

Does the Use of AI to Create Academic Research Papers Undermine Researcher Originality?

Eisuke Nakazawa ¹, Makoto Udagawa ¹ and Akira Akabayashi ^{1,2,*} 

¹ Department of Biomedical Ethics, Faculty of Medicine, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan

² Division of Medical Ethics, School of Medicine, New York University, New York, NY 10016, USA

* Correspondence: akira.akabayashi@gmail.com or akirasana-tky@umin.ac.jp; Fax: +81-35841-3319

Abstract: Manuscript writing support services using AI technology have become increasingly available in recent years. In keeping with this trend, we need to sort out issues related to authorship in academic writing. Authorship is attached to the contribution of researchers who report innovative research, the originality of which forms the core of their identity. The most important originality is demonstrated in the discussion of study findings. In the discussion section of this paper, we argue that if a researcher uses AI-based manuscript writing support to draft the discussion section, this does not necessarily diminish the researcher's originality. Rather, AI support may allow the researcher to perform creative work in a more refined fashion. Presumably, selecting which AI support to use or evaluating and properly adjusting AI would still remain an important aspect of research for researchers. It is thus reasonable to view a researcher as a cooperative existence realized through a network of cooperative work that includes the use of AI. Discussions on this topic will be scientifically and socially important as AI technology advances in the future.

Keywords: AI; authorship; ICMJE; originality; integrity



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1. Introduction

In recent years, massive advances have been made in AI technology-based support for writing research papers. Surprisingly, AIs that can generate drafts of the introduction have been developed, and it is now possible to have the abstract automatically created to some extent [1–4]. Could AI-based manuscript writing support undermine the originality and the contribution of researchers? [5] As to copyright in AI outputs such as texts and images, debate has been ongoing, but the focus has been on the issue of financial rights arising from the creation of copies [6].

Focusing on AI that offers writing support for scholarly articles, this paper aims to (1) organize representative positions on authorship, (2) examine the potential of AI-based manuscript writing support, and (3) envisage how the role of researchers in future society would change.

There are two major trends regarding the positions of authorship. The first trend reflects that of ICMJE recommendations [7], and the second, that of *Nature* [8]. There is also a “unique” Japanese position advocated by the Science Council of Japan (SCJ) [9] (Table 1). While we certainly think that the first through third ICMJE criteria, as well as the first and second *Nature* criteria, should be met, the fourth ICMJE criterion and the third *Nature* criterion (i.e., each author is expected to have agreed to be accountable for all aspects of the work, even specific parts of the work in which the author was not personally involved) may be considered somewhat stringent. We predict that it would be difficult to demand perfection regarding this point, and efforts to fulfill these criteria may instead become limiting factors. The SCJ has deemed it appropriate to respect the practices of academic circles, and in terms of author accountability, it only stipulates that “authors are

accountable for the contents of the manuscript”. However, detailed provisions are needed, given that the SCJ’s expression is vague and leaves room for interpretation.

Table 1. Positions on authorship qualification.

ICMJE’s Position [7] (p. 2) Who Is an Author?
The ICMJE recommends that authorship be based on the following 4 criteria: 1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND 2. Drafting the work or revising it critically for important intellectual content; AND 3. Final approval of the version to be published; AND 4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. In addition to being accountable for the parts of the work he or she has done, an author should be able to identify which co-authors are responsible for specific other parts of the work. In addition, authors should have confidence in the integrity of the contributions of their co-authors.
Nature’s Position [8]
1. Each author is expected to have made substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data; or the creation of new software used in the work; or have drafted the work or substantively revised it 2. AND to have approved the submitted version (and any substantially modified version that involves the author’s contribution to the study); 3. AND to have agreed both to be personally accountable for the author’s own contributions and to ensure that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved, and the resolution documented in the literature. (<i>underlined by the authors</i>)
Science Council of Japan’s Position [9] (p. 2)
1. Substantial contributions to the design/conception of the work, or the execution of surveys/experiments; or substantial contributions to the work, such as the acquisition and analysis of experimental/observational data, or theoretical interpretation and model construction; 2. Contributions to the completion of the manuscript, such as writing a draft of the manuscript or expressing opinions about the important parts of the manuscript; 3. Approval of the final version of the manuscript, and being accountable for the contents of the manuscript. However, since these requirements are subject to broad interpretation depending on the area of research, judgment should be based on the consensus of the researcher community in the respective research areas. When there are several authors, it is desirable that the roles each author played regarding the manuscript be clearly stated. (<i>translated by the authors</i>)

From a compliance perspective, journals that conform to ICMJE recommendations require the authors to submit the ICMJE Disclosure Form. Meanwhile, *Nature* asks the authors to provide detailed descriptions of their contributions, without specifying the content of contributions to fulfill to be listed as authors. The Consortium Advancing Standards in Research Administration (CASRAI) provides examples of 14 contributor roles (“CRediT”) [10]. According to *Nature*, however, these CRediT roles do not necessarily constitute the criteria of authorship.

Authorship provisions are of interest to all researchers. If the stance of the SCJ deserves some recognition, it is because it expresses respect for the researcher community. To this end, the ICMJE, *Nature*, and the SCJ will need to listen to the opinions of researchers worldwide, engage in discussion, and strive to increase transparency.

