Workshop on Professional Writing

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BEFORE WRITING

1. What Study Should I Do? (And how should I make this decision?)

No one will recommend publication of a study that appears to have been extremely well done but concerns a topic that is absolutely meaningless, or a study on an important topic that was designed in a way that makes it completely uninformative. So the question of what study to do is a very important one.

Sometimes you have little or no choice in the matter, because you are working for someone else as a post-doc or a student. Sometimes your choice is limited because you are handed a large, complex data set and told to do something (unspecified) with it, but it turns out all the variables you think are interesting are missing from the data set. Sometimes, though, you are starting from scratch, and can make this decision on your own.

Unfortunately, there is no easy and simple answer to the question. One common strategy is replication-and-extension, when you can see a failing, or hole, or boundary on some existing piece of work that you can address. The question "Is this extension enough" is itself not always easy to answer. Sometimes people follow a strategy of starting on a new path, creating a little island of information where these was nothing. The ideal is something that is theory-driven, tested in populations that are appropriate and somehow interesting. For example, testing hypotheses about illness in a sample that is almost all healthy is not very appropriate.

Issues of cross-sectional versus prospective longitudinal designs have become especially important in health psychology. Initial information on a topic can come from cross-sectional studies, but very shortly those are no longer considered useful and are rejected out of hand at the best journals.

Many papers are doomed before they are started, because of poor decisions about what study to do.

2. If I Have a Large, Complex Data Set, How Much of It Should Go into One Paper?

It's an enviable situation to have so much information from a study that it's hard to describe it all at once, but it can also be a problem. There are 2 sides to the problem. First, it turns out that trying to present too much in one paper is exhausting for the reader, potentially making it impossible to process. There are good reasons to keep it conceptually simple. On the other side, if you slice it up too thin, you become subject to the criticism of piecemeal publication, trying to squeeze more articles out of the data than you should. What to do is partly a matter of how integrated the themes are that are reflected in the data. If the same theme goes into different articles, it's bad. If too many themes go into one article, it's bad. This is also one that is harder to figure out before writing than after. Try to write it up, and see whether it works. Ask someone else to read it-if it doesn't work, you'll find out in a hurry.

AFTER WRITING

1. Where Should I Try To Publish My Results? (and how much of a result do I need to *have* before trying to publish it?)

In general, the more junior you are the more you want to try to publish everything you do, because you don't yet have any track record. You don't want to publish real rubbish, though, because that then *becomes* your track record. So the issue of how interesting a finding you have to have before publishing it becomes important. If methodology was appropriate, it's not shameful to have come up without the expected findings. The better the finding, of course, the more you want to publish it visibly.

Magnitude of contribution is always an issue in editorial decisions. The better the finding, the better the journal you should send it to. Some journals have very high reputations, because of their selectivity and because lots of people look at them (these qualities tend to go hand in hand). Most people in a field have a sense of what they think of as "top" journals, "second tier" journals, and so on, but people don't always agree with each other about which are which. In such cases, an important consideration is which journals your preferred audience reads.

Do you guess about how good your paper is before submitting? Yes and no. You don't want to waste your time (and that of reviewers) by sending a boring finding to a top journal, but at the same time you don't want to undervalue the quality of your own work. If you can afford the wait, it costs only time to have it reviewed and rejected by the journal you'd really like it to be in, even if you suspect it may not be good enough to make it there. If you really need the publications, that delay may be too much to tolerate.

Journals vary in quality, but also in focus. Every journal has a masthead statement about what sorts of things it publishes, just as grant programs have descriptions of what they fund. These can sometimes be hard to interpret, and a look at some of the articles in the journal can help.

What about medical versus psychological journals? Again, the general principle is that you would prefer to publish in journals that will be noticed by your target audience. (It sometimes is clear who that is and sometimes not.) If you want these findings to be read by people in the medical establishment, you should go to medical journals. Going to a medical journal may mean tailoring the presentation differently, with fancy statistics taking a back seat to medical/clinical implications.

2. Authorship: Who Goes Where and Why?

This is a tough and potentially touchy subject. The APA publication manual says "authorship is reserved for persons who make a primary contribution to and hold primary responsibility for the data, concepts, and interpretation of results for a published work." It also says several other things. For example, order of authorship should be negotiated early in the process—but it sometimes has to be renegotiated as the project continues, because things work out differently than first envisioned. Part of what makes this issue tricky is that it can be very hard to pin down the concept of "contribution." The manual indicates explicitly that helping collect the data does not intrinsically justify authorship; yet sometimes even that process is vary laborious and entails skills that make it a specialized contribution to the scientific product. Particularly in large group projects, such involvement winds up leading to authorship.

Order of authorship under APA style is that the person who contributed most should be lead author, followed by lesser contributors, in order. If 2 people make equal contributions, that can be indicated in a note. Medical publication tends to order authors differently, placing the project's main figure at the end of the authorship list. Sometimes that simply reflects "senior presence" in a research group (and the person really did not contribute all that much—or even at all—to the paper).

Sometimes this ordering is done to permit more junior people to get additional notice, even though the last author was the most important contributor, and will be recognized as such by sophisticated readers of medical journals.

