

Opinion  
Editing, Writing & Publishing



# Beyond the Keyboard: Academic Writing in the Era of ChatGPT

Bohdana Daskaliuk ,\* and Olena Zimba <sup>2,3,4\*</sup>

<sup>1</sup>Department of Pathophysiology, Ivano-Frankivsk National Medical University, Ivano-Frankivsk, Ukraine

<sup>2</sup>Department of Clinical Rheumatology and Immunology, University Hospital in Krakow, Krakow, Poland

<sup>3</sup>National Institute of Geriatrics, Rheumatology and Rehabilitation, Warsaw, Poland

<sup>4</sup>Department of Internal Medicine N2, Danylo Halytsky Lviv National Medical University, Lviv, Ukraine



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**Address for Correspondence:**

**Bohdana Daskaliuk, MD**

Department of Pathophysiology, Ivano-Frankivsk National Medical University, Ivano-Frankivsk, Ukraine, Halytska str. 2, Ivano-Frankivsk 76000, Ukraine.

Email: Daskaliuk\_Bo@ifnmu.edu.ua

\*Bohdana Daskaliuk and Olena Zimba contributed equally to this work.

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**ORCID iDs**

Bohdana Daskaliuk

<https://orcid.org/0000-0003-1650-8928>

Olena Zimba

<https://orcid.org/0000-0002-4188-8486>

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“Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less.”

Marie Curie

For centuries, some significant scientific advancements have elicited considerable anxiety and apprehension in society. However, with the passage of time, people have acclimated themselves to these novel inventions, mastered them, and ultimately ascended to a new level of progress. It appears that ChatGPT, as a prodigious creation of OpenAI, will inevitably follow in the footsteps of all great innovations, necessitating a journey through the various stages of societal and moreover academic acceptance.

The GPT acronym is derived from “Generative Pre-trained Transformer,” which refers to a deep learning algorithm to analyze and produce natural language text.<sup>1</sup> This innovative technology has been pre-trained on a vast corpus of internet text data, enabling it to generate cohesive and grammatically precise sentences in response to prompts or inquiries. Since its public debut on November 30th, 2022,<sup>1</sup> ChatGPT has garnered considerable interest not only among internet users but also within the scientific community. As of March 19th, 2023, the Scopus database already features an impressive 81 articles exclusively dedicated to ChatGPT, with topics ranging from its potential impact on education, academic writing, and medicine to its prospective role in addressing global warming and cybersecurity.

Within the discourse surrounding ChatGPT and academic writing, the issue of academic integrity and the potential for plagiarism has consistently arisen.<sup>2-5</sup> Many editors express apprehension that the utilization of artificial intelligence (AI) technology may lead to an increase in instances of plagiarism. In fact, as of January 2022, Science journals family have explicitly stated that manuscripts featuring text generated by ChatGPT will not be accepted due to concerns of unoriginality resulting from “plagiarism from the ChatGPT.”<sup>6</sup>

The issue of plagiarism has long persisted, and with the advent of the internet, it appeared that the potential for plagiarism had increased manifold.<sup>7,8</sup> However, as demanded by time, numerous software programs that possess the capacity to detect plagiarism and even classify it into various categories have been developed. Presently, the distinction between a manuscript composed by a human and one generated by an artificial intelligence is not easy. Nonetheless, an authors-team from Stanford University has recently released a preprint

detailing the development of DetectGPT, a program engineered to accurately identify AI-generated text.<sup>9</sup>

Nevertheless, if authors employ ChatGPT solely as a tool for proofreading and editing, would it still be considered a form of plagiarism? They are permitted to use other software programs such as Grammarly or seek assistance from translation firms or language editing services from prominent publishing houses, as long as it is properly acknowledged in the Acknowledgements section.