Authorship and originality in research are closely linked. The need to discuss authorship issues arises because each work has original value (“originality”), and it is necessary

to specify to whom this originality is ascribed. Authorship belongs to the contribution of a researcher who reports innovative research, and the originality of their work is at the core of their identity. Originality in research is the value of knowledge that the researcher produces.

Writing is considered an important part of work for researchers. Thus, delegating these tasks (e.g., generating a draft of the abstract and introduction) to AI may seem inappropriate, and some may even think this (outsourcing) compromises the researcher's authorship contribution. The increasing use of AI to this end may eventually generate conflict with researcher creativity and integrity.

But is that true? Does the use of AI when writing manuscripts threaten researcher integrity? If it does, where should the boundary be drawn such that researchers can be warned about their dependence on AI harming their integrity?

2. Discussion

2.1. Originality in the Introduction Section

Does the introduction of a manuscript require originality? Let us assume that it does not and speculate the following: The integral components of the introduction section are the parts that lead to the research question, which require an extensive review of essential research papers, as well as summarizing issues at hand. In this case, it is obvious that creating an introduction with the help of AI support would not compromise researcher originality.

Now let us assume that originality is required for the introduction section of a manuscript. Suppose that the perspective of each author is also reflected in how they perform literature searches and compile search results; in this instance, it may be possible to suggest that the introduction section requires originality. If such is the case, would the use of AI support undermine researcher originality? The answer to this question, in our opinion, is no. Researchers must examine the AI-drafted text sentence by sentence, make necessary modifications, supplement citations, and approve the final version: researcher originality is thus protected.

2.2. AI Support Related to the Discussion Section

The discussion section of manuscripts is where researcher originality is fully demonstrated. Even SciNotes, which offers AI support, restrains itself from writing the discussion section: "Which is why it cannot write the discussion section, which is the most creative and original part of the scientific article and greatly depends on the scientist's style and way of thinking. Every scientist adds their own expertise and knowledge to the entire text" [1]. From the perspective of respecting traditional values, receiving AI support in the process of creating the discussion section would mean a deviation from researcher originality.

In what way, then, can AI support be utilized when writing the discussion section? We presume that (1) AI can check for erroneous inferences drawn in the discussion section. Moreover, we wonder if (2) AI will become technically capable of presenting candidates for possible multiple inferences based on results in the future. Of course, we are aware of the technical gap between (1) and (2) (i.e., checking errors in inference vs. presenting candidate inferences).

Next, assume that AI has been created to allow for the writing of the discussion section in the above two capacities. While there is no issue with (1) from the same perspective as that regarding support related to the introduction section, we wonder if AI that offers services such as (2) might undermine researcher originality. Taking a traditional perspective, one may consider that using AI in this way does undermine researcher originality.

However, it is also possible that traditional perspectives do not consider the changing roles of researchers with technological advances in society. We should envision the future, turning our attention to humans who undergo changes in sync with those in technological advances. In other words, it is important to envision the values of future research that can be anticipated at that moment and follow that trajectory in the future society.

Based on the premise that researcher originality is what individual researchers achieve without relying on any environment or tools, we can say that the use of AI undermines researcher originality. However, we must ask whether this premise holds true. In fact, in genome research, studies cannot be carried out without genome analyzers. Furthermore, researchers are influenced by other researchers around them, both explicitly and implicitly, through everyday communication and academic meetings. However, one can imagine that a tremendous number of factors has influenced the researcher's observations. Perhaps the use of AI is just one of them. This also means that the author's identity has already been established within the context of environment and society. Thus, the originality of a researcher would no longer be set separately from the environment.

By obtaining AI support, researchers may be able to perform creative work in a more refined fashion. We predict that selecting AI support, evaluating it, and properly adjusting AI would remain an important aspect of work on the part of researchers. Furthermore, even if technology reaches the point where AI can do those tasks, researchers would still need to evaluate its performance. This, which leads to an infinite regress, ensures that researcher originality is protected.

3. Summary

In this paper, we first reviewed the recommendations set forth by the ICMJE, *Nature*, and the SCJ regarding the way authorship should be credited. In view of these, we tentatively discussed how the development of AI may change the image of researchers. This also affects authorship. The discussion section is the most important part of a manuscript in terms of claiming the originality of the work being reported. Even if advances in technology make it possible for researchers to use AI that offers the discussion section, we argue that this would not necessarily compromise researcher originality.

It resembles caregiving in medical practitioners; even if one day, the era of AI treatment arrives, it is a human wish to be cared for, at least at the end of our lives, by human medical practitioners. This practice (seeing off) would likely never be entrusted to AI even if all other jobs are.

The ethical implication of AI-assisted writing is that developments in AI may renew the researcher's originality. While AI will advance and improve research, it may also diminish the importance of the author's role. However, researchers are expected to demonstrate certain originality even when facing such an ethical dilemma. The value of originality has so far tended to be "individualistic", attributed to independent persons. Perhaps it is time to change this individualistic interpretation of originality and adopt a more "distributed" and "collaborative" meaning. Knowledge production is a collaborative process involving humans, research environments and instruments, and AI. Perhaps the dilemma of AI-assisted writing of papers and diminishing authors' originality would substantially reform the traditional knowledge framework.

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