PSY 410L – Cognitive Psychology Lab. J.P. Toth Fall 2013

Lab Assignment #1: Organize, Format, Analyze, Graph, & Interpret Data in Excel.
Imagine you are a researcher interested in whether memory performance changes across the day. To investigate, you collect memory data (proportion of correct responses) from 16 people, each of which has been tested at three different times: 9am, 1pm, & 5pm. The data for this study is on the course webpage (under "Lab Assignments & Materials") in a text file labeled "Memory Study Data". Your assignment is to Organize, Format, Analyze, Graph, & Interpret this data using the steps below.

A. Organize & Format your data (see "Data Example" on course webpage):
1. Import the data (copy & paste) from the text file into an Excel workbook.
2. Use "text-to-columns" (under Data menu) to separate the data so each value has its own cell.
3. Transpose the data to form columns instead of rows [Highlight & copy all of the data cells, put the cursor into an empty cell, and choose Transpose under the Home > Paste menu.].
4. Label the rows (subjects 1-16) and columns (9am, 1pm, 5pm).
5. Clean up your sheet & format your data so it's organized and easy to read. For example…
    a. Reduce the data (proportions) to 2 decimal places.
    b. Center everything; bold & underline your column labels.
    c. In general, the goal here is to make your data easy to read and understand.

B. Analyze your data using Excel formulas:
1. Use the "=average" formula to calculate means for each of the 3 conditions; put these at the bottom of each column, bolded. Put a label (e.g., "Means:") to the left of your three means.
2. Use the "=stdev" formula to calculate standard deviations for each of the 3 conditions; put these just below the relevant mean, un-bolded. Label these as well (e.g., "sd:").
3. Using the "=t-test" function, perform two t-tests to determine whether memory performance is significantly different at the .05 level for (a) 9am vs. 1pm; and (b) 9am vs. 5pm.

C. Graph your results (see "Graph Example" on course webpage):
1. Create a summary table of means, using the formula symbol ("=") to point at the cells containing the relevant means (Hint: after pointing at one, use the handle to get the rest).
2. Go to the Insert menu and select the chart type that is most appropriate for your data; once it's created, right click on it and choose "Move Chart…" to put it on its own page.
3. Use the Layout menu (under "Chart Tools") to label your axes and give your graph a title.
4. Create "data labels" so that your graph shows the mean for each condition.
5. Format all of the elements on your graph so that it's easy to read (see "Graph Example").

D. Interpret your results: Somewhere on your spreadsheet (e.g., below your means) answer the following two questions: (1) What do your t-tests reveal about the differences between the conditions (i.e., which conditions are significantly different and which are not)? (2) Given the results, what overall conclusions can you draw about how memory changes over the day?

E. Submit your work: Your completed Excel workbook should have two worksheets (within a single Excel file), one labeled "data", the other labeled "graph". **Using your last name (not mine!), name your file using the following format (e.g., "Lab1-Toth.xlsx"). The lab is due by 5pm Friday, Aug. 30, 2013, and should be sent to the TA for this course, Chris (cmc1978@uncw.edu).** You should also keep a copy for yourself for future reference and as proof that you did the assignment.