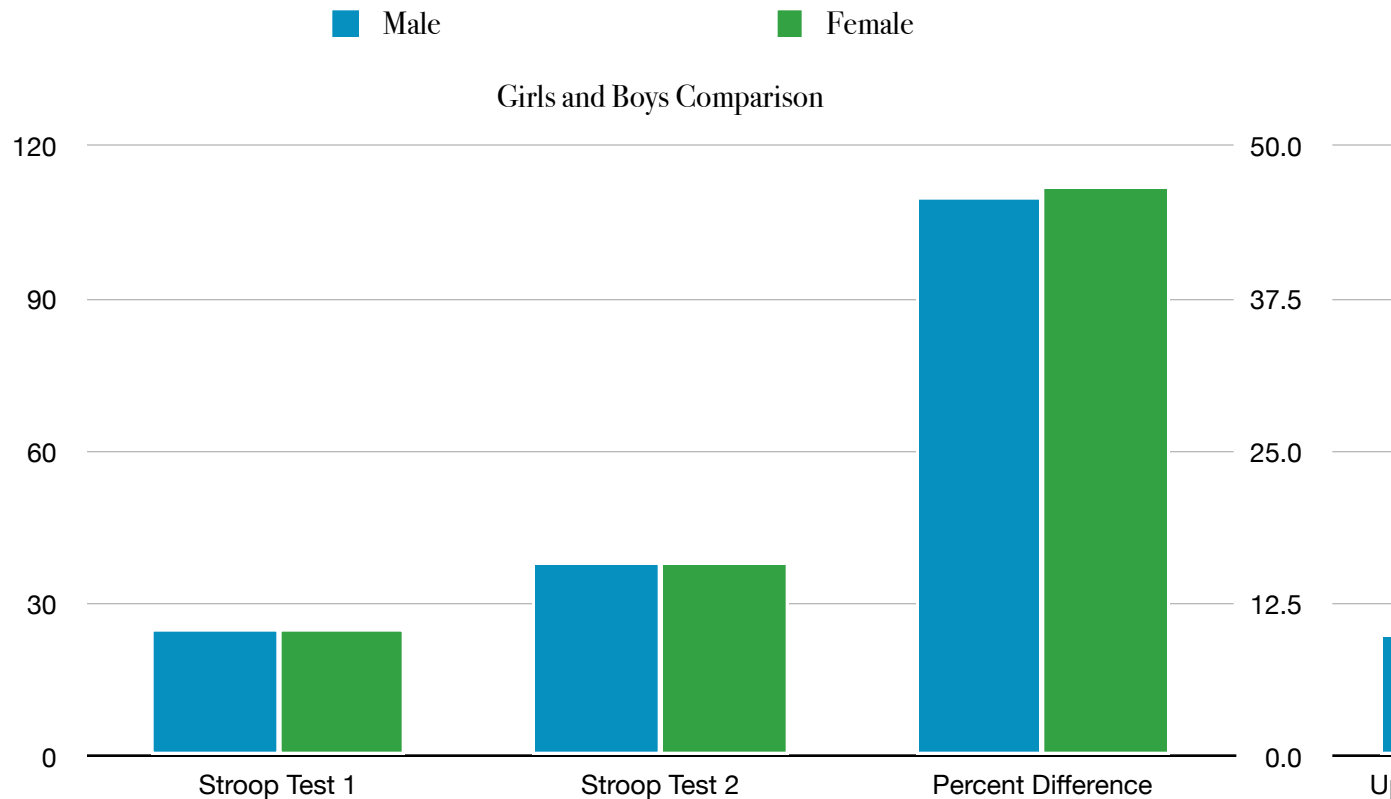
It is worth noting that some of the students that we tested had already done the test and knew what to expect, as a result they could have already known what to expect, and that may have changed the results.

QUESTIONS TO CONSIDER:

1. Draw one or more graphs (based on our data) that support or disprove your four hypothesis statements.

NOTICE: Stroop Test 1 & 2 units are in seconds, and Percentage Difference units are in percentage.

NOTICE: Stroop Test 1 & 2 units are in seconds.



NOTICE: The units of the numbers on the Y axis are Percents.

NOTICE: The first bar graphs units are in amount of people, and the second bar graphs units are in seconds.

NOTICE: The graphs above have percentage units.

