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Writing tips II



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01

**Grammar and
common mistakes**



Grammar is one of the more difficult aspects of English for non-native speakers. Each language has its own structure for communicating information. Sentence structure includes the relationship between:

- Nouns (words that name something, e.g., house, heart, x-ray);
- Verbs (words that specify actions associated with the nouns in a sentence, e.g., walk, give, analyze);

- Adjectives (words that describe characteristics of nouns, e.g., gray rat, hard lump, thorough examination);
- Adverbs (a word or phrase that modifies or qualifies an adjective, verb, or other adverb or a word group, expressing a relationship with place, time, circumstance, manner, cause, degree, etc., e.g., gently, quite, well).

English sentences are organized differently than typical sentences in Asian languages.

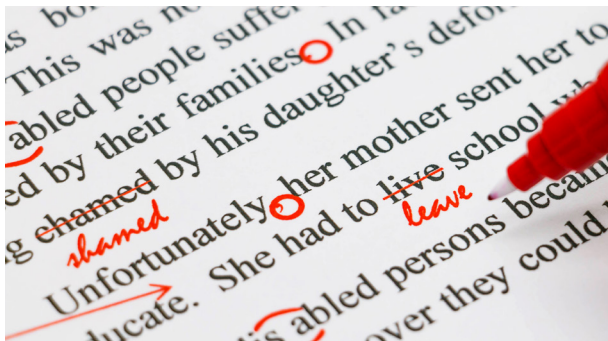
- Subject (who or what the sentence is about);
- Predicate (words that describe something about the subject);

This website contains a simple description of English sentence structures that can help non-native writers:
<http://esl.fis.edu/learners/advice/syntax.htm>

1. Grammar and common mistakes

a) Subject/verb agreement (singular versus plural)

It is important that the verb agrees with the subject of the sentence. This is best described through the examples below, using a common mistake:



Example 1:

✗ "This research on electrolytes show that..."

Here, the subject "research" is singular (the subject is not "electrolytes"). Because the verb tense is determined based on the subject, instead say:

✓ "This research on electrolytes shows that..."

Example 2:

✗ "These experiments enrolled 120 patients from each center and was approved by the institutional review board of our hospital."

Here, the subject "experiments" is plural (the subject is not "patients" or "center"). Because the verb tense is determined based on the subject, instead say:

✓ "These experiments enrolled 120 patients from each center and were approved by the institutional review board of our hospital."

CORRECT THE FOLLOWING SENTENCES FOR PRACTICE:

Pick the correct verb form from the options in parentheses.

i. "Analysis of these datasets (reveal / reveals) important findings that (influence / influences) patient care."

ii. "One of the solutions (was / were) titrated in NaOH after neutralization procedures and then (was / were) analyzed via fluorescence spectroscopy."

See page 50 for answers

b) That and which

The distinction between “that” and “which” can be confusing. A quick rule of thumb to help you decide which to use is: if the words that follow are not necessary to understanding the rest of the sentence, use “which”; if the words are needed to distinguish between cases, use “that.” A comma is always required before “which,” whereas a comma is typically not needed before “that.”

Example 1:

- “The signal, which was triangle-shaped, was analyzed in Equation X.”

The sentence is simply providing additional information, namely that the signal is triangle-shaped. The sentence could be broken into two sentences without changing the meaning: “The signal was triangle-shaped. The signal was analyzed in Equation X.”

Compare the sentence above with the example:

- “The signal that was triangle-shaped was included in Equation X, whereas the signal that was square-shaped was included in Equation Y.”

In this sentence, “that” is used to distinguish the signal being discussed from other signals.

Example 2:

- “The office, which has two lunchrooms, is located in Cincinnati.”
- “The office that has two lunchrooms is located in Cincinnati; the other office is located in Scranton.”

In the first sentence, the office is in Cincinnati, and the number of lunchrooms is additional information. In the second sentence, one office is in Cincinnati, and the fact that it has two lunchrooms is used to distinguish it from other office locations.

CORRECT THE FOLLOWING SENTENCES FOR PRACTICE:

Pick “that” or “which” for each blank space in the sentence.

- iii. “The cancer cell lines ____ were obtained from the ATCC were used for plating, while the cell lines ____ were obtained from the CAS were injected into mice.”
- iv. “Acetic acid and sodium acetate were added to the solution, ____ was incubated at 37°C for 7 days.”

See page 50 for answers

c) Hyphenation

Another common difficulty is when to use a hyphen to join words together. Hyphens in this context combine words that work together to form a compound adjective and appear immediately before a noun.

