Analysis of Batch Retraction of Papers from Hindawi Journals

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Date: 2024-06-05T00:00:00+00:00

Abstract

Objective To analyze certain characteristics of batch-retracted papers from Hindawi journals, in order to provide references for Chinese scientific journals in handling systematic manipulation of the publication process; Methods Retraction notices and retracted papers were obtained from the Hindawi XML corpus. The institutional affiliations of authors and citation status of retracted papers were analyzed based on the Web of Science Core Collection; Results Hindawi journals retracted a total of 11,371 papers from November 16, 2022 to March 20, 2024. 74.7% of the retracted papers were published in 2022, with an average of 46 days from submission to acceptance, 77 days from submission to publication, and 526 days from publication to retraction. The top 50 Chinese mainland institutions with the highest publication volume during the same period participated in publishing 18.6% of the retracted papers; Conclusion Batch retraction of papers involving systematic manipulation of the publication process is a practice by publishers to combat “paper mills”. Although the vast majority of batch-retracted papers have authors from Chinese mainland, the authors of retracted papers cannot be considered representative of Chinese researchers. Chinese scientific journals should avoid editorial dysfunction that leads to manipulation of the publication process, and research institutions should strengthen research integrity education to prevent Chinese authors from becoming involved in similar incidents.

Full Text

Analysis of the Batch Retraction of Publications in Hindawi Journals

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Abstract

[**Objective**] To analyze characteristics of papers retracted in batch by Hindawi journals, providing reference for Chinese scientific journals on addressing systematic manipulation of publication processes. [**Methods**] Retraction notices and retracted papers were obtained from the Hindawi XML corpus. Author affiliations and citation patterns of retracted papers were analyzed based on the Web of Science Core Collection. [**Results**] Between November 16, 2022 and March 20, 2024, Hindawi journals retracted 11,371 papers. Of these, 74.7% were published in 2022, with an average of 46 days from submission to acceptance, 77 days from submission to publication, and 526 days from publication to retraction. The 50 most productive institutions in mainland China during the same period were involved in publishing 18.6% of the retracted papers. [**Conclusion**] Batch retraction of papers involving systematic manipulation of publication processes represents a publisher's practice to combat "paper mills." Although most retracted papers had authors from mainland China, these authors cannot be considered representative of Chinese researchers. Chinese scientific journals should avoid publication process manipulation resulting from editorial incompetence, and research institutions should strengthen research integrity education to prevent Chinese authors from involvement in similar incidents.

Keywords: Special Issues in Scientific Journals; Retraction of Publication as Topic; Scientific Misconduct; Research Integrity; Manipulation of Publication Process

According to the Committee on Publication Ethics (COPE), systematic manipulation of a scholarly journal's publication process refers to instances where individuals or groups repeatedly employ fraudulent or deceptive means to publish manuscripts that have not undergone fair peer review, have been improperly attributed, or contain issues such as falsification, fabrication, and plagiarism. Specific forms may include manipulation of peer review, sale of authorship, or ghostwriting by parties other than the listed authors. Individuals or organizations engaged in such systematic manipulation are termed "paper mills" [1]. The activities of paper mills have severely detrimental effects on academic publishing and scientific research [2]. Retraction serves as a mechanism to correct the scientific literature, with journals issuing retraction notices to alert readers that a paper may contain erroneous content or have serious defects in its publication process [3]. Journals are generally expected to retract papers published through

systematically manipulated processes after conducting verification. However, when journals discover large numbers of potentially affected papers, timely retraction may prove difficult. To address this challenge, COPE issued guidelines in April 2023 titled "Addressing concerns about systematic manipulation of the publication process," which recommend that journals may process affected papers in batches—treating papers involved in the same systematic manipulation incident as a single "batch" for retraction purposes [4]. These guidelines continue to emphasize the journal's responsibility to investigate and communicate with authors, but support focusing investigations on paper mill activities rather than specific formal or content issues in individual papers, thereby providing guidance for large-scale retraction of papers published through manipulated processes.

Some scientific journals operate special issues (or thematic issues) led by guest editors, often researchers not serving on the editorial board. Guest editors assist journals in promoting special issues, attracting submissions, and assuming varying degrees of editorial responsibilities [5]. Different guest editors may apply different standards for manuscript acceptance, making journal oversight of guest editors essential; lax supervision may allow improper behavior by guest editors to damage journal reputation [6]. Hindawi, an open-access journal publisher acquired by Wiley in January 2021 [7], subsequently launched numerous guest editor-led special issues across its journals. However, some papers published in these special issues faced sharp criticism post-publication for apparent problems [8]. In September 2022, Wiley announced the retraction of 511 papers from 16 Hindawi journals [9], initiating batch retractions that began on November 16, 2022 and ultimately exceeded ten thousand papers.

