Hypothetical Data Writeup
- Before you collect the data for your second project, use the predictions you made in the Introduction section to develop (i.e., make up) a set of hypothetical data that fit these predictions.
- Write up these hypothetical results in APA format.
- Use “dummy” (hypothetical) values for F, df, and p.
- Date due: April 15

Introduction section
- The Introduction section places the study in a broader context and shows the reader where it fits into the literature.
  - What do we already know about the topic?
  - What missing pieces does the study fill in?
  - Why is it important?

Error Bars
- Error bars reflect the variability in scores around the means in two or more conditions.
- Download the Excel spreadsheet on the class web page to see how this is done.

Dates
- Draft Introduction section
  - due date: Thu Mar 27 (email is fine)
- Draft Methods section
  - due date: Tue Apr 8

Using Excel to add error bars to graphs.
Step 1: compute standard errors
http://www.utdallas.edu/~assmann/PSY3393/error_bars.xls
Using Excel to add error bars

• First step: make a line graph of the means
  – Copy the data means from each condition into a separate column. Each column generates one line in the graph. This will make a 2x2 grid.
  – Click and drag over the 2x2 grid of the means. Then select the “Chart Wizard” button. Choose “Line” plot (with markers displayed at each data value). Follow the steps used previously to make the interaction plot.

Using Excel to add error bars

• Change background color to white
• Change symbols to open and closed circles or squares; change plot line colors to black
• Increase the size of the plot symbol
• Add x-axis and y-axis labels
• Set y-axis range (e.g. 0-100 in steps of 20)

Using Excel to add error bars

• Select the “Source Data” menu to insert the correct legend labels (replacing “series 1” and “series 2”)
• Use “Source Data” to insert the correct x-axis labels.
• Many of the needed changes can be made by double-clicking on the object or plot feature you want to change.

Using Excel to add error bars

• Next, copy the standard errors for each condition into a 2x2 grid just as you did for the means.
• Divide each standard errors by 2 (because the error bars extend above and below the means).

Using Excel to add error bars

• To insert the error bars, double click one of the plot symbols. This brings up the “Format Data Series” pop-up menu.
• Choose the Y-error bars tab.
• Choose “Display Both” and for “Error Amount”, choose “Custom”.
• You can type in the desired error value, or select the standard error values from each row of the 2x2 grid in the spreadsheet.

Table to Graph: adding error bars

<table>
<thead>
<tr>
<th>Mean scores</th>
<th>Recall</th>
<th>Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall</td>
<td>70.66</td>
<td>21.66</td>
</tr>
<tr>
<td>Recall</td>
<td>40.83</td>
<td>46.66</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard errors</th>
<th>Recall</th>
<th>Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall</td>
<td>12.23</td>
<td>7.16</td>
</tr>
<tr>
<td>Recall</td>
<td>9.41</td>
<td>7.49</td>
</tr>
</tbody>
</table>
Graphing interactions

- For each of the following examples, construct a plausible set of data representing the outcome you think is most likely.
- Use Excel to enter the data in two columns. Use the Excel graphing tools to make line plots of the interaction.
- Include error bars on the graphs.

Two-way interactions

1. Jury decisions are influenced by the attractiveness of the defendant (male or female).
2. Visual imagery improves memory (immediate vs. delayed).
3. Providing courses in family planning in middle school reduce the incidence of teenage pregnancy (grade level).
4. A new program is developed to increase reading awareness in kindergarten children (normal and dyslexic).
5. Non-native speakers have more difficulty than native speakers understanding speech in noisy conditions (quiet and noise).