

Stat 150 – Day 16
Memory Study

You will be asked to study a sequence of letters for 20 seconds and then to write down as many as you can remember, in order. Your score will be the number that you remember correctly before your first error of any kind.

a) Identify the observational units in this study.

b) Identify the explanatory and response variables. Also classify them as categorical or quantitative.

c) Is this an observational study or an experiment? Explain.

d) How was the assignment of treatments to subjects carried out? How is that relevant to the issue of confounding variables, specifically the “memorization ability” variable? Why is this important?

e) Did this study make use of blindness? Explain how.

f) Put a dot on graph on the board corresponding to your own result.

g) Enter the data into Minitab. Put the JFK group's results in c1 and the JFKC group's results in c2. Then use Minitab to calculate five-number summaries, means, and standard deviations (Stat> Basic statistics> Display descriptive statistics). Record these below.

	Sample size	Mean	Std. dev.	Minimum	Lower quartile	Median	Upper quartile	Maximum
JFK group								
JFKC group								

h) Use Minitab to produce dotplots and boxplots for comparing the two groups on the same scale (Graph> Dotplot, MultipleY's, Simple).

i) Do these graphs and statistics suggest that the two "treatment" groups tended to produce different responses? Explain.

j) Now use Minitab to reproduce the data with a "stacked" format. Select Data> Stack> Columns. Enter c1 and c2 as the columns to be stacked. Click on "Column of current worksheet" and type c4 and then store subscripts in c5. Explain what this new format has done, and give appropriate names to c4 and c5.

k) Reproduce the calculations, dotplots, and boxplots using thje stacked data. (Choose the "By variable" option for the statistics, and choose the "One Y, With Groups" option for the graphs.)

l) If further analysis reveals that the differences between the two groups are "statistically significant," meaning that they are unlikely to occur by random variation if there were no underlying difference between the groups, would you have reason to conclude that one treatment *caused* lower/higher performance on the task? Explain.