

Oxford University Press: ACS Style Guide

Writing Style and Word Usage

Short declarative sentences are the easiest to write and the easiest to read, and they are usually clear. However, too many short sentences in a row can sound abrupt or monotonous. To add sentence variety, it is better to start with simple declarative sentences and then combine some of them than to start with long rambling sentences and then try to shorten them.

You and your colleagues probably have been discussing the project for months, so the words seem familiar, common, and clear to you. However, the readers will not have been part of these discussions. That is where copy editors can help. Their job is to make sure that readers understand the material you are presenting.

By all means, write in your own personal style, but keep in mind that scientific writing is not literary writing. Scientific writing serves a purpose completely different from that of literary writing, and it must therefore be precise and unambiguous.

If English is not your first language, ask an English-speaking colleague--if possible, a native English speaker--for help with grammar and diction.

Choosing the Correct Word or Phrase

Use words in their primary meanings; do not use a word to express a thought if such usage is uncommon, informal, or primarily literary. Examples are using "since" when you mean "because", and "while" when you mean "although". Many words are clear when you are speaking because you can amplify your meaning with gestures, expressions, and vocal inflections--but when these same words are written, they may be clear only to you.

Use appropriate verb tenses.

- Simple past tense is correct for stating what was done, either by others or by you: "The solutions were heated to boiling." "The spectra were recorded." "Jones reviewed the literature and gathered much of this information." "We recently found that relativistic effects enhance the bond strength." "The structures were determined by neutron diffraction methods."
- Present tense is correct for statements of fact: "Absolute rate constants for a wide variety of reactions are available." "Hyperbranched compounds are macromolecular compounds that contain a branching point in each structural repeat unit."
- Present and simple past tenses may both be correct for results, discussion, and conclusions: "The characteristics of the voltammetric wave indicate that electron transfer and breaking of the carbon-iodine bond are concerted." "The absence of substitution was confirmed by preparative-scale electrolysis at a potential located at the foot of the voltammetric wave." "IR spectroscopy shows that nitrates are adsorbed and are not removed by washing with distilled water."

Use the active voice when it is less wordy and more direct than the passive.

Poor: The fact that such processes are under strict stereoelectronic control is demonstrated by our work in this area.

Better: Our work in this area demonstrates that such processes are under strict stereoelectronic control.

Use first person when it helps to keep your meaning clear and to express a purpose or a decision.

Jones reported xyz, but I (or we) found . . .

I (or we) present here a detailed study . . .

My (or our) recent work demonstrated . . .

To determine the effects of structure on photophysics, I (or we) . . .

However, avoid phrases such as "we believe", "we feel", "we concluded", and "we can see", as well as personal opinions.

Use an affirmative sentence rather than a double negative.

<i>Instead of</i>	<i>Consider using</i>
This reaction is not uncommon	This reaction is common This reaction occurs about 40% of the time
This transition was not unexpected	This transition was expected We knew that such transitions were possible
This strategy is not infrequently used	This strategy is frequently used This strategy is occasionally used
This result is not unlikely to occur	This result is likely to occur This result is possible

Watch the placement of the word "only". It has different meanings in different places in the sentence.

Only the largest group was injected with the test compound. (Meaning: and no other group)

The largest group was only injected with the test compound. (Meaning: and not given the compound in any other way)

The largest group was injected with only the test compound. (Meaning: and no other compounds)

The largest group was injected with the only test compound. (Meaning: there were no other test compounds)
Be sure that the antecedents of the pronouns “this” and “that” are clear. If there is a chance of ambiguity, use a noun to clarify your meaning.

Ambiguous: The photochemistry of transition-metal carbonyl complexes has been the focus of many investigations. This is due to the central role that metal carbonyl complexes play in various reactions.

Unambiguous: The photochemistry of transition-metal carbonyl complexes has been the focus of many investigations. This interest is due to the central role that metal carbonyl complexes play in various reactions.

Use the proper subordinating conjunctions. “While” and “since” have strong connotations of time. Do not use them where you mean “although”, “because”, or “whereas”.

Poor: Since solvent reorganization is a potential contributor, the selection of data is very important.

Better: Because solvent reorganization is a potential contributor, the selection of data is very important.

Poor: While the reactions of the anion were solvent-dependent, the corresponding reactions of the substituted derivatives were not.

Better: Although the reactions of the anion were solvent-dependent, the corresponding reactions of the substituted derivatives were not.

Also: The reactions of the anion were solvent-dependent, but (or whereas) the corresponding reactions of the substituted derivatives were not.

Use “respectively” to relate two or more sequences in the same sentence.

The excitation and emission were measured at 360 and 440 nm, respectively. (That is, the excitation was measured at 360 nm and the emission was measured at 440 nm.)

