Title: Describe your take home message in 12 words or fewer.

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*[Note*: If you are in my class, you do not need an author note for your lab report.]

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Abstract

In this “article,” Nate summarizes the formatting and content of each section of a psychology paper following the guidelines of the 6th edition of the APA Manual. Psychology papers adhere to a standard outline and format. Certain things are expected in each section, and there are some fairly specific formatting rules. The abstract should be a concise summary of your paper. In about 150 words or less, it should cover some or all of the following elements, not necessarily in this order: What the question/hypothesis is; why it matters; key aspects of the method; what you found; and your conclusions about what your findings mean. Be specific (here and throughout the paper) when possible; for example, “participants learned significantly more when they studied trivia questions under water than on land” is better than “participants’ learning was significantly affected by where they studied.”

Keywords: Up to five keywords (e.g., Learning, Memory, Bias, Heuristic)

-- Insert title (again) here --

Your introduction goes here. The big task of the introduction is to explain the issue/problem you are addressing and explain why it matters. In other words, explain why the reader should care about the study you did. For this class it should probably be somewhere around a couple of pages but I am not setting page limits (max or min).

A big part of an effective introduction is explaining previous scholarship—that is, explain whatever background your reader needs to know in order to understand your research. In describing previous scholarship, you will be citing references. The references should be in APA format (see below). Please refrain from including background if it is only tangentially related to the issues in your paper.

Use your description of background research to set up the question(s) you asked in your research. Your research might be driven by a question or a hypothesis. To me, they are basically the same thing. In both cases you have a question; with a hypothesis you also have an educated guess about what the answer is.

When you write about your hypotheses or questions, there are basically three things you need to do. 1) What are they? 2) *Why* do you think they make sense? In other words, explain your predictions and the reasoning behind them (and if you don not have predictions you might still want to explain the logic that led to your question). Your reasons will probably be based on a mix of previous research and intuition. 3) Explain why the reader should care.

At the end of the introduction (or in the first paragraph of the method), try to summarize your method in one paragraph. Only include the key elements.

Throughout the paper, write as if your reader is an intelligent person who knows basic psychology concepts and basic statistics but does not know anything about the research you did or the background literature.

Formatting notes: According to the APA manual, 6th edition, there are multiple levels of headings within the body of the text. The highest level is bold and centered on its own line (see below). Also, notice that there are no page breaks between introduction, method, results, and discussion. And notice that everything is double-spaced.

Write in the past tense (e.g., “the results showed”). I personally support the use of “I” and “we” (e.g., “we analyzed response accuracy in two ways) so use it if you want, but do so sparingly.

Use an ampersand to cite a reference inside parentheses (Allen, Mahler, & Estes, 1969; Baron-Cohen, 1995) but use “and” if you want to cite something outside of parentheses, such as Baker and Brown (1984). The first time you cite an article, use all of the authors’ names. Any subsequent time you cite an article with more than two authors, just use the first author’s name followed by et al. For example, here is how our three articles from above would now be cited (Allen et al., 1969; Baker & Brown, 1984; Baron-Cohen, 1995). If you quote something, put it in quotes and give a reference with a page number.

Work with other students (do analyses, read drafts for each other, etc.) but write your own paper in your own words. I encourage you to get feedback from a peer prior to submitting your paper. But when you’re actually typing, you should be alone. Do not plagiarize from my handouts, each other, or published works. If you are not 100% sure what plagiarism is, talk to me.

Method

The first level of heading (Method, above) should be centered in bold.

Here is the point of a method section: After reading your method, your reader should be able to replicate your study at another college or university. For this class it should probably be a page or two.

The method section should describe what you did. Be concrete and precise. Sometimes the first paragraph of the method section is a summary of the method (in which case you obviously should not include a redundant summary at the end of the introduction). Other times you’ll go straight to the participants heading (see below).

Participants

The second level of subheading should be left justified, bold, and its own paragraph. There should not be a period. (Pro tip: The APA says any section with a subheading should have a minimum of two subheadings; in other words, do not have a section with a single sub-headed section.)

Describe your sample. Talk about how your sample was recruited and compensated (on rare occasions this would happen in the procedure section instead of here). Explain how many participants were excluded and for what reason. Then describe the final sample: number of participants, average age, breakdown by gender (number who were male, female, other), and possibly by race and/or ethnicity. Include other pertinent info as appropriate.

Materials

In some papers it is appropriate to describe your stimuli/materials (e.g., what the participants read, heard, looked at, etc.). When describing materials, examples always help. As always in the method section, be concrete and precise.

Design

In some papers it is appropriate to describe your design. This section generally contains information like what your independent variables were, how many levels they had, and whether each variable was manipulated within-participants or between-participants. You might want to say what your dependent variable(s) were here, too, unless it’s obvious.

For example, you could say you conducted a 2x2 experiment in which you investigated the effects of treatment (drug versus placebo) and participant gender (male or female) on happiness ratings.

Here’s a quick sidebar for those readers still trying to sort out the meaning of “independent variable,” etc. In the example above, Treatment is an independent variable with two levels. The levels are drug and placebo. Gender is a “quasi-independent” (aka “subject”) variable, meaning it was analyzed like an independent variable, but unlike an independent variable it was not manipulated by the experimenter (you can’t manipulate gender). Happiness ratings is the dependent variable. You can assume your reader knows everything in this paragraph, which means this information doesn't need to be stated in your lab report. The previous paragraph is sufficiently detailed.