In December 2023, Wiley published a white paper titled "Tackling publication manipulation at scale: Hindawi's journey and lessons for academic publishing" (hereinafter "the White Paper"). The White Paper, drawing on publisher investigations, described characteristics of paper mill activities and practices for investigating such activities and conducting mass retractions. It noted that blind trust in the academic integrity of guest editors and reviewers prevented effective detection of their misconduct [10], but did not elaborate on specific problems at particular stages of the publication process, nor discuss negligence or malfeasance by Hindawi staff. While the White Paper offers valuable reference for Chinese English-language scientific journals in identifying and rejecting paper mill submissions, it provides insufficient understanding of how publication processes at some Hindawi journals were manipulated at scale.

Previous studies on retractions within specific scopes have found diverse reasons for retraction involving various stages of the publication process [11-13], with retraction notices often attributing retractions to author misconduct rather than process manipulation. In recent years, some journals have retracted large numbers of papers to address systematic manipulation of their publication processes, yet research on these retractions remains limited. This study describes the batch retraction process undertaken by publishers to address systematic

manipulation, based on retraction notices, and explores how to prevent Chinese authors from participating in such manipulation by analyzing characteristics of retracted papers.

1.1 Hindawi Database

Several scholars tracking the mass retraction have compiled and released lists of affected papers. Among them, retired psychology researcher David Bimler shared a spreadsheet via social media documenting 11,371 batch-retracted papers published in Hindawi journals as of April 2024. While the spreadsheet shows authors from numerous institutions, Bimler did not document his sources or processing methods, making it an unreliable source. Hindawi provides a Hindawi XML Corpus (https://www.hindawi.com/hindawi-xml-corpus/) containing all its publications to facilitate data mining. This corpus comprehensively includes retraction notices issued during the batch retraction process. This study analyzed Hindawi's batch retractions using both the Hindawi XML Corpus and Web of Science (WoS) Core Collection.

On April 25, 2024, we downloaded the Hindawi XML Corpus (covering 2008 to present) and used the xml2 package (version 1.3.6) in R 4.4.0 to extract descriptive metadata and data availability statements for all Hindawi publications from 2020-2024, including DOI, journal name, publication type, editor names, and publication history. We screened retraction notices published on or after November 16, 2022, and compared them with Bimler's spreadsheet, reading any notices not present in both to confirm whether they represented batch retractions. As the Hindawi XML Corpus does not include special issue information, we downloaded HTML documents of retraction notices from the Hindawi full-text database and used the rvest package (version 1.0.3) in R to extract retracted paper DOIs and their associated special issues. Based on DOIs, we extracted partial metadata for all retracted papers published in 2020 or later from the Hindawi XML Corpus; for the few retracted papers published before 2020, we manually extracted information from full texts.

From publication histories, we calculated submission-to-acceptance time, submission-to-publication time, and retraction lag (interval between publication and retraction). These intervals represent durations at different stages: time from submission to author revision, time from submission to publication, and time from publication to retraction. Following Bishop's method, we used the interval from submission to revision (or direct acceptance without revision) to estimate editorial "response time" [14]. This estimation reflects editorial processing speed, as the submission-to-revision interval includes author revision time, making response time slightly longer than the interval to first editorial decision for papers requiring revision, while equaling the decision time for papers accepted without revision.

1.2 Web of Science Database

We searched for retracted papers and retraction notices in the WoS Core Collection using DOIs and exported results as Excel spreadsheets. Retracted paper records were imported into InCites Benchmarking & Analytics (InCites B&A) for analysis. In the WoS Core Collection, we retrieved all Article and Review publications from January 1, 2021 to December 31, 2022, filtered for those with mainland China authors, and identified the top 50 mainland Chinese institutions by publication volume. We then screened retracted papers with authors affiliated with these institutions. In InCites B&A, we compared international collaboration (authors from multiple countries/regions) and domestic collaboration (authors from multiple institutions within the same country/region) patterns between retracted papers with mainland China authors and those with authors from other countries/regions. InCites B&A used citation data as of April 26, 2024 and publication data as of March 31, 2024. We calculated citation frequencies for retracted papers based on citations recorded in the WoS Core Collection. Finally, we used Epi Info 7.2.6.0 to perform chi-square tests for differences in proportions, with significance level α=0.05.

