A Postprint Study on the Standardization Construction of Publishing Ethics for Scientific and Technological Journals under China' s Policy System

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Abstract

Publishing ethics constitutes the foundation and prerequisite for the development of scientific journals. Against the backdrop of China' s vigorous promotion of world-class scientific journal construction, the standardization of publishing ethics is particularly urgent. As an essential component of research integrity, the standardization of publishing ethics for scientific journals should align with national policy requirements. This study comprehensively collects relevant policies on publishing ethics in China, and through bibliometric analysis of policy documents and grounded theory analysis, clarifies the evolution of publishing ethics policies for scientific journals, the theoretical model for standardizing publishing ethics, and the content changes in publishing ethics policies. Analysis of the research results yields the following conclusions: China is increasingly emphasizing integrity and ethical governance in scientific journals; the basic framework for standardizing publishing ethics in scientific journals comprises general requirements, publishing ethics content, and safeguard measures for implementing publishing ethics, with the latter two being key elements.

Full Text

Preamble

Publication ethics constitute the foundation and prerequisite for the development of scientific journals. Against the backdrop of China' s vigorous efforts to build world-class scientific journals, the standardization of publication ethics has become particularly urgent. As a crucial component of research integrity, the standardization of publication ethics in scientific journals must align with national policy requirements. This study comprehensively collected relevant

policies on publication ethics in China and employed policy bibliometric analysis and grounded theory to clarify the evolution of scientific journal publication ethics policies, the theoretical model for standardizing publication ethics, and changes in the content of publication ethics policies. Analysis of the research results yields the following conclusions: China is attaching increasing importance to the integrity and ethical governance of scientific journals; the basic framework for standardizing publication ethics in scientific journals includes overall requirements, the content of publication ethics, and safeguard measures for implementing publication ethics, with the latter two being key elements.

In recent years, China has attached great importance to and strongly supported the construction of world-class scientific journals, aiming to comprehensively improve the quality of Chinese scientific journals, including content quality, editorial quality, publishing format quality, and printing quality [1]. The core of scientific journal development is quality [2], and publication ethics runs through the entire journal publishing process. It is key to comprehensively improving journal quality and an important factor in measuring the standardization of editorial work and the professional management capabilities of journals, playing a significant role in strengthening academic ethics and academic norm construction [3].

Chinese management institutions have recognized the role of publication ethics in building world-class scientific journals and purifying the academic communication environment. Both the China Science and Technology Journals International Influence Enhancement Plan [4] and the Excellence Action Plan [5] have proposed strengthening the construction of publication ethics and research integrity. In 2012, 1,050 journals hosted by national societies under the China Association for Science and Technology jointly signed and released the "Joint Statement of National Societies under the China Association for Science and Technology on Strengthening Scientific Ethics Norms and Creating a Good Academic Atmosphere" [6]. In 2013, China established the Medical Journal Editors and Publishing Ethics Committee, responsible for formulating editorial and publication ethics guidelines for medical and health journals that conform to international norms and China' s national conditions. In 2015, the China Association for Science and Technology officially released the "Five Prohibitions for Publishing Papers in International Academic Journals" [7], clarifying the ethical norms for researchers and preventing misconduct such as third-party ghostwriting, proxy submission, proxy revision, false peer review, and improper authorship. In 2019, the China Editology Society released the "Statement on Promoting Research Integrity and Ethical Norms in Academic Publishing" [8]. In 2021, the Publicity Department of the Central Committee of the Communist Party of China organized a symposium on the development of academic journals, emphasizing that journal management departments and sponsoring institutions should strengthen the construction of journal style and academic integrity.

China' s discussion on formulating academic ethics and research integrity policies began in the 1990s. Since 2018, the Party and the state have attached great

importance to research integrity and academic style construction, with relevant departments issuing a series of policy documents. Among them, publication ethics is a key focus of these policy documents. In the strategy of building high-end exchange platforms for scientific papers and scientific and technological information, Chinese government departments have formulated numerous policies to promote the development of scientific journals, with publication ethics being an indispensable component. These laws and policies provide fundamental and important references and bases for the standardization of publication ethics in Chinese scientific and technological academic journals from a top-level design perspective. This study comprehensively collected and organized policies related to publication ethics, quantitatively discussed the evolution and content changes of policies through policy text analysis, and used grounded theory to construct a basic framework for the standardization of publication ethics.