Another thing that makes this subject touchy is that establishing a "track record" requires getting some first-authored articles into print. It's also important to note that citation indexes count only the first author of

an article published, and citation indexes are sometimes used as information about one's standing in one's field. Thus, the medical model can get a person in trouble, if that person isn't already established.

The Writing of Research Articles in Psychology

A. INTRODUCTORY POINTS

1. The current "final" authority on matters of style, structure, and convention is the *Publication Manual of the APA, 4th Edition.* Anyone who expects to write many research reports should buy a copy from APA. The second best source of guidance is research reports published in APA journals within the last year or so. This source is slightly less reliable, because a surprising number of published articles violate one or more of the APA conventions. If you use published research as your guide, make your sample size larger than one.

Of course, even this general point must be qualified. Some journals use formats other than APA style. Every journal includes instructions to authors in every issue, which will tell you something about its format. If you are writing for a medical journal, or for a journal that uses a format other than APA, pay close attention to the instructions given by that journal.

2. Many of the issues that are dealt with in APA style (or in any other style) seem arbitrary, but in reality there are reasons, for most of them. One may quarrel with many of the decisions made in setting up the style, but using the prescribed format will make the review process easier (and can even work everso-slightly to your advantage). Many specific elements of the style pertain to aspects of the publication process. They make manuscripts uniform, so that the people who turn the manuscript into a printed article won't make mistakes with it. Every time you do something unusual, it forces one of those people to make an interpretation. You don't really want to force these people to make interpretations.

3. Like nearly everything else in life, all of this gets easier to do the more often you actually do it.

B.   STRUCTURE OF THE RESEARCH ARTICLE (adapted from the *APA Publication Manual)*

1. Title Page (page 1). Title (accurate and informative), author, author's affiliation, and running head (up to 50 characters total). A page header is encouraged (it makes it easier to figure out what article the pages belong to, if 3 unstapled articles fall on the floor together). I always add mailing address, phone, fax, and e-mail addresses here, so that if someone wants to contact me about some aspect of the paper (e.g., pages missing), it's easy to do so. Don't put extra stuff on this page (e.g., mention of grant support, thanks to your mother)—it has its own page in APA style.

2. Abstract (page 2). Starting on a new page, a short (960 characters max, including spaces) statement of the essence of what you did and why, and how results are interpreted. Here, as elsewhere, be sure not to overstate your results. Write this after you have written everything else in the paper (except possibly the title). Some journal styles break up the abstract into sections—use some examples from that journal as guides.

3. Introduction. Starting on a new page, this section concerns the background of the problem (thorough but not necessarily exhaustive), leading up to why you did the study and *what* you were expecting to find. You want the reader to understand *why it makes sense to ask the question you asked and predict what you predicted.* And you want to get the reader there as smoothly and as quickly as possible. In my opinion, an introduction should run 3-5 pages, generally. If it runs longer than that, there should be a really good reason. For medical journals, the introduction is often quite short.

This is the only major section of the article that in APA style does not have a section heading. For reasons that escape me, current APA style is to repeat the title at the top of this page, insert an empty line, then start the introduction.

4. <u>Method</u>. This section has a major heading, but does *not* start on a new page (you will not start the next section on a new page again until the references). Describe what you did, in sufficient detail that someone else could replicate your procedures based solely on this report, without leaving out an important step or a situational variable that has a major (perhaps critical) impact on the outcome of the procedures. This section is often, but not always, subdivided with headings to create separate subsections, as follows:

a. <u>Overview</u>. This section is not always necessary but is often used, particularly when the study is complicated. This is a brief description of what happened to participants in the study, written at a more concrete level than the introduction, but not as concrete as will be the case under Procedures. The alternative to having this section is to close the introduction with the essence of what would go into this overview. I prefer to do it in the introduction, others prefer to include this section.

b. <u>Participants</u>. How many participants, of what type (e.g., "undergraduates from the University of Miami," "inpatients at a cancer treatment center"), how many of each sex, and so on participated in the study. This is the place to mention selection criteria, how and when instruments relevant to those criteria were administered (say the measures are described later on), age range or other demographics (if relevant), and whether additional persons participated but were deleted due to their suspicion, equipment malfunctions, inability to understand instructions, etc. If you mention people being omitted, be clear about whether they were included in the number you mentioned earlier. If there were no special criteria, or if there is nothing else major or elaborate to be said here, this material need not be marked off with a heading. Just write a paragraph about it.

c. <u>Procedures</u>. What went on, in order. In complex studies there may also be separately-headed sections for particularly important events in the procedures, such as those that created the levels of the manipulated variables.

d. <u>Apparatus or materials</u>. In research in which some unusual apparatus was used, there is sometimes a separate section describing that apparatus and its characteristics. If the study made use of materials that are unusual or require some sort of description, this is the place to put it. Many studies do not require a section of this type, because the apparatus and materials are straightforward. It is something of a judgment call how much of this stuff to put in or leave out.

