

Adrian Wallwork

English for Writing Research Papers

Second Edition

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English for Academic Research

Series editor

Adrian Wallwork

Pisa

Italy

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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.

More information about this series at <http://www.springer.com/series/13913>

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Preface

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, though the majority of guidelines given would be appropriate for any language.

It is designed both for inexperienced and experienced authors.

EAP trainers can use this book in conjunction with: *English for Academic Research: A Guide for Teachers*.

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

The book is divided into two parts and the full contents can be seen in the Contents on page ix. 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.) and what tenses to use. Of course, not all disciplines use the same section headings, but most papers nevertheless tend to cover similar areas.

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.

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

How are the chapters organized?

Each chapter has the following three-part format:

1) FACTOIDS/WHAT THE EXPERTS SAY

In most cases, this section is a brief introduction to the topic of the chapter. Occasionally, the factoids are simply interesting in themselves and have no particular relevance to the chapter in question. However, they can be used by EAP teachers as warm-ups for their lessons. All the statistics and quotations are genuine, though in some cases I have been unable to verify the original source.

2) WHAT'S THE BUZZ?

This is designed to get you thinking about the topic, through a variety of useful but entertaining exercises. These exercises are designed to be done in class with an EAP (English for Academic Purposes) teacher/trainer, who will provide you with the keys to the exercises. The final part of each *What's the buzz?* section is a brief outline of the contents of the chapter.

- 3) The rest of each chapter is divided up into short subsections in answer to specific questions. These are either instructions (in Part 1) or in the form of FAQs (in Part 2). Each chapter ends with a summary.

I am a trainer in EAP and EFL. Should I read this book?

If you are a teacher of English for Academic Purposes or English as a Foreign Language, you will learn about all the typical problems that non-native researchers have in the world of academia. You will be able to give your students advice on writing quality research papers and getting referees and editors to accept their papers. In addition, you will generate a lot of stimulating and fun discussions by using the factoids and quotations, along with the *What's the buzz?* exercises.

You can also use the three exercise books (writing, grammar, vocabulary) that are part of this *English for Academic Research* series, plus the teacher's book that contains notes on how to exploit all the books: *English for Academic Research: A Guide for Teachers*. This guide contains keys to the exercises in the *What's the buzz?* sections.

I edit research papers. Can this book help me?

Certainly. It should clear up a lot of your doubts and also enable you to be a bolder and better editor!

Are the extracts in this book taken from real papers?

Most of the examples are taken from real published papers. 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. Some examples are fictitious (and are indicated as such), but nevertheless not far from reality!

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, sometimes labeled *No!*) and the revised version (RV, sometimes labeled *Yes*). Unless otherwise specified, the OVs and sentences labeled *No!* are all examples of how not to write.

Useful phrases

A list of useful phrases that you can use in your paper can be downloaded free of charge at: <http://www.springer.com/us/book/9783319260921>.

Differences from the first edition

Each chapter now begins with Factoids and a *What's the buzz?* section. There is a new chapter (Chapter 9 Discussing Your Limitations) and around 50 new sections spread over a 100 new pages - particularly in the chapters on: *Highlighting Your Findings*, *Abstracts*, *Introduction*, *Discussion*, and *Conclusions*. The chapter on *Useful Phrases* is now a free download (see above).

The author

Since 1984 Adrian Wallwork has been editing and revising scientific papers, as well as teaching English as a foreign language. In 2000 he began specializing in training PhD students from all over the world in how to write and present their research in English. He is the author of over 30 textbooks for Springer Science + Business Media, Cambridge University Press, Oxford University Press, the BBC, and many other publishers.

Other books in this series

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

English for Academic Research: A Guide for Teachers

English for Presentations at International Conferences

English for Academic Correspondence

English for Interacting on Campus

English for Academic Research: Grammar, Usage and Style

English for Academic Research: Grammar Exercises

English for Academic Research: Vocabulary Exercises

English for Academic Research: Writing Exercises

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Part I
Writing Skills

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Chapter 1

Planning and Preparation

Factoids

Every day 7000 scientific papers are written, but not necessarily accepted for publication.

At least two thirds of published scientific papers are written by researchers whose first language is not English.

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

A much disputed report drafted by the Organization for Economic Cooperation and Development found that only 12% of Italian and Spanish university graduates reached the top two levels on a standard literacy test, whereas around 13% of high school students reached these levels in Japan and the Netherlands.

