

Formatting L^AT_EX Documents in APA Style (6th Edition) Using the apa6 Class

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Abstract Journals in the social sciences typically require manuscripts to be formatted according to the American Psychological Association's *Publication Manual*, which is now in its 6th Edition. The apa6 class is an update of the popular apa class (often referred to as "apa.cls"), bringing it into compliance with 6th Edition requirements and adding a few new features. This article describes the major features of apa6 and presents results from testing apa6 with four bibliographic package scenarios; the output of these bibliographic packages is compared with 6th Edition requirements. The article concludes with information regarding how to easily convert a document from L^AT_EX to Microsoft Word® for the purpose of submitting manuscripts to journals that require APA style.

1 Background

Journals in psychology and other social sciences typically require authors to format their manuscripts in compliance with the guidelines published by the American Psychological Association (APA) in its *Publication Manual*, which APA updates periodically. The 6th Edition of the *Manual* (American Psychological Association, 2009) significantly altered the formatting guidelines for section headings and other aspects of manuscripts. These changes rendered existing formatting systems (e.g., the apa L^AT_EX class) inadequate for publication venues that require strict compliance with the 6th Edition.

The apa6 L^AT_EX class is an update of the apa class (frequently referred to as "apa.cls"), bringing the printed output into compliance with 6th Edition requirements. Because the author of the apa class is no longer maintaining it, I updated the code and released it under a new name, apa6.

In addition to the formatting updates (described in Section 2) required by the changes introduced in the 6th Edition, I added a few new features that were not available in the `apa` class. I describe these briefly in Section 3 of this article; for more detail, please consult the `apa6` documentation.

Central to the requirements of APA style is the citing of sources. Several \LaTeX bibliography packages are available for this. I tested the most common ones and have included my results in Section 4 of this article.

One additional aspect of preparing manuscripts for publication is the frequent stipulation that manuscripts be submitted in Microsoft Word[®] format. Microsoft Windows[®] users need look no further than Section 5 of this article for a relatively easy solution for accurately converting \LaTeX documents into Word documents.

Although I refer exclusively to \LaTeX documents throughout this article, all the information applies equally to Sweave documents (cf. Zahn, 2008). Sweave is a function in the open-source statistical software R (R Development Core Team, 2011). An Sweave document contains both directives for statistical analysis (conceptually similar to SPSS commands) and prose (abstract, introduction, etc.). The Sweave function processes the statistical analyses and “weaves” the statistical output with the prose to produce a complete manuscript. Thus, the researcher no longer must re-type, copy, or paste statistical results into a word-processing file. And if the data to be analyzed should change for any reason (e.g., one decides to exclude a few outlier cases), one only needs to re-run the Sweave command in order to produce an updated manuscript with the latest statistical results. The details of Sweaving are beyond the scope of this article, but a quick web search will turn up many useful results.

2 Compliance with 6th Edition Requirements

This section describes the updates made necessary by requirements appearing for the first time in the 6th Edition.

Like `apa`, `apa6` has three modes that generate a different visual result when the document is compiled: `jou` mode (the default), which has a two-column, printed-journal appearance; `man` mode, which follows APA’s requirements for formatting manuscripts for publication; and `doc` mode, which has a standard \LaTeX -document appearance. Although some of the 6th-Edition changes (e.g., format of section headings) apply equally to `jou` and `doc` modes, in this article I will be

discussing the much-more-detailed specifications from the *Manual* pertaining to man mode.

2.1 Section Headings

Perhaps the biggest change introduced in the 6th Edition is the way section headings are formatted. Prior to the 6th Edition, headings were formatted based on how many levels of heading (think of levels in a hierarchical, Roman-numeral outline) were present in the document. In the 6th Edition, regardless of the number of heading levels in the manuscript, the top heading level is always centered, boldfaced, and set in upper- and lower-case. Other heading levels have similarly specific requirements. (In APA style, headings are not numbered.) The `apa6` class complies with all of the 6th Edition heading requirements.

2.2 Float Placement

According to the 6th Edition, tables and figures (in that order) must appear after the references but before the appendices. This creates something of an enigma regarding what should happen with floats (i.e., tables or figures) that are ultimately typeset within an appendix. The choices we are left with are to place appendix floats (a) along with the floats from the main part of the manuscript, which would mean that appendix floats appear prior to the point at which they are mentioned; (b) within the appendices themselves, which is not consistent with how floats in the main part of the manuscript are handled; or (c) in a separate float section that follows the appendices, which results in two sections of floats. Obviously none of these choices is satisfactory, so I posed the question to APA's Style Expert. He responded that at least for APA's journals, "it doesn't matter whether appendix tables are submitted with text tables or separately, as long as they are numbered correctly (e.g., Table A1, Table B1, etc.)." (J. Hume-Pratuch, personal communication, June 15, 2011). Therefore, `apa6` takes the most straightforward approach and includes all appendix floats within the body of the relevant appendix. This also has the advantage of making the appendices more readable.