1 Research Samples and Methods

1.1 Policy Text Collection and Research Objects

Policy refers to the political actions or behavioral norms adopted by governments, political parties, and other organizations to achieve certain political, economic, cultural, and social goals within a specific period, comprising a series of laws, decrees, measures, methods, and regulations. To collect relevant policies to the maximum extent, we first searched for journal development policies on the official websites of the China Association for Science and Technology and the National Press and Publication Administration. Second, we searched for relevant policies in the Peking University Law Database using "journal" as the title, then used "integrity," "morality," "ethics," "misconduct," "academic style," "norms," and "guidelines" as titles and "journal," "publication," "publishing," and "paper" as full-text keywords for paired searches. Finally, we supplemented the collection with policies from two books: *Compilation of Laws, Regulations, and Documents on Research Integrity Construction* and *Selected Laws and Regulations on Publishing in 2020*. By May 16, 2022, we had preliminarily collected 83 policy documents. Subsequently, we screened them according to the following criteria: policy content involving research integrity, ethical requirements, ethical norms, research misconduct/academic misconduct, and investigation and handling of research misconduct/academic misconduct in journal editing, publishing, and paper publication. Ultimately, 51 policy documents were selected to construct a policy text database. We further extracted external characteristics of the policies and excerpts related to journal publication ethics.

1.2 Research Methods

1.2.1 Policy Bibliometrics Policy bibliometrics is a research method for quantitatively analyzing the structural attributes of policy documents. Unlike traditional policy research paradigms that focus on policy content, it emphasizes quantitative analysis of external features of large-sample, structured, or semi-structured policy texts [9]. This approach yields objective, reproducible, and

verifiable research results, enabling a clear understanding of policy evolution patterns, impact scope, and development trends from a macro perspective [10]. Using the 51 policy documents as samples, this study objectively presents the macro situation and content focus of scientific journal publication ethics policies through analysis of policy issuance time trends, institutional issuance quantities, institutional co-occurrence networks, and policy content changes.

1.2.2 Grounded Theory Grounded theory is an important qualitative research method that conceptualizes and operationalizes theory from the bottom up, continuously summarizing and refining conceptual categories to develop theory from data. The core of grounded theory is to avoid subjective assumptions and allow theoretical findings to emerge naturally from the research process. The grounded theory analysis process includes: open coding—comparing, refining, and defining raw data to form initial concepts and valid categories; axial coding—inductively clustering categories obtained from open coding to identify logical relationships between categories through axial coding; selective coding—extracting highly generalizable core categories based on the logical relationships of main categories and connecting various categories; and theoretical saturation testing—randomly sampling analyzed texts for coding to ensure no new concepts, categories, or relationship structures emerge [11]. This study employs grounded theory to gradually refine and inductively summarize elements of publication ethics policy content from the bottom up, thereby constructing a theoretical framework.

2 Research Results and Analysis

2.1 Evolution of China's Scientific Journal Publication Ethics Policies

This study quantitatively analyzed the external characteristics and content of 51 scientific journal publication ethics policy documents to clarify policy evolution patterns and development trends.

2.1.1 Policy Stage Division We conducted a statistical analysis of the annual publication quantities of scientific journal publication ethics policies. Overall, the number shows a growing trend, particularly surging after major academic misconduct cases. Based on the changing trends in policy publication quantities and the release times of important documents, policies were divided into three stages:

1) **1992-2003 Exploration Period**: Publication ethics policies for scientific journals were in their infancy, with a small number of policies—only five documents. During this stage, the Ministry of Science and Technology, Chinese Academy of Sciences, and Ministry of Education primarily proposed specific requirements for publication ethics from the perspectives of strengthening moral self-discipline among scientific and technological workers and improving scientific and technological evaluation. In 1992,

the State Secrets Bureau and other institutions issued the *Regulations on Confidentiality in Press and Publication*, the first document involving journal ethics construction. In 2003, the Ministry of Science and Technology and four other departments issued the *Decision on Improving Scientific and Technological Evaluation Work*, which first addressed academic misconduct in scientific and technological evaluation and proposed academic disciplinary measures.

