Dissertation and journal Article Writing Skills in Financial Economics: A Practical Guide

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ABSTRACT

Doctoral dissertations result from extensive critical reading, presentation of research papers and generation of knowledge. It is all premised on research. Indeed, research involves formal investigation, publication and dissemination of a report among peers for evaluation which ultimately generates knowledge and enhances paradigm shifts. In essence, dissertation writing guidelines and constant feedback from supervisors direct the course of dissertation writing. However, for journal articles, professional peer reviewers working with editorial boards evaluate conformity with journal guidelines and accepted standard practices. Hence, it is essential that, despite its difficulty, writing must be undertaken to validate research. Doctoral students should plan their writing within their first year of course work study so that they write up as they progress with their study. Consequently, this paper argues that students opting for dissertation writing without course work are myopic as they would not be able to perform academic duties of guiding other researchers and more importantly, they would not write quality research work themselves.

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Abstract

An abstract comprehensively summarizes an article or dissertation allowing readers a quick glimpse of its contents. It is single paragraphed and stands alone from the body text. Readers use the abstract as a window through which they gauge relevance of their material search. Abstract must capture the following four sections: Problem Statement which answers the following questions; why was research needed? What was the context of the work? Introduce the problem and provide ample background for what you will address. Approach which answers the following questions; what did you do and how did you go about solving or making progress on the problem, describe research method used and analysis applied to the problem. Results: what results did you get and could you relate it the problem? Conclusions/Recommendations: what are the implications of your answer in terms of relevance and significance?

Abstract wording is restricted with most journals allowing between 150 words and 250 words, though some journals allow for an upper limit of 350 words. Moreover, most universities require abstracts between half a page (A4) to three quarters of a page single paragraphed. Avoid body text citation in your abstract at all costs. Even though abstract is the first point of contact with an article, it is usually the last portion to be written. Most doctoral dissertations comprise publishable stand-alone papers harmoniously put together in a coherent manner. Of course, journal articles are themselves single papers and therefore abstracts contain problem statement, justification for research, methodology and results/discussion. More importantly, for dissertations, include keywords immediately below abstract, however, for journal articles include both keywords and Journal of Economic Literature (JEL) classification codes below the abstract.

1. Introduction

1.1 Introduce the Problem

In both dissertation and journal article writing, the manuscript opens with an introduction that presents specific problem under study. By virtue of its position in the manuscript, most journals are flexible about labeling the first section as introduction.

1.2 Explore Importance of the Problem

Business research mostly solves organizational anomalies which need urgent rectification to save on costs. Niche acquisition, maintenance and expansion require strategic analysis backed by empirical and theoretical justification. Research provides justification for strategic
implementation of corrective measures. For basic research, the statement about importance might involve the need to resolve any inconsistency in results of past work and/or extend the reach of a theoretical formulation. For applied research, this might involve the need to solve a social problem or treat a psychological disorder. When research is driven by the desire to resolve controversial issues, all sides in the debate should be represented in a balanced measure in the introduction.

The introduction gives an impression of the author’s skill as an investigator and writer, and may influence how the full paper is perceived. It usually consists of some background information which will give the reason for writing and explains how the research will be done. Clearly, this needs to be closely related to your research question. As well as stimulating the reader’s attention, it should convince the reader that they should care about what you have to say: the ‘so what’ factor. If too long, the introduction will probably be turgid; if too short it may not make clear why the research was needed. A single paragraph may be enough to serve as an introduction to a research paper of 500-1000 words, while an introduction to a thesis might be five to ten pages, although this of course depends on what level of thesis is being undertaken and writers should consult guidance notes issued by their university.

Introductions, like abstracts, are rarely written first yet novice writers often do not understand the difference between the two. Introductions serve to make the present story relevant by placing it appropriately in the context of other published work in the area, while abstracts very rarely discuss previous research. Naturally, Abstracts will contain introductory information such as purpose of the work, state the methodology, experimental procedures, and data collection, and report the results of the research because the preview this provides is strategically desirable. These areas should not be discussed in the introduction, because they will be addressed in the literature review. Also, an introduction should have no conclusion.

There are four rules that will help guide what the author should put in the introduction.

Firstly, the author must tell the reader why the research was initiated by explaining what gap in knowledge it sought to fill. This justifies the research. Secondly, the author should not explain what can be found in any relevant textbook. In justifying the research, only go back as far in the literature as is needed by the readers, who are likely to be knowledgeable in their field. Use the literature only to include previous major findings in order to contextualize the work, not as a summary and evaluation of all past work. On the other hand, in a dissertation,
a broader summary of previous research is expected and the literature review is the section where you can comprehensively review such body of knowledge related to your topic (Mullins 2002). If there are different viewpoints on a topic, be even-handed in how they are represented. Both sides of the argument need to be presented, but you can take a stance as long as you can justify why you think one viewpoint is valid.

