Perspective: Publication Ethics and the Emerging Scientific Workforce: Understanding “Plagiarism” in a Global Context
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Abstract

English has long been the dominant language of scientific publication, and it is rapidly approaching near-complete hegemony. The majority of the scientists publishing in English-language journals are not native English speakers, however. This imbalance has important implications for training concerning ethics and enforcement of publication standards, particularly with respect to plagiarism. The authors suggest that lack of understanding of what constitutes plagiarism and the use of a linguistic support strategy known as “patchwriting” can lead to inadvertent misuse of source material by nonnative speakers writing in English as well as to unfounded accusations of intentional scientific misconduct on the part of these authors. They propose that a rational and well-informed dialogue about this issue is needed among editors, educators, administrators, and both native-English-speaking and nonnative-English-speaking writers. They offer recommendations for creating environments in which such dialogue and training can occur.

Although the English language has dominated scientific publication for decades and is rapidly approaching near-complete hegemony, the majority of the world’s publishing scientists are not native English speakers.1 National Science Foundation data on global science-and-engineering-article output show that the share of articles published by U.S. researchers has been decreasing: In 2007, it was just 28% compared with 34% in 1995. Further, many U.S. articles are written by scientists whose first language is not English (L2 writers): By 2003, 40% of doctoral-level workers in U.S. science and engineering jobs were foreign born, and since 1994, over 50% of postdoctoral fellows in the biosciences have been visa holders.2 If these scientists’ nationalities are used as imperfect proxies for their native languages, it becomes clear that scientists who speak languages other than English are not a minority—they are part of the mainstream of the U.S. scientific workforce. This has important implications for the training of academic physicians and scientists in ethics and enforcement of publication standards, particularly with respect to plagiarism.

Defining the Act and the Concept of Plagiarism

Plagiarism is usually defined as using another author’s material or ideas without proper attribution. Our informal review of university and editorial Web pages on plagiarism revealed three key themes: (1) Plagiarism is an egregious infraction, regularly described with words such as "crime" and “stealing,” (2) absence of intent to plagiarize is not a mitigating factor, and (3) even trivial errors, such as citation form or muddled wording, can be construed as plagiarism. Precise characterizations of plagiarism are difficult to find, however, and several studies have shown that identification of and value judgments about source-text repetition vary markedly across individuals, let alone across languages.3–10 Given the gravity of plagiarism and its enmeshed relationship with culture and language, it is hard to imagine how the issue could be other than problematic for L2 writers. Whether plagiarism or perceived plagiarism is more prevalent in the work of L2 writers than that of native-language (L1) writers is not known. But L2 writers’ sometimes inappropriate use of source material (by U.S. standards) merits a deeper examination of how we teach and talk about publication ethics.

The Impetus for Patchwriting

L2 writers face significant additional burdens as they prepare their work for publication in English-language journals. In 2006, we conducted an anonymous informal survey of 41 L2 postdoctoral fellows taking the course “English for Academic Purposes” at the University of Texas MD Anderson Cancer Center. Thirty-one (76%) of these L2 fellows believed it took them at least twice as long to write a research communication in English as in their native language; some responded that it took them three to four times as long or even longer. Thirty-four (83%) agreed or strongly agreed that they had “missed professional opportunities” because of their L2 status. It is not unreasonable that researchers faced with such time and career pressures will develop compensatory strategies.

One such strategy is known as patchwriting, or the weaving together of both original and borrowed text. Howard,11 who coined the term primarily to describe writing patterns of L1 undergraduates, characterizes patchwriting as a scaffolding tool that students use to progress from “school” writing to academic expository prose.
Many scholars consider patchwriting to be a developmental strategy,\textsuperscript{12–16} distinct from plagiarism in that there is no deliberate intent to misrepresent the source of the ideas; it may be used by L2 writers in academia with motivations similar to those of novice L1 writers. Pecorari’s\textsuperscript{17} study of a corpus of 17 texts by predoctoral L2 writers from various disciplines suggested widespread use of patchwriting: 41% of the writing in the corpus consisted of unattributed repetition of source language. Of the disciplines represented in the corpus, biology writers were more likely than engineering, humanities, or social sciences writers to rely on this strategy. Given the workload of the average biosciences trainee and the pressure to publish, it is plausible that an L2 writer would employ patchwriting as a way both to reduce the time needed to complete an article and to elevate the quality of its prose.