Because the 6th Edition requires figure captions to be printed on the same page as their respective figures, `apa6` does not produce any Figure Captions pages.

2.3 Author Note

According to the 6th Edition, the Author Note must appear on the title page rather than on a separate page of the manuscript. The `apa6` class typesets the Author Note at the bottom of the title page, per 6th Edition specifications.

3 New features

In addition to providing compatibility with the 6th Edition of the *Manual*, I have implemented several new features beyond those available in the `apa` class.

3.1 Repositioned Floats

When revising and proofreading a manuscript, it is most helpful to have the tables and figures readily available (rather than turning most of the way to the end of the manuscript to access them). If the user invokes the `floatsintext` option (in the `\documentclass` line), tables and figures will be integrated in the text approximately at the point where they are mentioned.

3.2 Masked References

Most often when authors submit manuscripts for peer review, the manuscripts must have all identifying information stripped so that reviewers do not know who the author of the manuscript is. If the user specifies the `mask` option, `apa6` will suppress the author's name and affiliation, the Author Note, and any references that are marked as being the author's own.

The `apa6` class replaces masked citations with the text, *(2 citations removed for masked review)* (in the case of two masked citations) and removes the corresponding entries from the reference list.

For final production of the manuscript there is no need to revise how the previously masked references are cited. Removing the `mask` option from the `\documentclass` line will unmask all in-text citations and display all sources in the reference list.

3.3 Flexible Bibliographies

The `apa6` class supports three bibliography packages: `apacite`, `natbib`, and `biblatex`. Section 4 describes how well each of these packages complies with 6th Edition requirements.

3.4 Smaller Changes

I also added several new features for convenience, and will give them only passing attention here. First, the user can specify the desired font size (within the standard set of 10pt, 11pt, and 12pt that L^AT_EX provides). Second, with the `draftfirst` or `draftall` options, a “DRAFT” watermark (which the user can further customize with different text or font size) will be placed on either the first page or on all pages. Finally, the user can specify keywords to facilitate electronic indexing of the article after publication; many journals (including APA journals) request authors to provide these. If specified, keywords are displayed on a line beneath the abstract.

4 Compliance of Bibliography Packages with 6th Edition Requirements

Although `apa6` supports the `apacite`, `natbib`, and `biblatex` bibliography packages, not all of them are equally precise with regard to 6th Edition requirements. This section compares the output of these packages, highlighting inaccuracies that authors should be aware of when using them. For details on how to use each of these packages with the `apa6` class, please refer to the `apa6` documentation.

4.1 Citation Tests

The test cases for looking at formatting come from the file `bibliography.bib`, which is located in the “samples” subfolder of the `apa6` installation. There are several situations that we will need to examine in order to be satisfied that we are complying with APA requirements. Please note that the following tests are not intended to be comprehensive tests of APA citation style; rather, they cover some of the more rigorous APA-style challenges for bibliographic citation software.

1. *Joining Multiple Author Names Outside Parentheses.* With a multiple-author source and when all authors must be listed (as opposed to the situations in Tests #4 and #5 below), write out the word “and” prior to the last author’s name if the authors are named outside parentheses.
2. *Joining Multiple Author Names Within Parentheses.* In the same situation as above, but when the authors’ names are cited *inside* parentheses, use the symbol “&” in place of the word “and.”
3. *Order Citations Alphabetically.* When multiple sources are cited within parentheses, sort them in the same order in which they appear in the reference list at the end of the manuscript. For this test, I purposely entered the citations in reverse alphabetical order.
4. *Truncating 3-5 Author Names.* When there are 3-5 authors, list all authors’ names for the first citation; for subsequent citations, list only the first author’s name followed by “et al.”
5. *Truncating Six or More Author Names.* When there are more than six authors, list only the first author’s name, followed by “et al.”
6. *Same Author(s), Same Year.* When different articles have the identical author(s) in the same year, give the year followed by “a,” “b,” etc.
7. *Same Author(s), In Press.* When different in-press articles have identical author(s), use “in press-a”, “in press-b”, etc., instead of the year.
8. *Same Author(s), Different Articles.* When citing two or more articles by the same author(s) within parentheses, do not repeat the author name(s).
9. *Different First Authors, Same Last Name.* When two first authors have the same last name, include their initials to clarify which one is being cited.
10. *Multiple Authors, Same Year.* When two or more articles have a subset of the same authors in the same order, all citations must include as many author names as necessary to make the citation unique. Note that the “al.” in “et al.” is plural and therefore must replace at least two names.
11. *Suppress Name Suffixes.* Do not include the suffix of author names (e.g., “Jr.”) when citing their work in the body of the text.
12. *Capitalizing Initial Lower-Case Names.* If the first word in a sentence is an author name that begins with a lower-case letter (e.g., “de Waal”), capitalize

that name.