Use the more accurate terms “greater than” or “more than” rather than the imprecise “over” or “in excess of”.

greater than 50%, *not* in excess of 50%

more than 100 samples, *not* over 100 samples

more than 25 mg, *not* in excess of 25 mg, *not* over 25 mg

Use “fewer” to refer to number; use “less” to refer to quantity. fewer than 50 animals

fewer than 100 samples

less product

less time

less work

However, use “less” with number and unit of measure combinations because they are regarded as singular. less than 5 mg

less than 3 days

Use “between” with two named objects; use “among” with three or more named or implied objects. Communication between scientists and the public is essential.

Communication among scientists, educators, and the public is essential.

Communication among scientists is essential.

Choose “assure”, “ensure”, and “insure” depending on your meaning. To assure is to affirm; to ensure is to make certain; to insure is to indemnify for money. He assured me that the work had been completed.

The procedure ensures that clear guidelines have been established.

You cannot get a mortgage unless you insure your home.

Choose “affect”, “effect”, and “impact” depending on your meaning. “Affect” is a verb meaning to influence, modify, or change. “Effect” as a verb means to bring about, but as a noun it means consequence, outcome, or result. “Impact” is a noun meaning a significant effect. The increased use of pesticides affects agricultural productivity.

The use of polychlorinated benzenes has an effect on the cancer rate.

The effect of the added acid was negligible.

The new procedure effected a 50% increase in yield.

The impact of pesticide use on health is felt throughout the world.

The acid did not have a great impact on the reaction rate.

It is acceptable to use split infinitives to avoid awkwardness or ambiguity.

Awkward: The program is designed to assist financially the student who is considering a career in chemistry.

Better: The program is designed to financially assist the student who is considering a career in chemistry.

Ambiguous: The bonded phases allowed us to investigate fully permanent gases.

Better: The bonded phases allowed us to fully investigate permanent gases.

Use “whether” to introduce at least two alternatives, either stated or implied. I am not sure whether I should repeat the experiment.

I am not sure whether I should repeat the experiment or use a different statistical treatment.

I am going to repeat the experiment whether the results are positive or negative.

Use “whether or not” to mean “regardless of whether”.

Incorrect: I am not sure whether or not to repeat the experiment.

Correct: I am not sure whether to repeat the experiment.

Also correct: Whether or not the results are positive, I will repeat the experiment.

Also correct: Whether or not I repeat the experiment, I will probably leave the laboratory late tonight.

Use “to comprise” to mean “to contain” or “to consist of”; it is not a synonym for “to compose”. The whole comprises the parts,

or the whole is composed of the parts, but the whole is not comprised of the parts. Never use “is comprised of”.

Incorrect: A book is comprised of chapters.

Correct: A book comprises chapters.

Also correct: A book is composed of chapters.

Incorrect: Our research was comprised of three stages.

Correct: Our research comprised three stages.

Articles

Choose the articles “a” and “an” according to the pronunciation of the words or abbreviations they precede. a nuclear magnetic resonance spectrometer

an NMR spectrometer

Use “a” before an aspirated “h”; use “an” before the vowel sounds of a, e, i, o, “soft” u, and y.

a house a history	<i>but</i>	an hour an honor
a union a U-14C	<i>but</i>	an ultimate an ylide an yttrium compound

Choose the proper article to precede B.A., B.S., M.A., M.S., and Ph.D., according to pronunciation of the first letter. a B.S. degree

an M.S. degree

a Ph.D.

Comparisons

Introductory phrases that imply comparisons should refer to the subject of the sentence and be followed by a comma.

Incorrect: Unlike alkali-metal or alkaline-earth-metal cations, hydrolysis of trivalent lanthanides proceeds significantly at this pH.

Correct: Unlike that of alkali-metal or alkaline-earth-metal cations, hydrolysis of trivalent lanthanides proceeds significantly at this pH.

Also correct: Unlike alkali-metal or alkaline-earth-metal cations, trivalent lanthanides hydrolyze significantly at this pH.

Incorrect: In contrast to bromide anion, there is strong distortion of the free fluoride anion on the vibrational spectroscopy time scale.

Correct: In contrast to bromide anion, the free fluoride anion is strongly distorted on the vibrational spectroscopy time scale.

Use the verb “compare” followed by the preposition “to” when similarities are being noted. Use “compare” followed by the preposition “with” when differences are being noted. Only things of the same class should be compared. Compared to compound **3**, compound **4** shows an NMR spectrum with corresponding peaks.

Compared with compound **3**, compound **4** shows a more complex NMR spectrum.

Do not omit words needed to complete comparisons, and do not use confusing word order. The subordinating conjunction “than” is often used to introduce the second element in a comparison, following an adjective or adverb in the comparative degree.

Incorrect: The alkyne stretching bands for the complexes are all lower than the uncoordinated alkyne ligands.

Correct: The alkyne stretching bands for the complexes are all lower than those for the uncoordinated alkyne ligands.