In the EU alone there are over 250,000 PhD students.

China has nearly one million researchers, Japan 675,000, the Russian Federation 500,000.

1.1 What's the buzz?

Think of three good reasons for publishing your research in an international journal. The three quotations below should help you.

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

This chapter analyses the benefits for you of publishing your research, and suggests various approaches for

- choosing the right journal and understanding what the editor expects from a paper in terms of content, style and structure
- deciding the order in which to write the various sections (Introduction, Methods, etc.)
- keeping the referees happy

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

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.

One of my students received the following comment by a referee as a justification for rejecting her paper:

Not acceptable. No new knowledge, science or discovery is presented.

This kind of comment may reach you even six months after you have sent your paper for review. For you, it represents a considerable waste in time and energy spent on a paper.

So, 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. However, write your explanation in a way that shows you are open to other interpretations.

The above suggestions should also help you to decide whether your planned paper really will have a contribution to make.

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 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 (20.13), 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.

Note there are many online journals that advertise their services by sending emails to unsuspecting researchers – do not submit to such journals as either they are scams or at the very best have no impact factor.

1.4 How can I know exactly 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 a very specific field
LENGTH OF PAPER	Short or long
STYLE	Personal (<i>we, 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.

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 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 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 does s/he make in each section?
- how does s/he link paragraphs together?
- how does s/he connect the Results with the Discussion?
- how does s/he 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 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.

1.8 Should I write the initial draft in my own language before writing it in English?

Write directly in English rather than in your native language. This may be hard at the beginning. But with a model paper written by a native English-speaker in front of you, which you can follow step by step, it should be quicker than translating from your own language. From an English point of view, it should also be more reliable and accurate because you will be using some standard phrases that you have lifted directly or adapted from your model English paper.

Some researchers find it much easier to write a paper if they have already written notes in English throughout the research project. This means that you will already have much of the content you need when you finally start writing your manuscript. It also means that you will get a lot of practice in writing in English and may help you to discover any gaps in your understanding of your topic.

It might also be worth finding a native speaker to correct your written English for you whenever you write notes during the research. This might be a useful alternative to following a general English language course as it will be much more focused and also tailored to your particular needs. However, if your department or institute offers writing courses these are obviously well worth attending.

With your colleagues you could set up a writing group within your academic department. This would enable you to practice your own English writing skills and evaluate those of others in a mutual learning process.

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.

1.9 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 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. 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.

1.10 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 8.

1.11 Whose responsibility is it to ensure my paper is understood? Mine or my readers?

What kind of culture do you come from? Is there a power distance between you and your professors? Do your professors expect you to listen and understand by yourself what they are saying? Do they write in a way that requires effort on your part to decipher what they are saying? If so, you are in the majority on a worldwide scale. You are part of a receiver-oriented culture. It is your job, rather than the speaker's or writer's, to make sense of what you hear and read.

Anglo cultures too were once like this. But in the last 50 years or so, the roles have been reversed. It is the responsibility of the speaker or writer to ensure that their audience understand what they are saying.

Your job in your paper is to make the reader's understanding of your paper as simple and effortless as possible.

1.12 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:

- (1) 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.

- (2) 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.

- (3) Make your paper interesting enough for an expert

Try to ensure that your paper has enough meat (i.e. 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.

- (4) 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 questions in the forms as guidelines for your writing. Here are some examples:

- 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?

It will help you considerably if you think about all these questions while you are writing your paper. Also, when you have finished, you should check that the answer to each question is 'yes'.

1.13 What role do search engines play in making a paper accessible to others?

A study carried out by James Evans, a sociologist at the University of Chicago, revealed that despite the fact more papers are available online than ever before (due to the digitization of older articles), it tends to be the most recent papers that are cited ... again and again.

Search engines determine what we are likely to read. Our tendency is to click on what is presented to us on the first few pages of what the search engine returns. This narrows the scope of what we read and exaggerates in a self-perpetuating manner the importance of the articles that are ranked higher in the search.