2.1 Timing and Content of Retraction Notices

The Hindawi XML Corpus contained 11,385 retraction notices published between November 16, 2022 and March 20, 2024. Fourteen notices not present in Bimler's spreadsheet were reviewed and found not to be batch retraction notices, thus excluded from this study. All remaining notices targeted individual papers, covering 11,371 papers total.

The first wave comprised 508 retraction notices published from November 16, 2022 to January 25, 2023, with notices released weekly. The second wave included 10,863 notices published from May 24, 2023 to March 20, 2024. During this second wave, retraction notices showed a "pulsed" pattern, with over 400 notices released on a single day during 18 weeks (Figure 1 [Figure 1: see original paper]). The first wave involved only 17 journals and 37 special issues; during June-September 2023, the numbers of involved journals and special issues increased rapidly (Figure 2 [Figure 2: see original paper]).

Review found that 507 notices in the first wave used an identical template, all citing Wiley's September 28, 2022 statement on batch retractions [9]. Notices in the second wave also used a uniform template, stating that the publisher believed the publication process for retracted papers had been systematically manipulated. Most listed six indicators suggesting systematic manipulation: (1) paper topics inconsistent with journal or special issue scope; (2) contradictions between sections; (3) anomalous data availability statements; (4) inappropriate references in the main text; (5) incoherent or incomprehensible content; and (6) manipulated peer review. One notice did not follow either template [15]; responding to public concerns sparked by a visibly problematic figure discussed on social media, the journal retracted that paper individually, while dozens of

papers from the same special issue were batch-retracted months later.

2.2 Descriptive Metadata Characteristics and Data Availability Statements

The 11,371 retracted papers (Table 1) were published across 51 journals, with 11,340 (99.7%) appearing in 468 special issues and 31 published outside special issues or with invisible special issue information. Most retracted papers were submitted and published in 2022, with 7,240 papers (61.9%) both submitted and published that year.

Table 1 shows that from submission to acceptance, times clustered at 1-2 months, averaging 46 days; response times clustered at 15-35 days, averaging 36 days; submission-to-publication times clustered at 40-80 days, averaging 77 days; retraction lag showed no clear clustering, averaging 526 days, with 1,666 papers retracted more than two years after publication (>730 days).

Editor names were identifiable for 658 individuals. Seven guest editors had over 200 retracted papers each: Min Tang (417), Zhihan Lv (335), Rahim Khan (311), Osamah Ibrahim Khalaf (295), Zhao Kaifa (285), Muhammad Arif (265), and Songwen Tan (215).

Three data availability statements were most common: “The data used to support the findings of this study are available from the corresponding author upon request” (2,530 papers); “No data were used to support this study” (967 papers); and “The data used to support the findings of this study are included within the article” (846 papers). These three statements accounted for 38.2% of retracted papers, with many other statements showing only minor variations. Notably, many papers stating “no data were used” actually contained original research data, while papers claiming data were “included within the article” neither fully presented research data nor provided access channels, constituting anomalous data availability statements.

2.3 Involvement of the 50 Most Productive Mainland Chinese Institutions

The WoS Core Collection indexed 5,552,627 Articles and Reviews published in 2021-2022, with 1,470,817 involving mainland China authors. Authors from the top 50 mainland Chinese institutions contributed 807,138 papers (54.9%). By contrast, among 11,080 retracted papers indexed in the WoS Core Collection, 9,810 involved mainland China authors, with only 1,829 (18.6%) involving authors from the top 50 institutions. The proportion from these 50 institutions was significantly lower among retracted papers with mainland China authors (^{2}=161.7, P<0.01).

2.4 Patterns of International and Domestic Collaboration

InCites B&A covers WoS Core Collection papers from 2019-2023, including 3,555,919 papers with mainland China authors. Of these, 812,107 (22.8%) involved international collaboration and 1,536,928 (43.2%) involved domestic collaboration. InCites B&A also includes all retracted papers from this study that were indexed in the WoS Core Collection. Among retracted papers with mainland China authors (9,793 papers), 666 (6.8%) involved international collaboration and 2,862 (29.2%) involved domestic collaboration. Among retracted papers with authors from other countries/regions (1,776 papers), 1,445 (81.4%) involved international collaboration and 109 (6.1%) involved domestic collaboration.

