

## Psych./Neuro. 201

### How to Write an APA Style Research Paper

An APA-style paper includes the following sections: title page, abstract, introduction, method, results, discussion, and references. Your paper may also include one or more tables and/or figures. Different types of information about your study are addressed in each of the sections, as described below.

General formatting rules are as follows:

- Do not put page breaks in between the introduction, method, results, and discussion sections.
- The title page, abstract, references, table(s), and figure(s) should be on their own pages.
- The entire paper should be written in the past tense, in a 12-point font, double-spaced, and with one-inch margins all around.

**Title page** (see sample on p. 41 of APA manual)

- Title should be between 10-12 words and should reflect content of paper (e.g., IV and DV).
- Title, your name, and Hamilton College are all double-spaced (no extra spaces)
- Create a page header using the “View header” function in MS Word. On the title page, the header should include the following:
  - Flush left: Running head: THE RUNNING HEAD SHOULD BE IN ALL CAPITAL LETTERS. The running head is a short title that appears at the top of pages of published articles. It should not exceed 50 characters, including punctuation and spacing. (Note: on the title page, you actually write the words “Running head,” but these words do not appear on subsequent pages; just the actual running head does. If you make a section break between the title page and the rest of the paper you can make the header different for those two parts of the manuscript).
  - Flush right, on same line: page number. Use the toolbox to insert a page number, so it will automatically number each page.

**Abstract** (labeled, centered, not bold)

- No more than 120 words, one paragraph, block format (i.e., don’t indent), double-spaced.
- State topic, preferably in one sentence. Provide overview of method, results, and discussion.

**Introduction** (Do not label as “Introduction.” Title of paper goes at the top of the page—not bold)

The introduction of an APA-style paper is the most difficult to write. A good introduction will summarize, integrate, and critically evaluate the empirical knowledge in the relevant area(s) in a way that sets the stage for your study and why you conducted it. The introduction starts out broad (but not too broad!) and gets more focused toward the end. Here are some guidelines for constructing a good introduction:

- Don’t put your readers to sleep by beginning your paper with the time-worn sentence, “Past research has shown...(blah blah blah)” They’ll be snoring within a paragraph! Try to draw your reader in by saying something interesting or thought-provoking right off the bat. Take a look at articles you’ve read. Which ones captured your attention right away? How did the authors accomplish this task? Which ones didn’t? Why not? See if you can use articles you liked as a model. One way to begin (but not the only way) is to provide an example or anecdote illustrative of your topic area.
- Although you won’t go into the details of your study and hypotheses until the end of the intro, you should foreshadow your study a bit at the end of the first paragraph by stating your purpose briefly, to give your reader a schema for all the information you will present next.
- Your intro should be a logical flow of ideas that leads up to your hypothesis. Try to organize it in terms of the ideas rather than who did what when. In other words, your intro shouldn’t read like a story of “Schmirdley did such-and-such in 1991. Then Gurplehoff did something-or-other in 1993. Then...(etc.)” First, brainstorm all of the ideas you think are necessary to include in your paper. Next, decide which ideas make sense to present first, second, third, and so forth, and think about how you want to transition between ideas. When an idea is complex, don’t be afraid to use a real-life example to clarify it for your reader. **The introduction will end with a brief overview of your study and, finally, your specific hypotheses. The hypotheses should flow logically out of everything that’s been presented, so that the reader has the sense of, “Of course. This hypothesis makes complete sense, given all the other research that was presented.”**

- When incorporating references into your intro, you do not necessarily need to describe every single study in complete detail, particularly if different studies use similar methodologies. Certainly you want to summarize briefly key articles, though, and point out differences in methods or findings of relevant studies when necessary. Don't make one mistake typical of a novice APA-paper writer by stating overtly why you're including a particular article (e.g., "This article is relevant to my study because..."). It should be obvious to the reader why you're including a reference without your explicitly saying so. DO NOT quote from the articles, instead paraphrase by putting the information in your own words.
- Be careful about citing your sources (see APA manual). Make sure there is a one-to-one correspondence between the articles you've cited in your intro and the articles listed in your reference section.
- Remember that your audience is the broader scientific community, not the other students in your class or your professor. Therefore, you should assume they have a basic understanding of psychology, but you need to provide them with the complete information necessary for them to understand the research you are presenting.

### **Method** (labeled, centered, bold)

The Method section of an APA-style paper is the most straightforward to write, but requires precision. Your goal is to describe the details of your study in such a way that another researcher could duplicate your methods exactly. The Method section typically includes Participants, Materials and/or Apparatus, and Procedure sections. If the design is particularly complicated (multiple IVs in a factorial experiment, for example), you might also include a separate Design subsection or have a "Design and Procedure" section. Note that in some studies (e.g., questionnaire studies in which there are many measures to describe but the procedure is brief), it may be more useful to present the Procedure section prior to the Materials section rather than after it.

