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The Use of Artificial Intelligence (AI)-Assisted Technologies in Scientific Discourse

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Generative artificial intelligence (AI) and AI-assisted technologies have recently gained considerable attention, with ChatGPT as one of the most notable examples of this technology. ChatGPT was developed by OpenAI, an artificial intelligence company, and was launched on November 30, 2022. It is a generative chatbot, which is a software application that engages users via conversation (chat) and can simulate human-like conversations. It uses the Generative Pre-trained Transformer (GPT) language model to understand and respond to natural language inputs based on existing trained algorithms. As such, it can quickly provide detailed responses across multiple domains of knowledge and produce content that is almost indistinguishable from text written by humans (Eysenbach, 2023). Several experts and institutions have explored the potential of generative AI in different areas like business (van Dun, Moder, Kratsch, & Röglinger, 2023), education (Cooper, 2023), and medicine (Ali, & Shah, 2022). Very recently, on March 21, 2023 in the United States and United Kingdom, Google launched Bard, the company's own generative AI chatbox that aims to provide automated human-like support.

Generative chatbots, including ChatGPT, can be valuable tools for researchers and scientists in organizing material, generating an initial draft, and proofreading scientific writing. It is crucial to note that generative chatbots should not replace human judgment. As there are reports of incorrect and incomplete information generated by such technology (Shen et al., 2023), all should critically appraise and verify the output before use. In addition, using these tools as a substitute for writing raises several ethical concerns, including the risk of plagiarism and inaccuracies, as well as the potential disparity in accessibility between high- and low-income countries, particularly if payment is required for software access. There is a pressing need for a consensus on regulating the use of generative chatbots in scientific writing (Salvagno, Taccone, & Gerli, 2023).

Another potential challenge accompanying the use of generative AI-assisted technologies in scientific research is the potential for algorithmic bias. Although these technologies have significantly contributed to efficiency and advancements in healthcare and clinical decision-making, the potential risks and challenges associated with their use must be addressed. The problem of algorithmic bias arises from the inability of large datasets to capture the diverse characteristics and health conditions of certain groups of the human population. This misrepresentation in existing biomedical datasets reinforces bias, which may result in misdiagnoses, fatal outcomes, and lack of generalization. It is crucial to address this challenge and ensure that generative AI algorithms are developed and trained fairly. This requires concrete steps, including the use of tools from the field of open science to address bias and ensure timely and equitable representation of diverse populations in big datasets (Norori et al., 2021).

The emergence of generative AI in scientific research has led to concerns that reliance on technology may result in loss of critical thinking and creativity. While AI can be helpful in information gathering and other narrow tasks, there is a risk that using it to speed up bureaucratic and metricized processes may proliferate negative aspects of academic culture. The expansion of AI in research should assist, not replace, human critical thinking and creativity. Anticipatory approaches that engage diverse and critical voices across disciplines should be considered. Ultimately, generative AI should be viewed as a tool that supports scientific inquiry and innovation rather than a replacement for human ingenuity (Chubb, Cowling & Reed, 2022). To address this challenge, there is a need for meta-research on the role of generative AI in research to consider the effects on creativity.

As the use of AI-assisted technologies in physical therapy continues to grow, it is crucial to maintain transparency and integrity in the scholarly record. AI and AI-assisted technologies may include the generative AI of Google Docs, Microsoft word, and Grammarly that are used in the writing process, AI tools must not be used for data analysis or research insights. Authors who choose to use these technologies in their writing process must exercise caution and ensure human oversight, utilizing them only to enhance the readability and language of their work. It is the responsibility of the authors to review and edit the output generated by these technologies carefully, as there is a possibility that they may contain errors or biases that could compromise the integrity of the work.

Authorship involves responsibilities and tasks that only humans can perform. The World Association of Medical Editors advocates that generative AI tools should not be listed as an author or co-author nor cited as such (Zielinski et al., 2023). Each author is responsible for ensuring the accuracy and integrity of their work and must be able to approve the final version of the work and agree to its submission. Additionally, authors must ensure that their work is original, that the stated authors are qualified for authorship, and that the work does not infringe on third-party rights. If submitting to PhJPT, authors must also be familiar with the PhJPT's Ethics in Publishing policy, including the strict adherence to the authorship guidelines before submitting their work.

PhJPT is currently developing a new policy that will provide clear guidelines for authors who wish to use AI tools in their writing process. We expect this policy to be finalized soon. The policy is intended to promote transparency, trust, and compliance with the terms of use for relevant tools or technologies. By disclosing the use of any AI and AI-assisted technologies, authors can ensure that their work meets the highest standards of integrity and accuracy, and that their readers, reviewers, editors, and contributors can trust the scholarly record.

The use of AI and AI-assisted technologies in scientific discourse has the potential to revolutionize the way scientists conduct research and communicate their findings. Still, it also presents significant challenges and risks that must be addressed. It is crucial to ensure that the development and use of generative AI in scientific discourse are guided by ethical and social considerations, and that its benefits are shared equitably across society. Ultimately, a collaborative approach that combines human intelligence, creativity, and judgment with the power of AI can lead to more innovative and impactful scientific research.

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