CHAPTER 15

Write-Up

KEY TERMS

abstract
construct validity
construct
cause-effect relationship
citation
design
digital repository
distribution media
external validity
generalizability
hypothesis
internal validity
measure
reference database program
reliability
reference
scaling
sample
sampling method
study schema

OUTLINE

15-1 Envisioning the Write-up

So now that you've completed the research project, what do you do? I know you won't want to hear this, but your work is still far from done. In fact, this final stage—writing up your research—may be one of the most difficult—and most important. Dr. Robert Day's book on scientific writing concludes with a very clear statement about just how important writing the research report is: "What I have said in this book is this: Scientific research is not complete until the results have been published. Therefore, a scientific paper is an *essential* part of the research process" (p. 184, 1998).

Developing a good, effective, and concise report is an art form in itself, and in many research projects, you will need to write multiple reports that present the results at different levels of detail for different audiences. In this chapter you'll get an overview of the various kinds of reports you might eventually write, as well as a more detailed treatment of the most common kind of report using the most general format.

15-1a The Type of Report

The course in which you are studying this book is most likely devoted to helping you write two important kinds of papers before you have any data: the literature review and the research proposal. But if you do a systematic and careful job with your literature review and proposal, then any subsequent write-up of the complete study will be much easier to adapt to the purpose of the particular version of your study you need to write. Here is a list of some of the types of papers you may end up writing about any given research project: summary for study participants, report to the internal review board, paper for a class, abstract of the study to be submitted as a proposal for a conference paper or poster, thesis or dissertation, report to funding agency, summary for campus newspaper, technical report for distribution at a conference or on the Internet, peer-reviewed article for electronic or paper journal publication, chapter in a book, or a complete monograph reporting a series of studies. Each of these kinds of reports involves some common general considerations to keep in mind while planning your write-up.

15-1b The Audience

Who is going to read the report? Reports will differ considerably depending on whether the audience will want or require technical detail, whether they are looking for a summary of results, or whether they are about to examine your research in a Ph.D. examination.

15-1c The Story Line

I believe that every research project has at least one major story in it. Sometimes the story centers around a specific research finding. Sometimes it is based on a methodological problem or challenge. When you write your report, you should attempt to tell the story to your reader. Even in formal journal articles where you will be required to be concise and detailed at the same time, a good story line can help make an otherwise dull report interesting to the reader. The manner in which the story is told may be depend on whether your study is qualitative, quantitative, or a mixed methods study, but in all cases a well-written report will have a story that flows in a coherent and interesting way.

The hardest part of telling the story in your research is finding the story in the first place. Usually when you come to writing up your research you have been steeped in the details for weeks or months (and sometimes even for years). You've been worrying about sampling responses, struggling with operationalizing your measures, dealing with the details of design, and wrestling with the data analysis. You're a bit like the ostrich that has its head in the sand. To find the story in your research, you have to pull your head out of the sand and look at the big picture. You have to try to view your research from your audience's perspective. You may have to let go of some of the details that you obsessed so much about and leave them out of the write-up or bury them in technical appendices or tables.

15-1d The Writing Style

Are you writing a research report to submit for publication in a journal? If so, you should be aware that every journal requires articles that follow specific formatting guidelines. Thinking of writing a book? Again, every publisher requires specific formatting. Writing a term paper? Most faculty members require you to follow specific guidelines. Doing your thesis or dissertation? Every university I know of has strict policies about formatting and style. There are legendary stories that circulate among graduate students about the dissertation that was rejected because the page margins were a quarter inch off or the figures weren't labeled correctly.

Further guidance on writing style can be found in a variety of books written to help students in various disciplines with major writing tasks. For example, former American Psychological Association President Robert Sternberg, one of the most prolific writers in the field, produced a very helpful guide to scientific writing that covers many of the basics of good writing, as well as professional issues such as finding a book publisher (2003). Locke, Spirduso, and Silverman's (2000) book on proposal writing, now in the fourth edition, remains a very popular guide across disciplines and includes examples of experimental, quasi-experimental, and qualitative study proposals, as well as a funded grant proposal. In addition, a growing number of books have been written to integrate advice on coping with the challenges of graduate school with specific guidance on writing the thesis and dissertation (for example, Heppner & Heppner, 2004; Rudestam & Newton, 2001).