2) **2003-2012 Construction Period**: Publication ethics policies for scientific journals were in a stage of fluctuating growth, with 14 documents issued. The main issuing institutions were the Ministry of Education, National Natural Science Foundation of China, Ministry of Science and Technology, Chinese Academy of Sciences, and China Association for Science and Technology. During this stage, China began to intensify efforts in research integrity and academic ethics construction, issuing measures for handling academic misconduct.

3) **2012-2021 Development Period**: Publication ethics policies for scientific journals entered a rapid development stage, with 32 documents issued. From 2014 to 2017, policies on standardized journal operations and academic misconduct governance were successively introduced. Since 2018, the number of policy documents has grown rapidly. In 2018, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the *Opinions on Further Strengthening Research Integrity Construction*, a milestone document in China' s research integrity construction. In 2019, four departments including the China Association for Science and Technology jointly issued the *Opinions on Deepening Reform and Cultivating World-Class Scientific Journals*, ushering in an important development opportunity for scientific journals, which included requirements for publication ethics norms. The *Rules for Investigating and Handling Research Integrity Cases (Trial)* provided a behavioral basis for relevant entities to respond to academic misconduct cases. In 2021, the *Copyright Law of the People' s Republic of China* and the *Law of the People' s Republic of China on Science and Technology Progress* were successively revised, specifically emphasizing the strengthening of research integrity and science and technology ethics systems and norms, providing legal basis that conforms to the development of the times for publication ethics construction. With the release of high-effectiveness-level policies such as laws and intra-party regulations, the construction of scientific journal publication ethics has gradually embarked on a path of institutionalization and legalization.

2.1.2 Evolution of Institutional Policy Issuance and Co-occurrence Networks First, we statistically analyzed the number of policies issued by various institutions. Institutional names were standardized as follows: 1) For ministries and commissions, documents were retained at the ministry level, for

example, "Bureau of Communication of Chinese Academy of Sciences" was standardized to "Chinese Academy of Sciences" ; 2) For institutions directly under the State Council and national bureaus managed by ministries and commissions, the specific first-level name was retained, such as the State Administration of Traditional Chinese Medicine managed by the National Health Commission; 3) For institutions with changed names, the "institutional evolution" section on the official website of current government institutions was used to determine the name [12]. Policies issued by institutions consisted of lead issuance (including independent issuance) and joint issuance, with 38 lead-issued documents and 13 jointly-issued documents.

The 51 policy documents involved 30 institutions. The China Association for Science and Technology (CAST) is the unified organization of scientific and technological workers nationwide, with its societies hosting or co-hosting more than 1,000 journals. CAST attaches great importance to promoting the spirit of science and the construction of scientific ethics and technology ethics, issuing the largest number of policies (15 documents), including 12 lead-issued and 3 jointly-issued. The Ministry of Education attaches great importance to research integrity and academic ethics governance, issuing 15 policies (6 lead-issued and 9 jointly-issued). The Chinese Academy of Sciences is a national strategic scientific and technological force and a pacesetter in scientific ethics and academic style construction, issuing 13 documents (7 lead-issued and 6 jointly-issued). The Ministry of Science and Technology strengthens in-process and post-supervision and research integrity construction, issuing 11 documents (7 lead-issued and 4 jointly-issued). Additionally, the Chinese Academy of Engineering and the National Natural Science Foundation of China have also issued relatively many relevant policies. The General Office of the Central Committee of the Communist Party of China, the General Office of the State Council, and the Standing Committee of the National People's Congress have also lead-issued relevant regulations and policies. The National Health Commission and other institutions have also actively participated in issuing relevant policies, attaching increasing importance to research integrity and academic ethics construction.

