

# A Statistical Analysis Of The Correlation Between Left Handedness And Brain Function

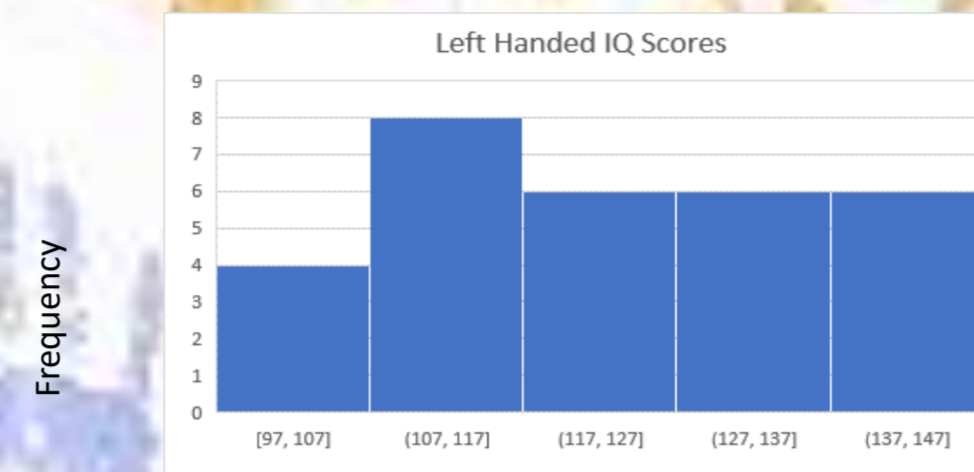
## Inspiration and background research:

Throughout our school years we had heard the rumour that left handed people are supposedly smarter than their right handed counterparts. We wanted to test this theory and see if there is a relationship between left handedness and brain function. A study carried out a few years ago claimed left-handedness to be a predictor of mathematics precociousness. The results, which were published in 'Frontiers in Psychology', showed that left-handed people outperformed the rest of the sample when taking part in difficult problem-solving, such as associating mathematical functions to a given set of data. After reviewing the synopsis of this study, we decided to investigate whether left handed people had superior IQ's, memories and spatial reasoning. The corpus callosum is a structure made up of nerves which separates the two hemispheres of the brain. It appears to be larger in 'lefties' and this suggests that they have enhanced connectivity between the two halves of the brain and therefore, superior information processing. This coheres with the idea that blind and sighted people read braille faster with their left hand as the right hemisphere, which controls the left hand, processes spatial information more efficiently.

## Experimental Methods:

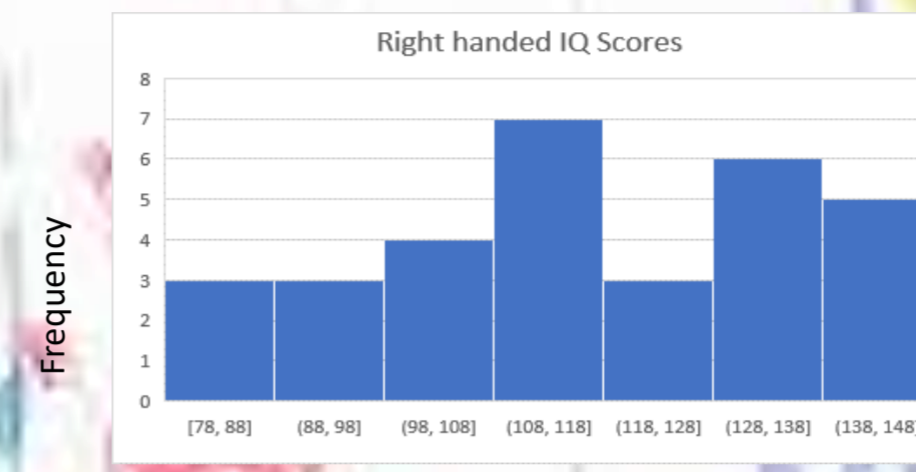
Step 1: We chose online tests to examine 32 student's brain function. We decided on an IQ test and a picture memory test.  
 Step 2: We created two separate surveys, all with the same questions and tests to compile all the data on two spreadsheets, one for the right handed results and one for the left handed results.  
 Step 3: We got our sample by going around to classes at our school and asking left handed students to partake in our survey. And we randomly selected 32 right handed students using a randomiser.  
 Step 4: The students took our survey and their results went to two separate spreadsheets for us to analyse.