Example 1:

✗ “High density samples were collected from...”

✓ “High-density samples were collected from...”

The phrase “high-density” is a compound adjective modifying the noun “samples”.

Example 2:

✗ “The high-density of the samples was evaluated ...”

✓ “The high density of the samples was evaluated ...”

In this case, density is a noun, not a compound adjective, and does not need to be hyphenated.

Hyphens are also required when age or another measure is used as an adjective. Some examples of this are given below.

Example 3:

✗ “The patient was a 42 year old man who presented with...”

✓ “The patient was a 42-year-old man who presented with...”

Note that the age appears as an adjective immediately before the noun (man). If “42-year-old” is removed, the sentence would still make sense.



1. Grammar and common mistakes

Example 4:



"The rats used were eight-weeks-old and were fed..."



"The rats used were eight weeks old and were fed..."

In this sentence, age is not being used to modify the noun. In particular, note where "8 weeks old" appears in the sentence. If "8 weeks old" is removed, the sentence would not make sense. In addition, the plural form "weeks" is used.

Here are additional examples with other units of measure:



"The concrete blocks were six-inches-long."



"The concrete blocks were six inches long."



"Samples were weighed on an eight inch wide scale..."



"Samples were weighed on an eight-inch-wide scale..."



"Seedlings were planted in 12 cm deep pots..."



"Seedlings were planted in 12-cm-deep pots..."

This website provides some other examples of when hyphens should and should not be used: <https://www.grammarbook.com/punctuation/hyphens.asp>

CORRECT THE FOLLOWING SENTENCES FOR PRACTICE:

Choose the correct form of the bold term for each sentence.

v. "A **high capacity** / **high-capacity** electrode material was used..."

vi. "In this experiment, **eight-week-old** / **eight weeks old** transgenic mice were..."

vii. "A 67 years old / 67-year-old female patient presented with..."

viii. "The cells were incubated on plates that were **3-inches-wide** / **3 inches** wide."

See page 50 for answers

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Writing tips II[✓]

02

Write clearly

Your paper should be as clear as possible. What does that mean?

Simplicity is best. Clear writing should avoid the following:



a) Unclear technical language

The first point refers to the use of highly specialized language, or jargon. While you should not avoid technical language, it can be helpful to provide descriptions and language that non-experts can understand. This can be accomplished by providing clear definitions and characterizations in your paper.

It is best to carefully evaluate the audience that will be reading your work. Are you submitting to a journal that is highly specific to your very small field, or is it a journal that covers multiple fields or a single, very broad industry? This will influence what concepts need to be defined in detail and how much jargon should be used.

b) Colloquial or vague language

Similarly, colloquial or overly vague language can make your research difficult to understand. This is best described as “writing in the way you would speak.” There are many informal, slang, or vague terms that we use in everyday language that are not appropriate in science writing.

A few examples of colloquial words include:

- 1) a lot (alternatives: several, many, numerous)
- 2) kind of / sort of (alternatives: somewhat, rather)
- 3) nowadays (alternatives: currently, recently, in recent times)

The use of formal language is very important since it is more precise and can reduce confusion.

When considering both of these points, the key is to find an appropriate balance between highly specialized technical language (for experts) and user-friendly language (for non-experts). That is, the writing should be clear but accessible.

c) Acronym use

Overuse or misuse of acronyms can also act as a barrier to readers when it comes to making your writing accessible. In general, acronym rules vary between journals and fields of research; however, there are some commonalities.

Acronyms need to be defined at first instance in both the abstract and the manuscript.



Acronyms are typically only presented for words that appear more than once or, in some journals, more than three times. This applies to both the abstract and the main manuscript. If a term only appears once in the abstract, typically the acronym is not used in the abstract; the term is written out. The same rule applies in the main body of the manuscript. Exceptions may be made for the names of organizations or trials where the acronym is more commonly used than the full name. In these cases, the acronym appears even if the study is only mentioned once.

Standard abbreviations for units of measure and chemical names do not need to be defined when they are used. Below are some examples, but your journal's style guide will be your best resource for choosing appropriate abbreviations.

- cm
- min
- Au
- Ag
- Cu

2. Write clearly

An acronym's definition typically only needs to be capitalized if it represents a proper noun. For example, "World Health Organization (WHO)" would be capitalized, while "bovine serum albumin (BSA)" would not. In certain cases, some words will be capitalized and others will not, because not all of the words are proper nouns.