15-1e Quantitative, Qualitative and Mixed Methods Write-ups*

If you browse some journals in your field that are primarily quantitative, and then browse some journals in your field that are primarily qualitative, you will notice some obvious differences in the papers published. These differences include the degree to which writers appear to take an objective versus subjective stance, the kinds of goals expressed, the use of numbers versus quotes or other "raw data." and so on. The

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Krathwohl, D.R. and Smith, N.L., (2005). *How To Prepare A Dissertation Proposal: Suggestions For Students In Education and the Social and Behavioral Sciences.* Syracuse, NY: Syracuse University Press.

differences should not make you think that there are no commonalities. Gilgun (2005) encouraged qualitative researchers to write with "grab," Glaser's term for writing that is memorable and interesting. I think the concept of writing with grab applies well to all kinds of writing, although you have to be a little careful about this when writing for technical or scientific journals where the norm is to stick to a straightforward presentation of the facts and a dispassionate rendering of your conclusions.

As you learned in a previous chapter, mixed methods designs are in a formative stage and norms for writing are not yet well established. But I can say without hesitation that writing a mixed methods report requires first and foremost a clear statement of purpose and a coherent rationale tying the choices made in framing questions to the choices made in the methods used to generate answers. One of the best ways to communicate a clear message about purpose and procedures is to use a study schema.

15-1f The Study Schema

study schema
A graphic display showing the procedural steps of a study and indicating the number of participants at each step.

Graphic **study schemas** can be very helpful in communicating the overall plan and flow of a study, whether the study includes mixed methods, or solely qualitative or quantitative procedures. One of the most important examples of the use of such graphics in communication is the CONSORT (Consolidated Standards of Reporting Trials) statement. The CONSORT group was formed by a scientists and editors who were concerned about the lack of uniformity in reporting of clinical trials and the introduction of bias in the report of studies that resulted from the variability in reporting. The group maintains a Web site (http://www.consort-statement.org) and periodically updates their recommendations. The CONSORT guidelines have now been adopted by dozens of leading scientific journals. The current CONSORT flowchart for reporting studies is shown in Figure 15–1. Qualitative researchers make extensive use of graphics to illustrate study processes as well as outcomes, although as you might expect, they tend to do so in a less structured manner than quantitative reporters.

15-1g Distribution Media

distribution media
In the context of research, it is the universe of possibilities for sharing a research report including all paper and electronic forms.

reference database program
A specialized kind of database program designed to help writers keep track of citations. It may include special tools for managing references from the point when a researcher downloads a citation from a bibliographic database to the writing of a manuscript.

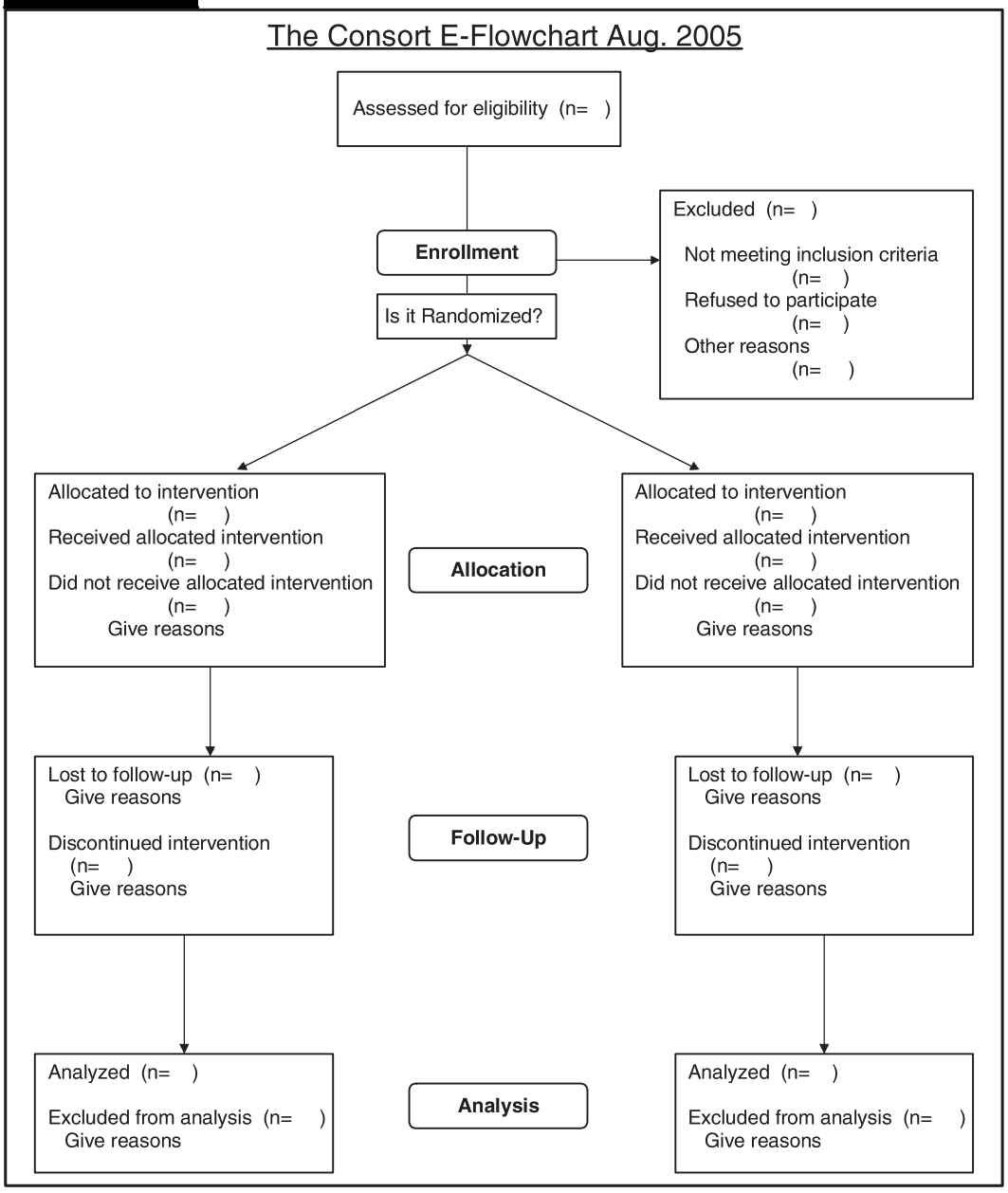
digital repository
A publicly shared electronic archive for research reports and data.