Thirdly, when writing your introduction, and indeed all your work, keep the reader in mind. If you do this, you will know what expression you can use that is the accepted language of your profession, only explaining terms that are unlikely to be understood by your readers. Finally, make clear what question the research was designed to answer. The research question should give rise to the scope and objectives of the work and, while it does not have to be expressed as a question, the statement of the problem should be able to be translated into a question. Be clear about your research question and hypotheses to be tested in your planning so that useful conclusions are arrived at.

Checklist

- Does your introduction stimulate the reader’s attention? Pass on your manuscript to a professional peer for valuable feedback.
- Does the introduction address the ‘so what’ factor, so that the reader knows why they should be interested in your work?
- Is it too long or too short to serve its purpose? This depends on whether you are introducing a dissertation or a journal article. Journal articles compile several papers in one release and therefore are constrained with available space. Stick within acceptable page limit.
- Can the introduction (and conclusion) stand alone, so that the reader can grasp the thrust of your work based on these two sections alone? Yes, the introduction fills in a lot that is glossed over from abstract. Strive to be as informative as you can without being too wordy.
- Does it explain the gap in knowledge that the research was designed to fill?
- Does the introduction mention previous literature, being even-handed if there are two viewpoints? Having presented both viewpoints you may then take a stance by justifying why you think one stance is correct. This may occur if you show that other viewpoint is flawed may be because of methodological shortcomings.
- Does it contain the research questions?
- Does it state the scope and objectives of the research?
2. Literature Review

Discuss relevant related literature, but do not feel compelled to include an exhaustive historical account. Assume that the reader is knowledgeable about the basic problem and does not require a complete accounting of its history. A scholarly description of earlier work in the introduction provides a summary of the most recent directly related work and recognizes the priority of the work of others. Citation of and specific credit to relevant earlier works are signs of scientific and scholarly responsibility and are essential for the growth of a cumulative science. Indeed, Mullins (2002) and Hart (1998) suggest that in the description of relevant scholarship; inform readers whether other aspects of this study have been reported on previously and how the current use of the evidence differs from earlier uses. Furthermore, cite and reference only works pertinent to the specific issue and not those that are of only tangential or of general significance.

More importantly, when summarizing earlier works, avoid nonessential details; instead, emphasize pertinent findings, relevant methodological issues, and major conclusions. Refer the reader to general surveys or research syntheses of the topic if they are available. Demonstrate the logical continuity between previous and present work. Develop the problem with enough breadth and clarity to make it generally understood by as wide a professional audience as possible. Consequently, do not let the goal of brevity lead you to write a statement intelligible only to the specialist.

A literature review is defined by Educational Resources Information Centre (1982) as: a systematic...method for identifying, evaluating and interpreting work produced by researchers, scholars and practitioners. Specifically, it is undertaken because, without it, the writer will not acquire an understanding of their topic, of what has already been done on it, how it has been researched, and what the key issues are. Furthermore, it provides the reader with the relevant background of what has already been undertaken in the field, so providing a context for the work. They are, therefore, an essential tool to make sense of all the information that is published on a specific topic. It should, firstly, indicate to the reader the context in which the research being presented is coming from. Moreover, the American Education Research Association (2006) contends that the review presents what is known about a topic in order to proceed to what is, as yet, unknown. Secondly, the implications of the research always have to relate back to the literature review. When later writing the discussion section, you will be able to comment, provided you can justify yourself, on
whether previous authors were right, wrong, partly right, and what you contributed to the discussion.

**Fundamentals of Review**

Most literature reviews, particularly from novice writers, do not accurately reflect the relevant literature, resulting in its failure to accurately synthesize key information from various academic papers, which often reflect different academic viewpoints on a topic. If this is not undertaken correctly, using appropriate research terms, then when it comes to the discussion section, the research findings may not be accurately embedded in the body of knowledge. Writing a literature review is a research methodology in its own right so, before starting the search for relevant literature, you must ensure that you have an effective way of recording the references from your search.

Bibliographic software packages such as EndNote, Reference Manager, and Procite, aid in database searching and the compilation of reference lists. They also allow you to make notes on the literature, which is important, especially when short-time library loans and inter-library loans mean that material referred to may have to be returned before you have been able to include it in your writing. Otherwise, less sophisticated methods, such as index cards or entering each reference to a reference list whilst writing up, are alternative methods. It is also important to get into the habit at an early stage of always ensuring that you have an up-to-date back-up of your work.