Also correct: The alkyne stretching bands are all lower for the complexes than for the uncoordinated alkyne ligands.

Incorrect: The decrease in isomer shift for compound **1** is greater in a given pressure increment than for compound **2**.

Correct: The decrease in isomer shift for compound **1** is greater in a given pressure increment than that for compound **2**.

Also correct: The decrease in isomer shift in a given pressure increment is greater for compound **1** than for compound **2**.

Idioms often used in comparisons are “different from”, “similar to”, “identical to”, and “identical with”. Generally these idioms should not be split.

Incorrect: The complex shows a significantly different NMR resonance from that of compound **1**.

Correct: The complex shows an NMR resonance significantly different from that of compound **1**.

Incorrect: Compound **5** does not catalyze hydrogenation under similar conditions to compound **6**.

Correct: Compound **5** does not catalyze hydrogenation under conditions similar to those for compound **6**.

Exception: These idioms can be split if an intervening prepositional phrase modifies the first word in the idiom. The single crystals are all similar in structure to the crystals of compound **7**.

Solution A is identical in appearance with solution B.

Phrases such as “relative to”, “as compared to”, and “as compared with” and words such as “versus” are also used to introduce the second element in a comparison. The things being compared must be in parallel structure (that is, grammatically equal). The greater acidity of nitric acid relative to nitrous acid is due to the initial-state charge distribution in the molecules.

The lowering of the vibronic coupling constants for Ni as compared with Cu is due to configuration interaction.

This behavior is analogous to the reduced Wittig-like reactivity in thiolate versus phenoxide complexes.

Parallelism

Use coordinating conjunctions (“and”, “but”, “or”, “nor”, “yet”, “for”, and sometimes “so”), correlative conjunctions (“either, or”; “neither, nor”; “both, and”; “not only, but also”; “not, but”), and correlative constructions (“as well as”; e.g., “as well as”) to

connect words or groups of words of equal grammatical rank.

Incorrect: Compound **12** was prepared analogously and by Lee's method (5).

Correct: Compound **12** was prepared in an analogous manner and by Lee's method (5).

Incorrect: It is best to use alternative methods both because of the condensation reaction and because the amount of water in the solvent increases with time.

Correct: It is best to use alternative methods both because of the condensation reaction and because of the increase in the amount of water in the solvent with time.

Incorrect: The product was washed either with alcohol or acetone.

Correct: The product was washed with either alcohol or acetone.

Also correct: The product was washed either with alcohol or with acetone.

Incorrect: Not only was the NiH functionality active toward the C-donor derivatives but also toward the N donors.

Correct: The NiH functionality was active not only toward the C-donor derivatives but also toward the N donors.

Also correct: The NiH functionality was not only active toward the C-donor derivatives but also active toward the N donors.

Also correct: Not only was the NiH functionality active toward the C-donor derivatives, but it was also active toward the N donors.

Use parallel constructions in series and lists, including section headings and subheadings in text and tables and listings in figure captions.

Do not try to use parallel construction around the word "but" when it is not used as a coordinating conjunction. Increasing the number of fluorine atoms on the adjacent boron atom decreases the chemical shift, but only by a small amount.

The reaction proceeded readily, but with some decomposition of the product.

Words and Phrases To Avoid

Avoid slang and jargon.

If you have already presented your results at a symposium or other meeting and are now writing the paper for publication in a book or journal, delete all references to the meeting or symposium such as "Good afternoon, ladies and gentlemen", "This morning we heard", "in this symposium", "at this meeting", and "I am pleased to be here". Such phrases would be appropriate only if you were asked to provide an exact transcript of a speech.

Be brief. Wordiness obscures your message, annoys the reader, and displeases the publisher because the resulting lengthy paper is more expensive to produce and to print.

- Omit phrases such as: As already stated
- It has been found that
- It has long been known that
- It is interesting to note that
- It is worth mentioning at this point
- It may be said that
- It was demonstrated that
- Omit excess words.

• <i>Instead of</i>	• <i>Use</i>
• It is a procedure that is often used.	• This procedure is often used.
• There are seven steps that must be completed.	• Seven steps must be completed.
• This is a problem that is...	• This problem is...
• These results are preliminary in nature.	• These results are preliminary.

- Use single words instead of phrases.