Next, we analyzed institutional collaboration relationships according to policy stages and used Python to plot institutional co-occurrence networks, with results shown in [Figure 1: see original paper]. We determined institutional contribution and importance through each node's degree centrality and the co-occurrence network diagram.

1) **Exploration Period**: Few institutions issued policies, showing characteristics of decentralized collaboration. Joint issuance was mainly among the Ministry of Education, Chinese Academy of Sciences, Ministry of Science and Technology, and Chinese Academy of Engineering, with CAST and the National Natural Science Foundation of China also actively participating, forming another cooperation network with the State Secrets Bureau.

2) **Construction Period**: The number of institutions increased, showing

characteristics of independent and discrete collaboration. On one hand, the number of institutions issuing policies independently increased, including the State Council and the National Press and Publication Administration. On the other hand, the number of jointly-issued policies was relatively small. During this stage, the Ministry of Education issued the most policies, playing a dominant role. In addition to departments closely related to research integrity and academic ethics construction such as CAST, Chinese Academy of Sciences, Ministry of Science and Technology, and National Natural Science Foundation of China, the National Health Commission and Ministry of Finance also became nodes in the collaboration network. During this stage, greater emphasis was placed on research integrity construction in the biomedical field and joint governance of academic misconduct.

3) **Development Period**: Institutions grew rapidly, showing characteristics of close collaboration. The proportion of independently issued policies decreased, while the proportion of jointly issued policies increased. The joint meeting system for research integrity construction reached a high consensus, and publication ethics construction entered a stage of multi-department collaborative governance. Among them, CAST, Ministry of Education, Chinese Academy of Sciences, Chinese Academy of Engineering, Ministry of Science and Technology, and National Health Commission had the highest centrality in the cooperation network, playing the most important role in publishing publication ethics policies. The Supreme People' s Court, Supreme People' s Procuratorate, and Ministry of Public Security also participated, including "tooth-bearing" processing clauses in relevant policies [13], making publication ethics policies more deterrent and binding.

Across different policy stages, the Ministry of Education, CAST, Chinese Academy of Sciences, Chinese Academy of Engineering, National Natural Science Foundation of China, Ministry of Science and Technology, and National Health Commission have consistently ranked high in centrality, reflecting that research management institutions, research institutions, funding agencies, and scientific journal supervisory institutions are the core forces in the standardization of publication ethics.

2.2 Theoretical Model of Publication Ethics Standardization Under China' s Policy System

2.2.1 Analysis Process

1) **Open Coding**: We used Nvivo12 qualitative analysis software to assist in coding raw data and constructing initial concepts from policy texts. Specifically, we coded the extracted policy texts sentence by sentence in chronological order of issuance, gradually refining initial concepts from unthemed statements and organizing them according to logical relationships.

Ultimately, 22 valid initial concepts were extracted, as shown in .

2) **Axial Coding**: Axial coding further inductively clusters the results of open coding to explore potential logical relationships between main categories and subcategories. Through axial coding, we obtained seven main categories and further explained their connotations. The main categories and their connotations are shown in .

3) **Selective Coding**: Based on axial coding, selective coding extracts highly generalizable core categories, analyzes the connections between core categories and main categories, and depicts behavioral phenomena and contextual conditions in a "story line" manner to develop new substantive theoretical frameworks. By categorizing the seven main categories, we summarized three core categories that form a typical relational structure and constitute the theoretical model of publication ethics standardization under China's policy system. The selective coding results obtained around the theme of "standardization construction of scientific journal publication ethics" are shown in .

4) **Theoretical Saturation Testing**: Another master' s student in this field conducted coding and analysis of policy texts one by one, and no new concepts, categories, or relationship structures emerged. Therefore, we can basically conclude that the above model has reached theoretical saturation.