As of this writing, you cannot download a research paper from *iTunes*, but you can do so from virtually any journal Web site. You can also organize personal databases of electronic references, abstracts, and even figures and tables with programs such as *EndNote*, a powerful **reference database program** for researchers that may be the research equivalent of *iTunes* in terms of organizing your own personal knowledge base. Most likely you will have obtained much of your background literature from electronic sources, and you may find that your own work will be published in an electronic journal or accessible from some other Web-based portal. Most leading journals produce both paper and electronic versions, and increasingly, electronic-only journals are becoming accepted in academic circles. The Internet is also home to a variety of specialized knowledge bases, such as government, university, and private Web sites. For example, DSpace (http://dspace.org/index.html), an open-source program created as a joint venture of MIT and Hewlett Packard, is a "**digital repository**" for papers, data, programs, and other research materials. Any organization can establish its own repository, which is linked to all others. In a sense, it is like *EndNote* in that it provides a way to organize and index a large and growing volume of knowledge, except on a public rather than personal scale. Technological developments will continue to affect the way we report studies, but I hope there will be a purpose beyond the mere application of technology—to speed the dissemination of findings in order to improve practice, thus improving quality of life for as many people as possible.

15-2 Key Elements of the Research Report

To illustrate what a set of research report specifications might include, I present in this section general guidelines for the formatting of a research write-up for a class term

FIGURE 15–1 **The CONSORT flowchart**



paper. These guidelines are similar to the types of specifications you might be required to follow for a journal article. However, you need to check the specific formatting guidelines for the report you are writing; the ones presented here are likely to differ in some ways from any other guidelines that may be required in other contexts.

Following you will see the elements or criteria that you must typically address in a research paper, like the one I typically require from students in my courses. The assumption here is that you are addressing a causal hypothesis in your paper.

I. Introduction

1. ***Statement of the problem:*** State the general problem area clearly and unambiguously. Discuss the importance and significance of the problem area.

cause-effect relationship
A cause effect relationship. For example, when you evaluate whether your treatment or program causes an outcome to occur, you are examining a causal relationship.

2. ***Statement of causal relationship:*** Clearly state **cause-effect relationship** to be studied and relate it sensibly to the problem area.
3. ***Statement of constructs:*** Explain each key construct in the research/evaluation project (minimally, both the cause and effect). Ensure that explanations are readily understandable (that is, jargon-free) to an intelligent reader.
4. ***Literature citations and review:*** Cite literature from reputable and appropriate sources (such as professional journals and books, and not *Time, Newsweek,* and so on). Condense the literature in an intelligent fashion and include only the most relevant information. Ensure that all citations are in the correct format. Describe the search procedures you used, including databases and keywords (Cooper, 1998).

hypothesis
A specific statement of prediction.