• <i>Instead of</i>	• <i>Use</i>
• a number of	• many, several
• a small number of	• a few
• are in agreement	• agree
• are found to be	• are
• are known to be	• are
• at present	• now
• at the present time	• now

• based on the fact that	• because
• by means of	• by
• despite the fact that	• although
• due to the fact that	• because
• during that time	• while
• fewer in number	• fewer
• for the reason that	• because
• has been shown to be	• is
• if it is assumed that	• if
• in color, e.g., red in color	• <i>just state the color, e.g., red</i>
• in consequence of this fact	• therefore, consequently
• in length	• long
• in order to	• to
• in shape, e.g., round in shape	• <i>just state the shape, e.g., round</i>
• in size, e.g., small in size	• <i>just state the size, e.g., small</i>
• in spite of the fact that	• although
• in the case of...	• in..., for...
• in the near future	• soon
• in view of the fact that	• because
• is known to be	• is
• it appears that	• apparently
• it is clear that	• clearly
• it is likely that	• likely
• it is possible that	• possibly
• it would appear that	• apparently
• of great importance	• important
• on the order of	• about
• owing to the fact that	• because
• prior to	• before
• reported in the literature	• reported
• subsequent to	• after

Do not use contractions in scientific papers. **Incorrect:** The identification wasn't confirmed by mass spectrometry.
Correct: The identification was not confirmed by mass spectrometry.
Do not use the word "plus" or the plus sign as a synonym for "and".

Incorrect: Two bacterial enzymes were used in a linked-enzyme assay for heroin plus metabolites.

Correct: Two bacterial enzymes were used in a linked-enzyme assay for heroin and its metabolites.

Do not use “respectively” when you mean “separately” or “independently”.

Incorrect: The electrochemical oxidations of chromium and tungsten tricarbonyl complexes, respectively, were studied.

Correct: The electrochemical oxidations of chromium and tungsten tricarbonyl complexes were studied separately.

Avoid misuse of prepositional phrases introduced by “with”.

Poor: Nine deaths from leukemia occurred, with six expected.

Better: Nine deaths from leukemia occurred, and six had been expected.

Poor: Of the 20 compounds tested, 12 gave positive reactions, with three being greater than 75%.

Better: Of the 20 compounds tested, 12 gave positive reactions; three of these were greater than 75%.

Poor: Two weeks later, six more animals died, with the total rising to 25.

Better: Two weeks later, six more animals died, and the total was then 25.

Do not use a slash to mean “and” or “or”.

Incorrect: Hot/cold extremes will damage the samples.

Correct: Hot and cold extremes will damage the samples.

Replace “and/or” with either “and” or “or”, depending on your meaning.

Incorrect: Our goal was to confirm the presence of the alkaloid in the leaves and/or roots.

Correct: Our goal was to confirm the presence of the alkaloid in the leaves and roots.

Also correct: Our goal was to confirm the presence of the alkaloid in either the leaves or the roots.

Also correct: Our goal was to confirm the presence of the alkaloid in the leaves, the roots, or both.

Gender-Neutral Language

The U.S. government and many publishers have gone to great effort to encourage the use of gender-neutral language in their publications. Gender-neutral language is also a goal of many chemists. Recent style guides and writing guides urge copy editors and writers to choose terms that do not reinforce outdated sex roles. Gender-neutral language can be accurate and unbiased and not necessarily awkward.

The most problematic words are the noun “man” and the pronouns “he” and “his”, but there are usually several satisfactory gender-neutral alternatives for these words. Choose an alternative carefully and keep it consistent with the context.

Instead of “man”, use “people”, “humans”, “human beings”, or “human species”, depending on your meaning.

Outdated: The effects of compounds I-X were studied in rats and man.

Gender-neutral: The effects of compounds I-X were studied in rats and humans.

Outdated: Men working in hazardous environments are often unaware of their rights and responsibilities.

Gender-neutral: People working in hazardous environments are often unaware of their rights and responsibilities.

Outdated: Man's search for beauty and truth has resulted in some of his greatest accomplishments.

Gender-neutral: The search for beauty and truth has resulted in some of our greatest accomplishments.

Instead of “manpower”, use “workers”, “staff”, “work force”, “labor”, “crew”, “employees”, or “personnel”, depending on your meaning.

Instead of “manmade”, use “synthetic”, “artificial”, “built”, “constructed”, “manufactured”, or even “factory-made”.

Instead of “he” and “his”, change the construction to a plural form (“they” and “theirs”) or first person (“we”, “us”, and “ours”).

Alternatively, delete “his” and replace it with “a”, “the”, or nothing at all. “His or her”, if not overused, is not terribly unpleasant.

Outdated: The principal investigator should place an asterisk after his name.

Gender-neutral: Principal investigators should place asterisks after their names.

Gender-neutral: If you are the principal investigator, place an asterisk after your name.

Gender-neutral: The name of the principal investigator should be followed by an asterisk.

However, do not use a plural pronoun with a singular antecedent.

Incorrect: The principal investigator should place an asterisk after their name.

Instead of “wife”, use “family” or “spouse” where appropriate.

Outdated: The work of professionals such as chemists and doctors is often so time-consuming that their wives are neglected.

Gender-neutral: The work of professionals such as chemists and doctors is often so time-consuming that their families are neglected.

Outdated: the society member and his wife

Gender-neutral: the society member and spouse