2.2.2 Model Construction and Interpretation Based on the steps of open coding, axial coding, selective coding, and theoretical saturation testing, this study constructed a theoretical model for the standardization of scientific journal publication ethics, as shown in [Figure 2: see original paper]. This theoretical model takes the overall requirements of publication ethics construction as guidance, the content of publication ethics as the core, and the institutional norms of publication ethics and joint governance of publication ethics misconduct as safeguards, ultimately achieving the goal of making scientific journal editing and publishing conform to ethical standards and serve scientific and technological progress and development. Specifically, the content of publication ethics guides what authors, editors, and reviewers should and should not do in their own work and in handling mutual relationships. In the digital publishing environment, scientific journals face complex and diverse ethical scenarios that require guidance and constraints from publication ethics norms. Simultaneously, the formulation of publication ethics norms should be guided by requirements such as research integrity, scientific and technological ethics, and the spirit of science, and the implementation of norms requires institutional support from publication ethics systems.

2.3 Changes in Publication Ethics Policy Content

2.3.1 Overall Policy Content Changes Based on the extracted core categories, this study explored changes in the focus of publication ethics policies. Across different stages, policies have consistently placed the most emphasis on the specific content of publication ethics norms and misconduct, followed by safeguard measures for implementing publication ethics, which have received continuous attention. The overall requirements for publication ethics construction only gradually emerged during the policy construction and development periods.

2.3.2 Changes in Publication Ethics Content This study further focused on analyzing changes in publication ethics content. First, we used Python to standardize and conduct frequency statistics on author publication ethics misconduct behaviors, as shown in [Figure 3: see original paper]. Across the three policy stages, the most emphasized issues were fabrication, plagiarism, falsification, copying, improper authorship, and appropriation. The policy development period added and emphasized emerging publication ethics misconduct behaviors such as interfering with peer review, third-party ghostwriting/proxy submission/proxy revision, and false peer review. It is particularly noteworthy that during the policy development period, China' s newly revised *Law of the People' s Republic of China on Science and Technology Progress* in 2021 explicitly prohibited fabricating or falsifying research results, publishing or disseminating false research results, and engaging in the buying, selling, ghostwriting, or proxy submission of academic papers and experimental research data, providing legal basis for clearly defining publication ethics misconduct behaviors.

The changes in 12 publication ethics norm themes are shown in [Figure 4: see original paper]. Across the three policy stages, relatively consistent emphasis was placed on authorship, review principles, citation, and the spirit of science. Peer review models and content standards that emerged during the policy exploration period received relatively low attention. Correction and retraction, scientific data, and scientific and technological ethics that emerged during the policy construction period began to receive attention. During the policy development period, fund labeling and paper dissemination emerged, while conflicts of interest disappeared.

3 Thoughts on Standardization Construction of Scientific Journal Publication Ethics

3.1 Main Characteristics of Publication Ethics Standardization Construction

Through quantitative analysis of scientific journal publication ethics policies, we can conclude that China is attaching increasing importance to journal integrity and ethical governance. This is manifested in: continuously increasing numbers of policy releases; research management institutions, research institu-

tions, funding agencies, and scientific journal supervisory institutions attaching importance to the standardization of publication ethics construction; and multi-institution joint policy issuance becoming an important trend, with scientific journal publication ethics standardization construction showing characteristics of multi-subject collaborative governance.

3.2 Basic Framework of Publication Ethics Standardization Construction

Scientific journal publication ethics construction starts from the gradual standardization of academic publishing and the frequent occurrence of academic misconduct, with the goal of regulating and clarifying the behaviors and responsibilities of various stakeholders. In the process of publication ethics standardization construction, keywords such as publication ethics norms, publication ethics misconduct, academic misconduct, research integrity systems, and academic misconduct investigation and handling have gradually emerged. This study extracted key components of publication ethics standardization construction, including three core categories and seven main categories, corresponding to overall requirements (reviewing research integrity and ethics, adhering to the spirit of science, resisting academic misconduct), publication ethics content (publication ethics norms, publication ethics misconduct), and safeguard measures for implementing publication ethics (publication ethics norm systems, joint governance of publication ethics misconduct), providing a basic framework for the standardization of scientific journal publication ethics in China.

