

Adrian Wallwork

ENGLISH

for Writing
Research Papers

 Springer

English for Writing Research Papers

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Preface

Who is this book for?

This book is aimed at researchers in any discipline who wish to write a research paper in English. If your first language is not English, you should find this book particularly useful.

I have never written a paper before. Will this book help me?

This book is intended both for inexperienced and experienced authors. In the Contents page, a (#) indicates that inexperienced writers should pay particular attention to this subsection. You can refer to the other points when you write more papers in the future.

The useful phrases in Chap. 19 will help you to structure your paper and give you an indication of the typical coverage of each section.

I have written many papers before. Will I still learn something from this book?

If you have ever had a paper rejected due to poor English, poor structure or poor readability, then this book will certainly help you.

What are the three most important things I will learn from this book?

This book is based on three fundamental guidelines.

I ALWAYS THINK ABOUT THE REFEREE AND THE READER

Your aim is to have your paper published. You will increase your chances of acceptance of your manuscript if referees and journal editors (i) find your paper easy to read, (ii) understand what gap you filled and how your findings differ from the

literature. You need to meet their expectations with regard to how your content is organized. This is achieved by writing clearly and concisely, and by carefully structuring not only each section, but also each paragraph and each sentence.

2 READ OTHER PAPERS, LEARN THE STANDARD PHRASES, USE THESE PAPERS AS A MODEL

You will improve your command of English considerably by reading lots of other papers in your field. You can underline or note down the typical phrases that they use to express the various language functions (e.g. outlining aims, reviewing the literature, highlighting their findings) that you too will need in your paper. You can also note down how they structure their paper and then use their paper as a template (i.e. a model) for your own.

3 WRITE CONCISELY WITH NO REDUNDANCY AND NO AMBIGUITY, AND YOU WILL MAKE LESS MISTAKES IN YOUR ENGLISH

The more you write, the more mistakes in English you will make. If you avoid redundant words and phrases you will significantly increase the readability of your paper.

What else will I learn?

You will learn how to:

- significantly improve your chances of having your paper published by thinking in terms of the referee and the reader
- reduce the number of mistakes you make in English
- plan and organize your paper, and structure each paragraph and each sentence so that the reader can easily follow the logical build-up towards various conclusions
- decide what to include in the various parts of the paper (Introduction, Methodology, Discussion etc.) and what typical phrases to use
- write a title and an abstract that will attract attention and be read
- highlight your claims and contribution
- make it 100% clear whether you are referring to your own work or someone else's
- use the minimum number of words required – this does not mean that less scientific content will be included, but simply that you find the clearest and most concise way to express this content
- increase the level of readability of your paper by helping readers to quickly understand what you are saying
- identify the correct style - personal or impersonal
- choose the correct tenses
- avoid ambiguity, for example being very careful that it is 100% clear what pronouns (e.g. it, them, this, these, one) refer to

Clearly, researchers from different disciplines write in different ways and sometimes follow a different structure. For example, there are significant differences between the

ways a medical, mathematical and sociological paper are written and constructed. However, whatever field you are in, the rules of good writing in English are the same: clarity, logic, conciseness (no redundancy), no ambiguity, and the highest level of readability possible.

This book focuses on language, structure and readability issues. It also tells you the key elements to include in the various sections of a paper.

It does not cover, for example, how to compile figures, tables, and bibliographies.

Who else will benefit from reading this book?

Proofreaders, those who work for editing services, referees, journal editors and EFL, ESL and EAP trainers should also find this book useful. I hope to be able to show you the reasons why the English of non-native speakers often does not comply with the standards of international journals. Knowing these reasons should then help you to give advice to authors on how to improve their manuscripts, and students on how to improve their writing in general. It should also help you understand the difficulties that non-natives have when writing in English.

Finally, if you are a tutor, supervisor or professor of any nationality, I hope that you will use this book as a resource to help your students improve their scientific writing skills. I imagine that you are generally able to identify the errors in writing made by your students, but you may not have the time or knowledge to explain how to rectify such mistakes.

I am a native English speaker. Should I read this book?

Most certainly. It contains good writing rules that are also found in books written exclusively for a native audience. Even papers written by native speakers are rejected in terms of poor readability i.e. the referee cannot understand what you are trying to say even though your English is grammatically correct. The only chapter that you probably don't need to read is Chap. 2, which deals with word order in English. Also, there are some grammatical rules that you can skip.