5. ***Statement of hypothesis:*** Clearly state the **hypothesis** (or hypotheses) and specify what the paper predicts. The relationship of the hypothesis to both the problem statement and literature review must be readily understood from reading the text.

II. Methods

Sample section:

sample
The actual units you select to participate in your study.

external validity
The degree to which the conclusions in your study would hold for other persons in other places and at other times.

generalizability
The degree to which study conclusions are valid for members of the population not included in the study sample.

1. ***Sampling procedure specifications:*** Describe the procedure for selecting units (such as subjects and records) for the study and ensure that it is appropriate. State which sampling method you used and why. Describe the population and sampling frame. In an evaluation, the program participants are frequently self-selected (volunteers) and if so, should be described as such.
2. ***Sample description:*** Describe the **sample** accurately and ensure that it is appropriate. Anticipate problems in contacting and measuring the sample.
3. **External validity** ***considerations:*** Consider **generalizability** from the sample to the sampling frame and population.

Measurement section:

scaling
The branch of measurement that involves the construction of an instrument that associates qualitative constructs with quantitative metric units.

reliability
The degree to which a measure is consistent or dependable; the degree to which it would give you the same result over and over again, assuming the underlying phenomenon is not changing.

construct validity
The degree to which inferences can legitimately be made from the operationalizations in your study to the theoretical constructs on which those operationalizations are based.

1. ***Measures:*** Describe each outcome measurement construct briefly. (A minimum of *two* outcome constructs is required.) For each construct, briefly describe the measure or measures and include an appropriate citation and reference (unless you created the measure). Describe briefly any measure you constructed and *provide the entire measure* in an appendix. The measures that are used are relevant to the hypotheses of the study and are included in those hypotheses. Wherever possible, use multiple measures of the same construct.
2. ***Construction of measures:*** Clearly word questionnaires, tests, and interviews. They should be specific, appropriate for the population, and follow in a logical fashion. Follow the standards for good questions. For archival data, describe original data collection procedures adequately and construct indices (for example, combinations of individual measures) correctly. For scales, you must describe briefly which **scaling** procedure you used and how you implemented it. Describe the procedures you used for collecting the qualitative measures in detail.
3. ***Reliability and validity:*** You must address both the **reliability** and validity of *all* of your measures. For reliability, you must specify what estimation procedure(s) you used. For validity, you must explain how you assessed **construct validity**. Wherever possible, you should minimally address both convergent and discriminant validity. The procedures that are used to examine reliability and validity are appropriate for the measures.

Design and Procedures section:

design
The design of a study is the specification of how the research question will be answered. A research design should specify how the selection of participants, method of assignment, and choice of measures and time frame work together to accomplish the study objectives.

internal validity
The approximate truth of inferences regarding cause-effect or causal relationships.

1. ***Design:*** Clearly present the **design** in both notational and text form. Ensure that the design is appropriate for the problem and addresses the hypothesis.
2. ***Internal validity:*** Discuss threats to **internal validity** and how they are addressed by the design. Also consider any threats to internal validity that are not well controlled.

3. ***Description of procedures:*** Include an overview of how the study will be conducted. Describe the sequence of events and ensure that it is appropriate to the design. Include sufficient information so that the essential features of the study could be replicated by a reader.

III. Results

1. ***Statement of Results:*** State the results concisely and ensure that they are plausible for the research described.
2. ***Tables:*** Format a table (or tables) correctly to present part of the analysis accurately and concisely.
3. ***Figures:*** Design figure(s) clearly to accurately describe a relevant aspect of the results.

IV. Conclusions, Abstract, and Reference Sections

1. ***Implications of the study:*** Assuming the expected results are obtained, discuss the implications of these results. Briefly mention any remaining problems that you anticipate in the study.
2. ***Abstract:*** The **abstract** is 125 words or less and presents a concise picture of the proposed research. Include major constructs and hypotheses. The abstract is the first section of the paper.
3. ***References:*** Include all **citations** to each **reference** in the correct format and ensure that they are appropriate for the study described.

abstract
A concise description of a research study, usually displayed at the beginning of a research publication as a summary.

citation
A brief reference in the text of a research write-up to a specific source used in the article, such as another research article, website, book, etc. Each citation in a write-up should have a complete reference included in the reference section at the end of the article.

reference
A complete description of a source (such as another research article, website, book, etc.) that is relevant to your research, including authors, title, date, publisher, page numbers and location. References for a research write-up are usually all listed at the end of the article.