- fast Fourier transform (FFT)
- Kawasaki disease (KD)

Journals may not require you to define acronyms that are extremely common and widely understood (for example, DNA, RNA, MRI, CT, RT-PCR, IoT, LED). However, always check with your journal's style guide.

Plural forms of acronyms can be indicated with an "s" either when first defined or at later instances if the initial definition was singular. One example of this would be: "Light-emitting diode (LED) arrays were used. LEDs were of variable intensity..." Note that the acronym can be pluralized with an "s" ("LEDs") even if the singular form never appears, as this can improve readability.

If you are only using the plural form of the acronym throughout the manuscript, the "s" can be omitted; however, be cautious with singular versus plural verb agreement and ensure that the "s" is either used or omitted consistently.



Example 1:

In this example, the author chooses to pluralize the acronym using an "s" because their paper includes both the singular (region of interest) and plural (regions of interest) versions of the term.

- ✔ "Regions of interest (ROIs) were drawn by hand. ROIs are outlined in red in Figure 1."
- ✘ "Regions of interest (ROI) were drawn by hand. ROIs are outlined in red in Figure 1."

In the incorrect sentence, the author has omitted the "s" from the acronym definition (ROI), but the "s" has been added ("ROIs") in the next sentence. This inconsistency needs to be corrected.

Example 2:

In this example, the authors choose the acronym form without the “s” because they never include the singular form of this term (region of interest) in the paper. Thus:



“Regions of interest (ROI) were drawn by hand. ROI are outlined in red in Figure 1.”



“Regions of interest (ROI) were drawn by hand. ROI is outlined in red in Figure 1.”

In the incorrect sentence above, “ROI” has been defined as the plural form, while “is” should only be used for the singular form.



In summary, clarity is important to writing in general, but is especially important in scientific writing. Here are a few guidelines:

- Avoid undefined technical language. Provide descriptions of technical terms so that non-experts can understand your paper.
- Be sure that all acronyms are defined.
- Avoid contractions (couldn't, doesn't, won't).
- Avoid the use of vague, colloquial, or informal terms.
- Make sure any results or key ideas are plainly stated.

CORRECT THE FOLLOWING SENTENCES FOR PRACTICE:

Replace colloquial terms with more formal scientific writing

- ix. “Nowadays, a lot of studies are focusing on nanomedicine.”
- x. “These findings are sort of contradictory, and so future research is needed to get clearer results.”

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03

**Write with
confidence**

3. Write with confidence



Being assertive reinforces that your research warrants attention. Generally, try to state your results using direct and positive language. Weak language can detract from your main points and fail to attract interest in your research. Using phrases with many caveats and exceptions can sound uncertain, thus weakening your results. Examples of phrases to avoid are given below.

Example 1:



"Though inconclusive, herein we review many methods..."



"Herein, we review many methods..."

Example 2:



"Our results could potentially suggest that..."



"Our results suggest that..."



3. Write with confidence

On the other hand, overconfidence should also be avoided. Overconfidence is when your assertions are aggressive or unquestionable in nature. Science is by nature skeptical, in the sense that vast amounts of evidence are required to advance a hypothesis to the level of theory or law. Some examples to avoid are given below.

Example 3:

✗ "...the results absolutely indicate that..."

✓ "...the results indicate that..."

Example 4:

✗ "It is definitely the case that..."

✓ "It is the case that..."

Word choice is particularly important when conveying your findings, and some words have a specific meaning or implication in science writing. The term "significant" is a common example of this. In the majority of science writing, the term "significant" is used to refer to statistical significance. Thus, using it for any other purpose can be misleading and cause confusion with regard to your statistical results. Alternatives to the word "significant" include "noteworthy," "substantial," "considerable," or "meaningful."

Example 5:

✗ "Our results have significance with regard to future clinical applications."

✓ "Our results have substantial implications for future clinical applications."

Example 6:

✗ "These plants play a significant role in tropical ecosystems..."

✓ "These plants play an important role in tropical ecosystems..."

3. Write with confidence

Another term to be aware of is “prove” (including proof / proved / proven), which should be generally avoided when describing the results of research. The term “prove” suggests that the finding can be accepted as fact, without a shadow of doubt, when instead we should be cautious about overstating our findings. Thus, the terms “suggest,” “indicate,” or “demonstrate” are much more appropriate for most papers. Except for its obvious mathematical use, “proof” can generally be replaced with “evidence.”



Example 7:

- ✗ “This study provides proof that statins....”
- ✓ “This study provides evidence that statins....”

Example 8:

- ✗ “Our results prove that this association is caused by...”
- ✓ “Our results indicate that this association is caused by...”