This has implications for the way you approach the writing of your paper:

- key words are essential in order for the search engines to identify your paper
- no amount of key words is going to help you if readers are not immediately able to understand your paper, and cite it in their own

1.14 Summary

- Consult with your professor and colleagues about the most appropriate journal where you can publish your research
- Match your topic to the journal, or vice versa
- Download the guidelines for authors – these will tell you about the style and structure of your paper
- Choose frequently cited papers in the journal to see how other authors construct their argumentation, and note down ways in which your research is different and innovative with respect to theirs
- Choose one paper as a model onto which to map your research, imitating the style and organization. This model should be written by a native English speaker
- Note down useful / standard phrases from your model paper which you can then use in your own paper
- Decide on the best order to write the various sections of your paper. It is generally best to start with a very rough draft of the Abstract, and then whichever section is clearest in your head (generally the Materials and Methods)
- Consider having separate documents for each section. This enables you to work on several sections at the same time
- Make sure your unique contribution to your community is very clear in every section, not just in the Abstract
- Write in a way that even a non-expert can understand
- Referees work for free and often outside working hours – never submit a carelessly written manuscript
- Access referees report forms to understand the ways that referees will evaluate your work
- Write directly in English, and use every opportunity for improving your writing skills
- Use online resources
- Learn how search engines index your paper

Chapter 2

Structuring a Sentence: Word Order

Factoids

In Old English, the language spoken in English over 1000 years ago, a word could be placed almost anywhere in a sentence, and often with no change in meaning.

Word order differs massively from language to language, even to say a simple concept such as 'I like you': *like to me you* (Croatian), *you like to me* (Estonian), *you are liking to me* (Irish), *I you like* (Korean), *to me you like* (Spanish), *you me I like* (Wolof).

The English sentence *This is the rat that lives in the house that Jack built* would be rendered in Japanese as: *this Jack-built-house live-in-rat is*.

Even when expressing extremely basic concepts different languages put the words in different orders. For example, many languages say *men and women*, but *mother and father*. However in China, they say *father and mother*. This probably has nothing to do with putting one sex in front of another, but simply that in cases of pairs of words we tend to say the word with the easiest sound first. This explains why around half the world's languages say *black and white*, while the other half say *white and black*. For English speakers it's easier to make the sound of *b* rather than *w*, for the same reasons a Spanish speaking person says '*bianco e negro*' rather than '*negro e bianco*'.

When we scan results from a search engine, our eye rapidly goes vertically down the left hand side of the page, before starting again to read horizontally. This means that you need to think carefully about what grammatical subject to place at the beginning of the first sentence that begins a new paragraph, otherwise there is a chance that browsers and readers won't spot the key information that you want to give them.

2.1 What's the buzz?

1) How could these sentences be improved?

- S1. Finding a candidate with all the right qualifications, with a high level of communications skills, a good knowledge of at least two languages and a friendly personality is a rare event.
- S2. It is advisable that a foreign language should be learned at a young age.

2) Which is better? S3 or S4? Why?

- S3. You are doing this course in your own time but at the expense of your department in order to learn English.
- S4. In order to learn English you are doing this course. The course takes place in your own time but at the expense of your department.

3) Which sentence is the least readable? Why?

- S5. English, although currently the international language of business, may one day be replaced by Spanish or Chinese.
- S6. Although English is currently the international language of business, it may one day be replaced by Spanish or Chinese.
- S7. English may one day be replaced by Spanish or Chinese, even though it is currently the international language of business.
- S8. English is currently the international language of business. However, it may one day be replaced by Spanish or Chinese.

4) Decide if the following statements are true or false.

- People want key information first. On CVs people put their most recent achievements first. They don't put what primary school they went to.
- If you put the most important element at the beginning of sentence, it forces you to think what the most important element is. This will also help the reader understand more.
- By putting subject and main verb at the beginning, you will be forced to write more concisely and probably with shorter sentences.

This chapter provides rules for deciding where to put various types of words within a sentence. For further details see Chapters 16–18 in *English for Research: Grammar, Usage and Style*.

2.2 Basic word order in English: subject + verb + object + indirect object

The order in which you put information in a sentence (or paragraph) conditions the weight that your reader will give to each element of information.

Native English-speaking readers have a clear expectation regarding the order in which information should be given to them.

English has a strict order in which words can appear in a sentence. Below is an example of this order.

The researchers sent their manuscript to the journal.

This order is rarely altered. It is:

- subject (*the researchers*)
- verb (*sent*)
- direct object (*their manuscript*)
- indirect object (*the journal*)

The key is to keep the subject, verb, direct object and indirect object as close to each other as possible:.

Last week *the researchers sent their manuscript to the journal* for the second time.