4.2 Results of Citation Tests

Table 1 presents the results of these citation tests. First it should be noted that most of these packages handle basic citations very well. Only one of them passed all 12 tests, but two others did very well. Additionally, not all failures in Table 1 are equally egregious; for example, the single biblatex-biber failure (Test #9b) will never cause confusion as to which source is being cited.

Before we look at the results, I wish to applaud the developers of apacite and biblatex-apa for responding to my initial citation results and modifying their packages to better comply with 6th Edition requirements. There are now many fewer failed tests in this series than there were when I first ran these tests with then-current versions of these packages just a few months ago.

I summarize the results for each package next. No reviewer or journal editor will comment on “the amazing accuracy of your citations”; but comments to the opposite effect may end up in your Inbox. So unfortunately, we need to focus on the non-compliance here rather than what each package does right.

4.2.1 apacite

I loaded the apacite package using the apacite option of the apa6 class, as follows:
`\documentclass[jou,apacite]{apa6}`

There were two apacite errors: (a) in Test #3, the references were not sorted alphabetically within the parentheses; and (b) in Test #12, the prefix “De” was not capitalized (because there is no capitalization command in apacite).

To overcome the failures of Test #3, one must manually sequence the parenthetical citations; this is entirely feasible but does require a certain level of alertness on the part of the author. There is no cure for the failure of Test #12 without adding on the natbib package (see next section).

4.2.2 apacite-natbib

I loaded both the apacite package and the natbib package implicitly using the natbib option when calling the apa6 class: `\documentclass[jou,natbib]{apa6}`

Table 1: Citation test results

Test	Expected	Results			
		apacite ^a	apacite-natbib ^b	biblatex ^c	biblatex-biber ^d
1	Herbst-Damm and Kulik (2005)	Passed	Passed	Passed	Passed
2	(Herbst-Damm & Kulik, 2005)	Passed	Passed	Passed	Passed
3	(Haybron, 2008; Mayer, 2008a)	Failed	Passed	Passed	Passed
4a	Lassen, Steele, and Sailor (2006)	Passed	Passed	Passed	Passed
4b	Lassen et al. (2006)	Passed	Passed	Passed	Passed
5	Gilbert et al. (2004)	Passed	Passed	Passed	Passed
6a	Mayer (2008a)	Passed	Passed	Passed	Passed
6b	Mayer (2008b)	Passed	Passed	Passed	Passed
7	Mayer (in press-a, in press-b)	Passed	Passed	Passed	Passed
8	(Mayer, 2008a, 2008b)	Passed	Passed	Passed	Passed
9a	J. R. Levin and O'Donnell (2000)	Passed	Passed	Failed	Passed
9b	M. E. Levin and Levin (1990)	Passed	Passed	Failed	Failed
10a	(Borst, Kosslyn, et al., 2011)	Passed	Passed	Failed	Passed
10b	(Borst, Kievit, et al., 2011)	Passed	Passed	Failed	Passed
10c	(Borst, Thompson, & Kosslyn, 2011)	Passed	Passed	Failed	Passed
11	Franklin and Adams (2010)	Passed	Passed	Passed	Passed
12	De Waal and Grosser (2009)	Failed	Passed	Passed	Passed

^a apacite version 6.01 (2012/02/25) ^b natbib version 8.31b (2010/09/13) ^c biblatex version 1.7 (2011/11/13), biblatex-apa version 4.6 (2012/02/08), BibTEX version 0.99d ^d biblatex version 1.7 (2011/11/13), biblatex-apa version 4.6 (2012/02/08), biber version 0.9 (2012/02/17)

There were no apacite-natbib errors, thanks to some clever programming by the apacite developer. The natbib package does not contain a bibliographic style; therefore, apacite is required when using natbib with apa6. The apa6 user simply needs to specify the natbib option to load both of these packages properly.

4.2.3 biblatex with BibT_EX

I loaded the biblatex package with the following options specified:

```
\usepackage[style=apa,sortcites=true,sorting=nyt]{biblatex}
```

There were five biblatex (with BibT_EX) errors: (a) in Test #9a, the first author's initials were not given; this is a serious error, explicitly violating APA requirements because another author has the same surname; (b) in Test #9b, the same problem occurred; (c–e) in Tests #10a, #10b, and #10c, the references were identified as "(Borst et al., 2011a)," "(Borst et al., 2011b)," and "(Borst et al., 2011c)." Although the Test #10 results do not cause confusion in identifying the intended source, this format does not conform to APA requirements.

4.2.4 biblatex with biber

I loaded the biblatex package and biber with the following options specified:

```
\usepackage[style=apa,sortcites=true,  
            sorting=nyt,backend=biber]{biblatex}
```

There was only one minor biblatex (with biber) error: In Test #9b, the second author's initials were given when they should have been omitted.