3. Write with confidence

Finally, claims of first discovery are a growing concern among a number of journals. Phrases such as “This is the first study to...” and “We provide the first evidence that...” are overused and generally unnecessary. Every study is providing important new insight into a topic, or it would not have been published. It is more useful to state what previous research has established on the topic, what remains to be clarified, and then to describe how your findings fit into that gap.

Example 9:

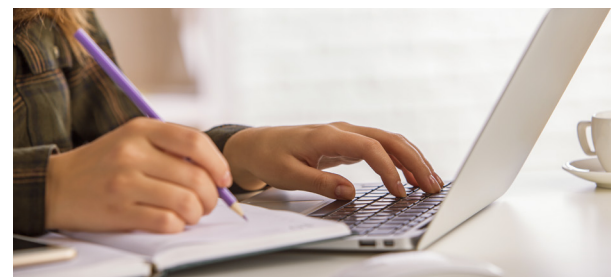


“Previous studies established that genetics play a role in cardiovascular risk, but ours is the first study to prove that this SNP...”



“Previous studies have established that genetics play a role in cardiovascular risk, but the importance of this SNP remains unclear. In this study, we demonstrate its role in...”

To improve the likelihood your paper will be published, an appropriate level of confidence is crucial. However, ensure that you avoid the abovementioned pitfalls of overconfidence and overstating your results, which can lead to rejection or the need for extensive revisions.



CORRECT THE FOLLOWING SENTENCES FOR PRACTICE:

Re-write the sentence with more confident phrasing.

xi. “While it is possible that these results might be controversial, we think that they could possibly provide some insight into this topic.”

Re-write this sentence to avoid overstating the results.

xii. “Our ground-breaking study absolutely proves the outstanding role that this technology will have in future applications.”

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04

Write concisely

4. Write concisely



Similar to clarity, conciseness is important to effective writing. The key distinction is that conciseness is related to conservative word choice. A helpful way of thinking about conciseness is that it is generally better to use fewer words wherever possible. Conciseness keeps your writing understandable and focused. Concise writing avoids clutter, which can be confusing even to native speakers, and emphasizes the key aspects of your research. Writing concisely is particularly important when developing abstracts and summaries or submitting to journals with strict word count limits.

While it is often necessary when conveying complex ideas, including a lot of information in one sentence can cause confusion. If you find a particularly long sentence in your paper, consider splitting this sentence into two or more smaller sentences so you do not overwhelm your readers.



4. Write concisely

Below we include five strategies for making your writing more concise.

1) Eliminate unnecessary words and phrases

When you review your writing, identify words and phrases that are not essential to what you are trying to communicate. These are terms that can easily be removed without rewriting or restructuring the sentence.

Example 1:



"Basically, our results demonstrated good agreement with the findings of Smith et al. (2013)."

Because "basically" does not add meaning to the sentence, it can be deleted:



"Our results demonstrated good agreement with the findings of Smith et al. (2013)."

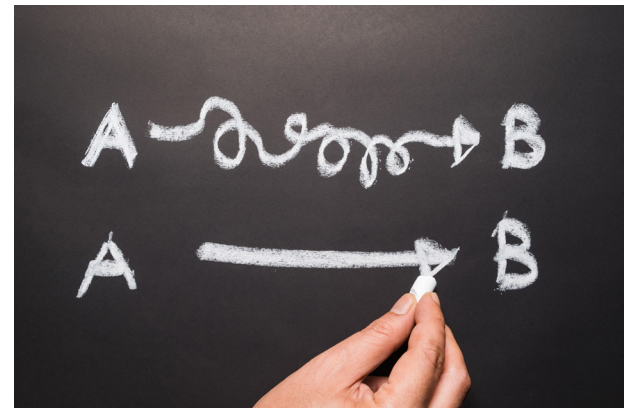
Example 2:



"Due to recent studies, these methods have become the gold standard for determining body condition."



"These methods have become the gold standard for determining body condition."



4. Write concisely

2) Remove repetitive words:

Repetitive words and phrases add clutter to your sentences, making your writing more challenging to read and understand. Be sure to identify and eliminate phrases and terms that mean the same thing.

Example 1:



"These findings could indicate a potential relationship between x and y."

Because "could" and "potential" are both used to suggest a possibility, they are repetitive. Thus, the sentence can be written more concisely as:



"These findings indicate a potential relationship between x and y."

or

"These findings could indicate a relationship between x and y."

