

4Y Scientific English Module Student handout

Scientific English linguistic characteristics: highlights

1. General advice regarding grammar

- Write in the active and use the first person where necessary. Try to avoid long sentences that have several embedded clauses.
- Sex: avoid "he" as a general pronoun. Make the nouns (and pronouns) plural, then use "they"; if that's not possible, use "he or she".
- Nouns and verbs should agree: The data *are*; None *is*...
- Organisations and groups of people take singular verbs: The government *is*; The team *has* researched...
- Avoid noun clusters: "Patient in coronary care unit" rather than "coronary care unit patient."
- Watch out for "danglers" (unattached participles and misrelated clauses): Joining the service in 1933, his first post was... (the post didn't join the service) vs Joining the service in 1933, he was first posted to... (this is correct)

Source: bmj.com/about-bmj/resources-authors//house-style

2. Word order

- **Basic word order in English: subject + verb + object + indirect object.**

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

Ex: 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.*

- **Place the various elements in your sentence in the most logical order possible.**

Don't force the reader to have to change their perspective.

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.
<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	Overall <i>there seems to be a close match</i> between the aggressiveness of seasonbased

and the capacity of the fungus to be active in vitro as a function of the temperature, <i>appears strict</i> .	inoculations and the capacity of the fungus to be active in vitro as a function of the temperature.
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.

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.

- **Place the subject before the verb.**

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 are</i> among the factors that influence the choice of parameters.
Of particular interest <i>was the sugar transporter</i> , because...	<i>The sugar transporter was</i> of particular interest, because...
Important parameters <i>are conciseness and non-ambiguity</i> .	<i>Conciseness and non-ambiguity are</i> important parameters.

- **Don't delay the subject.**

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.

- **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).

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

- **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...

- **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.

Ex (wrong): * Data regarding the thyroid function and the thyroid antibodies before the beginning of the therapy *were not available*.

Ex (right): 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...

- **Locate negations before the main verb, but after auxiliary and modal verbs.**

Ex (wrong): * Patients *seemed not* to be affected by intestinal disorders.

Ex (right): Patients *did not seem* to be affected by intestinal disorders.

- **Deciding where to locate an adverb.**

The rules for deciding where to locate an adverb are complex. Here are 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.

Ex 1: Dying neurons do not *usually* exhibit these biochemical changes.

Ex 2: The mental functions are slowed, and patients are *also* confused.

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

Ex 1: Language would *never* have arisen as a set of bare arbitrary terms if...

Ex 2: Late complications may not *always* have been notified.

-After the present and past tenses of 'to be'.

Ex 1: The answer of the machine is *thus* correct.

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

- **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 we 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.

3. Structuring paragraphs

- Always think about your readers – order the information you give them in the most logical way and in the simplest form.
- Begin each paragraph with a topic sentence, then use the rest of the paragraph to develop this topic. If appropriate have a short concluding sentence at the end of the paragraph.

- Decide whether to begin a new section with a short summary, or whether to go directly to the main points.
- Put the topic as the subject of the paragraph or sentence, then give known information (context, background) followed by new information. Consider not giving the known information if it will be obvious for your readers.
- Move from the general to the increasingly specific, do not mix the two.
- Always progress in the most logical and consistent order, do not go backwards and forwards.
- Break up long paragraphs.
- Begin a new paragraph when i) you move on to a new topic (e.g. you move from general background info to discussing a particular case; ii) you have been talking about the literature and now you start talking about your contribution; iii) you are talking about your contribution and you want to mention a specific gap that your contribution fills; iv) you are discussing your results, and you want to highlight a key finding
- Avoid redundancy in the final paragraph of a section.

4. Being Concise and Removing Redundancy

Don't think that using complex terms will make you sound more intelligent. Write using the simplest most direct terminology. Cut everything that is not essential – this will let your key ideas stand out (be seen) more easily.

- **Write less and you will make fewer mistakes in English**, and your key points will be clearer
- **Cut individual redundant words**

The words in square brackets below could simply be removed without having to make further changes to the sentence.

Ex1: It was small [in size], round [in shape], yellow [in color] and heavy [in weight].

Ex2: This will be done in [the month of] December for [a period of] six days.

Ex3: Our research [activity] initially focused [attention] on [the process of] designing the architecture.

Ex4: The [task of] analysis is not [a] straightforward [operation] and there is a [serious] danger that [the presence of] errors in the text ...

Ex5: The analyses [performed in this context] highlighted [among other things] the [fundamental and critical] importance of using the correct methodology in a consistent [and coherent] manner [of conduction].

- **Consider cutting abstract words**

If you find that your paper is full of the words listed below, first decide if you could cut them, if not try to find a more concise and concrete alternative.

activity, case, character, characteristics, choice, circumstances, condition, consideration, criteria, eventuality, facilities, factor, instance, intervention, nature, observation, operation, phase, phenomenon, problem, procedure, process, purpose, realization, remark, situation, step, task, tendency, undertaking

- **When drawing the reader's attention to something use the least number of words possible**

All the phrases below could be replaced by *Note that* ...

It must be emphasized / stressed / noted / remarked / underlined ...

It is interesting to observe that ...

It is worthwhile bearing in mind / noting / mentioning that ...

