ENGLISH FOR ACADEMIC RESEARCH

Adrian Wallwork

English for Writing Research Papers

Third Edition

Springer

English for Academic Research

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Pisa, Italy

This series aims to help non-native, English-speaking researchers communicate in English. The books in this series are designed like manuals or user guides to help readers find relevant information quickly, and assimilate it rapidly and effectively. The author has divided each book into short subsections of short paragraphs with many bullet points.

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Introduction

Who is this book for?

This book is part of the *English for Research* series of guides for academics of all disciplines who work in an international field. This volume focuses on how to write a research paper in English.

It is designed both for inexperienced and experienced writers with an upper intermediate (or above) level of English, as well as EAP trainers and scientific editors.

How is this book organized? How should I read it?

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

Part II: Guidelines about what to write in each section (Abstract, Introduction, Methodology etc.), what tenses to use, and how to use a chatbot to correct and improve your English.

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

Chapter 20 concludes the book and contains a checklist of things to consider before sending your manuscript to the journal.

Each chapter begins with some factoids or quotations that either act as a brief introduction to the topic of the chapter or are just simply interesting in themselves (I hope!). They can be used by EAP teachers as warm-ups for their lessons.

Chapters are divided into short subsections in answer to specific questions or relating to various guidelines. Each chapter ends with a summary.

What is different from the previous editions of this book?

There are two new chapters: Chapters 9 and 10. They cover how to use ChatGPT (and similar tools) and machine translation to write and/or correct your paper. Full details on how to use AI to help you write a paper can be found in the companion volume *AI-Assisted Writing and Presenting in English* (2024). Writing and grammar exercises related to using AI can be found in the 2024 editions of the exercise books.

Many of the chapters in Part I have been totally revised or combined together, and several subsections in Part II have been shortened or removed in order to make room for the new chapters. The chapters on how to write Abstracts, Introductions, Methods etc now include at least one subsection on using ChatGPT to help you write those specific sections of a paper.

Example sentences of good and bad English are now in a blue and red font, respectively.

The *What's The Buzz* sections have been integrated into the main text.

The chapter on hedging has been removed to provide space for new material, but is still available in the 2016 edition.

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Part I

Writing Skills

Chapter 1

Planning and Preparation

Publications and PhDs

No one knows how many scientific journals there are, but several estimates point to around 30,000, with close to two million articles published each year.

*****

According to Wikipedia, more scientific works are published in China than in any other country, followed by the USA, UK, India, and Germany. However in terms of publications per capita, Switzerland and Scandinavian countries have the highest output.

*****

Approximately 20% of the comments referees make when reviewing papers for possible publication in international journals regard English language issues.

*****

Only 1% of the world's 25-64 year-olds who have been to university, have a PhD – the top five countries are: Slovenia (5%), Switzerland (3%), and Luxembourg, USA, Sweden, UK, Germany and Australia (2%).

*****

In the EU alone there are over 650,000 PhD students.

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1.1 Why should I publish? How do I know whether my research is worth publishing?

Before you start writing you need to have an absolutely clear idea of:

- what your research goal was
- what your most important findings are and how you can demonstrate that they are true
- how these findings differ from, and add to, previous knowledge

You know implicitly what the importance of your findings are – after all, you may have been working for months and years on the project.

But the reader does not know.

You must give the reader a clear message.

Discussing and presenting your findings to colleagues should help you to identify what your key findings are.

Make a list of your key findings and choose the most important ones to fit the space you have available (i.e. the total word count allowed by your chosen journal). For each key finding decide if there is another possible explanation for what you have found. You can do this by looking in the literature again. Make sure you have not inserted any bias in your explanation of your findings. Next, write an explanation saying why you think each key finding is true.

These three quotations should inspire you to write simply and clearly:

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

1.2 Should I write the initial draft in my own language rather than writing it directly in English?

Artificial intelligence (AI) has reached a point where you can write a paper directly in your native language, automatically translate it, and then check / improve it with a chatbot. Full details on how to use AI to help you write a paper in the companion volume *AI-Assisted Writing and Presenting in English* (Springer Nature, 2024).

If you speak a major European language, AND you implement ALL THE GUIDELINES outlined in Chapters 9 and 10 of this book, the result of the above process will be over 95% accurate in terms of English usage – at least according to tests that I have personally carried out with my PhD students. This percentage is very likely higher than if you wrote directly in English without any help from AI.