How is this book organized?

The book is divided into two parts and the full contents can be seen in the Contents on page xiii. This Contents page also acts as a mini summary of the entire book.

Part 1: Guidelines on how to improve your writing skills and level of readability.

Part 2: Guidelines about what to write in each section (Abstract, Introduction, Methodology etc.), what tenses to use, and typical useful phrases.

I recommend you read all of Part 1 before you start writing your paper. Then refer to specific chapters in Part 2 when you write the various sections of your paper.

Each chapter begins with a very quick summary of its importance. This is followed either by advice from experts in writing and/or science, or by typical comments made by referees in their reports. Many of the comments from the experts were commissioned specifically for this book. The other quotations are referenced in the Links and References section at the back of the book. The referees' comments are extracts from referees' reports, which I have edited to make them more concise and to avoid any technical words. The comments are designed to make you think of typical things referees might say about your work, and thus to warn you of potential pitfalls in your paper.

A typical chapter then proceeds with a series of points for you to take into account when you are carrying out a particular writing task.

Each chapter ends with a summary of the main points.

Chapter 20, the final chapter in the book, contains a checklist of things to check and to consider before sending your manuscript to the journal.

What about grammar?

Chapter 1 covers syntax, i.e. where to position different types of word (nouns, adverbs etc.) within a sentence. Chapter 6 discusses the most common grammatical mistakes that cause ambiguity and which could thus cause your paper to be rejected. Other essential grammar rules are covered in relation to when they are required in specific sections of a paper – see the Index on page 00. Further details on grammar are provided in the companion volume: *English for Research: Usage, Style, and Grammar*.

Are the extracts in this book taken from real papers?

Most of the examples are taken from real published papers, and in some cases the names of the authors and titles of the papers, plus where they can be downloaded, can be found in the Links and References section at the back of the book.

To explain some specific points, I have used original and revised versions of extracts from unpublished papers (i.e. from manuscripts being prepared by my PhD students) – again these are referenced at the back of the book. In a few other cases, I have invented examples.

How do I know if the examples given are good or bad examples?

Example sentences are preceded by an S, e.g. S1, S2. If they contain an asterisk (e.g. S1*) then they are examples of sentences that either contain incorrect English or are not recommended for some other reason. Longer examples are contained in a table. This table contains the original version (OV) and the revised version (RV). Unless otherwise specified, the OVs are all examples of how not to write.

Other books in this series

This book is a part of series of books to help non-native English-speaking researchers to communicate in English. The other titles are:

English for Presentations at International Conferences
 English for Academic Correspondence and Socializing
 English for Research: Usage, Style, and Grammar
 English for Academic Research: Grammar Exercises
 English for Academic Research: Vocabulary Exercises
 English for Academic Research: Writing Exercises

Acronyms and Abbreviations

I have used and/or coined the following acronyms for use throughout this book.

KF: key finding (a very important result of your research)
 KFP: key finding paragraph (a paragraph where a key finding is introduced and discussed)
 NS: native speaker (someone whose first language is English)
 NNS: non native speaker (someone whose first language is not English)
 OV: original version
 PV: paraphrased version
 RV: revised version
 S: sentence
 S*: this sentence contains incorrect English

Note: Throughout the book I use X, Y and Z to replace the technical words used by the author of the example text.

Glossary

The definitions below are my definitions of how various terms are used in this book. They should not be considered as official definitions.

adjective: a word that describes a noun (e.g. *significant, usual*)

adverb: a word that describes a verb or appears before an adjective (e.g. *significantly, usually*)

ambiguity: words and phrases that could be interpreted in more than one way

active: use of a personal pronoun/subject before a verb, e.g. *we found that $x = y$* rather than *it was found that $x = y$*

direct object: in the sentence 'I have a book', the book is the direct object

indirect object: in the sentence 'I gave the book to Anna', book is the direct object, and Anna is the indirect object

infinitive: the root part of the verb (e.g. *to learn, to analyze*)

- ing form: the part of the verb that ends in – *ing* and that acts like a noun (e.g. *learning, analyzing*)

link word, linker: words and expressions that connect phrases and sentences together (e.g. *and, moreover, although, despite the fact that*)

manuscript: an unpublished written work that is going to be submitted for publication

modal verb: verbs such as: *can, may, might, could, would, should*

noun: words such as: *a/the paper, a/the result, a/the sample*

paragraph: a series of one or more sentences, the last of which ends with a paragraph symbol (¶)

passive: an impersonal way of using verbs, e.g. *it was found that $x = y$* rather than *we found that $x = y$*

phrase: a series of words that make up part of a sentence

redundancy: words and phrases that could be deleted because they add no value for the reader

section: a principal part of a paper e.g. the Introduction, Results, Discussion

sentence: a series of words ending with a period (.)