4.3 Conclusions from Citation Tests

For APA-style citations, the apacite-natbib and biblatex-biber solutions are clearly the most competent; the only error was relatively minor and would never cause confusion as to which source is being cited (unlike the biblatex-BibT_EX errors).

Time for a personal admission: For several months after learning about biber I was daunted by using it because for some reason I thought that once I converted to biber I was more or less committing myself to it for life. However, that is not so; to use biber, there are no changes required in the .bib file (although some advantages can be gained from a few label changes). All it takes is including

the `backend=biber` option when loading the `biblatex` package. It could hardly be simpler!

4.4 Reference Tests

The in-text citations are only part of the battle; formatting the reference list correctly is the other critical test for a bibliography package. I checked the reference list output from each package against 6th Edition requirements and found no errors that could not have been predicted by the results of the citation tests already described.

4.4.1 `apacite`

The `apacite` package produced a perfect reference list for my sample sources.

4.4.2 `apacite-natbib`

The `apacite-natbib` solution also had no errors in the reference list.

4.4.3 `biblatex` with `BibTeX`

Strangely, `biblatex` (with `BibTeX`) erred in sorting two of the references: Borst, Kosslyn, et al., 2011 was listed prior to Borst, Kievit, et al., 2011. I don't have a clue as to why this would be; I even tried switching the `BibTeX` keys but the sorting remained unchanged.

Additionally there is the problem of the three Borst references having "a," "b," and "c" (respectively) appended to their publication dates. This violates APA guidelines because the author lists for these three references are unique.

4.4.4 `biblatex` with `biber`

The `biblatex-biber` package also produced a perfect reference list.

4.4.5 Attention to the Details

To conclude, let's show off a 6th Edition formatting requirement that all four of these bibliography solutions are now capable of producing. D. Gilbert and eight

other individuals published an article in 2004. Check out the reference below and you will see that the first six authors are listed, followed by an ellipsis, followed by the final author. This way of handling more than six authors in the reference list is a new stipulation in the 6th Edition.

Gilbert, D., McClernon, J., Rabinovich, N., Sugai, C., Plath, L., Asgaard, G., ... Botros, N. (2004). Effects of quitting smoking on EEG activation and attention last for more than 31 days and are more severe with stress, dependence, DRD2 A1 allele, and depressive traits. *Nicotine & Tobacco Research*, 6(2), 249–267. doi:10.1080/14622200410001676305

4.5 EndNote® Results

For comparison with a leading commercial bibliographic manager, I also subjected the latest version of EndNote® (X5.0.1) to each of these tests. EndNote failed citation tests #10c (substituting “et al.” in place of only one author name, the same error as biblatex) and #12 (with no capitalization available for a lower-case name, the same flaw as apacite). There were no errors on the reference list.

5 Converting Documents from L^AT_EX to Word®

There are many recommendations online regarding how to solve the problem of submitting a L^AT_EX document to a journal that requires submissions to be in Word® format. The most common recommendation is to convert from L^AT_EX to HTML and then open the HTML file in Word. Various open-source converters are available, such as htlatex, tth, and others; see <http://www.tug.org/utilities/texconv/textopc.html> for a good listing of available programs.

An HTML-converter solution is quite unsatisfactory for APA style, however, because such converters cannot precisely maintain page formatting (e.g., title page, abstract page, etc.).

After much searching and experimenting, I found the TeX2Word™ software (<http://www.chikrii.com/products/tex2word/>) from Chikrii Softlab to be an excellent conversion utility. It is commercial software but has a free 30-day trial period available. TeX2Word allows customized conversion of documents from L^AT_EX to Word format (Microsoft Windows® only). Although TeX2Word does

not utilize a $\text{T}_{\text{E}}\text{X}$ distribution in its conversion (and thus cannot access the `apa6` class directly), it has extensive customization capabilities that allow one to specify the formatting of section headings and other aspects of the resulting Word document. These customizations are contained in files with a `.ptex` extension. I have written the `apa6.ptex` file that facilitates conversion of `apa6` documents and have included it with the `apa6` class, available from CTAN. Conversion from $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$ to Word with the `apa6.ptex` file properly formats section headings, the title page, abstract page, double-spacing, any boldfaced and italicized text (e.g., statistical results), and table and figure captions. Some editing must be done by hand, such as inserting figures and moving tables from their in-text positions to separate pages at the end of the document. After the conversion is complete, the user will see some final editing directions on the title page of the Word document. My biggest disappointment with `TeX2Word` is its current inability to competently handle bibliographic information. See the `apa6` documentation for more details.

Overall, `TeX2Word` is relatively painless to use, and in my opinion it should be the first choice for anyone wishing to convert an `apa6` document to Word.

References

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