If you do not speak a major European language, the level of accuracy will be lower. My experiments with Chinese and Arabic, for instance, show that machine translation is not consistent – sometimes it is surprisingly accurate, other times it makes a lot of mistakes. Nevertheless, AI can still help you, as outlined in Chapter 9 and the various subsections in Part II.

The key advantage of writing in your own language is that you have total control over what you write. It is much easier for you, for example, to:

- write quickly with much less mental effort
- reduce the number of words if you find you have exceeded the journal's wordcount, i.e. the maximum of number of words permitted for each section of your paper.
- move sentences around, i.e. change their position within a paragraph or section
- work with a co-author – provided, of course, they speak the same language as you
- show your work to your colleagues, who will be better able to judge its merits if it is written in their first language

If you already have some parts of the paper in English, it does not necessarily mean that you have to write the other parts directly in English. You can upload a document that is made up of parts in your language and parts in English. The automatic translator will automatically output only in English, maintaining the parts that were already in English. However, you need to check that no changes were made by the translation software. For example, the spelling or capitalization of some technical or foreign words may have been altered.

Another advantage of writing in your own language is that you will save an incredible amount of time that you can then dedicate to

- checking your results
- improving your tables and figures
- making your paper more readable by removing redundancy, replacing generic words with more specific words, avoiding possible ambiguity etc
- checking your final version

Of course there are also good reasons for writing directly in English. English may be

- the language that you habitually use to write up your research
- the only language that you have in common with your co-authors
- a language you enjoy writing in

However, I suggest that you don't see automatic translators and chatbots as a form of 'cheating'. You still have to check that the output of these applications is correct, and by doing so, you will also improve your level of English by comparing what you would have written with what the application has written.

The chatbots only become of form of 'cheating' when you use them to generate totally new work, and pass this new work off as your own work.

Note that I mentioned you can achieve 99% accuracy. This only refers to accuracy of English grammar, syntax and vocabulary. However your paper may

1. still contain redundancy and ambiguity – see Chapter 4 and Chapter 5
2. fail to clarify if a particular study mentioned in your paper was written by you or someone else – see Chapter 6
3. fail to highlight the importance of your work – see Chapter 6
4. be poorly structured at a sentence, paragraph and section level – see Chapter 2 and Chapter 3
5. be full of general statements

Consequently it makes sense to eliminate the five problems above in your original version in your own language.

Final advice: If you write in your own language, try to use an English style of writing. For example, use shorter sentences and paragraphs than perhaps you normally would, put the subject or key info near the beginning of the sentence, do not separate the subject and the verb, be concise, and remove anything that is not strictly necessary.

This means following all the guidelines in this book.

1.3 Which journal should I choose?

If you have never written a paper before and your supervisor has not indicated a specific journal where they 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 internet, you can use Google Scholar to help you find them.

However, given the difficulties of getting published in a high impact journal, 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.

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.

One way of improving your writing skills and raising your profile in your area of expertise is to consider writing letters. Journals generally publish letters that offer a short critical review of the research of others. Such letters tend to be about 300 words long, so the same as or a little longer than an abstract. You can also write online rapid responses to letters in print journals.

1.4 How do I know what style and structure to use?

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 Methods after the Introduction, or are they after the bibliography? 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 at 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.

1.5 What preparation do I need to do?

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 steps that the author carried out
- results achieved
- analysis and interpretation of these results
- strengths and weaknesses of the research
- 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 possible 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 How can I create a template?

Choose one paper that is close to your topic, that is written by a native English speaker, and that you enjoyed reading. Use this paper as a model into which you can 'paste' your own research.

Notice how your model paper is structured:

- how does the author begin?
- what points do they make in each section?
- how do they link paragraphs together?
- how do they connect the Results with the Discussion?
- how do they present the Conclusions?

As you read your model paper, note down some useful English phrases that the author uses. Such phrases will help to increase the readability of your text, as they will be familiar to your readers.

1.7 Writing style: how do I keep the referees happy?

It is possible to write a paper in completely accurate English, but still have a paper rejected for poor writing skills – which is what happens even to native English-speaking researchers. On the other hand, a paper that is constructed well, and is easy to read, may be accepted (perhaps with some requests for minor revisions) even if the English is not totally accurate.

In my experience native referees tend to be more interested in how the paper flows and how easy it is to read. Non-native referees seem to focus more on grammatical and vocabulary mistakes, so very accurate English is important in order to keep them satisfied too.

All referees will appreciate it if you use simple language.

There are no journals, as far as I know, that are easier to write for in terms of level of English required.