5. <u>Results</u>. Next major section, starting with a major heading. Describe the findings that emerged from the data analyses, in terms of what kind of difference emerged (e.g., "a main effect for self-consciousness"), what its direction was ("such that participants high in self-consciousness drank more beer than did participants lower in self-consciousness"), and what the statistical basis for this assertion is $\underline{F}$ (1, 44) = 5.56, p <.05"). Often you will also need to report descriptive statistics such as means (always followed by SDs) to characterize the sample or subgroups on the variable(s) of interest. Numbers are to 2 decimals; <u>p</u>s used to be "less than" but now you can give exact <u>p</u> values; inferential statistics for significant effects are set off from text by commas (though descriptive statistics—Ms and SDs—are in parentheses); there are spaces before parentheses, after commas, and both before and after equal signs and <s; manuscripts prepared for publication use <u>underlining</u> to indicate italics, rather than the italic function of the word processor.

How to portray results is a very complicated topic. Interactions are harder to describe than main effects, and other analysis techniques (e.g., regression, discriminant analysis, structural equation modeling) present their own special problems of presentation.

<u>Three things are important in the results section:</u> *clarity, accuracy, and completeness of presentation of information concerning claimed differences.* Saying that groups "differed" is legitimate only if you also support that assertion with a statistical test. Though purists will object, anything between .05 and .10 is often

described as "marginally significant" or "approaching significance." Anything weaker than that is a nonsignificant "tendency" (*not* "trend," which has a specific statistical meaning concerning variations across several groups that vary parametrically on a predictor). It is typically assumed that no effect other than those that are reported attained significance. It doesn't hurt to say so explicitly, however.

Sometimes people begin the results section by briefly restating their predictions. Whether to do that depends on how much information has come between the earlier statement of those predictions and this section, and how obvious the predictions are. If they are obvious, an alternative to reviewing predictions is to insert an "as predicted" here and there into the flow of things. Do not get into psychologizing your results in the results section. Here you present them as statistical effects, not as psychologically meaningful findings.

Some results sections really need to begin with a subsection on data reduction. Whether this is necessary depends on the complexity of the data set. If you have 4 outcome measures that are fairly strongly correlated with each other, you may need to condense them before going on. Another thing that is sometimes needed at the opening of the results section (especially in health psychology, but other domains as well) is a set of tests of other variables as potential control variables.

Do you lead off the main part of things with the findings of greatest interest, or to start with manipulation checks? This decision is usually dictated by the principle of clarity. Manipulation checks commonly go first (to establish that it's worth looking at the rest). Self-reports other than manipulation cheeks (i.e., findings of secondary importance) usually go last.

The general issue of how to present your data also raises several more-complex questions. For example, should you report data in text, or in tables or figures? If you have a lot of correlations to report, it is often more sensible to put them all into a table than to write them all into text. If you are presenting results of an analysis of variance, how to present things depends on the complexity of what you've found. If what you are reporting is simple (you have a main effect for gender) even though the design is complex (it's a 2 X 3 X 4 X 2, between-within design), you can put everything in text, setting off the relevant means and SDs in parentheses ("... males were more optimistic overall ($M = 12.47$, $SD = 1.36$) than were females ($M = 9.87$, $SD = 1.28$), $\underline{F}$..."). If you have to talk about interactions, the means should ordinarily be in a table or a figure. Some people like tables, some like figures. Tables have a weird format for their captions (see below, or the manual). Figures in APA style are supposed to have their captions on a separate page (1 page for all captions).

In general, there should *not* be redundancy between the text of the results section and tables/figures. Put the numbers in one place or the other, but not both.

6. Discussion. Review the results briefly in a conceptual fashion, and indicate their psychological meaning. Describe the fit between the data and your predictions. Try to interpret any lack of fit, indicate what problems emerged (if any), and indicate any important limitations you may see on the generality of the findings.

After this, you may discuss the broader meaning of the findings, relating them to other literature, etc. Do not attempt to speculate *too* far beyond the data, however, or someone will surely require you to take it out. The length of the discussion section will depend upon how many different things your findings connect with, but don't let it get too long (in my view 5-6 pages is getting to be longish).

7. References. Starting on a new page with a new heading, list citations alphabetically, in APA style (which has a ton of rules that are not noted here). Spell out all journal titles completely (though remember that some journals use a different style, in which journal titles are not spelled out), and get used to following APA's conventions regarding capitalization, punctuation, and organization. Underline journal and book titles, and journal volume numbers. The new edition of the manual tells you to indent references (as though each were a paragraph) rather than "outdent" them (as they were in earlier editions of the manual). I hate the new format and never use it myself, but don't follow my example. Here are examples of three common referencing categories: a journal article, a book chapter, and an unpublished conference presentation.

Carver, C. S., & Scheier, M. F. (1978). We do it all with mirrors: Identification of homo vampyrus with a self-awareness inducing stimulus. Worm Runner's Digest, 20, 114-l 15.

Carver, C. S. (in press). Truth is stranger than friction. In I. M. A. Wombat & A. Evans (Eds.), <u>The nature of things</u> (pp. 1-20). Mahwah, NJ: Erlbaum.

Carver, C. S. (1984, July). <u>Self-consciousness and the experience of the self</u>. Paper presented at the International Interdisciplinary Conference on Self and Identity, Cardiff, Wales.

Though it may not be immediately apparent, these examples illustrate a large number of rules concerning when and when not to capitalize, how various elements of the reference are to be ordered, and so on (the ton of rules alluded to above). When you compose your first reference section, it will suddenly dawn on you how many things there are to make decisions about. See the manual.