3.3 Key Elements of Publication Ethics Standardization Construction

Across different policy stages, the content of publication ethics has consistently been the focus of policies, and safeguard measures for publication ethics have gradually received attention. Both are important focal points for achieving publication ethics standardization construction. Regarding publication ethics content, China' s relevant policies have delineated the bottom line for authors, editors, and reviewers in journal editing, publishing, and paper publication, with crossing this bottom line constituting academic misconduct. Regarding publication ethics norms, China' s policies have defined 12 norm themes, with different policy stages emphasizing different norm themes.

4 Conclusion

Scientific journal publication ethics is an important component of China' s research integrity and scientific and technological ethics policy system. National-level policies have provided adequate guidance for the standardization of publication ethics construction. China is attaching increasing importance to the standardization of scientific journal publication ethics construction, with research management institutions, research institutions, funding agencies, and scientific journal supervisory institutions playing important roles. Policy content provides

a basic theoretical model for publication ethics standardization construction and clearly defines publication ethics misconduct and norm themes. In the process of publication ethics standardization construction, China places greater emphasis on the content of publication ethics and safeguard measures for implementing publication ethics.

The next step of research will combine the analysis results of China' s publication ethics policies to analyze the practical situation of scientific journal publication ethics standardization construction in China, clarify achievements and existing deficiencies, and propose targeted recommendations for promoting research integrity and publication ethics construction in scientific journals.

5 References

[1] Notice of the National Press and Publication Administration on Issuing the *Regulations on Quality Management of Newspapers and Journals* [A/OL]. [2023-10-10]. https://www.gov.cn/gongbao/content/2020/content_{5551815}.htm

[2] China Association for Science and Technology. *Blue Book on the Development of Chinese Science and Technology Journals (2020)* [M]. Beijing: Science Press, 2020.

[3] ZHOU Zhixin. Analysis of the current status and trends of research on publication ethics of scientific journals in China based on CiteSpace [J]. Science-Technology & Publication, 2020(8): 129.

[4] Implementation Plan for China Science and Technology Journals International Influence Enhancement Plan [EB/OL]. [2023-10-10]. https://view.officeapps.live.com/op/view.aspx?src=

[5] Implementation Plan for China Science and Technology Journals Excellence Action Plan (2019-2023) [EB/OL]. [2023-10-10]. https://www.scuec.edu.cn/xuebao/info/1011/1030.htm

[6] More Than 1,000 Science and Technology Journals Under the China Association for Science and Technology Jointly Sign to Strengthen Scientific Ethics Norms [EB/OL]. [2023-10-10]. https://m.fx361.com/news/2012/0127/15947373.html

[7] YIN Fou, MEI Shen. China Association for Science and Technology Releases "Five Prohibitions for Publishing Papers in International Academic Journals" [J]. Journal of Waterway and Harbor, 2016, 37(1): 88.

[8] Statement of the China Editology Society on Promoting Research Integrity and Ethical Norms in Academic Publishing [EB/OL]. [2023-12-21]. https://kjqkbjxh.portallib.libsou.com/info/73924.jspx

[9] SU Jun. *Introduction to Public Science and Technology Policy* [M]. Beijing: Science Press, 2014.

[10] LI Jiang, LIU Yuanhao, HUANG Cui, et al. Reshaping policy text data analysis with bibliometric research: Origins, migration, and methodological innovation of policy bibliometrics [J]. Journal of Public Management, 2015, 12(2): 138.

[11] WEN Yating, YU Jiang, HONG Zhisheng, et al. Research on the path of public service innovation under the background of digital transformation: Based on the perspective of polycentric-collaborative governance [J]. Science of Science and Management of S.& T., 2021, 42(3): 105.

[12] FENG Lingzi, LIU Jing, YUAN Junpeng. Bibliometric analysis of the evolution of China' s research integrity policies [J]. Library and Information Service, 2020, 64(9): 74.

[13] YIN Bo. The main responsibility of scientific journal editorial departments in the investigation and handling of research misconduct [J]. Acta Editologica, 2020, 32(4): 368.

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