Retracted papers with mainland China authors showed significantly lower rates of international collaboration compared to those with authors from other countries/regions (^{2}=602.7, P<0.01). Compared to all papers with mainland China authors from 2019-2023, retracted papers showed lower proportions of both international (^{2}=427.3, P<0.01) and domestic collaboration (^{2}=779.8, P<0.01).

2.5 Citation Patterns of Retracted Papers

As of April 29, 2024, the 11,080 retracted papers indexed in the WoS Core Collection had been cited 29,342 times (including citations from retraction notices). Since some Hindawi journals were delisted from the WoS Core Collection in March 2023, only 2,796 retraction notices were indexed, and some citations from notices to retracted papers were not properly recorded, making accurate citation counts difficult. To estimate citation patterns, we subtracted one citation for each retracted paper if its retraction notice was indexed in the WoS Core Collection, adjusting any resulting -1 values to 0. After adjustment, retracted papers received 26,649 citations total, averaging 2.4 citations per paper (Figure 4 [Figure 4: see original paper]). Notably, 39.2% (4,344 papers) received zero citations, while the maximum citation count reached 150.

3.1 Retractions Resulting from Systematic Manipulation of Publication Processes

In recent years, several publishers have retracted papers due to manipulated publication processes in special issues. Based on Wiley's White Paper and analysis of retracted papers, large-scale manipulation of some Hindawi journals' publication processes stemmed from editorial dysfunction. Journals failed to fulfill their responsibilities throughout the publication process of retracted papers [16]. Since most batch-retracted Hindawi papers were published in special issues, editorial decisions were made by guest editors. The retraction of hundreds of papers handled by a few guest editors demonstrates ineffective journal oversight of guest editorial work and special issue publications, suggesting journals may have invited unqualified scholars as guest editors who engaged in misconduct. However, guest editors' exact roles in systematic manipulation remain

difficult to determine. Some may have been impersonated; for example, Retraction Watch reported that "Zhao Kaifa," a guest editor, was actually a doctoral student whose identity had been stolen [17]. Conversely, over 200 guest editors had only one retracted paper each, yet the Hindawi XML Corpus shows most served as editors for other papers, suggesting they may not have actively participated in paper mill activities. Since Hindawi special issues publicly solicit submissions, some retracted paper authors may have been unaware of paper mill involvement. The batch retraction of over ten thousand papers confirms that editorial dysfunction can create systemic risks for academic publishing.

Many global research evaluation and management institutions recognize that systematic manipulation of journal publication processes significantly damages journal and publisher reputations. In March 2023, the WoS Core Collection delisted 19 Hindawi journals [18], while Scopus delisted 13 Hindawi journals throughout 2023. In July 2023, Malaysia's Ministry of Higher Education banned public university researchers from publishing government-funded research in Hindawi journals [19]. Norway's Register for Scientific Journals, Series and Publishers [20] and Finland's Publication Forum (Julkaisufoorumi) downgraded multiple Hindawi journals, disqualifying papers published therein from national recognition. Reputational damage threatens journal sustainability, prompting Hindawi to cease publishing four severely affected journals in May 2023 [21].

3.2 Effectiveness and Impact of Batch Retractions

Hindawi's batch retractions demonstrate that journals can retract large numbers of paper mill-affected papers within relatively short timeframes. The post-April 2023 batch retractions represent the first large-scale implementation of COPE's guidelines on batch retraction of papers involving systematic manipulation. The White Paper describes how publishers identified problematic papers through indicators associated with systematic manipulation. Beyond the six indicators listed in retraction notices, researchers have identified other potential paper mill markers, such as mismatched email addresses and affiliations for corresponding authors [22], response times significantly shorter than other papers in the same journal [14], and an anomalous data availability statement (claiming use of "simulated data") found almost exclusively in Hindawi journals [23]. The White Paper mentions that publishers developed a scoring system based on these indicators to assist editorial review. This study confirms these indicators appeared in many retracted papers, though methodological limitations prevent demonstrating the prevalence of mismatched topics, incoherent content, or inappropriate references.