Example 2:



"It would be unlikely for this condition to recur in the future."

could be shortened to:



"This condition is unlikely to recur."

or

"Recurrence is unlikely."

Example 3:



"In contrast to prior research, our treatment group had a higher survival rate than reported in previous studies."

can be rewritten as:



"Our treatment group had a higher survival rate than reported in previous studies."

3) Shorten long phrases:

In science and technical writing, the shortest possible sentence that conveys the same meaning is the best option. There are many words or phrases in English that mean the same thing, and shorter terms can often be substituted for longer phrases to make your writing more concise.

Example 1:

✗ “Specimens had deteriorated in such a manner that observations were unreliable.”

can be shortened to:

✓ “Specimens had deteriorated such that observations were unreliable.”



Example 2:

✗ “The experiment was conducted in this manner for the reason that blood counts could be evaluated.”

could be rewritten as:

✓ “The experiment was conducted so that blood counts could be evaluated.”

or shortened even further to:

✓ “These experimental methods enabled blood count evaluation.”

4. Write concisely

4) Do not let your verbs become nouns (nominalization)

Presenting terms as a noun instead of a verb is a common mistake when trying to sound more formal; instead, it makes sentences awkward and less concise.

Example 1:



"We performed detailed analysis of pathology specimens to determine..."

should be revised to:



"We analyzed pathology specimens to determine..."

Example 2:



"This study involved the utilization of three tools to increase patient awareness of health risks."

is more concise when written as:



"This study utilized three tools to increase patient awareness of health risks."

5) Keep your verbs and subjects close together

To reduce confusion and improve clarity, long sentences should be rephrased so that verbs and their subjects remain connected.

Example 1:



"In developing nations, water pollution from sources such as agricultural run-off and manufacturing processes, among others, in both urban and rural areas, is increasing."

is easier to understand when written as:



"In developing nations, water pollution is increasing in both urban and rural areas from sources such as agricultural run-off and manufacturing processes."

Example 2:



“Irrigation for agricultural production, which can address world food security threats such as population growth and climate change, is a valuable tool.”

can be revised to:



“Irrigation is a valuable tool in agricultural production that can address world food security threats such as population growth and climate change.”

Following these five simple guidelines will improve the clarity and conciseness of your writing and will help you meet strict journal word counts, both of which are important steps toward publication in high-impact journals.

Quick Conciseness Tips

- Avoid clutter when possible; unnecessarily long strings of words can make your writing difficult to understand.
- Find ways to reduce the number of words in a given phrase or sentence.
- Longer sentences often benefit from being split into two or more sentences.

CORRECT THE FOLLOWING SENTENCES FOR PRACTICE:

Identify words or phrases that could be eliminated from the sentence below.

xiii. “It is known that this is a common postoperative complication in elderly men and women [4].”

Re-write the long phrase in the sentence below to shorten the sentence.

xiv. “In spite of the fact that group A was much larger, the statistical findings were similar.”

Re-write the sentence below

xv. “Greer et al. (2007) employed the examination of cells for the determination of survival and reproduction rates.”

See page 51 for our suggestions

PRACTICE SENTENCE ANSWERS

- i. "Analysis of these datasets **reveals** important findings that influence patient care."
- ii. "One of the solutions **was** titrated in NaOH after neutralization procedures and then was analyzed via fluorescence spectroscopy."
- iii. "The cancer cell lines **that** were obtained from the ATCC were used for plating, while the cell lines that were obtained from the CAS were injected into mice."
- iv. "Acetic acid and sodium acetate were added to the solution, **which** was incubated at 37°C for 7 days."
- v. "A **high-capacity** electrode material was used..."
- vi. "In this experiment, **eight-week-old** transgenic mice were..."
- vii. "A **67-year-old** female patient presented with..."
- viii. "The cells were incubated on plates that were **3 inches** wide."

There is more than one correct way to revise the sentences below, so your responses may not match our suggestions.

- ix. "Many recent studies have focused on advances in nanomedicine."
- x. "These findings contradict the results of previous studies, and thus future research on this topic is warranted."
- xi. "While these results are controversial and will require confirmation, they also provide important insight into this topic."
- xii. "Our study suggests that this technology will be particularly relevant to future applications."
- xiii. "~~It is known that~~ This is a common postoperative complication in elderly men and women [4]."
- xiv. "~~In spite of the fact that~~ Although group A was much larger, the statistical findings were similar."
- xv. "Greer et al. (2007) ~~employed the examination of~~ examined cells ~~for the determination of~~ to determine survival and reproduction rates."

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How to Write a Paper in English

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