One last point about references: Read the final version of the paper against the reference list to be sure all the things you cite in the body (don't forget footnotes) are in the reference list and vice versa.

8. <u>Author Notes</u>. A separate page containing any author notes, e.g., thanking someone for comments, suggestions, help, or inspiration, acknowledging grant support. The last sentence of this (as a new paragraph) should read "Correspondence concerning the article should be sent to ... [your name and address]." Today this usually includes an e-mail address as well.

9. <u>Footnotes</u>. On a new page, list all footnotes occurring in the manuscript (numbered), with footnote number entered before each as a superscript. Footnotes in text will similarly be superscripted. If there were no footnotes, this page does not exist.

1 0. <u>Tables</u>. One table per page, with the caption above the table. Captions should be sufficiently complete that the table can be understood independent of the text. "Table l" is left-justified, not followed by a period; the caption starts on a new line, is left justified, is fully underlined, has all major words capitalized, and does not have a period at the end. For other information about format, see the manual.

11. <u>Figure Captions</u>. A list of the captions of all the figures in the manuscript. As above, be complete. "Figure Captions" is centered, each notation (<u>"Figure 1</u>. Mean number of problems solved correctly by optimistic and pessimistic participants following success and failure manipulations") is left justified. This is another one that I hate, and rarely follow. With the widespread use of graphics programs to create the figures, it is easier to put the caption on the same page as the figure, thereby keeping the reader from having to flip back and forth.

12. <u>Figures</u>. One figure per page, in order of appearance. Mark the number at the bottom of each (unless you've broken the previous rule the way I just described, in which case this is unnecessary).

C. COMMON STYLISTIC ISSUES

1. APA style discourages the use of abbreviations or acronyms to refer to anything unless its use is already common (MMPI, HR, BP). Spell out "participant" and "experimenter," and do the same for group and condition names. There is increasing pressure to use "participants" instead of "subjects."

2. APA style discourages the use of sexist language in any context *except* when you are referring specifically to one gender or the other. There are various ways around this, some better than others. The ideal is to get around it without it's being obvious that you are getting around it.

3. All parts of a manuscript are typed double-spaced. This is not solely for the benefit of nearsighted professors, but mostly so that copy-editors can pencil in changes and notations for the typesetters.

Everything that is published is copy-edited first. (In most academic settings the bias to produce text in double-spaced format extends to theses and dissertations, though I can't say that I know why.)

4. <u>Referencing</u>. In the text, the first time a multi-authored (3 or more) work is referred to, list all authors and the year: e.g., "(Carver, Blaney, & Scheier, 1979)." If it comes up again later, use "Carver et al., 1979." (When there are 6 or more authors, use the et al. form even the very first time. By the way, *al*. is an abbreviation and thus has a period, whereas *et* isn't and thus doesn't; also there is no comma before et al.) When there are only 2 authors, name both every time. When the names are used in the body of the sentence, and there are at least 2 authors, the names are joined by "and." When the cite is inside parentheses, the names are joined by "&." In the reference section, name all authors, and use "&".

5. <u>Headings</u>. This topic can be more important to the paper than it seems at first. Headings function as an outline for the paper. Most artic-les in APA style will use up to 3 levels of headings. There also are 2 more levels that are more rarely used.

A normal <u>center</u> <u>head</u> (also called level 1 heading, or A heading) has the first letter of all major words capitalized, and is centered on its own line. Center heads are used to mark the beginning of the major sections of the manuscript: Abstract, Method, Results, Discussion, References, etc. The introduction section is *not* marked with a heading; APA style used to assume an "implicit" center head, but this is no longer true. If you put any heading into an introduction, APA will be looking for a center head before any other heading (see below).

A <u>flush-left</u> or <u>side head</u> (unaccountably labeled level 3 by APA, also called a B heading) has the first letter of all major words capitalized, has its own line, starts at the left margin, and is underlined. This one is used to break up long blocks of material and/or to indicate a change in flow. Its use is discretionary.

A <u>paragraph head</u> (level 4, C heading) is indented, underlined, followed by a period, and *only its first word* is capitalized. It does *not* have its own line—the first sentence of the paragraph follows directly after the period. This heading has essentially the same kind of function as a side head, but at a more fine-grained level of abstraction.
A typical manuscript will use these 3 levels of headings (or only the first 2). A more complex paper will add another level (called level 2); a hugely complex paper will add another (level 5). See the book.

Headings are like levels of an outline. You do not jump from the major level (center) directly to the fine-grained level (paragraph). Within a section marked off by center heads, any other break is by a side head. Use a paragraph head only within a section already marked off by a side head. As in an outline, you aren't supposed to have only one heading of a given level.

Proper use of headings is something that requires some thought and some practice. Too few headings can-make a manuscript tedious and hard to get a "feel" for. Too many can make it seem choppy and jumpy, and generally get in the way of the flow. Use them where they make sense conceptually. In fact, <u>you can sometimes get a better sense of what you are trying to say by trying to put some headings into what you have written</u>. The precise wording you choose for headings may well change as you revise the paper and rethink what points you are trying to make. I find that I start wanting to have a heading of some sort after more than about 2-3 pages of text, and sometimes sooner.