The sentence below does not follow the correct order:

**The researchers last week sent for the second time to the journal their manuscript.*

The position of *last week* and *for the second time* is wrong, and the indirect object comes before the direct object.

2.3 Place the various elements in your sentence in the most logical order possible: don't force the reader to have to change their perspective

Readers expect words/phrases that are closely related to each other, to appear next to each other within the sentence.

NO!	YES
Several authors have evaluated the possibility to minimize the levels of background compounds, both those released from the bag material and those from the previous sample collection <i>using a cleaning procedure</i> .	Several authors have evaluated the possibility <i>of using a cleaning procedure</i> to minimize the levels of background compounds, both those released from the bag material and those from the previous sample collection.
All PCR-amplified products were visualized on 2% agarose gel containing ethidium bromide, <i>under ultraviolet light</i> .	All PCR-amplified products were visualized <i>under ultraviolet light</i> on 2% agarose gel containing ethidium bromide.
<i>The figures show</i> , for each observation time, the average values of the peak areas of the compounds present in the dry gaseous standard mixture.	For each observation time, <i>the figures show</i> the average values of the peak areas of the compounds present in the dry gaseous standard mixture.
Overall the match between the aggressiveness of season-based inoculations and the capacity of the fungus to be active in vitro as a function of the temperature, <i>appears strict</i> .	Overall <i>there seems to be a close</i> match between the aggressiveness of season-based inoculations and the capacity of the fungus to be active in vitro as a function of the temperature.

In the NO! versions of the first two examples, the information in italics is key to the readers' overall understanding and should be placed earlier in the sentence closer to the elements it refers to. In the third example, the YES version avoids the need to break up the flow of the sentence. In the last example, the verb in the NO! version is almost at the end of the sentence - this is extremely rare in English and should be avoided.

Below are some more examples:

NO!	YES
It is important to remark that our components are of a traditional design. <i>However</i> , we want to stress that the way the components are assembled is very innovative.	<i>Although</i> our components are of a traditional design, the way they are assembled is very innovative.
Working in this domain entails modifying the algorithms as <i>we are dealing</i> with complex numbers.	<i>Since we are dealing</i> with complex numbers, working in this domain also entails modifying the algorithms.
Therefore, the rescaled parameters seem to be appropriate for characterizing the properties, <i>from a statistical point of view</i> .	Therefore, <i>from a statistical point of view</i> , the rescaled parameters seem to be appropriate for characterizing the properties.

The YES sentences all provide signals to the reader about what they can expect next.

The NO! sentences are confusing:

- In the first example, readers initially think that *traditional design* is the key information that the author wants to give them. The author then introduces new information that completely contrasts with the preceding information. In such cases, you need to forewarn your readers of such contrasts by using a linker that introduces a qualification, such as *although*, at the beginning of the phrase.
- In the second and third examples, the key information is only given at the end of the sentence. On the other hand in the YES examples, the author immediately tells readers the point of view he wants them to assume.

2.4 Place the subject before the verb

The subject (in *italics* in the sentences below) must come before the verb.

NO!	YES
In the survey participated <i>350 subjects</i> .	<i>Three hundred and fifty subjects</i> participated in the survey.
Were used <i>several different methods</i> in the experiments.	<i>Several different methods</i> were used in the experiments.
With these values are associated <i>a series of measurements</i> .	<i>A series of measurements</i> are associated with these values.
Once verified <i>the nature of the residues</i> ...	Once <i>the nature of the residues</i> had been verified ...

The key rule is: Say what something is before you begin to describe it.

In the NO! versions below, the authors have delayed the subject until the end of the clause. They have used an introductory subsidiary clause to stress the importance or evidence of the subject before telling the reader what the subject is.

NO!	YES
Among the factors that influence the choice of parameters <i>are time and cost</i> .	<i>Time and cost</i> are among the factors that influence the choice of parameters.
Of particular interest <i>was the sugar transporter</i> , because...	<i>The sugar transporter</i> was of particular interest, because...
Important parameters <i>are conciseness and non-ambiguity</i> .	<i>Conciseness and non-ambiguity</i> are important parameters.

A verb can come before a noun, if the verb is in the imperative, or if the sentence begins with *there + to be*.

NO!	YES
Noteworthy <i>is the presence</i> of a peak at ...	<i>Note the presence</i> of a peak at ...
	There is a peak at ...

The verb in the infinitive form is also found at the beginning of a phrase:

(In order) to learn English, a good teacher is required.