The literature review should start with the research question, to which all the literature reviewed must be relevant, and it should explain relevance of the topic to practice. The process of searching must be undertaken systematically and should provide a comprehensive overview and summary about what is known about the research area. This need for the review to be comprehensive is in order to expose any different viewpoints about the research topic. Recognizing the onerous task that is literature review, Gall and Borg (1996) suggest that the review should include primary data arising from quantitative and qualitative studies and the reviews of these papers, as well as information arising from non-research papers such as editorials, letters to the editor, discussion documents, commissioned research reports, government documents, as appropriate. It is worth remembering, therefore, that literature reviews need not exclusively report only on research-based publications. The review may also contain tables or figures and will yield its own reference list, which can be incorporated
at the end of a thesis or alternatively, if the literature review is a work in its own right, following the review.

While novice writers find it daunting to critically review works of expert scholars, it is essential that this is undertaken for the production of a balanced literature review. It must be thorough and substantive and it must be produced as a precondition to doing substantive, thorough, sophisticated research. Maybe they feel daunted because they mistake critical review for criticism. More importantly, research indicates that conclusions from one review could differ completely from another review written by a different author, even when exactly the same articles are reviewed (Light & Pillemer, 1984, Randolph, 2009).

Prior to the collection of data, it is essential that the writer is absolutely clear regarding their research question. This should be a well-defined, unambiguous question, which the researcher finds stimulating. In health and social care, most such questions are usually relevant to practice, and indeed may arise from practice. It is essential to define a research question that can be answered in the time period allowed before the work must be submitted. Keep the research question in a prominent place all the time so that you do not stray off the precise topic – otherwise you will search lots of irrelevant papers. Sometimes, as literature is uncovered, it may be necessary to redefine the research question. There are three stages involved in the process:

- Searching for literature – the data collection stage
- Critiquing literature to provide an analysis or deconstruction of it
- Synthesizing the literature.

When searching literature, remember that the aim of this task is to demonstrate to your examiners, readers, or funders that you searched systematically. Be sure that you have clear inclusion and exclusion criteria before starting to ensure that it is all relevant to your research question. You should record both the approach that developed an effective search strategy, and all the search terms you used to provide evidence that your review was systematically carried out. If your search revealed little relevant literature, you should have an idea why that was. Was it your use of limited search terms or was it because there is genuinely little literature on that topic? If there is little background information, you may find that your work is research hypothesis generation rather than hypothesis testing, in which case you will need to refine your research question to address this different focus of your work. Beware of
asserting that there is no literature on a topic, rather say ‘it was not possible to find any reference to xxx/examples of work on xxx/studies of xxx’.

Do not only utilize work that is easily accessible such as electronically – you must consider utilizing other facilities, such as inter-library loans, to ensure that your search picks up all relevant data. Use primary sources predominantly: those that have not been filtered through interpretation or evaluation, but are original materials on which other research is based. They are usually the first formal appearance of results in physical, print or electronic format, and present original thinking, report a discovery, or share new information.

Secondary sources should be used sparingly, if at all; these are sources that you do not directly access but that are cited in primary sources. When searching, use multiple search terms and key words that you identify in the articles to ensure your review is comprehensive. A good search should reveal a minimum of 20 key references that accurately fit with your research question. If not, then consider refocusing the research question accordingly, either by narrowing it down if there are too many, or by thinking of the broader implications of your research question to allow you to search more literature (Mullins 2002, Randolph, 2009).

The search can yield three different results or a combination of the three. There could be:

- A common consensus or near consensus about a topic. If this is so, then it will represent the ‘conventional wisdom on a topic’.
- Areas of disagreement or debate which give rise to various schools of thought.
- Gaps in the literature in terms of questions that have not been researched or perspectives that none has considered.

By considering these, you can use your review to describe what your contribution to knowledge will be. If you have far too many sources to reasonably handle in the time frame, narrow down the literature by concentrating on that produced by leading authorities, work that is the most recent, and work that most closely aligns with your own. Generally, unless your research question has a historical perspective, the most current literature is the best, and work in articles tends to be more current than that in books (Boote, 2005). If your search produces too few articles, you can broaden your search with wider subject headings and by searching other databases.
If you still have too little literature, consider both the first tier of information which relates directly to your topic, which would be adequate for your work if it yielded many sources, and then a second tier of literature where you have broadened your review to cover publications that only partially overlap your area even if they do not directly address the same point. Likewise, Mullins (2002) suggests keeping the following in mind as you conduct a literature review:

- You need to give positive and negative points on the paper which you can only achieve after one or two readings.
- Remember that no research paper is perfect.
- Explain how you appraised the literature, including non-research papers.
- Remember that empirical findings gleaned from peer-reviewed journals constitute stronger evidence than that produced in discussion papers/expert review papers.
- Give a summary of your critical appraisal the first time you refer to a paper.
- Only include about one paragraph as a critique of each article, and if there is an abundance of literature, you may group and discuss articles together, with a consensus the authors did, what the results showed, and finally, if you are writing your review within a dissertation, your review of the quality of the paper. If writing a journal article, this is not usually included unless there is a specific paper that deserves such close attention.
- Organize your review so that all papers relevant to a specific viewpoint are critiqued together and if there is an opposing viewpoint present your critiques of those articles together.
- The final stage of your literature review is to combine the evidence and present your findings. This may be done as a summary section at the end of the review.
Figure 1 outlines the various stages of the search process.

