

How to use ChatGPT in scientific writing

[Source: <https://scientistseessquirrel.wordpress.com/2023/06/20/how-to-use-chatgpt-in-scientific-writing>, accessed 2024.06.05]

Very, very, VERY carefully.

But that doesn't mean "not at all", as some folks seem to be saying (often in a rather scandalized tone of voice). Using ChatGPT in writing is dangerous. But lots of tools are dangerous, if you don't use them carefully – like the table saw in my basement. I'm always careful with my table saw (look – typing with all ten fingers!), and it's done good work for me. You can be careful with ChatGPT; and if you are, you may find it does good work for you.

Being careful with ChatGPT starts with understanding two absolutely critical things, which I can't possibly emphasize enough. First, ***ChatGPT does not know anything***. Second, ***you are responsible for any mistakes it makes***.

On the first point: it's been remarkable to see user after user being shocked to discover that ChatGPT makes stuff up – nonexistent citations, imaginary "facts", you name it. Most recently (as I write) it's a lawyer who used ChatGPT to write a brief, [only to have the judge discover that the brief was "supported" by citations to imaginary cases](#). (As you can imagine, this is not turning out well for either the lawyer or his client.) Before you use ChatGPT for *anything*, you must understand this: it *does not know anything*, and it *does not care whether the things it says are true or false*. Neither of those things is surprising; ChatGPT wasn't designed to know things, or to care about truth. It's nothing more than a very fancy version of the autocomplete function on your phone. ChatGPT is designed to produce text that sounds like a human wrote it – and that's it. So: ***never*** use ChatGPT to generate content. Don't ask it for information; the results are meaningless, even if it purports to back up its claims with citations. Using ChatGPT to generate content is like using a watermelon to do a jigsaw puzzle. It's not even a poor tool for that – it isn't a tool for that *at all*.

On the second point: as an author, whatever you write, no matter what tools you use to write it, you must take responsibility for. That's part of what authorship means in science. So if your paper includes a statistical error, pointing to the Google search result that told you to do it that way doesn't fix the mistake or change the fact that you are to blame for it. And if your paper includes an imaginary citation that came from ChatGPT, explaining its ChatGPT origin doesn't help: the screwup (by which I mean fraud) is on you, and only on you. Well, and your coauthors. (For this reason, I think [it's silly that some journals are requiring that authors disclose their use of ChatGPT](#). How, exactly, does that change the situation if their papers are bad as a result?) Whatever comes out of *any* kind of writing assistance you use – a thesaurus, a grammar checker, the Hemingway app, your cousin Tina, or ChatGPT – is nothing more than a suggestion you can consider adopting; and only you (and your coauthors) are responsible for your decision.

OK, now you know what *not* to do: don't ask ChatGPT for content, and don't accept any suggestion it makes uncritically. With those safeguards in place, how might you use ChatGPT to help you with scientific writing? I think there are some really interesting possibilities, and I'm sure you'll suggest more in the *Replies*. You'll see that all of these have an important thing in common: *you* supply the content, while asking ChatGPT to suggest ways to polish or change its presentation. Here goes:

- Give ChatGPT a draft and ask it to polish the grammar and syntax. (This may be especially useful for authors who speak English as an additional language. Some of English's peculiarities – like its very complex rules around when we use “the” and when we don't – are remarkably hard to master or even to explain, but easily reproduced by a corpus-based tool like ChatGPT.)
- Give it bullet points, rough notes, or an informal draft and ask it to provide a fleshed-out draft.
- Give it an informally written draft, and ask it for a more formal revision “in the style of a scientific paper”. Warning, though: since ChatGPT is corpus-based, it's very, very good at reproducing the kinds of writing patterns already present in our literature – [and a lot of those are bad](#). So it might actually be more useful to reverse this: give it a formally written draft, and ask it for a *less* formal, more engaging version.
- Give it a draft and ask it for a more concise version with the same content. If you're like me (and like virtually every writer I know), your first drafts are too long. Not, I mean, too long for a first draft – the point of a first draft is to *exist*, not to be perfect. But too long for your reader, or the journal you're targeting, or both; and ChatGPT can suggest ways to cut.
- Give it a draft and ask it for a version using shorter words. This is related to the last suggestion, of course, but there's [more than one way to be concise](#). A lot of us focus on reducing word count (because Word displays it live as you type!), but we should try at least as hard to use short, simple words. That's in part because long, fancy words sound science-y to us, so we slip into using them even if we know we shouldn't.
- Give it some Methods text from your *last* paper and ask it to paraphrase. Yes, I know you're annoyed by the fact that you can't just re-use your old Methods text; but you can't. (Don't stop here, though. There are other reasons why [more than just a paraphrase is the way to go](#)).
- Give it a passage and ask it to reorder the material or revise paragraph structure for logical flow.
- Give it a sentence you know is awkward or cumbersome and ask it for a revision. I sometimes stare at an awkward sentence for far too long; the way I've written it seems to take over my brain and I can't see the alternatives. There are *always* alternatives.

In all cases: think of ChatGPT's *output* as your own brain's *input*. Is the new version better? Great. Is it worse (as it often will be)? Discard it. Does it suggest a third way? Remember, you're in charge, and you're responsible.

One last tip. If you try one of these things, do it twice (or more), closing your ChatGPT session between times. Because ChatGPT has a strong stochastic component, you'll get different

responses. That's good in two ways. First, it's always better to take two shots at a target. Second, it will be a good reminder that there isn't actually one target. That is, there isn't a [single](#) perfect [way](#) to write something; so you needn't think of ChatGPT's suggestions, or your own draft, as a step on a linear journey toward the only way your writing can be.

ChatGPT is a tool, just like my table saw or a thesaurus. You can use it safely, productively, and ethically – if you put some thought into it.

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