2.5 Don't delay the subject

As mentioned in the Factoids, when we scan results from a search engine, our eye rapidly goes vertically down the left-hand side of the page, before starting again to read horizontally.

This means that you need to think carefully about what information to place at the beginning of the first sentence that begins a new paragraph. If you misplace the key information, there is a strong chance that browsers and readers won't spot it.

In the following sentences, the parts highlighted in italics occupy the key left-hand position. They delay the subject, with the risk that readers may not even see the subject.

S1. *It is interesting to note that* x is equal to y.

S2. *As a consequence of the preceding observations,* x is equal to y.

To avoid this problem:

- delete or reduce the part before the subject
- shift the linking expression to later in the sentence

S1 and S2 thus become:

Note that x is equal to y. // *Interestingly,* x is equal to y.

Consequently, x is equal to y. // X is *thus* equal to Y.

Putting *it* in first position (S1) often delays the real subject. Instead, use modal verbs (*might, need, should* etc.) where possible (5.12).

OK	IMPROVED
It is probable that this is due to poor performance.	This <i>may / might / could</i> be due to poor performance.
It is possible to do this with the new system.	This <i>can</i> be done with the new system.
It is mandatory to use the new version.	The new version <i>must</i> be used.

2.6 Keep the subject and verb close to each other

The verb contains important information: keep it as close as possible to the subject. Anything that comes between the subject and the verb will be read with less attention, and readers will consider it of less importance (see next subsection).

S1 and S2 force the reader to wait too long to find out what the verb is and thus delay important information.

- S1. *A gradual decline in germinability and vigor of the resultant seedling, a higher sensitivity to stresses upon germination, and possibly a loss of the ability to germinate *are recorded* in the literature [5, 8, 19].
- S2. *People with a high rate of intelligence, an unusual ability to resolve problems, a passion for computers, along with good communication skills *are generally employed* by such companies.

S3 and S4 shift the verb to the beginning of the sentence and make the meaning / direction of the sentence immediately clear.

- S3. There is generally a gradual decline in germinability and of the resultant seedling, followed by a higher sensitivity to stress upon germination, and possibly a loss of the ability to germinate [5, 8, 19].
- S4. Such companies generally employ people with a high rate of...

S3 and S4 use active verbs. But sometimes you may need to use the passive and you may have several subjects for the same verb. In such cases, locate the passive verb after the first subject (S5):

- S5. People with a high rate of intelligence are generally employed by such companies. They must also have other skills including: an unusual ability to...

2.7 Avoid inserting parenthetical information between the subject and the verb

If you insert more than a couple of words between the subject and the verb, this may interrupt the reader's train of thought. Readers may consider this parenthetical information to be of less importance.

Sentences are much easier to read if they flow logically from step to step, without any deviations.

NO!	YES
The result, after the calculation has been made, can be used to determine Y.	After the calculation has been made, the result can be used to determine Y.
This sampling method, when it is possible, is useful because it allows....	When this sampling method is possible, it allows us...
These steps, owing to the difficulties in measuring the weight, require some simplifications.	Owing to the difficulties in measuring the weight, these steps require some simplifications. These steps require some simplifications, owing to the difficulties in measuring the weight.

This does not mean that you cannot have a series of short clauses within one sentence. In the example below, readers do not have to change their perspective while moving from one clause to the next.

In Old English, the language spoken in English over 1000 years ago, a word could be placed almost anywhere in a sentence, and often with no change in meaning.

Of course, the rule not to insert parenthetical information, like every rule, should not be regarded as sacrosanct - i.e. you are at liberty to break it. If you think that the insertion makes the sentence flow better and be clearer, then ignore the rule.

2.8 Don't separate the verb from its direct object

When a verb is followed by two possible objects, place the direct object (i.e. the thing given or received) before the indirect object (the thing it is given to or received by).

This kind of construction is often found with verbs followed by 'to' and 'with': associate X with Y, apply X to Y, attribute X to Y, consign X to Y, give X to Y (or give Y X), introduce X to Y, send X to Y (or send Y X).

NO!	YES
We can <i>separate</i> , with this tool, <i>P and Q</i> .	We can <i>separate P and Q</i> with this tool.
We can <i>associate</i> with these values <i>a high cost</i> .	We can <i>associate a high cost</i> with these values.