Stylistic Elements

I. **Professional Writing**
Avoid first person and sex-stereotyped forms. Present material in an unbiased and unemotional (for example, no feelings about things), but not necessarily uninteresting, fashion.

II. **Parallel Construction**
Keep tense parallel within and between sentences (as appropriate).

III. **Sentence Structure**
Use correct sentence structure and punctuation. Avoid incomplete and run-on sentences.

IV. **Spelling and Word Usage**
Make sure that spelling and word usage are appropriate. Correctly capitalize and abbreviate words.

V. **General Style**
Ensure that the document is neatly produced and reads well, and that the format for the document has been correctly followed.

15-3 Formatting

In this section, I discuss formatting a research article or a research report. This discussion follows the formatting requirements stated in the *Publication Manual of the American Psychological Association* (American Psychological Association [APA], 2001), often referred to as APA formatting. Although APA formatting is widely followed in the social sciences, it is not universally required. However, virtually every publisher adheres to some set of format guidelines. Please consult the specific guidelines that are required by the publisher for the type of document you are producing.

In APA format, for example, all sections of a research paper are typed, double-spaced on white 8 ½-by 11-inch paper with 12-point typeface with all margins set to 1 inch. Every page has a header in the upper-right corner with the running header right-justified on the top line and the page number right-justified and double-spaced

on the line below it. The paper must have all the following sections in the order given, using the specifications outlined for each section (all page numbers are my estimates of fairly typical proportions in a research article of about 15 to 25 typed pages in length; of course, you should adjust these as appropriate for your context):

- Title Page
- Abstract (on a separate single page)
- Body (no page breaks between sections in the body)
  - Introduction (2–3 pages)
  - Methods (7–10 pages)
    - Sample (1 page)
    - Measures (2–3 pages)
    - Design (2–3 pages)
    - Procedures (2–3 pages)
  - Results (2–3 pages)
  - Conclusions (1–2 pages)
- References
- Tables (one to a page)
- Figures (one to a page)
- Appendices

15-3a Title Page

On separate lines and centered, the title page has the title of the study, the author's name, and the institutional affiliation. At the bottom of the title page, you should have the words (in caps) RUNNING HEADER: followed by a short identifying title (two to four words) for the study. This running header should also appear on the top-right of every page of the paper.

15-3b Abstract

The abstract is limited to one page, double-spaced. At the top of the page, centered, you should have the word "Abstract." The abstract itself should be written in paragraph form and should be a concise summary of the entire paper including the problem, major hypotheses, sample and population, a brief description of the measures, the name of the design or a short description (no design notation here), the major results, and the major conclusions. Obviously, to fit this all on one page you will have to be extremely concise.

15-3c Body

The first page of the body of the paper should have, centered, the complete title of the study.

15-3d Introduction

The first section in the body is the introduction. Do not include a heading that says, "Introduction." You simply begin the paper in paragraph form following the title. Every introduction will have the following (roughly in this order): a statement of the problem being addressed, a statement of the cause-effect relationship being studied, a description of the major constructs involved, a brief review of relevant literature (including citations), and a statement of hypotheses. The entire section should be in paragraph form with the possible exception of the hypotheses, which may be indented.

15-3e Methods

The next section of the paper has four subsections: Sample, Measures, Design, and Procedures. The Methods section should begin immediately after the introduction (no page break) and should have the centered title "Methods." Each of the four subsections should have an underlined, left-justified section heading.

15-3f Sample

This section should describe the population of interest, the sampling frame, the method for selecting the sample, and the sample itself. A brief discussion of external validity is appropriate here; that is, you should state the degree to which your results will be generalizable from your sample to the population. Sampling is covered in Chapter 2.

15-3g Measures

This section should include a brief description of your constructs and all measures used to operationalize them. You may present short instruments in their entirety in this section. If you have more lengthy instruments, you may present some typical questions to give the reader a sense of what you will be doing (and include the full measure in an appendix). You may include any instruments in full in appendices rather than in the body. Appendices should be labeled by letter (for example, Appendix A) and cited appropriately in the body of the text. For preexisting instruments, you should cite any relevant information about reliability and validity if it is available. For all instruments, you should briefly state how you determined reliability and validity, report the results, and discuss them. For reliability, you must describe the methods you used and report results. A brief discussion of how you have addressed construct validity is essential. In general, you should try to demonstrate both convergent and discriminant validity. You must discuss the evidence in support of the validity of your measures. Measurement is covered in Chapter 3.