<table>
<thead>
<tr>
<th>Identify a topic of interest and spend time identifying keywords</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using keywords, conduct a search (electronic and/or manual) of relevant literature</td>
</tr>
<tr>
<td>Review all references sourced and retrieve a copy of relevant references</td>
</tr>
<tr>
<td>Read all relevant material sourced and identify new references through citations</td>
</tr>
<tr>
<td>Organize all material in preparation for analysis and integration into the review</td>
</tr>
</tbody>
</table>

**Figure 1**
Stages of research

**Putting it all Together**

Critiquing the literature and then synthesizing it, the second and third stages, are the hardest part of writing a literature review because they require intense thought and the making of connections regarding, for example, whether it was due to the methodology of two studies that they revealed different findings (Boote and Beile 2005, Randolph, 2009). During the process of summing up the literature, identify common themes to help you organize your review. These will give you the sub-headings under which to organize your work. Take into account the strengths and limitations of the literature you have reviewed and, once ordered under sub-headings, organize the sections so that the literature review flows in a logical sequence.
Most literature reviews in dissertations and manuscripts submitted for publication to journal houses are flawed (Alton-Lee 1998), Grante and Graue (1999), and LeCompte, Klinger, Campbell, and Menck (2003). Similarly, Boote (2004) suggests that a good literature review will be ordered so that one theme expands on, and adds insights to, another. Of course, with each theme recorded, remember to explain how the themes relate to the research question. If there are gaps in the relevant literature, point this out to the reader. Be even handed in the recording of relevant literature so that you do not appear to critique literature which fits with your hypothesis. However, in recording this information you may want to take a stance, maybe supporting one school of thought. This is something you should be able to justify by, for example, pointing out methodological flaws in papers supporting the viewpoint that you do not back.

Before you start writing, consider whether to write in the first or third person. It can be confusing if you refer to yourself as ‘the author’ and it can sound pretentious especially if you are, for example, an undergraduate student (Randolph, 2009). It is not necessarily optimal to write in the third person and it has been advocated over a considerable time that the first person is acceptable. Other sources, however, would contradict this and advocate writing in the third person. Check relevant guidelines from the journal to which you intend to submit to establish their policy, or look at any dissertation guidelines and discuss them with your supervisor.

When you write up your discussion section later in your work, you will need to restate your research question and show how your findings relate to the body of knowledge that you have presented in your literature review. To ensure a logical flow to information presentation, Use linking words and signposting words to clarify the structure of the text, words such as: However, But, Yet, And, Moreover, Furthermore, Further, Nevertheless, Besides, Indeed, True, Still, In fact, In reality, In addition, Of course, Naturally, Likewise, Similarly, In the same way, Now, Thus, It is clear, then, that ...A different perspective is provided by.........

Avoid gender-oriented vocabulary such as; he, she, him, her. To avoid this trap use plural instead of singular forms such as;

What does this mean to the customer? It means that he/she can ... (gender oriented)

What does this mean to customers? It means that they can..... (right format)

Use such as or including, namely or that is if appropriate and limit use of for example and for instance. Do not use etc at all costs. So do not write:
For example, screen design, icons, etc.

Leave it at: For example, screen designs and icons.

Use double negatives very sparingly, for emphasis:

It is *not inconceivable* that……..

It is *not without significance* that…….

This was *far from an insubstantial* part of the project.

Parentheses could be used sparingly for emphasis purposes and to relate a subsidiary idea to a main idea; Ojwang’ expects (justifiably so) that mutual fund investors are protected from…..