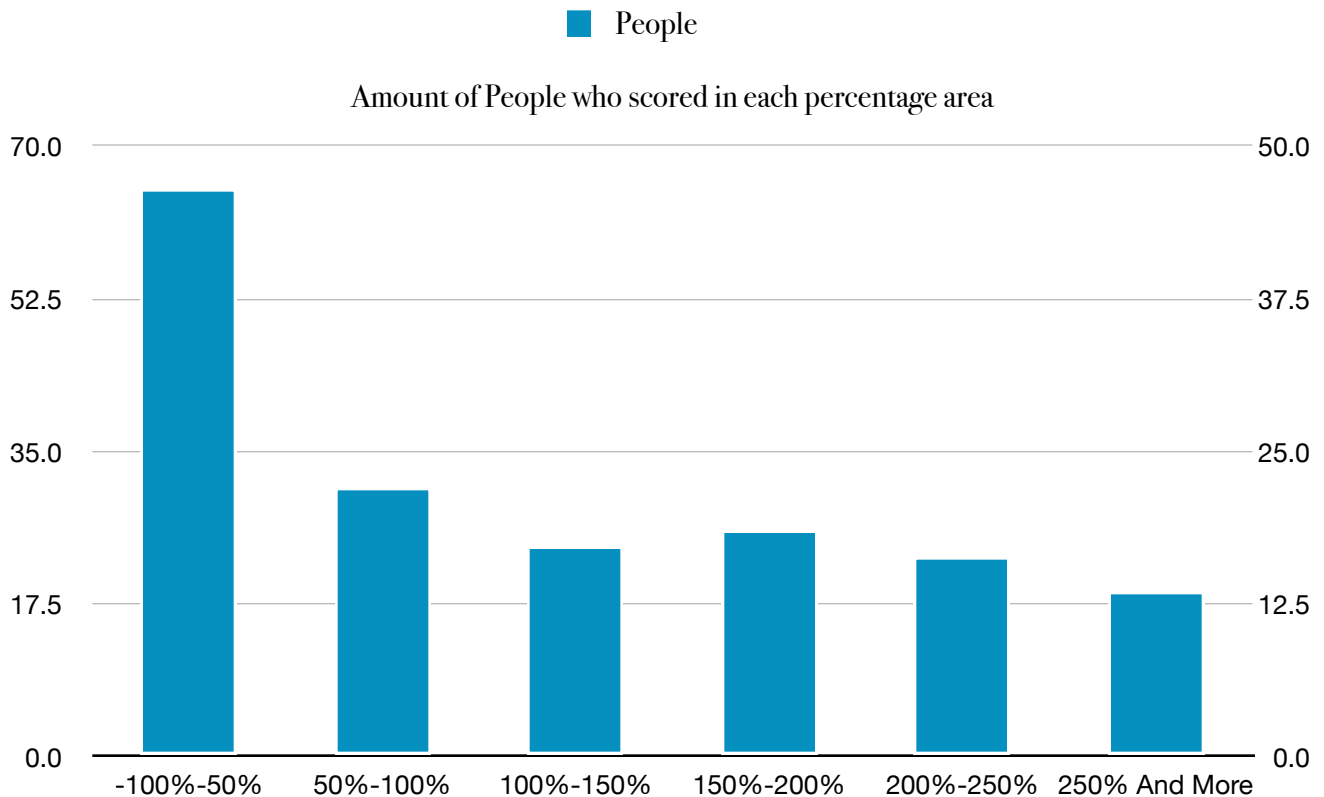
NOTICE: There are two hand drawn graphs attached to meet the requirement.

2. Is our sample representative of the MCS Community? Why? Why not?

No, our sample was not an exact representative of the entire MCS community, because we did not extract an even amount of people per class room relative to the classroom population. If everyone in the MCS Community was present and was willing to be tested we would have got the exact amount, but it would not be a sample.

3. Given what you know about the human brain and about your own experience taking the Stroop Test, how would you explain the results?

The conclusions that I have come to based on my graphs and observations, were that in if you were to average the amount of time and percentage for all the girls in the MCS Community and compare it to the boys you would get almost the exact same results. Thus answering the question "Would your results vary based on your sex?" with overall in the MCS community your sex is irrelevant to your test results. Another conclusion that I came to was