15-3h Design

You should state the name of the design used and tell whether it is a true or quasi-experiment, nonequivalent-groups design, and so on. You should also present the design structure in *X* and *O* notation. (This should be indented and centered, not put into a sentence.) You should also include a discussion of internal validity that describes the major likely threats in your study and how the design accounts for them, if at all. (Be your own study critic here and provide enough information to show that you understand the threats to validity, whether you've been able to account for them all in the design or not.)

15-3i Procedures

Generally, this section ties together the sampling, measurement, and research design. In this section, you should briefly describe the overall plan of the research, the sequence of events from beginning to end (including sampling, measurement, and use of groups in designs), how participants will be notified, and how their confidentiality will be protected (where relevant). An essential part of this subsection is a description of the program or independent variable that you are studying.

15-3j Results

The heading for this section is centered with uppercase and lowercase letters. You should indicate concisely what results you found in this research. Your results don't

have to confirm your hypotheses. In fact, the common experience in social research is the finding of no effect.

15-3k Conclusions

Here you should describe the conclusions you reach (assuming you got the results described in the Results section). You should relate these conclusions back to the level of the construct and the general problem area that you described in the introduction. You should also discuss the overall strength of the research proposed (for example, a general discussion of the strong and weak validity areas) and should present some suggestions for possible future research that would be sensible based on the results of this work.

15-3l References

There are really two parts to a reference citation. First, there is the way you cite the item in the text when you are discussing it. Second, there is the way you list the complete reference in the reference section in the back of the report.

Reference Citations in the Text of Your Paper Cited references appear in the text of your paper and are a way of giving credit to the source of the information you quoted or used in your paper. They generally consist of the following bits of information:

The author's last name, unless first initials are needed to distinguish between two authors with the same last name. If there are six or more authors, the first author is listed followed by the term, et al., and then the year of the publication is given in parenthesis. The year of publication appears in parentheses. Page numbers are given with a quotation or when only a specific part of a source was used.

"To be or not to be" (Shakespeare, 1660, p. 241)

One Work by One Author:

Rogers (1994) compared reaction times

One Work by Multiple Authors:

Wasserstein, Zappulla, Rosen, Gerstman, and Rock (1994) [first time you cite in text].
Wasserstein et al. (1994) found [subsequent times you cite in text].

Reference List in Reference Section There are a wide variety of reference citation formats. Before submitting any research report, you should check to see which type of format is considered acceptable for that context. If there is no official format requirement, the most sensible thing is for you to select one approach and implement it consistently. (There's nothing worse than a reference list with a variety of formats.) Here, I'll illustrate by example some of the major reference items and how they might be cited in the reference section.

The references list all the articles, books, and other sources used in the research and preparation of the paper and cited with a parenthetical (textual) citation in the text. These items are entered in alphabetical order according to the authors' last names; if a source does not have an author, alphabetize according to the first word of the title, disregarding the articles *a*, *an*, and *the* if they are the first word in the title.

Examples

Book by One Author:
Jones, T. (1940). *My life on the road.* New York: Doubleday.

Book by Two Authors:
Williams, A., & Wilson, J. (1962). *New ways with chicken.* New York: Harcourt.

Book by Three or More Authors:
Smith, J., Jones, J., & Williams, S. (1976). *Common names.* Chicago: University of Chicago Press.

Book with No Given Author or Editor:
Handbook of Korea (4th ed.). (1982). Seoul: Korean Overseas Information, Ministry of Culture & Information: Author.

Two or More Books by the Same Author:
Oates, J. C. (1990). *Because it is bitter, and because it is my heart.* New York: Dutton.
Oates, J. C. (1993). *Foxfire: Confessions of a girl gang.* New York: Dutton.

Note: Entries by the same author are arranged chronologically by the year of publication, the earliest first. References with the same first author and different second and subsequent authors are listed alphabetically by the surname of the second author, and then by the surname of the third author. References with the same authors in the same order are entered chronologically by year of publication, the earliest first. References by the same author (or by the same two or more authors in identical order) with the same publication date are listed alphabetically by the first word of the title following the date; lower case letters (*a*, *b*, *c*, and so on) are included after the year, within the parentheses.