Use of hyphenation in compound nouns and adjectival use is encouraged to avoid ambiguity:

Bank-controlled economy (economy controlled by banks)

Bank controlled economy (bank economy not necessarily controlled by banks. Better: controlled bank economy)

Here are some other examples:

Exchange-Traded Funds

Easy-to-use interface (but the interface is easy to use)

Computer-aided instruction

20th-century opinions (but opinions in the 20th century)

Client-centered activity, task-oriented approach

Avoid verbal contractions from your writing except when quoting directly;

*Can’t* instead use *cannot*

*Isn’t* instead use *is not*

*We’ll* instead use *we will*

*Wouldn’t* instead use *would not*

Avoid slang and colloquialisms such as *six million dollar question* or *this is no big deal*. They Examiners and peer reviewers expect formal writing from you. Unnecessarily stretched-out expressions are a waste of valuable thinking time. Specifically; *at the end of the day* should be avoided and instead use *in the final account, in the last analysis; at this point in time*
should be avoided instead use now, currently, at present; business-based activity (should be avoided and instead simple use business.

Above all, Mullins (2002) recommends being simple and clear to pass your information on and avoid jargon. Specifically, you are writing an academic paper by adding and generating knowledge so avoid noise making. Stick to accepted vocabulary of financial economics not linguistics or phonetics; purchase for buy

Commence for begin

Permit for allow

Whilst for while

Amongst for among

Within for in, for

Upon for on

Facilitate for teach, provide

Utilize for use (and utilization for use or usage)

Conclusion

Novice writers experience difficulties writing a literature review. It is unacceptable for doctoral students in their literature review to begin a sentence with according to…. In addition, avoid beginning a sentence with name of an author such as Ojwang’ (2016). Indeed, this is descriptive, rumbling and demeaning of your status as a doctoral student. Use transitional words and collate authors along methodological or result approach so that your voice comes out critically. Your writing identifies a conversation surrounding an issue and then developing a stance within the conversation. This could be achieved by refuting or refining an argument, revealing a gap and then filling it by asking a new question or refining an older question.
Checklist

- Have you indicated the purpose of the review?
- Have you stated the research question explicitly?
- Are the parameters of the review reasonable? Did you adequately search all aspects of the research question?
- Why did you include some literature and exclude others?
- Which years did you include and exclude? Why? This is relevant to a dissertation but not a journal article, as is...
- Which databases did you search?
- What other methods of searching did you use in addition to electronic searching? It is advisable to use reference lists for additional citations
- Have you emphasized current developments, provided your work does not have a historical perspective?
- Have you focused on primary sources with only selective use of secondary sources?
- Is the literature you have selected relevant to the research question?
- Is your literature base complete?
- Have you indicated when results are conflicting and discussed possible reasons?
- Is your literature review even-handed in allowing both sides of an argument to be presented, even if you take a justified stance regarding which viewpoint you support?
- Does your review offer positive as well as negative constructive criticism, particularly of methodological issues?
- Have you organized your findings under appropriate sub-headings?
- Is there a logical flow to the way you have presented the information?
- Does the amount of information presented on an issue relate to its importance?
- Have you indicated the relevance of each paper to your research question?
- Has your summary of current literature contributed to the reader’s understanding of the research question and provided you with a rationale for your research?
3. Methodology

The Method section describes in detail how the study was conducted, including conceptual and operational definitions of the variables used in the study. Different types of studies will rely on different methodologies; however, a complete description of the methods used enables the reader to evaluate the appropriateness of your methods and the reliability and the validity of your results. It also permits experienced investigators to replicate the study. If your manuscript is an update of an ongoing or earlier study and the method has been published in detail elsewhere, you may refer the reader to that source and simply give a brief synopsis of the method in this section.

Writing a method section and a methodology has to be undertaken thoroughly and with sufficient detail so that other researchers could replicate the work in their own setting to see whether it gives rise to similar results. In addition, Mullins (2002) recommends writing up your method in the past tense and use a passive voice – many authorities believe that this makes the writing less personal and more scientific. Similarly, some advocate the use of the third person, promoting it as scientific, while others prefer the use of the first person, claiming that this is equally scientific. Consequently, it is worth checking with your supervisor or the journal to which you are submitting.

There are two broad categories of research: quantitative and qualitative. Quantitative research is a systematic, scientific, empirical investigation of a phenomenon, collecting data that can be quantified statistically. Indeed, Moustakas (1994) asserts that qualitative research typically uses a flexible research design, investigating phenomena in depth and holistically, typically through the collection of rich narrative materials. For example, to investigate issues around drug addiction, a qualitative approach would be interested in the ‘why’ and ‘how’ of the behaviour, while a quantitative approach would collect figures relating to the ‘what’, ‘where’ and ‘when’ of drug abuse.

Writing a methodology for quantitative research is a contested area, with both differences and similarities in the philosophies adopted regarding the methodology and thus analyzing data, for example, mixed methods, ethnographic, and feminist. Readers using a qualitative approach are advised to read more widely in this area. The sample in quantitative research tends to be random in that sample selection is such that each member of the population has equal probability of being selected or case controlled with non-experimental research design involving the comparison of cases and matched controls. This sort of research lends itself to
statistical analysis. Sampling in qualitative research tends to be purposive, for example, a non-probability sampling method in which the researcher selects members of a population based on personal judgment about who will be most informative. It is designed to enhance understanding of a particular individual or group and such research tends to be analyzed by thematic analysis and quasi-statistics.