The use of headings is also important in preparing theoretical or review articles (which obviously have a different set of sections than described above). The headings serve as a partial road map through the article, which is particularly important if the manuscript is long.

Charles S. Carver

D.   THE WRITING PROCESS ITSELF

The most serious problem that most of you will face at least once in your writing career is that the task will seem overwhelming. This is not as big a problem as you may think. Break the task up into its component parts, and focus on some part. There are several tricks that will ease the process.

1. <u>It helps to begin with the concrete</u>. Write the Method and Results sections first. Even in the other sections it's best to begin by being as concrete as you can. Remember that some readers know little or nothing about the area you're writing about, so provide sufficient context to make yourself comprehensible. Remember too that some readers know all about the area, so don't feel compelled to review it in its entirety. Make only the points that you need to make, but do make all of those. Keep in mind the audience, and keep in mind the context in which you are writing. A useful trick is to imagine you are trying to explain to an intelligent but not-very-well informed friend what you did and why. Say it in the way that would make it most clear to that friend.

Also, as odd as it sounds, let the pattern of results guide what you say in the introduction, in certain respects. If you found the opposite of what you expected to find, don't reverse your hypotheses to fit your findings; but if you found a particular pattern, it doesn't make it easy for the reader to start with an introduction that predicts only the opposite. If you have a clear idea of what dynamic produced what you found, pose multiple possibilities in the introduction. If one aspect of the finding turned out quite nicely and another one didn't, focus more in the introduction on why people should be interested in the first phenomenon. Remember that the article as a whole is a story, and that the story needs to hold together.

2. <u>Avoid blocks by stopping in the middle of something you know you can do well</u>. I don't do this myself, but a colleague suggested it as quite useful. If you can start off the next time you sit down with a section you still have to finish but know how to finish, it gets you off on the right foot and has you moving again by the time you get to something harder.

3. <u>Simplifying.</u> There are two key words to etch in the back of your mind as you prepare to write. The words apply to all professional writing. The words are *simple and linear.* They converge on the same general issue, which is that almost everyone tends to begin writing by attacking the subject matter from several different angles at once. Inevitably we build elaborate verbal structures, and sometimes circle back to pick up points we had missed or neglected earlier. These tendencies are your enemy. It is your job to get rid of them, a little at a time. Simplify the words, the constructions that you use, and the way you get from one point to another. If a simple word actually will do as well as a jargony, arcane, or even an erudite word, in most cases it's better to use the simple one (unless you are in danger of being too repetitive). Use a dictionary, when in doubt, to assess the precision and accuracy of your word choices. Use simple and short sentences, whenever possible. A sentence that goes more than 2 and a half typed lines is getting too long. When readers get to the end of it, they will have forgotten what was at the beginning.

Similarly, a paragraph that is longer than 6 or 7 inches from top to bottom is getting too long. It is either repetitive, or it is developing a substructure. Find the substructure. Break it into its constituents and separate them into distinct paragraphs. Simplify.

In addition, keep in mind that you are leading readers into what is-to them-a maze that you have constructed. Make the path as straight and direct as possible. Don't make side trips unless it is absolutely necessary. If it is, make it clear that it is a side trip, and why it is necessary. But don't do it just for the hell of it. As much as you can, lead the reader straight through from the beginning to the end, one point following inevitably from the preceding point. Think linear.

Simplicity and linearity combine to produce an effect that is sometimes termed elegance.

4. **Important warning:** Do *NOT* expect your *first draft* of *anything* to be simple, linear, pretty, or even accurate or complete. If you demand *any* of these characteristics from a first draft, you will never get it written. Ignore those considerations, at first. These considerations are to be your guides, but let them enter the picture later on. Don't try to make paragraphs or even sentences perfect. Just write the damn thing

down. Some people find it useful to make an outline before starting, others don't. If you feel that you need to know what you are saying before starting to say it, try an outline. But other people don't do even that. I personally prepare only the sketchiest of notes (sort of a brief run through the major lines of argument) before beginning, and I have begun to develop the habit of doing even that right there in the computer file I'm working in.

My main point here is this: it is better to get a draft down in any form than to sit and look at blank pages (or screen), trying to decide what to say and how to say it perfectly.

Once you have a draft down, *then* set about fixing it. What's missing? Add it. What's out of order? Rearrange it (the advent of word processors has made cutting and pasting incredibly simple). What's confusing about this paragraph? What am I really trying to get across in this paragraph? How can it be said more directly? Where can words be saved? How can it be made more linear? Fix and adjust. Change phrases. Change words. Tune it like an instrument.

There's another reason why it can be better to dive right in, even if you don't have what you are going to say planned perfectly: People often discover what they have to say from the act of trying to say something. Indeed, I've often found that what I wind up saying is quite different from what I thought I was going to say. The act of writing forces you to fill in missing assumptions and mental leaps. It also forces you to think more precisely about the topic. Don't be surprised or alanned by this. It's OK.