In S1 below, the direct object is very long and consists of a series of items, so the reader has to wait a long time before discovering what all these items are associated with. The solution, S2, is to put the indirect object after the first item and then use 'along with'. S3 and S4 are other alternatives to dealing with this problem.

- S1. *We can *associate* a high cost, higher overheads, a significant increase in man-hours and several other problems *with these values*.
- S2. We can *associate* a high cost *with these values, along with* higher overheads, a significant increase in man-hours and several other problems.
- S3. We can *associate several factors with these values:* a high cost, higher overheads, a significant increase in man-hours and several other problems.
- S4. *The following can be associated with these values:*
 - a high cost
 - higher overheads
 - a significant increase in man hours

2.9 Put the direct object before the indirect object

Don't put the indirect object (in *italics*) at the beginning of the sentence or main clause. This is not the usual word order in English.

NO!	YES
However, only <i>for some cases</i> this operation is defined, these cases are called...	However, this operation is only defined <i>for some cases</i> , which are called...
Although <i>in the above references</i> one can find algorithms for this kind of processing, the execution of ...	Although algorithms for this kind of processing are reported <i>in the above references</i> , the execution of...
This occurs when <i>in the original network</i> there is a dependent voltage.	This occurs when there is a dependent voltage <i>in the original network</i> .

2.10 Don't use a pronoun (*it, they*) before you introduce the noun that the pronoun refers to

It is OK to use a pronoun at the beginning of the sentence, provided that this pronoun refers back to a noun in a previous sentence (i.e. a backward reference). For example:

S1. *Beeswax* is a very important substance because... In fact, *it* is...

In S1 it is clear that *it* refers to beeswax. But in S2, below, *it* refers to a noun that comes after (i.e. a forward reference). The reader does not know what the pronoun refers to and thus has to wait to find out.

S2. *Although *it* is a very stable and chemically inert material, studies have verified that the composition of *beeswax* is ...

A better version is S3, which immediately tells the reader what the subject is.

S3. Although *beeswax* is a very stable and chemically inert material, studies have verified that *its* composition is ...

2.11 Locate negations near the beginning of the sentence

The order you put the words in your sentence should be designed to take your reader through a logical progression of thoughts. These thoughts should move forward, never backtracking, never forcing the reader to reconsider or reinterpret what they have just read in the light of what they are reading now.

In S1 and S2 readers cannot predict how the sentence might progress. They are forced to wait to the end before being able to understand what they have just read.

- S1. * Data regarding the thyroid function and the thyroid antibodies before the beginning of the therapy *were not available*.
- S2. * *All of the spectra of the volatiles did not* show absorptions in the range ...

Both S1 and S2 appear to begin in a positive way and then suddenly change direction.

Instead, S3 and S4 help the reader to immediately understand the central purpose and driving force of the sentence (also known as the ‘thrust of a sentence’).

- S3. *No data were available* regarding thyroid function and thyroid antibodies before the beginning of the therapy. // Before the beginning of the therapy, *no data were available* regarding ...
- S4. *None of the spectra of the volatiles showed* absorptions in the range ...

Negations (*no, do not, does not, none, nothing* etc) are often a key element in the thrust of a sentence - try to locate them as close as possible to the beginning of a sentence.

Below are some more examples:

NO!	YES
The number of times this happens when the user is online is generally <i>very few</i> .	This <i>rarely</i> happens when the user is online.
Documentation on this particular matter is almost <i>completely lacking</i> .	There is <i>virtually no documentation</i> on this particular matter.
*Consequently <i>we found</i> this particular type of service <i>not</i> interesting.	Consequently <i>we did not find</i> this particular type of service interesting.

As highlighted in the first two NO! examples, English tends to express negative ideas with a negation. This helps the reader to understand immediately that something negative is being said. The last example is incorrect English because the verb and the negation (*not*) have been separated. See 15.16 in *English for Research: Grammar, Usage and Style*.

2.12 Locate negations before the main verb, but after auxiliary and modal verbs

The word *not* should be placed before the main verb it is associated with.

In S1 *not* is placed after the verb and is thus incorrect.

- S1. * Patients *seemed not* to be affected by intestinal disorders.
- S2. Patients *did not seem* to be affected by intestinal disorders.

When the verbs *to have* and *to be* are used in the present simple or past simple, *not* is located after the verb.

- S3. These findings *are not* significant.
- S4. Their results *had no* value. // Their results *did not have* any value.

Not is located after modal verbs and auxiliary verbs.

