

English as the universal language of science: opportunities and challenges

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English is now used almost exclusively as the language of science. The adoption of a de facto universal language of science has had an extraordinary effect on scientific communication: by learning a single language, scientists around the world gain access to the vast scientific literature and can communicate with other scientists anywhere in the world. However, the use of English as the universal scientific language creates distinct challenges for those who are not native speakers of English. In this editorial, we discuss how researchers, manuscript reviewers, and journal editors can help minimize these challenges, thereby leveling the playing field and fostering international scientific communication.

It is estimated that less than 15% of the world's population speaks English, with just 5% being native speakers (http://en.wikipedia.org/wiki/English_language). This extraordinary imbalance emphasizes the importance of recognizing and alleviating the difficulties faced by nonnative speakers of English if we are to have a truly global community of scientists. For scientists whose first language is not English, writing manuscripts and grants, preparing oral presentations, and communicating directly with other scientists in English is much more challenging than it is for native speakers of English. Communicating subtle nuances, which can be done easily in one's native tongue, becomes difficult or impossible. A common complaint of nonnative speakers of English is that manuscript reviewers often focus on criticizing their English, rather than looking beyond the language to evaluate the scientific results and logic of a manuscript. This makes it difficult for their manuscripts to get a fair review and, ultimately, to be accepted for publication.

We believe that the communications advantage realized by native speakers of English obligates them to acknowledge and to help alleviate the extra challenges faced by their fellow scientists from

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non-English-speaking countries. Native speakers of English should offer understanding, patience, and assistance when reviewing or editing manuscripts of nonnative speakers of English. At the same time, nonnative speakers of English must endeavor to produce manuscripts that are clearly written. We offer the following guidelines for writing and evaluating manuscripts in the context of the international community of scientists:

1. Nonnative speakers of English can write effective manuscripts, despite errors of grammar, syntax, and usage, if the manuscripts are clear, simple, logical, and concise. (We note that native speakers of English sometimes write manuscripts exhibiting good grammar, yet filled with muddled and confusing logic.)
2. When possible, reviewers and editors of manuscripts should look beyond errors in grammar, syntax, and usage, and evaluate the science.
3. It is inappropriate to reject or harshly criticize manuscripts from nonnative speakers of English based on errors of grammar, syntax, or usage alone. If there are language errors, reviewers and editors should provide constructive criticism, pointing out examples of passages that are unclear and suggesting improvements. Reviewers and editors may also suggest that authors seek the assistance of expert English speakers or professional editing services in preparing revised versions of manuscripts. And finally, all involved should bear in mind that most journals employ copyeditors, whose job it is to correct any lingering errors in grammar, syntax, and usage before final publication of an article.
4. Nonnative speakers of English must be aware that reviewers, editors, and journal staff do not have the time or resources to extensively edit manuscripts for language and that reviewers and editors must be able to understand what is being reported. Thus, it is essential that nonnative speakers of English recognize that their ability to participate in the international scientific enterprise is directly related to their ability to produce manuscripts in English that are clear, simple, logical, and concise.

The fact that English is the de facto global language of science is not likely to change anytime soon. Optimizing communication among members of the international community of scientists, and thus advancing scientific progress, depends on elimination of obstacles faced by nonnative speakers of the English language. This ideal can best be achieved when all members of the scientific community work together.

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