**Recipe for Success**

A scientific method is written with the following key components:

- A question which can be answered by means of an interview, questionnaire or experiment, for example: why is the toaster not working?
- A hypothesis that can be investigated to ‘answer’ the question, for example, two hypotheses need testing: is the toaster unplugged? And is it broken?
- One or two testable predictions based on the hypothesis. These predictions will have been generated before the methods section but need restating here, for example: does the toaster work when you ensure it is plugged in?
- The experiment/s and data collection that test the predictions, for example: plug in the toaster and see whether it works...
- Support or disproof of the hypothesis – if it was unplugged, this supports the first hypothesis, if it was plugged in, hypothesis two is correct.
- The communication of the results and discussion to others, for example to tell family members that the toaster is broken.

When writing up your materials and methods section, think of it as the recipe which needs to be written up. This must be done in such a way that others could replicate your research method. If it does not, it is not good science and may cause reviewers to reject it if it is a journal article. Indeed, Cooper (1984, 1988) observes that the section should be precise regarding the testing or intervention that occurred, stating the sample size, the sampling strategy, and the variables tested. Saying the work was undertaken by a qualitative research methodology is too broad and must be stated more precisely, for example, participant observation or ethnographic methods were used. It should also be written in prose, not as a list.

Explain your inclusion criteria and provide a statement of informed consent if human subjects are used. If you use a questionnaire or interview schedule for your research, include it as an appendix and cross reference. Researchers (Cooper & Hedges, 1994a; Glass, McGaw,
& Smith, 1981; Lipsey & Wilson, 2001; or Rosenthal, 1991) are in agreement over the use of meta-analysis to synthesize and analyze quantitative research. They contend that materials should be described along with how you analyzed the data, including which statistical methods and software packages you used, and at what probability level you set significance, usually at 0.0510.

If your method is new, carefully describe it in detail so that all the necessary information required is included. If your method is complex, a diagram, flow chart or table may be useful. Do not include any results from your research here.

Certainly, Cooper (1994a) observes that the methods section is often the first place to start writing, because the likelihood is that you have already undertaken your study so you need only record it and get it into a logical sequence. Sub-headings can help, such as subjects, experimental design, inclusion and exclusion criteria, sampling techniques and analyses. In addition to writing this section you may be asked, usually if your work is a dissertation, to write a methodology i.e., a study of the method in which you justify your experimental design, explain why you used a certain type of sampling, exclusion criteria, statistical analysis.

3.1 Identify Subsections

It is both conventional and expedient to divide the Method section into labeled subsections. These usually include a section with descriptions of the participants or subjects and a section describing the procedures used in the study. The latter section often includes description of (a) any experimental manipulations or interventions used and how they were delivered-for example, any mechanical apparatus used to deliver them; (b) sampling procedures and sample size and precision; (c) measurement approaches (including the psychometric properties of the instruments used); and (d) the research design.

Of course, if the design of the study is complex or the stimuli require detailed description, additional subsections or subheadings to divide the subsections may be warranted to help readers find specific information. Consequently, insufficient detail leaves the reader with questions; too much detail burdens the reader with irrelevant information. Consider using appendices and/or a supplemental website for more detailed information.
3.2 Participant (Subject) Characteristics
Appropriate identification of research participants is critical to the science and practice of psychology, particularly for generalizing the findings, making comparisons across replications, and using the evidence in research syntheses and secondary data analyses. If humans participated in the study, report the eligibility and exclusion criteria, including any restrictions based on demographic characteristics.

3.3 Sampling Procedures
Describe the procedures for selecting participants, including (a) the sampling method, if a systematic sampling plan was used; (b) the percentage of the sample approached that participated; and (c) the number of participants who selected themselves into the sample. Describe the settings and locations in which the data were collected as well as any agreements and payments made to participants, agreements with the institutional review board, ethical standards met, and safety monitoring procedures.

3.3.1 Sample Size, Power, and Precision
Along with the description of subjects, give the mended size of the sample and number of individuals meant to be in each condition if separate conditions were used. State whether the achieved sample differed in known ways from the target population. Conclusions and interpretations should not go beyond what the sample would warrant.