## Left Hand IQ



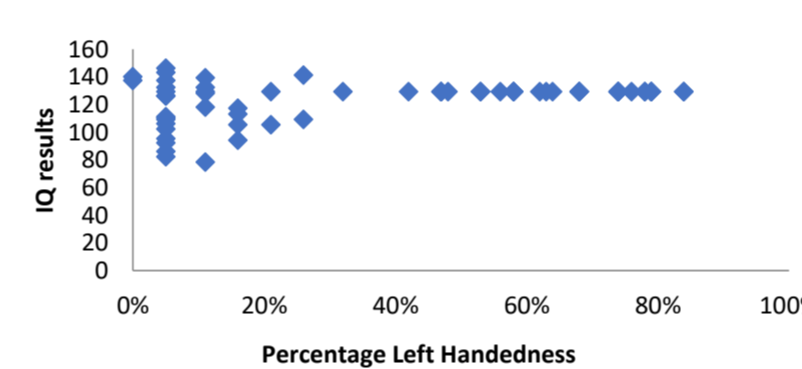
IQ Scores	
Mean	122.46666 67
Standard Deviation	13.44397

## Right Hand IQ



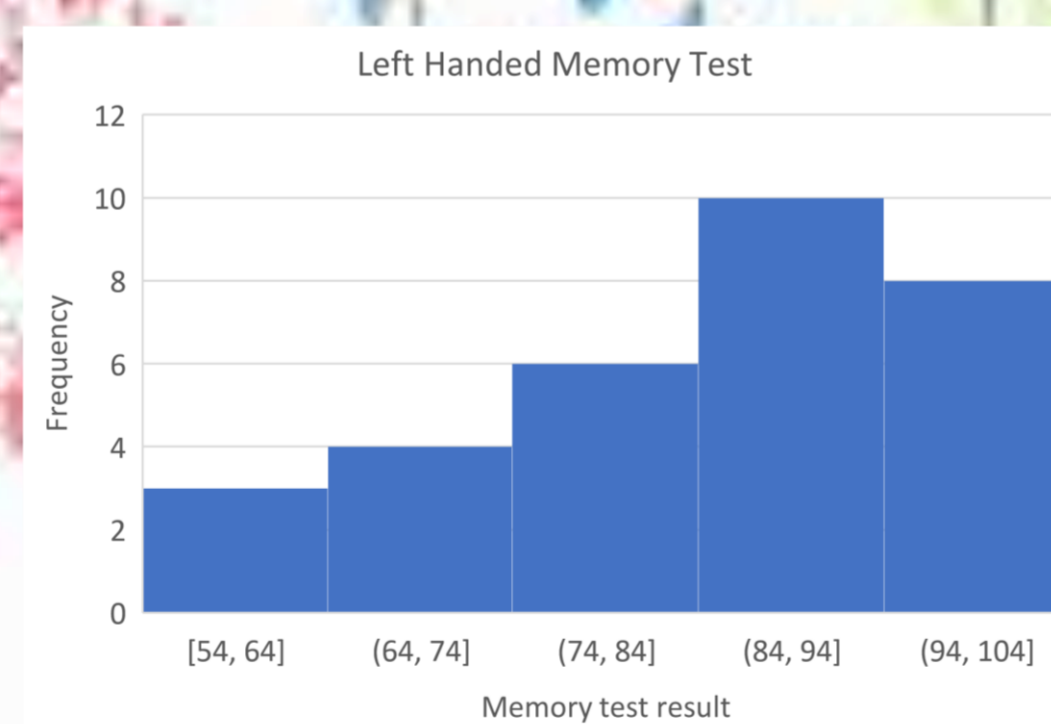
IQ Scores	
Mean	116.6774
Standard Deviation	19.26376