### **Participants** (labeled, flush left, bold)

- Total number of participants (# women, # men), age range, mean and SD for age, racial/ethnic composition (if applicable), population type (e.g., college students). Remember to write numbers out when they begin a sentence.
- How were the participants recruited? (Don't say "randomly" if it wasn't random!) Were they compensated for their time in any way? (e.g., money, extra credit points)
- Write for a broad audience. Thus, do not write, "Students in Psych. 280..." Rather, write (for instance), "Students in a psychological statistics and research methods course at a small liberal arts college...."
- Try to avoid short, choppy sentences. Combine information into a longer sentence when possible.

### **Materials** (labeled, flush left, bold)

Carefully describe any stimuli, questionnaires, and so forth. It is unnecessary to mention things such as the paper and pencil used to record the responses, the data recording sheet, the computer that ran the data analysis, the color of the computer, and so forth. If you included a questionnaire, you should describe it in detail. For instance, note how many items were on the questionnaire, what the response format was (e.g., a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree)), how many items were reverse-scored, whether the measure had subscales, and so forth. Provide a sample item or two for your reader. If you have created a new instrument, you should attach it as an Appendix. If you presented participants with various word lists to remember or stimuli to judge, you should describe those in detail here. Use subheadings to separate different types of stimuli if needed. If you are only describing questionnaires, you may call this section "**Measures**."

### **Apparatus** (labeled, flush left, bold)

Include an apparatus section if you used specialized equipment for your study (e.g., the eyetracking machine) and need to describe it in detail.

### **Procedure** (labeled, flush left, bold)

What did participants do, and in what order? When you list a control variable (e.g., "Participants all sat two feet from the experimenter."), explain WHY you did what you did. In other words, what nuisance variable were you controlling for? Your procedure should be as brief and concise as possible. Read through it. Did you repeat yourself anywhere? If so, how can you rearrange things to avoid redundancy? You may either write the instructions to the participants verbatim or paraphrase, whichever you deem more appropriate. Don't forget to include brief statements about informed consent and debriefing.

## Results (labeled, centered, bold)

In this section, describe how you analyzed the data and what you found. If your data analyses were complex, feel free to break this section down into labeled subsections, perhaps one section for each hypothesis.

- Include a section for descriptive statistics
- List what type of analysis or test you conducted to test each hypothesis.
- Refer to your Statistics textbook for the proper way to report results in APA style. A t-test, for example, is reported in the following format:  $t(18) = 3.57, p < .001$ , where 18 is the number of degrees of freedom ( $N - 2$  for an independent-groups t test). For a correlation:  $r(32) = -.52, p < .001$ , where 32 is the number of degrees of freedom ( $N - 2$  for a correlation). For a one-way ANOVA:  $F(2, 18) = 7.00, p < .001$ , where 2 represents the  $df_{\text{between}}$  and 18 represents  $df_{\text{within}}$ . Remember that if a finding has a  $p$  value greater than .05, it is “nonsignificant,” not “insignificant.” For nonsignificant findings, still provide the exact  $p$  values. For correlations, be sure to report the  $r^2$  value as an assessment of the strength of the finding, to show what proportion of variability is shared by the two variables you’re correlating. For t-tests and ANOVAs, report  $\eta^2$ .
- Report exact  $p$  values to two or three decimal places (e.g.,  $p = .042$ ; see p. 114 of APA manual). However, for  $p$ -values less than .001, simply put  $p < .001$ .
- Following the presentation of all the statistics and numbers, be sure to state the nature of your finding(s) in words and whether or not they support your hypothesis (e.g., “As predicted, ...”). This information can typically be presented in a sentence or two following the numbers (within the same paragraph). Also, be sure to include the relevant means and SDs.
- It may be useful to include a table or figure to represent your results visually. Be sure to refer to these in your paper (e.g., “As illustrated in Figure 1...”). Remember that you may present a set of findings *either* as a table *or* as a figure, but not as both. Make sure that your text is not redundant with your tables/figures. For instance, if you present a table of means and standard deviations, you do not need to also report these in the text. However, if you use a figure to represent your results, you may wish to report means and standard deviations in the text, as these may not always be precisely ascertained by examining the figure. Do describe the trends shown in the figure.
- Do not spend any time interpreting or explaining the results; save that for the Discussion section.

