Exploring Post-Prints in Academic Publishing for Research Integrity

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Abstract

In recent years, the growing number of academic misconduct incidents has sparked widespread concern across various sectors, making research integrity construction a new focal point of scholarly inquiry. Through an analysis of the research integrity challenges confronting traditional academic publishing, this paper expounds on how the development of open science presents new opportunities for research integrity construction and introduces the research integrity framework under open science initiatives. In contrast to passive approaches to research integrity construction, academic publishing for research integrity under open science initiatives can proactively maintain research integrity by facilitating the standardization of scientific research and publications, ensuring transparency throughout the research and publication process, and enhancing the originality of research and papers.

Full Text

Abstract

In recent years, the increasing number of academic misconduct incidents has raised widespread concern, making research integrity construction a new focal point in scholarly discourse. By analyzing the dilemmas facing traditional academic publishing regarding research integrity, this paper expounds on how the development of open science presents new opportunities for research integrity construction and introduces the research integrity framework under the Open Science Initiative. Unlike passive approaches to research integrity, academic publishing for research integrity under the Open Science Initiative can actively safeguard research integrity by promoting the standardization of scientific research and papers, ensuring transparency in the research publication process, and enhancing the originality of research and publications.

Keywords: research integrity; academic misconduct; academic publishing; Open Science Identity (OSID)

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1. The Dilemma of Research Integrity in Traditional Academic Publishing

Recent years have witnessed a surge in research integrity issues caused by academic misconduct, particularly plagiarism and fabrication, which have repeatedly sparked intense discussion and reaction across society and academia. From Haruko Obokata' s fabrication scandal at Japan' s RIKEN Institute [1] to the mass retractions of papers with fake peer reviews at Springer [2] and BioMed Central [3], and the concentrated retraction incident at Tumor Biology [4], these cases collectively reflect the inadequacies of traditional academic publishing models in ensuring research integrity.

From the perspective of academic publishing, academic misconduct primarily violates the principles of normativity, transparency, and originality in scholarly communication. Violations of normativity include: breach of policy by authors, ethical violations by authors, copyright claims, forged authorship, lack of approval from authors, conflict of interest, and informed/patient consent. Violations of transparency in academic publishing encompass concerns/issues about data, concerns/issues about authorship, concerns/issues about referencing/attributions, concerns/issues about images, and irreproducibility. Violations of originality include plagiarism, appropriation of ideas, and duplicate publication.

The Office of Research Integrity (ORI) under the U.S. Department of Health and Human Services defines research misconduct as "fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results" [5]. The Committee on Publication Ethics (COPE) guidelines hold significant influence in academic publishing, and their classification of retraction reasons is widely accepted [6]. Studies by Benos et al. [7] and Zhang et al. [8] align with COPE' s framework, which primarily includes "honest error," "non-reproducibility," "journal error," "duplicate publication," "plagiarism," "unauthorized use of data," "data fabrication," "data falsification," and "ethical issues."

2. New Opportunities for Research Integrity Construction Under Open Science

Open science broadly describes changes in how science is conducted, including the use of technology to make research activities more collaborative and open [9]. Open science encompasses a wide range of topics such as open access [10-11], open data [12], and research integrity [13]. With the rise and development of open science, the scientific research process places greater emphasis on collabo-

rative sharing and data reuse, focusing on atypical resources such as data and tools [14]. The International Association of Scientific, Technical and Medical Publishers (STM) released the "Tech Trends 2021" report, which uses a keyword map to project future trends in academic publishing, identifying research integrity, personalized services for researchers, collaboration, and sharing as future hotspots [15].

In traditional academic publishing, papers and data materials are disconnected, making it difficult to present the complete research process. Important materials such as research details are often missing, resulting in poor reproducibility. The philosophy and technological power of the open science movement create new possibilities for research integrity construction. Academic publishing under the open science philosophy, leveraging cutting-edge technological innovations, can effectively connect authors, content, and readers through research data and enhanced materials. By embracing cross-linking, rich data, and open sharing, it achieves research integrity, extends the transformation and application of academic achievements, meets multiple needs in academic communication, and enables full knowledge exchange and sharing. As the open science research paradigm develops, characterized by collaborative sharing and data reuse, open collaborative peer review and the transparent sharing of review comments can make academic publishing more open, transparent, and fair, offering promise for preventing academic misconduct.

3. The Research Integrity Framework Under the Open Science Initiative

The endless stream of academic misconduct incidents has not only sparked intense discussion across society and academia but also reflects, to some extent, the research integrity dilemmas facing traditional academic publishing. With the development of the open science philosophy and related technological capabilities, collaborative sharing, data reuse, open collaborative peer review, and shared review comments can overcome the shortcomings of traditional publishing—where papers and data materials are disconnected, the research process is difficult to fully present, crucial research details are missing, and reproducibility is poor. Simultaneously, these approaches can make academic publishing more open and transparent, creating more possibilities for research integrity construction.

Unlike passive approaches to research integrity, the NTO system for research integrity construction under the Open Science Initiative can actively safeguard research integrity by promoting the standardization of scientific research and papers, ensuring transparency in the research publication process, and enhancing the originality of research and publications. Based on the Open Science Initiative, the Open Science Identity (OSID) develops enhanced academic publishing through technological innovations in publishing. By providing supplementary content and services related to papers, sharing open content and data from research, and strengthening effective connections among journals, authors, and

readers, OSID-based publishing creates a more three-dimensional publication format and a more open and transparent research process. It can fully present content that was previously limited by traditional page constraints and material formats, establish online communication circles among peers, promote broader research collaboration, and build an open and transparent peer review system. Therefore, the Open Science Initiative focuses on promoting standardization, transparency, and openness throughout the academic publishing process, improving the reproducibility of research results, and is committed to high-quality peer review and academic publishing for comprehensive research integrity construction.

The NTO system for research integrity construction under the Open Science Initiative can enhance the research integrity level of academic papers through three main components: Normativity, Transparency, and Originality. (1) **Normativity** requires that research processes follow academic norms and paper writing adheres to scholarly standards. Ensuring the integrity of scientific data is crucial for advancing science, engineering, and medical research while maintaining public and corporate trust. However, researchers often forget to report research details in their papers. Therefore, following complete writing norms and standards helps peers cite or replicate their work and avoids wasting research resources. (2) **Transparency** requires that the process and content of academic publishing be as open and transparent as possible. Research data, methods, and other information closely related to research findings should be publicly accessible. Making underlying data and materials publicly available not only enables peers to make further research advances based on the findings but also allows for better evaluation of research outcomes, thereby increasing trust in science. (3) **Originality** requires that research and papers represent innovative, original work. High-quality research papers must be based on "original research" that demonstrates unique academic discoveries, analysis, argumentation, and interpretation specific to the innovative study. Research that lacks originality violates the principles of research integrity.

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Note: Figure translations are in progress. See original paper for figures.