When writing your paper bear the following in mind:

A REFEREE HAS NO OBLIGATION TO REVIEW YOUR PAPER

Referees review manuscripts in their own time and have no direct financial reward for doing so. So do everything you can to make the referee's work easier and more pleasurable – clear English, clear layout, clear tables etc. By doing so you will increase the chances of your paper being accepted.

WRITE IN A WAY THAT A NON-EXPERT OR LESS EXPERIENCED PERSON CAN UNDERSTAND

Research is becoming increasingly more specialized, so that even two people with the same degree may not be able to understand each other's papers. Also, due to the fact that research groups cannot always get the funding they need for research in their specific field, they may have to shift their interests to a related field where funds are available. This entails them reading the literature from this new field. The clearer the literature is, the more they will understand.

This means that when you begin the writing process, you need to bear in mind that your reader may not be as expert as you are.

MAKE YOUR PAPER INTERESTING ENOUGH FOR AN EXPERT

Try to ensure that your paper has enough scientific substance for the experts. This does not mean you have to write in a more complicated way, but just that you include enough details to get experts interested.

LOOK AT THE FORMS USED IN REFEREES' REPORTS

Every journal has a standard form for use by referees when writing their reports, which the editor then uses to judge whether your paper is suitable for publication or not. Through your professor and colleagues, try to find as many such forms as you can, and preferably the one for your chosen journal.

You can use the following questions as guidelines for your writing.

- Is the research novel and of international relevance?
- Does the article fit the aims and scope of the journal?
- Is the paper written grammatically and clearly?
- Is the writing style succinct and appropriate to the work?
- Is the title appropriate to the content?
- Does the abstract accurately describe the content?
- Are the conclusions borne out by the evidence and arguments?

1.8 In what order should I write the various sections?

There is no standard order in which you should write the various sections of your paper. You should choose the order that suits you best. This may involve writing several sections simultaneously.

Many authors start with the Methods, which is often the easiest section to write because this is the part that will usually be clearest in your mind. Beginning with the Methods will also give you the confidence and impetus you need to move on to the other sections of the paper.

In reality, it is best to start with the Abstract as this will help you to focus / orient your ideas on what are the key aspects of your research. In any case, if you are going to present your work at a conference, the organizers will ask you to submit an abstract before you write the related paper – you can still change the Abstract when you have finished writing the actual paper.

You might find it useful to look at the scientific study protocol that you wrote when you outlined the aims of your research at the beginning of your PhD or before you began your current project. Here you should have written out your goals very clearly, and this will help you to write your Abstract.

The hardest part for most authors is the Discussion where you have to interpret your results and compare them with other authors' results. While you are writing the Discussion, you may find it useful to draft the Introduction, as some of the authors you mention will appear both in the Introduction and the Discussion.

A typical order for writing the various sections is thus:

Abstract (very rough draft)

Methods

Results

Discussion

Introduction

Conclusions

Abstract (final version)

It is a good idea to write the Results and Discussion before the Introduction. This is because you will only truly understand the significance of what you have done after you have written these two sections. Laying the background foundations on which you can highlight the significance of your research is a major part of the Introduction.

1.9 How can I highlight my key findings?

While you are planning what to put in each section, think of where and how you can highlight your contribution. It may help you to imagine that the reader has asked you these questions:

1. what problem are you trying to solve / investigate?
2. how did you solve / investigate it?
3. how does your solution / investigation differ from previous approaches?
4. what did you discover?
5. how do your findings differ from what is already in the literature, and what do they mean?

Readers generally read the Title and Abstract of a paper first, followed by the Discussion; though some may just look at your figures and tables! However, you cannot be sure at which section your readers will begin reading, so they need access to the answers to these questions in most or all the sections. Look at other papers in your chosen journal to see how the authors deal with such questions. Clearly, the emphasis you put on answering the questions will vary from section to section, and is likely to be greatest in the Abstract and Discussion, but consider covering it in the other sections too.

When you revise your paper if you think you have done too much highlighting, then you can always remove a few sentences. But while drafting your paper if you constantly try to highlight your contribution, this will give you extra focus.

Think of your paper as a product that you are trying to sell to the referee and journal. The clearer and more convincing you are, the more likely a journal will 'buy' your manuscript.

For more on underlining your contribution see Chapter 6.

1.10 How can I improve the chances of my paper not only being published, but also being read, understood and cited?

One important way of improving the chances of your paper being cited and remembered and cited is to make it as interesting a read as possible. A good start is to think of the following points:

- Why is my research important? Why is it needed? What would happen if my research was not done?
- Who will benefit from my research? Why will they benefit?
- What makes my research exciting? What makes it different from what has been done before?