- S5. Such patients *should not* be treated with warfarin.
- S6. We *have not* encountered such a problem before.

2.13 State your aim before giving the reasons for it

When you explain a new game to someone, do you tell them the rules/strategies and then the objective, or vice versa? Which sounds more logical to you: S1 or S2?

- S1. You need to develop a strategy, make decisions as to whether to collaborate or not with the other players, also keep an eye on the progress of the other players, and finally make the most money *in order to win the game*.
- S2. *In order to win the game* you need to make the most money. To do this, you need to develop ...

Game players and readers have the same expectations: they want to know the aim of the game before learning how to carry it out - i) aim ii) means (i.e. how).

In S1 you are forcing the reader to wait for the key information, which only appears 38 words into the sentence. In S2 the aim is immediately established.

However, if the sentence is short, it does not make too much difference which element (aim or means) you put first. So both S3 and S4 could be used.

- S3. In order to win the game you need to make the most money.
- S4. You need to make the most money in order to win the game.

2.14 Deciding where to locate an adverb

The rules for deciding where to locate an adverb are complex. This section only gives some very basic guidelines.

If you are in doubt about where to put the adverb, the following rules apply to most adverbs including *only* and *also*. Locate the adverb:

- Immediately before the main verb.

Dying neurons do not *usually* exhibit these biochemical changes.
The mental functions are slowed, and patients are *also* confused.

- Immediately before the second auxiliary when there are two auxiliaries.

Language would *never* have arisen as a set of bare arbitrary terms if ...
Late complications may not *always* have been notified.

- After the present and past tenses of ‘to be’

The answer of the machine is *thus* correct.

However other types of adverbs (e.g. certainty, manner, time) follow different rules.

For full details see Chapter 17 in *English for Research: Grammar, Usage and Style*.

2.15 Put adjectives before the noun they describe, or use a relative clause

Adjectives normally go before the noun they describe.

NO!	YES
This is a paper particularly interesting for PhD students.	This paper is particularly interesting for PhD students.
We examined a patient, 30 years old, to investigate whether ...	This is a paper that is particularly interesting for PhD students.
	We examined a 30-year-old patient to investigate whether ...
	We examined a patient, who was 30 years old, to investigate whether ...

If you want to put the adjective after the noun, you have to use a relative clause as in the second alternatives in the Yes column above (i.e. *which*, *that*, *who* - see 6.10)

2.16 Do not put an adjective before the wrong noun or between two nouns

Never put an adjective before a noun that it does not describe.

Generally, you cannot put an adjective between two nouns.

NO!	YES
The main document <i>contribution</i>	The main <i>contribution</i> of the document
The editor <i>main</i> interface	The <i>main</i> interface of the editor
The algorithm <i>computational</i> complexity	The <i>computational</i> complexity of the algorithm

2.17 Avoid creating strings of nouns that describe other nouns

You cannot indiscriminately put nouns in front of each other in a string. For example, you cannot say *art state technology* (state-of-the-art technology) or *mass destruction weapons* (weapons of mass destruction). But you can say *a software program* or *an aluminum tube*.

Native speakers do tend to string nouns together, but they intuitively know how to do it. In fact, they are not following any written rules, but they base themselves on examples that already exist. If you are a non-native speaker I strongly recommend that you verify on Google Scholar that your proposed string of nouns already exists and has been used by native English-speaking authors.

If it does not exist, it will sound very strange to any native English-speaking referees, and more than one occurrence of such structures could cause the referee to recommend that your English be revised.

If it has not been used by native English-speaking authors, then you need to change the order of the words, which normally entails inserting some prepositions. To learn how to do this, see 12.3.

2.18 Summary

- Basic English word order is: (1) subject, (2) verb, (3) direct object, (4) indirect object. Keep these four elements in this order and as close to each other as possible.
- If you have a choice of subjects, choose the one that is the most relevant and leads to the shortest construction.
- Avoid delaying the subject. So don't begin a sentence with the impersonal *it*.
- Avoid inserting parenthetical information between the subject and the verb.
- Most adverbs are located just before the main verb, and before the second auxiliary verb when there are two auxiliaries.
- Put adjectives before the noun they describe, or use a relative clause. Do not insert an adjective between two nouns or before the wrong noun.
- Do not indiscriminately put nouns in a string.

Rules tend to have exceptions. The rules given in this section also have exceptions, and so you might find sentences written by native English speakers that contradict my rules.