Procedure

Describe what the *participants* did in sufficient detail that someone could replicate the study. Do not talk about the steps the *experimenter* went through unless they are relevant.

Go through it step by step and be clear and thorough. You may want to include the instructions participants read (in summary or you can quote them in some cases if the wording is crucial), what the participants did during a given trial, the order of presentation (if relevant), and so on. You might want to have subsections in the procedure, such as the ones that follow.

Session 1. The third level of heading is bold with a period. It is not a separate paragraph. For example, you might talk about what happened in the first session.

Session 2. Then you would talk about session 2 (in this example). This is a third level heading; there are additional levels of headings (fourth, etc.), but you will have to look those up if you want to use them.

Results

The most important thing to do in results is present data that answer the questions and/or address the hypotheses from your intro. In my experience, one of the most common mistakes beginners make, in the results section, is they fail to address their hypotheses. For this class, your results section should probably be a page or two and it might be less than a single page.

Think about what your hypotheses/questions were, and what the reader needs to know to answer them. Make sure you address them in the results section. Do this even if you are not required to write an introduction.

Remember to *talk about* the findings in the results section. But don’t go overboard. It’s not good to just stick a bunch of numbers in there. Nor is it good to elaborately spell out everything you are going to say in the discussion. In trying to strike a balance, try to make sure your reader is not confused and knows why the results matter.

When you present the results of any inferential statistics (e.g., t-tests, correlations, ANOVAs), make sure to report the relevant means and SDs. Also, the direction of an effect should be stated (e.g., saying two means were different is not as good as saying one was higher than the other). Means should always be accompanied by standard deviations.

Here is an example. Assume we did an experiment to test the prediction that people can read concrete nouns (e.g., “potato”) more quickly than abstract nouns (e.g., “liberty”). Suppose we do a within-participant experiment with 12 participants and find that people are faster on the concrete nouns than the abstract nouns, and a t-test shows that the difference is statistically significant. We could report the result as follows: “It took participants fewer seconds to name concrete words (*M* = .664, *SD* = .109) than abstract words (*M* = .689, *SD* = .113). This difference was significant: *t*(11) = 2.29, *p* = .02.” The APA Manual strongly suggests reporting confidence intervals or effect size as well, but only do so if you feel confident that you can do it right.

You can also present your data using a table or graph. If you do, make sure to use correct APA formatting (for example, the graph/table comes at the end of the paper). See the APA manual for more on properly formatting graphs and tables. Sometimes this is optional (e.g., if you just have a few means, you can decide whether to do a table or not). Sometimes it is pretty much mandatory. One example is when you have a lot of means that need to be compared (e.g., a 2x2x3 ANOVA, or a single variable that has 12 levels). Another is if understanding a correlation is crucial, in which case a graphical presentation, such as a scatterplot, is often the best way to go.

Discussion

The discussion should address the issues raised in your introduction. For this class it should probably be a maximum of about two pages. You might want to include some or all of the following.

Summarize your findings. Were your hypotheses supported?

Talk about why you found what you found. Why was your hypothesis supported, if it was, and if it was not supported, why not? This might involve some reiteration of the introduction, especially for hypotheses that were supported.

Talk about implications of your study for a) the real world or b) psychological theory. This is where you remind us why your study is important. Again, there might be some reiteration, but try to keep redundancy to a minimum.

You might point out problems with the study. You might propose future research, although doing so is not always useful.

It is often good to end with a short paragraph either summarizing the conclusions or making a larger comment on a lesson learned from the research.

Science cannot proceed without clear, accurate, and complete communication through journal articles. The most important thing, by far, is the content. Next, in my view, is putting information in the right places (e.g., methods in the Method section, discussion in the Discussion section). Least important—again, in my opinion—is formatting minutiae such as getting reference style correct. But getting everything right is a worthy goal.

References

Allen, G. A., Mahler, W. A., & Estes, W. K. (1969). Effects of recall tests on long-term retention of paired associates. *Journal of Verbal Learning and Verbal Behavior, 8,* 463-470.

Baker, L. & Brown, A.L. (1984). Metacognitive skills and reading. In P. David Pearson (Ed.), *Handbook of reading research*. New York: Longman.

Baron-Cohen, S. (1995). *Mindblindness: an essay on autism and theory of mind*. Boston: MIT Press/Bradford Books.

[NOTE: Make sure you write your references in APA style. These are examples of citing a journal article, a chapter in a book, and a book, respectively. There is a different format for each of these and for dozens of other types of publication.

The Williams College library has a helpful set of examples of how to do APA references: http://libguides.williams.edu/citing/apa. There are plenty of other resources online as well. And if you want to borrow the APA manual itself just ask me. ]

Footnotes

[NOTE: If you have footnotes they go here. If not delete this page.]

Table 1

*Describe the table, for example: Mean correlations in each of the three conditions of Experiment 1*

[Put table right here.]

*Note.* Put a note here if necessary (with the word note italicized). For example: Mean correlations were calculated by computing a correlation for each participant and then averaging across participants.

[NOTE: If you have a table it goes on this page. If you have more than one, each gets its own page. There are specific rules for formatting tables; see APA manual.]

[Put the figure right here.]

*Figure 1.* Write the caption here.

[NOTE: If you have a figure it goes here. If you have more than one, each gets its own page. There are specific rules for formatting figures; see APA manual.]