5. <u>Revision</u>. As is directly implied in the preceding paragraphs, you can expect to revise your writing considerably. In fact, *if you are willing to attempt to write well,* you should reconcile yourself to the fact that *<u>you are going to throw away about 90% of what you</u>* write. The single hardest part of writing is getting used to this idea. But if you want to write well, you *have* to get used to it. As a postdoc, my articles commonly went through 8 to 10 drafts. Even now I always go through 5 or 6, and it is not that unusual for it to go back up to 10. You *must* be willing to discard a partially successful attempt to make it closer to what you really want to say.

If you can do so (and we don't always have this luxury), it's best to write a third or fourth draft, then put it away for a few weeks. When you come back to it, its flaws will be more obvious to you, and it will be easier to see what still needs work. Remember, what you eventually produce is the picture that a naive reader will have of your work. As you look back at your writing after a period away from it, you are seeing it from the viewpoint of a reviewer, or of another professional reading it in a journal. Is what you see what you want it to look like? If not, make more changes.

It is also extremely useful to get someone else to critique the draft once you think it's in pretty good shape (actually the more people you can get to do that, the better). This can be threatening, but it avoids problems later on. The idea of being threatened by criticism gets us to the next general issue.

6. <u>Collaborating</u>. Writing in collaboration with someone else (either a faculty supervisor or a colleague) creates a problem that merges some of what I just said with some things that come later in this document (in the section on the review process). When you write with someone else, you will disagree with each other. You will rewrite each other. You will criticize each other in a wide variety of different ways. It can be a very painful and threatening process, and it is a process that is very hard to get used to. Many of the disagreements will revolve around style, others around how to focus what is being written. The good news is that resolution of these disagreements will tend to produce a less egocentric final product than if you did it all by yourself. The bad news is that it can hurt. Friendships have been destroyed by this process (and, I suspect, some marriages).

How do you minimize the damage from collaboration? How do you decide whether you should even get yourself *into* a collaborative effort? Collaboration is easiest if the people involved in the process are more interested in the ideas being written about than in self-aggrandizement. It can also be a pain in the neck to collaborate with someone who always is sure he's right. It is much easier to collaborate on a given project if the collaborators agree beforehand who has the lead role on the project. When there are substantive differences of opinion, those have to get talked out. When the differences are over what's the best way to say something (and that happens a *whole* lot), you often have to let one person make the final call and live

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with it. Some collaborative efforts are short-term, maybe just one article. Others are longer lasting. With longer lasting ones, there can be some back and forth about who makes the final decision.

7. <u>Quality control</u>. Every time a manuscript is revised and retyped, it must be cheeked for errors (a simple illustration of the more general principle of feedback control in behavior). Word processors have drastically reduced the scope of this problem, but you still must be attentive to it. Blocks of paragraphs sometimes get left out, sometimes words—sometimes authors' names are misspelled. It is *your* responsibility to make sure that everything is accurate. Even if only a few changes are to be made, and even if it is being done on a word processor, *sometimes those changes don't get made correctly. Verify* changes. Before submitting the manuscript for publication, be absolutely sure that everything is correct and that nothing is missing. These clerical aspects of the process are frustrating and tedious. But they are every bit as important as the writing process itself. You will see why, when you read someone's article from which a line or two has been excised from a paragraph. It makes them look bad, slipshod. A missing line or 2 from the submitted manuscript has the same effect on a reviewer. You don't want reviewers to start thinking you are slipshod.

8. <u>Keep explicit notes</u>. This point applies at all stages of work. When you are reading material that is relevant to your writing, be more careful about keeping track of things than you think you need to be. References that you jot down only bits of (e.g., names and dates) as you come across them have a way of disappearing, and becoming incredibly difficult to relocate. *Never assume that you will be able to remember where you ran across them,* because you *won't,* and it will cost you hours of your life to find them again. Whenever you write down a reference, record either exactly where you found it, or (preferably) the full reference in APA style. Also, be sure to write down *all* of the authors' names (including all initials) and *be sure to spell them correctly* (you'll understand why this matters, the first time you see your own name irrevocably misspelled in print).

E. THE REVIEW AND PUBLICATION PROCESS

1. <u>Submission</u>. When a manuscript is ready to be published, you will submit it to an "appropriate" journal. Every journal has a masthead statement, a brief description somewhere, concerning the kind of articles that are published in it. These descriptions, and the advice of someone who is familiar with the journals in your area, are your best guides to what is and is not an appropriate journal. The journal's instructions to authors will also tell you where to send it, and how many copies.

When you first submit an article, there rarely is a need for more than about a 2-sentence cover letter. A longer letter will probably not be read, and if it is read, it probably will be ignored. There are some exceptions to this. One example is that *Health Psychology* requires you to say certain things in the letter about having followed ethical principles in collecting the data, that the paper has not been published before and is not under review elsewhere, that all the authors listed are willingly listed (always check the instructions to authors to determine whether there are specific things like this-some medical journals require even more information). As another example, if the article is about one aspect of a topic and the editor is almost certain to think it is about another aspect of the topic (and thus send it to inappropriate reviewers), you may want to point out what the issue is.