L2 writers’ use of patchwriting (and/or plagiarism) has been associated with cultural heritages\textsuperscript{18,19} that prize emulation of traditional scholarship over individuality. In this view, it would be considered presumptuous for a novice to impose his or her own voice over the cited scholar’s. But the cultural values explanation is built on unexamined assumptions. A recent study\textsuperscript{20} on attitudes toward plagiarism among 77 Japanese undergraduates suggests that in Japan—one of the Confucian–influenced cultures often said to encourage imitation of canonical scholars—students are aware of what plagiarism is, can identify it when they see it, and reject it as poor scholarship (although not necessarily as a form of theft). Cultural values may sometimes play a role in aspects of academic writing, but relying on them as an explanation for patchwriting leads us to a dead end: Either we sacrifice scholarly integrity in favor of relativistic broad-mindedness or we sacrifice the legitimate scientific contributions of a significant number of investigators in favor of absolutist ethics. Either way, science loses.

A thoughtful examination of why writers patchwrite may lead to a better understanding of the dilemma as well as more productive solutions. Simply informing L2 writers that patchwriting is unacceptable does not address their competing priorities and their motivations. Patchwriting must first be understood as a strategy for solving a linguistic problem that is experienced by novice L1 writers\textsuperscript{13} but that is especially acute for L2 writers.\textsuperscript{21–26} Skillful synthesis of source material requires discernment of both the denotation (what is meant) and connotation (what is suggested) of words, phrases, idioms, and grammatical constructions. The expression “It has come to my attention” carries a complex set of associations different than, for example, “Somebody said” or “They let me know.” L2 writers realize that unknown connotations present risks for them. Even in cases where the differences among possible connotations may be minor, L2 writers are often reluctant to take chances; they may feel that it is safer to use the original words than to attempt to use synonyms.

Second, proper integration of source material into academic expository prose requires the writer to be skilled in paraphrasing and summarizing. The writer must not only accurately interpret the source language but also possess considerable linguistic agility and range in order to recreate the meaning of the source material faithfully. These skills are difficult to master in a second language, and the L2 writer may struggle to find even one way of expressing an idea, much less alternative ways to do so.

Thus, L2 writers must choose between rapidly producing scientific papers with less sophistication or delaying publication in order to meet L1 linguistic standards. Moreover, L2 writers are likely to have been educated in environments where plagiarism and especially patchwriting are neither vigorously condemned nor openly condoned: They simply are not discussed as frequently as they are in the United States, where middle school and high school writing classes teach proper attribution of sources, use strict grading criteria for proper citation style, and penalize students whose work does not conform to these standards. U.S. students continue to receive such instruction and socialization in their introductory-level college courses. L2 writers educated outside the United States are, thus, less likely than their L1 colleagues to have received in-depth training in proper source attribution.

The Risks and Implications of Patchwriting

The difficulty of producing sophisticated academic prose in a second language, together with a lesser degree of socialization regarding U.S.-style attribution standards, may lead the L2 writer to overestimate the benefits and underestimate the risks of patchwriting. An Asian L2 postdoctoral fellow working in Texas, in an interview with one of us (C.C.), recounted details of an after-class discussion about plagiarism among several fellows and their scientific writing instructor:

My friend who is a non-English speaker was caught in plagiarism in her term paper when she was a master degree student. We were all shocked since what she did was copying sentences or paragraph from papers journals into her term paper. This was quite common for us non-English speakers to do since we usually felt the language in the published paper is more precise and correct than our own words, and on the other hand, it took a long time to rewrite or paraphrase other’s work; this is especially common if we are under time pressure. But we usually cite those sentences or change a few words. My friend probably didn’t cite or she copied too much…. But she got disciplined by the course instructor, she almost got kicked out of the school. It was so scary.