3.3.2 Measures and Covariates
Include in the Method section information that provides definitions of all primary and secondary outcome measures and covariates, including measures collected but not included in your report. Describe the methods used to collect data (e.g., written questionnaires, interviews, observations) as well as methods used to enhance the quality of the measurements (e.g., the training and reliability of assessors or the use of multiple observations). Provide information on instruments used, including their psychometric and biometric properties and evidence of cultural validity.

3.3.3 Research Design
Specify the research design in the Method section. Were subjects placed into conditions that were manipulated, or were they observed naturalistically? If multiple conditions were created, how were participants assigned to conditions, through random assignment or some other selection mechanism? Was the study conducted as a between-subjects or a within-subject design?
3.3.4 Experimental Manipulations or Interventions

If interventions or experimental manipulations were used in the study, describe their specific content. Include the details of the interventions or manipulations intended for each study condition, including control groups (if any), and describe how and when interventions (experimental manipulations) were actually administered. The text size of formula should be similar with normal text size. The formula should be placed in the middle and serial number on the right. For example:

\[ a^2 + b^2 = c^2 \]  \hspace{1cm} (1)

Conclusion

Dissertations and journal articles provide an outlet for dissemination of knowledge to peers. Writing a materials and methods section, with a methodology if appropriate, can be difficult, especially to those without experience. It is essential that this is undertaken precisely to allow replication of your work by others.

Checklist

- Have you a clearly defined research question?
- Is it clear what hypothesis this research question will test?
- What intervention are you going to make?
- What data are you going to collect?
- What inclusion/exclusion criteria did you use?
- What sampling method did you use?
- What was your sample size?
- What variables did you test?
- What data collection tool did you use?
- Have you provided a copy of your questionnaire/interview schedule in the appendices?
- What statistical test will you use for your analysis?
- How did you categorize qualitative data for thematic analysis?
- Is the use of quasi statistics relevant to your qualitative data?
- What software package will you perform your analysis on?
- At what figure will you set statistical probability?
• Is there sufficient information in the methods section for your work to be repeated elsewhere?
• Have you identified precisely all the materials you used?
• If your work is qualitative, does it address the ‘why’ and ‘how’ associated with your research question?
• If your work is quantitative, does it address the ‘what’, ‘where’ and ‘when’ relevant to your research?
• Does it contain any results? (because it should not)

4. Results

This section is used to describe the results of your work and contextualize them into the body of knowledge on the topic. It can be a particularly difficult section for novice writers to write and the need for a good literature review will soon become apparent when the writer tries to embed their findings into what is already known on the topic.

Re-reading the Question

Before starting to write your discussion, remind yourself and your readers what your research question was by including it at the start of the section thereby linking it to the introduction.

Refer to previous work done in the past tense but to generally accepted facts and principles in the present tense. You should have a clear statement very early on in your discussion regarding whether or not your work supports your hypothesis. Your results section should have set the stage for the discussion, which will embed your work in the big picture. Along with the literature review in which you may have to take a stance, the discussion is the only part of your work which will allow subjective judgments to be made. Some writers advocate structuring the discussion with sub-headings, but it is good to gain advice about this from either your dissertation supervisor or a journal’s instructions to authors. Generally, the longer the discussion is, the more sensible it is to structure it. The suggested structure of a discussion is:

• A statement of the principal findings
• The strengths and weaknesses of the study
• The strengths and weaknesses in respect to other studies, particularly any differences in results
• What issues influenced the findings?
• Did any unforeseen variables alter or contaminate the research process?
• What is the meaning of the study? Does it support your hypothesis?
• What new insights have your research uncovered, and what literature/theories support these findings?
• Are there possible mechanisms and implications for practitioners and policy makers?
• What unanswered questions are there and what future research needs doing? Even if you do not use these headings they could be used to guide your writing into a logical sequence and ensure that all main points are covered.

Using the Results

If your results are statistically significant, you can use them to support your hypothesis.

Remember, though, that a hypothesis can never be proven by the data, only supported by data. If your results are not statistically significant but show trends then you can describe these trends but they cannot be used as a basis for a conclusion. Do not just repeat your results in the discussion, show their meaning. As Alton-Lee (1998) and Cooper (1994b) recommend, if your work produces a consensus with previous research, that research can be used to strengthen your work. However, if the results differ from those previously published then you should try and explain why this is so.