2. <u>Review</u>. The journal editor will scan the manuscript to see what it is about, and pick 2 or 3 people to use as consultants. The manuscript will be sent off to them for comments. Most journals have boards of Consulting Editors, who review lots of manuscripts for the journal. It's also very common for editors to piek reviewers from among the people cited in the references, especially if the editor is not very knowledgeable about the area the paper concerns. After all, the people cited are experts on the problem being discussed. If the editor can't think of other experts off the top of his or her head, why not use these? Given this tendency, it's possible to salt the reference section with people you'd like to have as reviewers, though that's also a little tricky. If your literature review is too slanted, you create the potential of annoying a reader who knows better.

You can expect the review process to take a minimum of 2-3 months. It often is 4-5 months before you hear anything, and occasionally is even longer. The best thing to do when you submit a paper is to put it directly out of your mind.

Why on earth does it take so long?!!!!!? There are several reasons. Journals often have multiple editors. If you submit to the Editor-in-Chief, it may sit a week in that office while a code number is assigned, a file created, etc., before being looked over and assigned to a particular Associate Editor for actual processing. After another week in the mail system, it sits on that person's desk for a week (while another file is set up) before being assigned to reviewers. A week in the mail to the reviewers, who maybe open it up and look at it before putting it on a pile, and maybe don't even open it before putting it on a pile. In either case, when the reviewer eventually looks at the paper, he or she may decide not to do the review (for many reasons, including lack of expertise or interest in the topic, conflict of interest). Another week in the mail back to the editor. If the reviewer has waited a couple of weeks before deciding to send it back, a fairly long period of time has by now passed. Sometimes reviewers have moved, and forwarding addresses sometimes disappear. All of these problems can delay the paper's arrival in the reviewer's hands.

Once the reviewer has decided to accept the assignment, it goes to another pile. Why doesn't he just review the damn thing? Because (a) he's doing this completely voluntarily, getting nothing in return other than the warm glow of altruism and a thank-you in a list of names published once a year in the journal, (b) he's got lots of other things to do that are more important to him personally, (c) if he's any good, lots of people send him papers to review, and he has 3-6 of them already stacked up in the pile. Once the review has been written, the reviewer's last step—delivery to the editor—is now pretty fast. Most people now deliver their reviews as e-mail attachments.

When the review gets to the editor, it goes into the file folder until 2 or 3 are in. Then the editor's efficient secretary gently reminds her that it's time to write a decision letter. Since the editor is usually in the middle of something else, that takes a while to happen, too.

3. <u>Editorial decision</u>. At some point, eventually, you will receive an envelope from the editor containing reviews and a decision letter. These days it is common to get 3 reviews (which sure seems like a lot, given what they are doing).

Reviewers are supposed to indicate the strengths and weaknesses of the manuscript. They are the first line of quality control for the journal. As such, they are likely to chop the paper to bits. *Expect* that to happen. *Don't be crushed* when it happens. It is the editor's job to sort out the criticisms from the article's good points, and to decide whether the problems that are noted can be remedied. In general, the better the journal, the tougher it is to get by the review process; good journals reject 90% of the papers submitted to them. Editors vary in the extent to which they actually do sort through and evaluate the merits of the critiques, though. Some editors use the reviews as opinions, grist for their own thinking; others use them as votes. Some editors shuffle paper; others sort through the issues. It's a problem, but one we haven't figured out how to remedy.

4. <u>Revision and resubmission</u>. Virtually nothing is published in the form in which it was first submitted. Even if you get lucky and the reviewers recommend publication, they will also recommend changes. (Note: any changes made at this stage are subject to the same quality-control considerations as were outlined earlier.)

Even flat-out rejections also will be accompanied by fairly extensive descriptions of perceived problems and suggestions for changes. Why? Because the presumption is usually that you will want to correct however many problems you can, and resubmit the paper to a less selective journal. Even hardhearted reviewers would prefer to have you make the paper as good as it can be, even if it is ultimately to be published in some 3rd-rate journal.

When you get to the stage of having criticisms on the manuscript in hand, you have to decide how to respond. This can be tricky. Sometimes reviewers criticize for excellent reasons; sometimes criticisms are poorly thought out; and sometimes the reviewer's graduate student or gerbil actually wrote the review. This, in turn, means that some kinds of criticisms are amenable to rebuttal (resulting in no change in the paper). You have to decide which criticisms are of which sort.

Similarly, when a paper is rejected, there sometimes is a question as to whether you should challenge the reviewers' conclusions, or just say the hell with it and go to another journal. In general, it usually is hard to deal with lengthy negative reviews in a way that will get an editor to reverse a decision, but there are exceptions. If you do decide to challenge the reviewers' conclusions, be sure not to let the reply letter become strident or argumentative (unless that is absolutely necessary for some reason).

The same is true of letters written in response to a revise-and-resubmit decision. These days it is pretty common for editors to explicitly request a cover letter in which all issues raised by the reviewers are addressed. In most cases, that letter then goes to the reviewers along with the revised manuscript. The reviewers often use the letter as a blueprint to help them navigate the revision. It is important that that letter be thorough, clear, and conciliatory. The reviewers in most cases have actually worked hard on your paper (it takes me a half day or more to do a careful review); it does not win you points to insult them.

Even if you do decide to simply go to another journal, it is wise to go through the first reviews carefully to see whether the comments made there have merit. If they do and if you attend to them, you will have a better article. (You may even get the same reviewer next time, who will be pleased that you took his/her advice.)