In our institution’s Responsible Conduct of Research (RCR) training workshops on publication ethics, patchwriting is defined and the risks of engaging in it are explained. Many members of the international audience—whether from Germany, China, or Colombia—state that they know essentially what intentional plagiarism is. Many, however, state that they did not realize that patchwriting as a textual strategy is likely to be equated with plagiarism and that they were not aware of the intense condemnation that perceived plagiarism elicits. In an interview with one of us (C.C.), a South American L2 postdoctoral fellow explained:

They tell us about plagiarism a lot, you hear about it all over the place when you come here. But they assume that you already know since undergrad how to write…. So you take those [English] sentences and you use the thesaurus to change it a little bit and then you cite the guy. We don’t really connect that with what they told us about plagiarism since we’re not stealing the scientific ideas, we’re just imitating some sentences. You
There is such a strong stigma surrounding plagiarism in the United States that it can be difficult to have an open and constructive discussion of patchwriting by L2 trainees. Yet a rational and well-informed dialogue about this issue that affects such a large portion of the research community—in the United States and around the world—is critical. Educators’ and publishers’ use of plagiarism detection software (e.g., Turnitin, SafeAssign, Déjà Vu) is bringing patchwriting cases to the fore with greater frequency than ever before. A recent Science News Focus article reported on an instance of L2 patchwriting in which 95% of the text of a cancer research article was duplicated; the L2 authors had changed little more than the disease site and the figures. The Science item noted that the authors responded to the research journal’s editorial inquiries by stating that the quality of their English was insufficient and that they acknowledged their lapse in judgment in publishing the paper without using their own prose. The authors eventually retracted the paper.

In a personal communication with one of us (C.C.), an English-speaking (L1) teaching assistant for a public health course in environmental science provided examples of personal and institutional efforts to identify patchwriting and enforce standards:

As a teaching assistant in a required course for all graduate students in the School of Public Health, I was astonished at the number of students who used multiple unreferenced sentences in their submitted assignments. These cases did not include the instances where I felt it was lack of knowledge on how to properly cite a reference…. When I suspected egregious plagiarism, I merely copied the sentences into a Google search and would easily find the primary source. Even though students are given a lecture on plagiarism and our course required students to take a quiz on plagiarism, every semester would bring new cases. Because of this, my school instituted a program called SafeAssign, which allows students to check their work for potential plagiarized text before submitting the assignment. The school even provides a course on how to use it. That said, the professor who still teaches the course, even two years after SafeAssign was introduced, still gets new cases of egregious plagiarism every semester. I find it astonishing that there are still individuals who do not understand what constitutes plagiarism. I often hear it is “cultural” and “acceptable in other countries”; however, I personally feel that any student, regardless of country of origin, who chooses to get an academic degree or attain an academic position, must follow the rules of their institution and be held to the same academic and ethical standards.

Toward a Win–Win Solution

Editors, educators, administrators, and both L1 and L2 writers need to better understand patchwriting. Although excessive duplication of source material is unacceptable, categorical condemnation of patchwriting as willful scientific misconduct both misses the point and fosters an adversarial climate. To facilitate a more supportive environment in U.S. training programs, we offer the following recommendations:

- Address patchwriting and its significance in English-language publication thoughtfully in scientific writing and advanced English-as-a-second-language courses; also, provide training in linguistic skills such as paraphrase and summary. If mentors or coauthors are not sure how to help L2 writers, scientific editors and English instructors can be asked to provide support and assistance.

- Enhance RCR units in publication and authorship ethics. “RCR Seminars: A Postdoc Toolbox,” a lecture series on research ethics at our institution, includes a session on publication ethics that addresses patchwriting explicitly. Other opportunities for education and training include journal clubs, lab meetings, and career development seminars.

- Encourage mentors to provide direct, specific guidance to trainees on avoiding patchwriting and to model skillful attribution. Unless a trainee inserts a passage that uses dramatically more sophisticated language than the rest of the manuscript, patchwriting can be difficult to detect—especially if mentors are unaware of its likelihood. Trainees who are unaware of the implications of patchwriting may not think it an issue worth bringing up in discussions with their mentors. Both mentors and trainees need to be aware that patchwriting is an understandable yet unacceptable practice. An open and trusting dialogue is critical.

Rather than further marginalizing L2 writers, the academic community should encourage appropriate education and support at various points of their careers; at the same time, we should develop a greater appreciation for the challenges facing L2 researchers. Awareness, education, and communication about this prevalent and poorly understood issue will serve science and scientists alike as international collaboration and integration continue to grow.

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