APA Results & Discussion

Psychology 280 Lecture
5/17/2006

APA Results Section Details

- The Results section is where you summarize the data you collected and present the main findings (even those that are counter to your hypotheses).
- You should also explain what analyses were used (e.g., one-way ANOVA, t-test).
- The results section should be organized in some fashion.
- Don’t start a new page for this section, continue from introduction
  - Center the word “Results” and continue typing on the very next double-spaced line

Basics of Results Section

- Before writing your results, look at your results carefully
  - It may help to have any tables or figures you plan to use created before writing this section
- Briefly state the main findings in words. That is, first give a general description, then go into the details.
- A common way to report results is to
  1. Restate your hypothesis for the reader.
  2. Summarize the results for each of the statistical tests you completed for that hypothesis.
  3. Repeat steps 1 and 2 for each subsequent hypothesis.

Writing Up Statistical Analyses

- When presenting the results of statistical tests, give descriptive statistics before the corresponding inferential statistics. In other words, give means and/or percentages (perhaps referring to a table or figure), before talking about the results of any statistical tests you performed.
- When presenting means, it is reasonable to use one additional digit of accuracy than what is contained in the raw data. In other words, if the raw data consisted of whole numbers, then the means should contain one decimal place.
- When presenting nominal or ordinal data, give the percents rather than frequencies (since percents are independent of the sample size).
Writing Up Statistical Analyses (con’t)

- The general format for presenting an inferential statistic is: 
  Statistic(df) = value, probability = value.
  - Note that exact p values are preferred.
  - For our paper, stating if the results is greater than or less than .05 is sufficient.
  - An example of this would be $F(1, 149) = 107.31, p < .001$.
  - In general, any p-value less than or equal to .05 is considered significant and you should be sure to point out to your reader that there was an effect.
  - P-values greater than .05 are not significant and are considered uninterpretable.

Writing Up Statistical Analyses (con’t)

- When actually presenting the results, try to emphasize the meaning of the statistics. That is, clearly describe what it is you are testing and what significance means for the variables involved.
  - Do not mention individual scores except as an example; instead report means and standard deviations.
  - It is not appropriate to discuss what you think these findings mean, including the implication of the results! Save this for the Discussion section.

Writing Up Statistical Analyses (con’t)

- Examples of how to report common statistical analyses:
  - An analysis using Pearson’s correlation coefficient supported this observation, $r(58) = .63, p < .001$.
  - The control group ($M = 14.1$) remembered more words on the memory test than the drugged group ($M = 12.3$). This difference was tested using an independent groups t test, and was shown to be nonsignificant, $t(18) = 1.23, p = .283$. Thus, the data fail to support the notion of a drug effect on memory.
  - The mean scores for the short, medium, and long retention intervals were 5.9, 10.3, and 14.2, respectively. A one way analysis of variance revealed a significant effect of retention interval, $F(2, 34) = 123.87, p < .001$.

Additional Considerations

- In cases where the reader would expect something to be significant and it is not, you should address the issue.
  - Be careful with the word “prove”. Since statistical tests are based on probability and can be in error, they do not really prove anything.
  - Do not talk about the meaning of the alpha level or the null hypothesis, and what chance factors have to do with it. Since you are writing for the scientific community, you can assume the reader will have a working knowledge of statistics.
Tables & Figures Basics

- After the Reference section (unless you have footnote or authors notes pages) come:
  - any tables
  - the page(s) with the figure captions
  - any figures
  - Each belongs on a separate page (multiple figure captions can appear on one page however).
- Tables and the figure captions page have a manuscript page header and page number just like all the other typed pages. Note that figures are not typed, so pages with the actual figure do not have a manuscript page header and page number.

Tables & Figures Basics (con't)

- Tables and figures should be able to stand alone (i.e., you should not have to read the manuscript to be able to understand a table or figure).
- A big help in this regard is the table title or the figure caption. Use these wisely to explain what is going on in the table or figure. In other words, do not be afraid to be a little bit verbose in your table titles and figure captions.
- Tables and figures should not duplicate the same information. Likewise, you should not repeat the data point values in a table or figure in the text of the manuscript.

Tables (con't)

- If you only have a few data points to present, do it in the text of the manuscript rather than in a table or figure.
- Tables and figures are most often used to present results, but may also be used to present other information, such as the design or a theoretical schema.
- If you include a table or figure, you must introduce it in the text of the results section (e.g., Table 1 displays the...) and describe to the reader what should be seen in it.
- DO NOT reference tables and figures in text like this:
  - (see Table 1)
  - Instead .... Table 1 details the mean scores, etc.

- Type the table number and then (on the next double spaced line) type the table title flush left and italicized. Note that there are no periods used after the table number or title.
- There are different ways to format tables. Your best bet is to set the tabs for the table or to use your word processor's table generating ability.
- When using columns with decimal numbers, make the decimal points line up.
- Be sure to use clear descriptors and labels in the table.
- APA style tables do not contain any vertical lines, so do not draw them in or use your word processor to generate them.
**Figures**

- ‘Figures’ is the technical term for graphs, charts, drawings and pictures.
- Figures (other than pictures) may be drawn in black and white only (using a ruler and preferably on graph paper) or they may be generated with a computer graphics program (keeping it in two dimensions).
- Each Figure has two pages
  - First page for Figure Caption
  - Second page for the Figure

**Figures (con’t)**

- If the figure is a chart or graph, verbally label the axes (do not use “X” and “Y”) and provide a key if necessary (e.g., explaining what open vs. filled circles are).
- On the back of each figure (with a pencil), write the figure number.
- Remember … do not put the figure caption on the figure, since that is what the figure captions page is for.

**Discussion**

- Do not purposely start a new page for this section. Simply center the word Discussion and continue typing on the very next double-spaced line (i.e., do not insert any extra blank lines here).
- The purpose of this section is to evaluate and interpret the results, especially with respect to the original research question.
- Start off with a brief, non-technical summary of the results. In other words, tell the reader about the main findings without using statistical terminology.

**Figures (con’t)**

- **Figure Captions**
  - Start on a new page. Center the phrase Figure Captions at the top. Double space everything!
  - Each figure caption is typed flush left in block format.
  - The word ‘figure’ and the number are italicized while the title is not.
    - For example, Figure 1. The effects of...
- **Figures**
  - Center each figure on the page vertically as well as horizontally and arrange for the figure to use the bulk of the page.
  - Do not have manuscript page header for the page the actual figure is on.
Discussion (con't)

- Then go on to discuss the implications of the results. In other words, whatever was found needs to be discussed.
- It is also important to discuss how the results relate to the literature you cited in the introduction. In other words, emphasize any theoretical consequences of the results.
- You might (or might not) also mention any limitations of the study and any suggestions for future research in this section.

Discussion (con't)

- Finally, you need an ending paragraph in which you make a final summary statement of the conclusions you have drawn. You are also encouraged, when appropriate, to comment on the importance and relevance of your findings. How are your findings related to the big picture?
- Thus, this section should contain an absolute minimum of three paragraphs: the non-technical summary, discussion of the results and their implications, and the concluding paragraph.

The End

Lecture information from APA Manual and University of Wisconsin APA Resources