It has been my experience that e-mail contact with the editor can sometimes clarify what the key issue is, and what is needed to get the paper past the issue. Nothing that happens by e-mail is definitive, but it sometimes is worth seeking the additional information. Be sure you digest the reviews well before doing this, though. If the editor gets the impression you are just whining without having thought about it hard, it won't help you.

It can be very painful to subject yourself to the editorial review process. Sometimes reviewers are less than tactful, and occasionally they get downright nasty. But the process is a necessary one, and it usually results in a better, less egocentric final product.

5. Tricks to help you get by the review process. Nothing will make a bad study good, but even very good studies often have problems in the review process. Various people have various superstitions about how to improve their chances of acceptance. A few general principles, though, are on. most lists and may even qualify as "truths."

The overall general rule is to make the reviewer's task as easy as possible. Remember that the reviewer is having to work (for no compensation) to read your manuscript. The harder it is to read, the more surly the reviewer is going to be, and the less likely to be positive about your work. Anything that facilitates the reading helps you; anything that makes it harder hurts. Sometimes reviewers seem to create an implicit tally of black marks of various sorts, and if the paper exceeds some threshold, they decide it doesn't deserve to be published. You want to keep the tally as low as you can.

The principle that you want to keep the reviewer's job easy also applies to issues of comprehension. It's easy to describe something so superficially that the reviewer can't evaluate it. This applies to your reasoning, and it applies to your use of statistics with which the reader may not be overly familiar (and has to decide is or is not appropriate). If the reader can't evaluate it from what you've written, it will be presumed to be wrong, and it will cost you in the review. Better to over-write these aspects and cut back later if asked to do so.

As noted elsewhere, a flurry of small mistakes creates the impression of carelessness; the reviewer carries this impression into evaluating the methods and data analysis.

Length: I gave general guidelines above for introduction and discussion, but overall length is also an issue. Unfortunately, there are no solid guides here. About 18 pages of text (discounting pages 1-2) for a single study to be submitted to a psychology journal seems OK. Longer than that is starting to feel long (don't try to compensate by using a really small font—that will annoy someone even worse). I should admit that I sometimes under-write things, which gets me in trouble on the other end, because the paper doesn't seem weighty and important enough.

6. Production. When a manuscript has been accepted, it enters the netherworld of the publication process itself, which will take anywhere from 5-10 months, or even longer. After lying around for a while, the manuscript will be gone over by a copy editor, who will look for errors, add instructions to the printer, and try

to improve your writing. After this has been done, the manuscript (usually) will be returned to you. If there are things in the paper that don't match up (e.g., you cite "Carver, 1978" in text hut there is only a "Carver, 1979" in the reference section), there will be a query for you to respond to. If you do not approve of wording changes made by the copy editor, you can so indicate at this stage. This is your last chance to make small changes in text (as opposed to corrections) without getting someone mad at you, or worse yet, being charged for it.

This aspect of the process has changed in recent times. APA journals now are using a computer program to take your text file (which you will submit on disk with the final version of the manuscript) and turn it into the copy-edited version of the manuscript and then the final version. A certain amount of the specificity in the current version of APA style is a reflection of the desire to fit your file to this program. Some non-APA journals also work from computer files for final typesetting but do copy editing on your submitted paper copy. In increasingly rare cases, the manuscript is typed from hard copy into a computer for typesetting. No matter which system is used, there once again is now the potential for errors to be introduced (though the chances are obviously slimmer with APA's system than with re-typing).

You will eventually receive page proofs to examine for accuracy. These, in essence, are copies of the article in regular print-face, pretty much as it will look when finally published. This is your *absolutely last chance* to correct errors. Done properly, checking of the proofs is a 2-person job. One person reads the proofs *out loud,* while the other follows along on the copy-edited manuscript (which will also be returned to you for this purpose). Anytime there is a discrepancy, the copy-edited manuscript is presumed to be correct.

This process is *important,* even if it is tedious. Sometimes what gets into the computer is not the same as what was on the copy that was to be entered. Sometimes the loading of computer files is not complete. Sometimes even the simple little changes that you pointed out earlier are not made correctly. It is your job to verify them.

Several weeks (or months) after correction of proofs, the article (or chapter) will appear in print, in the journal (or book), for all the world to see. By then, of course, you will largely have forgotten what it was about. So it goes.

Four additional sources of information that you may find useful:

The Publication Manual of the APA is itself a pretty good resource now for all aspects of the process.

Stemberg, R. A. (1988). The psychologist's companion: A guide to scientific writing for students and researchers. Cambridge: Cambridge University Press. [a general purpose paperback that is very accessible, includes a lot of the information that's in the Publication Manual, and also has practical discussion concerning the writing process.] A new edition of this book has come out, but I haven't had a chance to track it down.

Gopen, G. D., & Swan, J. A. (1990). The science of scientific writing. American Scientist, 78, 550-558. [A somewhat technical discussion of what aspects of sentence and paragraph construction make writing easier or more difficult to read and comprehend, using examples drawn (unfortunately) from fields other than psychology.]

Kazdin, A. E. (1995). Preparing and evaluating research reports. Psychological Assessment, 7, 228-237. [includes some useful discussion about how to orient yourself to reviewers and a good table about what's in an empirical article]

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