Book by a Corporate (Group) Author:
President's Commission on Higher Education. (1977). *Higher education for American democracy.* Washington, DC: U.S. Government Printing Office.

Book with an Editor:
Bloom, H. (Ed.). (1988). *James Joyce's Dubliners.* New York: Chelsea House.

A Translation:
Dostoevsky, F. (1964). *Crime and punishment* (J. Coulson, Trans.). New York: Norton (Original work published 1866).

An Article or Reading in a Collection of Pieces by Several Authors (Anthology):
O'Connor, M. F. (1975). *Everything that rises must converge.* In J. R. Knott, Jr., & C. R. Raeske (Eds.), *Mirrors: An introduction to literature* (2nd ed., pp. 58–67. San Francisco: Canfield.

Edition of a Book:
Tortora, G. J., Funke, B. R., & Case, C. L. (1989). *Microbiology: An introduction* (3rd ed.). Redwood City, CA: Benjamin/Cummings.

Diagnostic and Statistical Manual of Mental Disorders:
American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

A Work in Several Volumes:
Churchill, W. S. (1957). *A history of the English speaking peoples: Vol. 3. The age of revolution.* New York: Dodd, Mead.

Encyclopedia or Dictionary
Cockrell, D. (1980). Beatles. In *The new Grove dictionary of music and musicians* (6th ed., Vol. 2, pp. 321–322). London: Macmillan.

Article from a Weekly Magazine:
Jones, W. (1970, August 14). Today's kids. *Newseek, 76,* 10–15.

Article from a Monthly Magazine:
Howe, I. (1968, September). James Baldwin: At ease in apocalypse. *Harper's, 237,* 92–100.

Article from a Newspaper:
Brody, J. E. (1976, October 10). Multiple cancers termed on increase. *New York Times (national ed.),* p. A37.

Article from a Scholarly Academic or Professional Journal:
Barber, B. K. (1994). Cultural, family, and personal contexts of parent-adolescent conflict. *Journal of Marriage and the Family, 56,* 375–386.

Government Publication:
U.S. Department of Labor. Bureau of Labor Statistics. (1980). *Productivity.* Washington, DC: U.S. Government Printing Office.

Pamphlet or Brochure:
Research and Training Center on Independent Living. (1993). *Guidelines for reporting and writing about people with disabilities* (4th ed.) [Brochure]. Lawrence, KS: Author.

15-3m Tables

Any tables should have a heading with "Table #" (where # is the table number), followed by the title for the heading that describes concisely what is contained in the table. Tables and figures are typed on separate sheets at the end of the paper after the references and before the appendices. In the text you should put a reference where each table or figure should be inserted using this form: "Insert Table 1 about here."

15-3n Figures

Figures are drawn on separate sheets at the end of the paper after the references and tables, and before the appendices. In the text you should put a reference where each figure will be inserted using this form: "Insert Figure 1 about here."

15-3o Appendices

Appendices should be used only when absolutely necessary. Generally, you will use them only for presentation of extensive measurement instruments, for detailed descriptions of the program or independent variable, and for any relevant supporting documents that you don't include in the body. Even if you include such appendices, you should briefly describe the relevant material in the body and give an accurate citation to the appropriate appendix (for example, "see Appendix A").

A Checklist for Reviewing Your Paper (or Critically Reviewing Any Other Study) One of the best ideas for improving the quality of your writing is to have it proofread by others. Ask a colleague or two for feedback about all aspects of the paper, from writing style to ethics to science. To help you get your paper ready for such an informal review, as well as the more formal evaluation of your professor or anonymous journal reviewers, I suggest you consider every question on the list in Table 15–1. In fact, this checklist can be used in reviewing any scientific report, but

TABLE 15–1 Some Questions to Ask When Critically Reviewing a Research Report

Title/Abstract:

1. Does the title suggest the important constructs and relationships in the study?
2. Does the abstract provide sufficient information for you to make a decision about whether to read the full article?
3. Is the purpose of the study clearly stated?
4. Does the introduction make the purpose of the study easy to understand?

Introduction/Literature Review

1. Is the topic of the study introduced in terms of what is already known about the subject?
2. Have the authors described relevant theories? Do they propose any problems with existing theories that they will address in their study?
3. Have conflicting findings from previous studies been discussed? Was any insight provided as to how to explain the conflicting results?
4. Were decisions about the design and procedures of the present study justified in terms of prior studies?
5. Were the study goals or hypotheses clearly stated?