Correlation between percentage left handedness and IQ



Correlation Coefficient  
0.370061

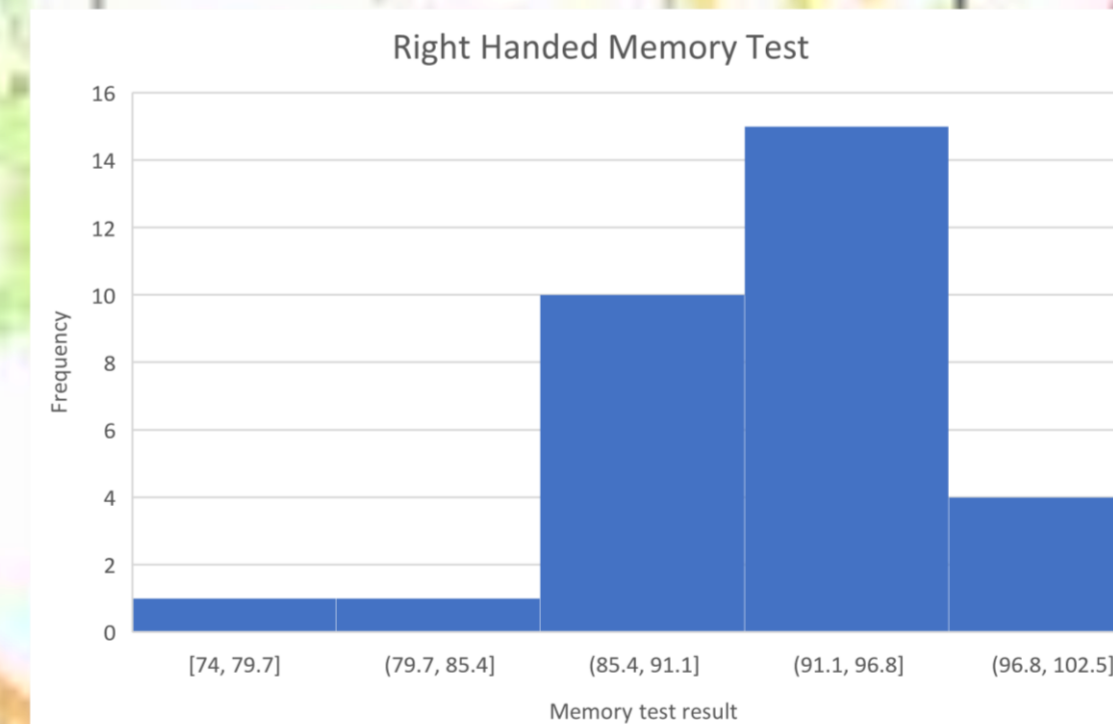
## Left Hand Memory



Mean	84.903226
Standard Deviation	19.551586 7

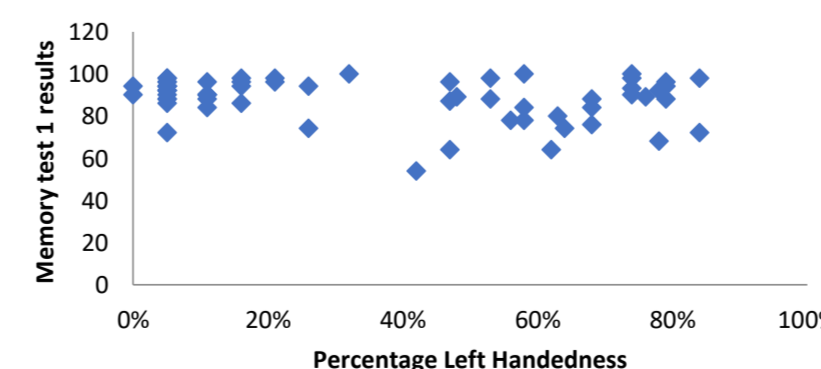
Max Score on memory test is 100

## Right Hand Memory



Mean	84.90323
Standard Deviation	6.38223627 4

Correlation between percentage left handedness and memory test



Correlation Coefficient  
-0.24308

Our chi squared p value for left and right handed data sets indicates that our samples come from normal distributions for both IQ and Memory tests

## Issues:

We were limited to our sample size by the number of left handed students in our school. We would suggest that this project be carried out on a larger scale in order to get more in-depth results. Also we limited our sample to secondary school students aged 13-18. Perhaps this age group could be expanded in future studies for more extensive results.

## Conclusion:

Our confidence intervals at a 95% confidence level show that the *average IQ* for a left handed person is between 117.73 and 127.19 and for a right handed person it is between 109.9 and 123.5. Our confidence intervals at a 95% confidence level show that the *average memory test result* for a left handed person is between 80.590 and 89.215 whereas it is between 90.16 and 93.17 for a right handed person. We also performed a test on all subjects that measured the percentage 'left handedness' that each of them had. When we assess the correlation coefficients of left handedness against IQ we have a moderate positive *r* value of 0.370061 indicating that the higher your percentage left handedness the higher IQ. The *r* value of left handedness against memory is -0.24308 indicating that the more left handed you are the worse your memory is. While both of these correlations are relatively weak their direction adds further credence to the results of the confidence intervals above.

Overall there is statistically significant information that leads us to conclude that left handed people are more intelligent while right handed people have better memory. It is a topic that warrants further and deeper investigation.