It is important to recall that ...

As the reader will no doubt be aware ...

We have to point out that ...

- **Reduce the number of link words**

When papers reflect a clear, logical progression of ideas, the reader follows the argument without excessive promptings such as:

It is worthwhile noting that ...,

As a matter of fact ...,

Experience teaches us that ...

The following link words could all be replaced by *since*:

considering that, given that, due to the fact that, on the basis of the fact that, notwithstanding the fact that, in view of the fact that, in consequence of the fact that

- **Choose the shortest expressions**

Instead of using an adjective + a generic noun (way, mode, fashion), use the adverb form of the adjective. Ex: in the normal course of events (normally), on many occasions (often), a good number of times (many times, frequently), from time to time (occasionally), in a rapid manner (rapidly), in a manual mode (manually), in an easy fashion (easily), from a conceptual point of view (conceptually).

- **Cut redundant adjectives**

Whenever you use an adjective decide if it really is necessary.

an *acute* dilemma, a *real* challenge, a *complete* victory, a *novel* solution, an *interesting* result, an *appropriate* method

Only use an adjective and adverb if it adds precision to your sentence. If you really think that such adjectives are necessary you should explain why something is *novel*, *interesting*, *appropriate*.

- **Cut pointless introductory phrases**

Often you can avoid an introductory phrase when it is preceded by a heading. For example, immediately after a heading entitled Results, the following phrases would be completely redundant:

The salient results are summarized in the following.

The results of this work may be synthesized as follows.

Let us recapitulate some of the results obtained in this study.

Likewise, under a heading entitled Conclusions don't begin by saying:

In conclusion, we can say that ...

- **Prefer verbs to nouns**

English tends to use more verbs than nouns. This reduces the number of words needed, makes sentences flow better, and provides variety. Too many nouns make a sentence heavy to read.

NO ☹	YES ☺
X was used in the <i>calculation</i> of Y	X was used to <i>calculate</i> Y
Symbols will be defined in the text at their first occurrence	Symbols will be defined <i>when they first occur</i> in the text

Lipid <i>identification</i> in paint samples is based on the <i>evaluation</i> of characteristic ratio values of fatty acid amounts and <i>comparison</i> with reference samples	Lipids are generally <i>identified</i> in paint samples by <i>evaluating</i> the characteristic ratio values of fatty acid amounts and <i>comparing</i> them with reference samples
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- **Use one verb (e.g. *analyze*) instead of a verb+noun (e.g. *make an analysis*)**

Some examples:

achieve an improvement (improve), carry out a test (test), cause a cessation (stop), conduct a survey (survey), effect a reduction (reduce), execute a search (search), exert an influence (influence), exhibit a performance (perform), experience a change (change), give an explanation (explain), implement a change (change), make a prediction (predict), obtain an increase (increase), reach a conclusion (conclude), show an improvement (improve), subject to examination (examine).

- **Reduce your authorial voice**

Readers will not appreciate being continually given a commentary on what you are doing in your paper, as in the first five examples in the NO version below. Also, avoid *we* to refer to you and your readers, as in the last example.

NO ☹	YES ☺
As in the previous case we observe that there are three distributions of this measure	There are three distributions of this measure
We can identify two categories of users	There are two categories of users
It is now time to turn our attention, in the rest of the paper, to the question of	The rest of the paper focuses on the question of
We find it interesting to note that $x = y$	Interestingly, $x = y$

- **Be concise when referring to figures and tables.**

If you refer your readers to a figure, you don't need to describe the figure using words like *graphically* or *schematically*. You don't need to use many different synonyms either to describe what kind of figure it is or to say what it shows. If possible use active verbs – this figure *shows* x , rather than x *is shown* in this figure.

In your text, avoid duplicating information that can be easily found in tables and figures. Just give the highlights.

- **Use the infinitive when expressing an aim.**

You can often save space by expressing your purposes and objectives in the shortest form possible.

Ex: *The design of software* is aimed at supporting *multimedia services* / The software is designed to *support* multimedia services / The software *supports* multimedia services.

- **Plagiarism and paraphrasing**

<http://www.ithenticate.com/> contains much useful information about plagiarism, including a survey amongst academics on what constitutes plagiarism.

- **Check specific journals' citation patterns.**

You can cite the exact phrase or sentence used by putting it in quotations marks. Then reference the author.

Ex: As noted by Wood [1997]: “The owners of international scientific English should be international scientists not Englishmen or Americans”.

As an alternative to *As noted by Wood [1997]* you could say:

Wood [1997] concludes:

As Wood [1997] states:

As Wood states in his 1997 paper:

In his Conclusions, Wood [1997] writes:

Rather than quoting directly, you can paraphrase Wood’s sentence using your own words. But you must still reference Wood, otherwise it would appear that these are your own conclusions. S1 is Wood’s original sentence, S2 and S3 are paraphrased versions.

S1. The owners of international scientific English should be international scientists not Englishmen or Americans.

S2. International scientific English belongs to everyone in science [Wood, 1997].

S3. International scientific English does not just belong to native English speakers but to the whole scientific community [Wood, 1997].

Source: Wallwork, Adrian. (2016). *English for Writing Research papers*. 2nd edition. Springer.