Method—Participants

1. Were the subjects treated in an ethically enlightened manner?
2. Was the study reviewed by an ethics committee/board?
3. Is there a clear explanation of why these particular subjects were sampled?
4. What was the selection process?
5. Was random selection or assignment used?
6. Was a power analysis done?
7. Is there any evidence of bias due to poor sampling or non-response (missing data)? Are details of non-participants or dropouts given?

Method—Design

1. Was a specific research design named?
2. Are the primary variables defined?
3. Have any particular validity threats been identified?
4. Have any particular validity threats been overlooked?
5. If this is a longitudinal study are the number and timing of observations justified?
6. If this is an intervention study, have treatment procedures been clearly described?

Method—Measures

1. Are all of the instruments used well described and referenced?
2. Has reliability and validity data been presented for each instrument?
3. Are there any researcher-constructed instruments in the study? Have they been pilot tested?
4. Does the study report the exact protocol used for obtaining measures?
5. Have scoring procedures been described? Are there any deviations from standard scoring procedures?

Method—Data Analysis

1. Have the data analysis procedures been described in detail?
2. Do they fit the questions being asked?
3. Have assumptions of statistical tests been checked?
4. To what extent have data been explored for irregularities such as non-random missingness and outliers?
5. How was missing data handled?

(continued)

TABLE 15-1 **Some Questions to Ask When Critically Reviewing a Research Report ( )**

6. Have references been given for any statistical software used?
7. Is practical or clinical significance described?
8. Are effect sizes and confidence intervals given?
9. Are exact *p* values provided?
10. Have the authors "gone fishing"?

Results and Discussion

1. Do the study conclusions relate directly to the results, or do they range beyond the results into speculation?
2. Do the study conclusions relate directly to the purpose and hypotheses of the study?
3. Are the results linked in the discussion to prior knowledge?
4. Are limitations of the study discussed?
5. Have the authors given you an adequate answer to the question, "So what?"

Figures

1. Does the figure caption clearly identify the variables?
2. Are the figure axes clearly labeled?
3. Does the figure "stand alone," or do you have to refer to text to understand it?

Tables

1. Does the title clearly indicate which variables or categories of variables are included in the table?
2. Are the rows and columns clearly labeled?
3. Are significance tests noted?
4. Does the table "stand alone," or do you have to refer to text to understand it?

References

1. Are the references appropriately formatted?
2. Do the references include key sources by leading researchers in the area?

Writing Style

1. Is a particular writing style consistently used?
2. What is the overall quality of the writing? (Consider technical aspects of style as well as your overall impression of the paper with regard to quality of writing.)

* Some items adapted from Locke, Silverman, and Spirduso (2000) and Fink (2004).

if you get in the habit of systematically asking these kinds of questions about your own work, your critical thinking skills are likely to develop nicely.

Summary

This chapter discussed the last step in a typical research project—the write-up. I outlined the key elements that typically must be included somewhere in a standard research write-up—the introduction, methods, results, and conclusions—and described what should be included in each of these sections. I described the major style issues you should watch out for when writing the typical report, and I presented one way to format a research paper appropriately, including how to cite other research in your report. Even though formatting rules can vary widely from one field to another, once you see how a set of rules guides report writing, it's a simple matter to change the formatting for a different audience or editorial policy.

So, with the write-up, the formal part of the research process is complete. You've taken the journey down the research road, from the initial plan for your trip, through all of the challenges along the way, and now with the write-up, on to your final destination. Now what? If you're a researcher, you don't stay in one place for very long. The thrill of the journey is just too much to resist. You begin pulling out the road maps (formulating research questions and hypotheses) and thinking about how you'd like to get to your next destination. There's a certain restlessness, a bit of research-based wanderlust that sets in. And there are all the lessons you've learned from your previous research journeys. Now, if on this next trip you can only avoid the potholes! After you've done research for a while, you might actually start thinking about how the research can be utilized or related to practice, how you can do research (like evaluation) in more immediately practical contexts, and how we might look across multiple research studies to assess what is goin on (i.e., meta-analysis). Each of these topics is introduced in Chapter 16.

I hope that when you set out on your own research journey, you'll take this book along. Consider it a brief guidebook, a companion that might help point the way when you're feeling lost. And be sure to watch out for those bumps in the road.

Login to the Online Edition of your text at www.atomicdog.com to find additional resources located in the Study Guide at the end of each chapter.