Use of initial capital letters

The various section headings used throughout a paper have been given an initial capital letter (Abstract, Introduction, Methodology etc.). An example:

In your discussion of the literature – here *discussion* is used in a general sentence, it could be replaced by a synonym, for instance, *analysis*

In your Discussion you need to – here *Discussion* refers to the Discussion section of the paper.

Tenses

The following tenses are referred to in this book.

FUTURE SIMPLE: *we will study, he will study* etc.

PRESENT SIMPLE: *we study, he studies* etc.

PRESENT CONTINUOUS: *we are studying, he is studying* etc.

PRESENT PERFECT: *we have studied, he has studied* etc.

PRESENT PERFECT CONTINUOUS: *we have been studying, he has been studying* etc.

PAST SIMPLE: *we studied, he studied* etc.

Punctuation

The following punctuation marks are referred to in this book.

.	full stop
,	comma
;	semi colon
()	parentheses
'blah'	single quotes
"blah"	double quotes

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Part I
Writing Skills

Chapter 1

Planning and Preparation

Why is this chapter important?

To write a well-structured paper in good clear English you need to have a method. If you don't have a good method you may waste a lot of time having to re-plan and re-write entire sections of your paper.

This chapter outlines some steps to follow and things to think about before you begin the writing process.

Reading this chapter should enable you to have clear preliminary ideas regarding:

- what journals are looking for (also in terms of English)
- standard phrases used in English in research
- how a typical paper is structured in your field
- what makes your research unique
- what referees' expectations may be

All these factors combined should then help you to communicate the results of your research in good clear English.

What the experts say

From note taking to publishing to teaching, language is the tool that gives sense to scientific activity. Whatever scientists do or observe, everything they come to know or to hypothesize, is mediated through language.

Robert Goldbort, Writing for Science

The writing of an accurate, understandable paper is just as important as the research itself.

Robert A Day, How to Write and Publish a Scientific Paper

Writing helps you to learn. Writing is not simply a task to be done once research or other preparation is completed - it can be an integral part of the work progress.

Nicholas Highman, Handbook of Writing for the Mathematical Sciences

1.1 Think about why you want to publish your research

You will be more motivated to write a good paper, if you have thought about exactly why you want to have your research published. One of your reasons will probably be because you believe you can make a contribution to a gap in the current knowledge base of your field. It helps if you can write down concisely what this contribution is, and then double check that your proposed contribution really is original (see Sect. 1.6).

1.2 Give yourself enough time to plan and write your manuscript

You may have spent three years doing your research. Dedicating only three days or even three weeks to your manuscript makes little sense if it means that your paper will probably be initially rejected.

Allow at least twice as much time as you think it will take.

1.3 Choose an appropriate journal, preferably with a high impact factor

If you have never written a paper before and your supervisor has not indicated a specific journal where he/she would like you to publish, it is a good idea to ask colleagues in your research group what they read and what sort of publications they aspire to publish in.

Even if you are writing a paper for the first time, it does not mean that it will only be suitable for a marginal or not very well known journal. Your progress in academia very much depends on your ability to publish in journals that have a high impact factor.

An impact factor is a measure of how prestigious a journal is. The higher the impact factor, the more widely read the journal is, and the more likely other researchers will cite your paper. Tables of impact factors which rank all the peer-reviewed journals in the world are available on the Net, you can use Google Scholar to help you find them.

However, given the difficulties of getting published in a high impact journal (Sect. 20.14), you might consider opting for a short article or a 'letter'. A literature review or a methodological text is often publishable. For instance, if you are studying medicine, you could consider writing a clinical review - a 2,500 word

article which is essentially a review of the management of important and common problems. Many disciplines have such an equivalent.