At present, ChatGPT stands as a cost-free solution, effectively dismantling the linguistic barrier that has historically hindered non-Anglophone authors from achieving parity with their native-speaking counterparts.<sup>10</sup> Given that many language editing services require payment, non-Anglophone researchers hailing from regions with moderate to low economic stability are often significantly disadvantaged. ChatGPT therefore presents itself as a tool that could streamline access to the realm of esteemed, peer-reviewed academic journals, enabling scientists from a wider range of backgrounds to navigate the publishing process with greater ease and comfort, without having to contend with oppressive linguistic biases.

It is an established fact that the manner in which text is presented holds a substantial impact on its reception by readers.<sup>11</sup> Even incontrovertible research findings may be disregarded if the author fails to aptly articulate their viewpoint. However, is it truly justifiable to assign such elevated value to writing proficiency? In the past, statistical data analysis entailed extensive time investment, the application of intricate formulas, and the manual computation of all relevant data. This approach is now widely considered obsolete, with the majority of scientists availing themselves of statistical programs that perform all calculations on their behalf. The primary objective is now the capacity to select appropriate statistical methodologies and competently utilize data analysis software. Nevertheless, it would be remiss to subsequently undervalue the contributions of statisticians because of that. In this light, it may be said that we are traversing a similar trajectory within the sphere of academic writing. Just as we have a comprehensive statistical analysis section detailing all relevant methodologies, it may be prudent to include a section elucidating the employment of AI tools. Editors might require disclosing the specific commands issued during the employment of ChatGPT in order to accurately denote its role in the composition of the manuscript.

In what ways can authors be dissuaded from engaging in academic dishonesty while utilizing ChatGPT? Primarily, the question of adherence to academic integrity regulations should not be seen as merely a matter of avoiding detection, but rather as an embodiment of a deep-seated belief in scientific principles. By subscribing to the ICMJE 4 authorship criteria, authors willingly assume responsibility for all aspects of their work. Hence, it is doubtful that researchers would exclusively rely on ChatGPT, given its limitations. Furthermore, in accordance with the academic writing guidelines, ChatGPT does not meet the criteria for authorship or co-authorship of a manuscript.<sup>12</sup> While this AI tool offers numerous of benefits, it also possesses several drawbacks. Notably, it has limited knowledge of data and events beyond 2021. Moreover, it relies on internet resources of varying credibility, without the capacity to ascertain their reliability, resulting in occasional generation of inaccurate information. However, it is known that competition drives progress. Thus, it is reasonable to anticipate the continuous evolution of chatbots. Presently, there are already viable alternatives to ChatGPT, such as Google's Language Model for Dialogue Applications (LaMDA), which demonstrates remarkable capabilities in conversational AI.<sup>13</sup> Additionally,

cutting-edge endeavors like DeepMind's "Sparrow" are currently in the beta testing phase, indicating the rapid pace of advancement in the field of chatbot technologies.

Furthermore, we took the initiative to solicit the "opinion" of the AI tool itself, posing the question: "Is ChatGPT a threat to academic writing?" The response that we received was as follows:

"No, ChatGPT is not a threat to academic writing. ChatGPT is a tool designed to assist users in generating human-like responses to their queries or prompts. While it can be helpful in generating ideas and initial drafts of academic writing, it should not be relied upon as the sole source of information or analysis. Academic writing requires critical thinking, research, and analysis, which are skills that cannot be replicated by a machine. Additionally, academic writing often requires adherence to specific style guides and formatting requirements, which are not necessarily within the scope of ChatGPT's capabilities. Ultimately, ChatGPT is a useful tool, but it is not a replacement for the work of human writers in academic settings."

We strongly believe that ChatGPT could prove to be a valuable asset for the compiling of scholarly articles. Furthermore, it could potentially establish a new paradigm wherein, due to the convenience of producing review articles bereft of any critical analysis or innovative insights, the scientific community would enact stricter measures to regulate their appearance. It is highly probable that, in the future, the principal criterion for assessing articles will be their creative merit, thereby significantly enhancing science as a whole.

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The present manuscript was subjected to ChatGPT editing, employing a particular command: "Could you make this paragraph sound more sophisticated?" Each paragraph was further subjected to a rigorous process of double proofreading by the human authors and was subsequently re-edited if necessary.

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