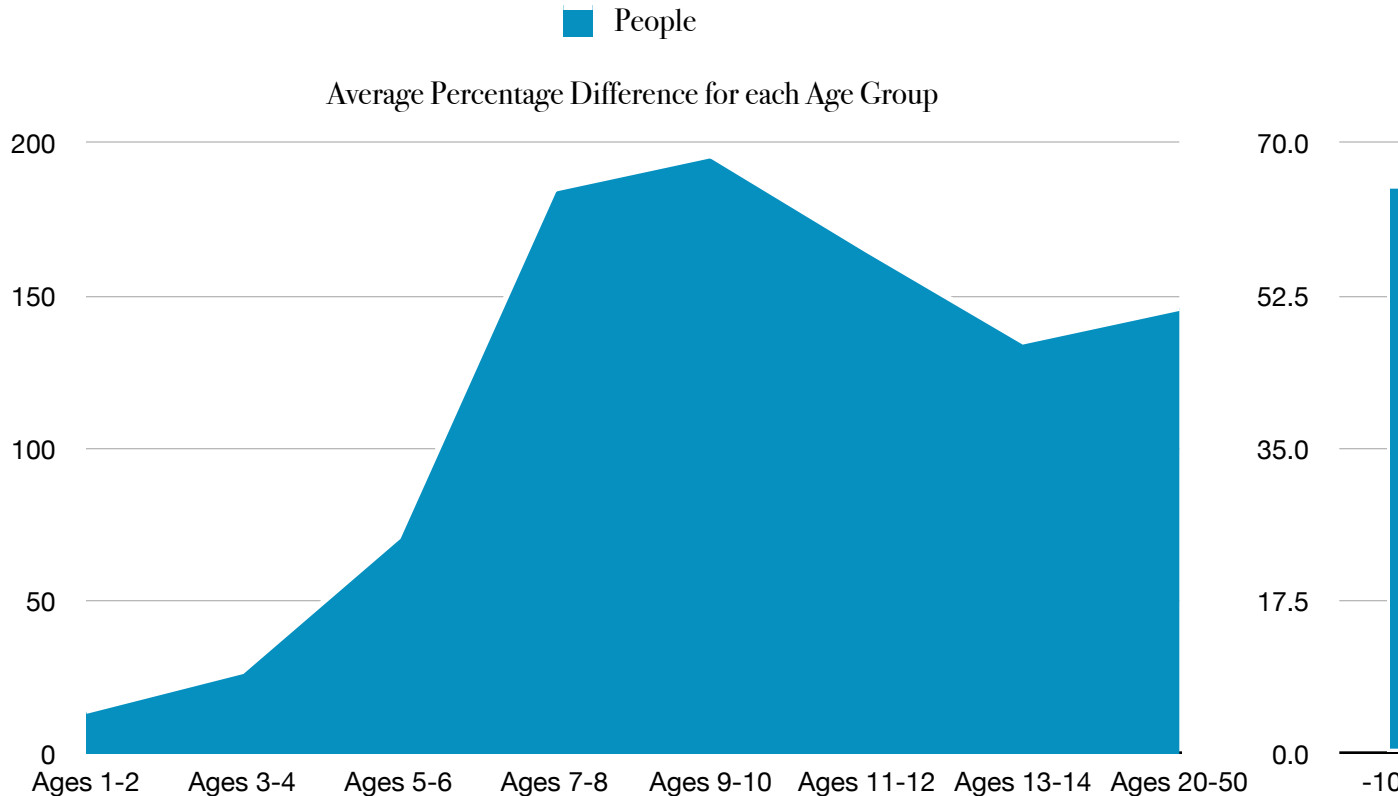
that for the first Stroop test if you are a girl ranging from the classrooms primary through lower elementary, you are more likely to score lower than the boys in the same age group.

However as you become older the test results for the girls in the first Stroop test will even out with the boys. My conclusions for the second Stroop test were quite different. They showed that if you are a girl ranging in the classrooms Primary through lower elementary than it was also more likely that you would score lower than the boys. But if you were a girl ranging from the classrooms Upper Elementary to Adolescents you would score higher than the boys in your same age group.

As you can see in this graph at a lower age there is not much of a time difference between doing the first and second stroop test. As your age increases you can see a definite increase in the difference. But starting at age eleven and twelve the difference begins to decrease again, and does not rise until age 20.

This graph tells us that if you were to test any person it is more likely that the proportion between their first Stroop test results and their second Stroop test results would be -100%-50% than any other percentage.

My conclusions based on this graph are that if you are younger than an adolescent (12-14) and you take the first stroop test you are more likely to take more time than an adolescent would. And if you were younger than an Adolescent it would take more time to do the second test. My conclusions based on this graph also show that it would take an adult less time to do both tests than an adolescent.



4. Did you notice any other interesting patterns in the data we collected? If so, what were they and how might you explain them?

One very interesting conclusion that I came to was that it takes both boys and girls an equal amount of time to do each test. Not only did this match my hypothesis but in the graph I made comparing all of the girls tests in each age group with all the boys tests in each age group I found that the average test score for both Stroop test 1 and Stroop test 2 for both the girls and the boys were identical. At first I thought I had calculated it wrong but I had not.

CONCLUSIONS:

In my hypothesis I stat that “we will need to test at least 100 subjects to be able to come to reasonable conclusions.” We ended up testing the entire community but it would have been possible to come to around the same conclusions if we had tested 100 subjects, so I would say that it was correct. In my second hypothesis question I

stated that it would not take as much time for the students younger than the adolescents but they would make more mistakes. Based on the results that I've seen I can come to the conclusion that students younger than the adolescents take more time to do the tests, however I was not able to take observations on the tests of the people younger than me therefore I was not able to note how many mistakes they made compared to us.

In the third hypothesis question I stated that it would take longer for the people older than us to do the test but they would not make as many mistakes. Based on the results this is not true, it takes the people older than us around the same amount of time to do both tests. However I was not able to take observations on the tests of the people older than us therefore I was not able to come to any conclusions on part of my hypothesis. In the fourth hypothesis question I stated that it would take the boys and girls the same amount of time to do both tests, and based on the gathered results this was correct.

This lab triggered the following questions:

What would be the results if we were to test the same person in different environments how might that alter their scores?

What if we were to compare information of the same person taking the same test only when they were taking one of the tests they were in a good mood and when they were taking the test a second time they were in a bad mood?