Batch retraction promises to improve efficiency in correcting publications affected by paper mills. Hindawi's batch processing appears to have reduced retraction lag: Lü Wenshu's analysis of 4,647 retraction records from Retraction Watch found natural science papers were retracted an average of 797 days post-publication [24], whereas this study's papers averaged 526 days, with a median of 483 days. Shorter retraction lag may relate to early identification

of problems in post-publication peer review. Zheng et al. suggest open-access publishing increases paper accessibility, making problems easier to detect and facilitating faster retraction of problematic papers [25]. In Hindawi's case, freely available full texts enabled numerous readers to raise concerns about thousands of papers via the PubPeer platform, drawing scholarly attention to manipulated special issues. The White Paper also noted Hindawi referenced "the work of independent research integrity investigators." Faster retraction of problematic papers can reduce citation frequency and minimize potential impact on other publications [26]. However, Hindawi failed to halt publication of some paper mill-involved papers in a timely manner; the latest retracted paper in this study was published on October 10, 2023, over a year after the publisher announced mass retractions. After removing citations from retraction notices, nearly 40% of retracted papers had not been cited by other publications, possibly due to timely batch retraction.

Batch retraction presupposes severely compromised journal integrity that has or will inevitably damage reputation. Correcting systematic manipulation through batch retraction can help restore reputation. Following batch retractions, no further Hindawi journals were delisted from the WoS Core Collection, and the biomedical journal *BioMed Research International* was reinstated nine months after delisting. The reputational damage to multiple Hindawi journals from manipulated special issues serves as a warning: Chinese English-language journals must prevent any manipulation of publication processes, and journals operating special issues should enhance support and supervision of guest editors. When publication process manipulation occurs, journals can draw on COPE guidelines and the White Paper to conduct timely batch retractions and restore reputation.

3.3 Preventing Author Involvement in Systematic Manipulation

The involvement of numerous Chinese authors in retracted Hindawi papers has negatively impacted China's academic reputation. Previous international journal retractions of Chinese authors' papers primarily resulted from misconduct in individual papers [17,27], attributing problems to specific authors violating research integrity. Hindawi's batch retractions involve a broader author community, inevitably damaging the overall image of Chinese authors. Methodological limitations prevent in-depth analysis of Chinese authors of retracted papers. However, Bimler's spreadsheet recorded corresponding author affiliations, showing over 2,700 domestic institutions involved, with nearly half contributing only one paper and no single institution dominating, indicating highly dispersed institutional distribution. Additionally, many retracted papers had topics mismatched with their journals or special issues, making it difficult to estimate the extent of impact on Chinese scholars by discipline.

Nevertheless, the institutional distribution of retracted paper authors differs markedly from that of all mainland Chinese authors' publications, so retracted paper authors cannot be considered representative of Chinese researchers overall. While the top 50 mainland Chinese institutions by 2021-2022 publication

volume contributed over half of all papers by mainland Chinese authors, they accounted for only 18.6% of retracted papers in this study, suggesting many authors came from institutions with small-scale research activity and fewer achievements, where research integrity infrastructure may be weak. Weak institutional research integrity infrastructure may lead some authors to perceive integrity as limited to ensuring scientific validity and truthfulness, while overlooking integrity issues related to publishing via manipulated processes. This suggests insufficient nationwide research integrity education and outreach may be a major reason for extensive Chinese author involvement in manipulated publication processes. To improve research integrity, China's Ministry of Science and Technology released the "Guidelines for Responsible Research Conduct (2023)" in December 2023 [28], and the National Natural Science Foundation of China issued the "Research Integrity Handbook" [29], both providing detailed guidance for institutional integrity education. While high-output universities and research institutions should be priorities, enterprises, public institutions, and social organizations engaged in research activities must also strengthen systematic research integrity development. Additionally, retracted papers with mainland China authors showed significantly lower proportions of international and domestic collaboration, suggesting that encouraging broader international and domestic cooperation among research institutions may promote research integrity development.

This study describes Hindawi's batch retraction process for papers involving systematic manipulation of publication processes, demonstrating how publishers address paper mill phenomena to maintain journal quality and reputation. Limitations include focusing exclusively on Hindawi's batch retractions, which may not represent the entire scholarly publishing landscape, and methodological constraints preventing detailed analysis of retracted paper content, quality, or specific retraction reasons. Further research is needed for complete understanding of retraction phenomena. Although most batch-retracted Hindawi papers had mainland China authors, these authors are not representative of Chinese researchers overall. To prevent recurrence, we recommend publishers establish stricter review mechanisms to enhance scrutiny of manuscript authenticity and quality, avoiding publication process manipulation due to editorial dysfunction. Nationwide research integrity education should be strengthened to prevent Chinese author involvement in similar incidents.

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