## Discussion (labeled, centered, bold)

The goal of the discussion section is to interpret your findings and place them in the broader context of the literature in the area. A discussion section is like the reverse of the introduction, in that you begin with the specifics and work toward the more general (*funnel out*). Some points to consider:

- Begin with a brief restatement of your main findings (using words, not numbers). Did they support the hypothesis or not? If not, why not, do you think? Were there any surprising or interesting findings?
- How do your findings tie into the existing literature on the topic, or extend previous research? What do the results say about the broader behavior under investigation? Bring back some of the literature you discussed in the Introduction, and show how your results fit in (or don’t fit in, as the case may be). If you have surprising findings, you might discuss other theories that can help to explain the findings. Begin with the assumption that your results are valid, and explain why they might differ from others in the literature.
- What are the limitations of the study? If your findings differ from those of other researchers, or if you did not get statistically significant results, don’t spend pages and pages detailing what might have gone wrong with your study, but do provide one or two suggestions. Perhaps these could be incorporated into the future research section, below.
- What additional questions were generated from this study? What further research should be conducted on the topic? What gaps are there in the current body of research? Whenever you present an idea for a future research study, be sure to explain why you think that particular study should be conducted. What new knowledge would be gained from it? Don’t just say, “I think it would be interesting to re-run the study on a different college campus” or “It would be better to run the study again with more participants.” **Really put some thought into what extensions of the research might be interesting/informative, and why.**
- What are the theoretical and/or practical implications of your findings? How do these results relate to larger issues of human thoughts, feelings, and behavior? Give your readers “the big picture.” Try to answer the question, “So what?”
- Final paragraph: Be sure to sum up your paper with a final concluding statement. Don’t just trail off with an idea for a future study. End on a positive note by reminding your reader why your study was important and what it added to the literature.

## **References** (labeled, centered, not bold)

Provide an alphabetical listing of the references (alphabetize by last name of first author). Double-space all, with no extra spaces between references. The second line of each reference should be indented (this is called a hanging indent and is easily accomplished using the ruler in Microsoft Word). See the APA manual for how to format references correctly. Examples of references to journal articles start on p. 198 of the manual, and examples of references to books and book chapters start on pp. 202. Digital object identifiers (DOIs) are now included for electronic sources (see pp. 187-192 of APA manual to learn more).

### Journal article example:

[Note that only the first letter of the first word of the article title is capitalized; the journal name and volume are italicized. If the journal name had multiple words, each of the major words would be capitalized.]

Ebner-Priemer, U. W., & Trull, T. J. (2009). Ecological momentary assessment of mood disorders and mood dysregulation. *Psychological Assessment, 21*, 463-475. doi:10.1037/a0017075

### Book chapter example:

[Note that only the first letter of the first word of both the chapter title and book title are capitalized.]

Stephan, W. G. (1985). Intergroup relations. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology* (3<sup>rd</sup> ed., Vol. 2, pp. 599-658). New York: Random House.

### Book example:

Gray, P. (2010). *Psychology* (6<sup>th</sup> ed.). New York: Worth.

## **Table**

There are various formats for tables, depending upon the information you wish to include. See the APA manual. Be sure to provide a table number and table title (the latter is italicized). Tables can be single or double-spaced.

## **Figure**

If you have more than one figure, each one gets its own page. Use a sans serif font, such as Helvetica, for any text within your figure. Be sure to label your x- and y-axes clearly, and make sure you've noted the units of measurement of the DV. Underneath the figure provide a label and brief caption (e.g., "*Figure 1*. Mean evaluation of job applicant qualifications as a function of applicant attractiveness level"). The figure caption typically includes the IVs/predictor variables and the DV. Include error bars in your bar graphs, and note what the bars represent in the figure caption: Error bars represent one standard error above and below the mean.

## **In-Text Citations** (see pp. 174-179 of APA manual)

When citing sources in your paper, you need to include the authors' names and publication date. You should use the following formats:

When including the citation as part of the sentence, use AND: "According to Jones and Smith (2003), the..."

When the citation appears in parentheses, use "&": "Studies have shown that priming can affect actual motor behavior (Jones & Smith, 2003; Klein, Bailey, & Hammer, 1999)." The studies appearing in parentheses should be ordered alphabetically by the first author's last name, and should be separated by semicolons.

If you are quoting directly (which you should avoid), you also need to include the page number.

For sources with three or more authors, once you have listed all the authors' names, you may write "et al." on subsequent mentions. For example: "Klein et al. (1999) found that..." For sources with two authors, both authors must be included every time the source is cited. When a source has six or more authors, the first author's last name and "et al." are used every time the source is cited (including the first time).

## **Secondary Sources**

“Secondary source” is the term used to describe material that is cited in another source. If in his article entitled “Behavioral Study of Obedience” (1963), Stanley Milgram makes reference to the ideas of Snow (presented above), Snow (1961) is the primary source, and Milgram (1963) is the secondary source. Try to avoid using secondary sources in your papers; in other words, try to find the primary source and read it before citing it in your own work. If you must use a secondary source, however, you should cite it in the following way:

Snow (as cited in Milgram, 1963) argued that, historically, the cause of most criminal acts...

The reference for the Milgram article (but not the Snow reference) should then appear in the reference list at the end of your paper.