If there is a discrepancy between your work and that of others this may lead you to suggest what work could be done to cast further light on the problem, and it may cause you to revise your hypothesis. When writing this section, be honest and reflect on any shortcomings of the work, particularly stating what effect that could have had on your work. Certainly, your results allow you to speculate with regard to what your work means, but do not speculate too far beyond the results. Indeed, your discussion should provide the ‘answer’ to the research question, which will be based on the critical arguments you have presented that enlighten your work. You should discuss whether any further work is necessary. Your conclusion may be subsumed within your discussion or can be a separate section. Check in the instructions to authors for the particular journal to which you are submitting what their format is, or with your dissertation supervisor if appropriate. If there is no separate conclusion, end the discussion with a short summary of your work.
Conclusion

Dissertations and journal articles provide an outlet for dissemination of knowledge to peers. Writing a discussion section and undertaking the task of positioning and demonstrating the relationship between your work and that already known and published can be difficult, especially to novice writers. It is essential this is precisely undertaken to allow the discussion to be represented as clearly as possible in a way that it is easiest for the reader to assimilate.

In the Results section, summarize collected data and analysis performed on those data relevant to the discourse that is to follow. Clearly, report the data in sufficient detail to justify your conclusions. Mention all relevant results, including those that run counter to expectation; be sure to include small effect sizes (or statistically non significant findings) when theory predicts large (or statistically significant) ones. Do not hide uncomfortable results by omission. Do not include individual scores or raw data with the exception, for example, of single-case designs or illustrative examples. In the spirit of data sharing (encouraged by APA and other professional associations and sometimes required by funding agencies), raw data, including study characteristics and individual effect sizes used in a meta-analysis, can be made available on supplemental online archives.

5. Discussion

After presenting the results, you are in a position to evaluate and interpret their implications, especially with respect to your original hypotheses. Here you will examine, interpret, and qualify the results and draw inferences and conclusions from them. Emphasize any theoretical or practical consequences of the results. It is advisable when the discussion is relatively brief and straightforward to combine it with the results section, creating a section called Results and Discussion.

Open the Discussion section with a clear statement of the support or nonsupport for your original hypotheses, distinguished by primary and secondary hypotheses. If hypotheses were not supported, offer post hoc explanations. Similarities and differences between your results and the work of others should be used to contextualize, confirm, and clarify your conclusions. Do not simply reformulate and repeat points already made; each new statement should contribute to your interpretation and to the reader's understanding of the problem.

Your interpretation of the results should take into account (a) sources of potential bias and other threats to internal validity, (b) the imprecision of measures, (c) the overall number of tests or overlap among tests, (d) the effect of sizes observed, and (e) other limitations or
weaknesses of the study. If an intervention is involved, discuss whether it was successful and the mechanism by which it was intended to work (causal pathways) and/or alternative mechanisms. Also, discuss barriers to implementing the intervention or manipulation as well as the fidelity with which the intervention or manipulation was implemented in the study, that is, any differences between the manipulation as planned and as implemented.

Acknowledge the limitations of your research, and address alternative explanations of the results. Discuss the generalizability, or external validity, of the findings. This critical analysis should take into account differences between the target population and the accessed sample. For interventions, discuss characteristics that make them more or less applicable to circumstances not included in the study, how and what outcomes were measured (relative to other measures that might have been used), the length of time to measurement (between the end of the intervention and the measurement of outcomes), incentives, compliance rates, and specific settings involved in the study as well as other contextual issues.

End the Discussion section with a reasoned and justifiable commentary on the importance of your findings. This concluding section may be brief or extensive provided that it is tightly reasoned, self-contained, and not overstated. In this section, you might briefly return to a discussion of why the problem is important (as stated in the introduction); what larger issues, those that transcend the particulars of the subfield, might hinge on the findings; and what propositions are confirmed or disconfirmed by the extrapolation of these findings to such overarching issues.

You may also consider the following issues:

• What is the theoretical or practical significance of the outcomes, and what is the basis for these interpretations? If the findings are valid and replicable, what real-life phenomena might be explained or modeled by the results? Are applications warranted on the basis of this research?

• What problems remain unresolved or arise anew because of these findings? The responses to these questions are the core of the contribution of your study and justify why readers both inside and outside your own specialty should attend to the findings. Your readers should receive clear, unambiguous, and direct answers.
Checklist

- You must show how your work fits into previously undertaken work, which is referred to as the body of knowledge.
- You must ‘answer’ your research question.
- Is your work supportive of your research hypothesis or do you need to refine it?
- You must organize your work into a logical sequence covering, if appropriate, all the points illustrated earlier.
- If your work provides a consensus with current work, ensure you say that your hypothesis is supported.
- If your work is at odds with the consensus in the literature, you must seek to explain why.
- You must state any shortcomings in your work and explain what effect they may have had on your work.
- You may suggest where further work could be valuable.
- You must not generalize your findings to too wide a population without evidence

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article); Identify grants or other financial support (and the source, if appropriate) for your study.

6. References


**Appendix A**

If your manuscript has only one appendix, label it Appendix; if your manuscript has more than one appendix, label each one with a capital letter (Appendix A, Appendix B, etc.) in the order in which it is mentioned in the main text.