When you have chosen three or four possible journals, look at their styles and think about their audience – what do the editors and readers expect from the articles (see Sect. 1.7)?

You could try to insert your paper into an ongoing discussion that is currently being covered in the journal. This approach may increase the chances of getting your paper approved by the editor.

The topic you choose to write about is obviously related to the journal where you want to publish. Occasionally it may be worth choosing the journal first (rather than your exact topic), and then deciding which angle of your research to focus on so that it will match the expectations of your chosen journal.

1.4 Download the instructions for authors from your chosen journal AND from a high impact journal in the same field

Each journal has its own requirements and style guide. These instructions tend to have different titles, for example: ‘instructions for authors’, ‘notes for authors’, ‘author guidelines’. They often appear under a page called ‘author resources’.

The guidelines include:

- types of titles that are acceptable
- structure of paper – for example, is the review of the literature near the beginning of the article or at the end? Are the Results included in the Discussion or in a separate section? Is there a Conclusions section?
- layout (including how the Abstract should be presented – one long paragraph, or 5–6 short paragraphs)
- structure of sections - some journals prescribe exactly how certain sections (most commonly the Discussion) are organized, and what subheadings should be included
- use of passive rather than personal style (*we*, *I*)
- how to make citations
- how to arrange the bibliography
- use of key words
- American or British spelling

It is vital that you rigorously follow your chosen journal's instructions to authors. So download these instructions from the journal's website before you start writing.

If you opt for a low impact journal, you will still find it very useful to look at the instructions of an equivalent high impact journal. Higher impact journals tend to have better author resources, which are useful for all authors, not just for those in the specific field of the journal itself.

If no journals in your discipline offer such resources, then I suggest that you look on the 'Welcome to resources for authors' page of the website of the British Medical Journal (bmj.com), one of the world's most prestigious journals. Even if you are not a medical researcher, the resources you will find there are very helpful.

The medical community has made a concerted effort to improve the quality of papers published in its journals. So reading one or two medical papers could help you learn techniques for clear structure and clear concise writing.

1.5 Read and analyze papers for your literature review, and note how they are structured

Once you have chosen your journal, look at the most frequently cited papers to see how the authors rationalize the various steps of their research. Try to use papers that you will probably quote in your section on the review of the literature, and which are highly relevant to your topic and/or classic papers in your general field.

For example, you could create a table with some or all of the following headings:

- problem that the research addresses
- background information and relevant references
- elements that validate the level of innovation of the research
- conceptual model, methodology or procedure that the research takes into consideration
- materials, equipment and software used
- method used and the operational steps that the author carried out
- results achieved
- analysis and interpretation of these results
- strengths and weaknesses of the research, the insights demonstrated
- implications for further research

Then you can fill in your table with brief notes for each of the papers you have analyzed. This analysis should help you to:

1. write your own literature review, because after this analysis you will be very familiar with the literature
2. identify the differences in other researchers' approaches and results compared to your research
3. note down the strengths and weaknesses (including possibly bias) in the work of others

These three points should enable you to understand in what ways your research is unique, innovative, interesting and useful, and how it extends what is already in the literature. Your aim is to find a knowledge gap to fill.

If you have done a very thorough literature search, then another publishing opportunity for you is to write a literature review.

1.6 Identify what the editor is looking for

Read as many papers as you can from your chosen journal. This should help you to gain a clearer picture of what the editors of the journal are looking for to enable them to keep their readership levels high. Below are some of the typical things that editors hope to find in manuscripts.

TYPE OF PAPER	Original research, or a systematic review, or a position paper etc. (for more on the various types of paper consult Google Scholar or Wikipedia)
SUBJECT	Hot topic (contemporary issues), original and innovative; or controversial; or classic
AIM	Clarity of purpose, i.e. the research objectives are clear
RESEARCH	Well conducted, methodology clear, ethical, reproducible, no bias, limitations admitted
RESULTS	In line with research objective; entirely new or confirmation of other results already published in the same journal; not too broad as to be meaningless; can be generalized outside your very specific field
LENGTH OF PAPER	Short or long
STYLE	Personal (<i>we</i> , <i>I</i>), or impersonal (exclusively passive form), or mix (personal and impersonal)

Sometimes journals have themed or special issues on specific topics. These special issues are announced many months in advance of publication. Keep a look out for an issue that covers your specific area - it may be the perfect opportunity for you.