Aims and scope

Science Editing (Sci Ed) is the official journal of the Korean Council of Science Editors (https://kcse.org) and Council of Asian Science Editors (https://www.asian-editor.org). It aims to improve the culture and health of human being by promoting the quality of editing and publishing scientific, technical, and medical journals. Expected readers are editors, publishers, reviewers, and authors of the journals around the world, specially focused to those in Asia. Since scholarly journals in Asia are mostly published by the academic societies, universities, or nonprofit organizations, Science Editing is sought to play a role in journal development. The number of publications from Asia is increasing rapidly and overpass that of other continents; meanwhile, the number of international journals and highly appreciated journals is yet to be coming forward. It is the task of Asian editors to pledge the journal quality and broaden the visibility and accessibility. Therefore, the journal's scope includes the following in the field of science, technology, and medicine.

- Policy of journal editing
- Data mining on editing and publishing
- Systematic review on medical journal publishing and editing
- Research ethics and medical ethics, including clinical registration, statement of human and animal health protection, and conflict of interest
- Publication ethics, such as fabrication, falsification, plagiarism, duplicate publication, and authorship
- CrossCheck
- Legal issue in journal publishing
- Peer review process
- Reporting guideline for medical journals
- Medical and scientific literature databases
- Advanced information technology applicable to journal editing and publishing, including PubMed Central schemas, JATS schemas, DOIs, CrossMark, FundRef, ORCIDs, DataCite, QR codes, and apps
- International standard of journal editing and publishing, including International Committee of Medical Journal Editors’ Recommendations
- Reference styles, including Vancouver (NLM) style, APA style, IEEE style, and ACS style
- Digital publishing on the web and apps
- Education and training of editors, reviewers, and authors
- Manuscript editing
- Journal evaluation
- Bibliometrics and scientometrics in the context of journal editing and publishing
- Finance of journal publishing
- History of scholarly journal
- Copyright and Creative Commons License
- Open access and public access approaches

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About the journal

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Artificial intelligence–assisted writing: a continuously evolving issue

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The Ongoing Development of AI-assisted Writing in ChatGPT’s Responses

Since McCarthy et al. [1] first introduced the term “artificial intelligence (AI),” there have been numerous significant developments in the field. It all began with expert systems, evolved to the point where humans were defeated in games of Chess and Go, and eventually led to the emergence of large language models (LLMs). The key feature of these LLMs is their ability to outperform previous achievements and potentially replace human input in various domains. In this editorial, I aim to provide an overview of AI-assisted writing and discuss the policies regarding AI-assisted writing for popular journals, following a brief after introduction to the history of AI. The majority of the content is derived from responses by ChatGPT (GPT-3.5, OpenAI).

The History of AI

Here is an explanation from ChatGPT about its history, in response to the query, “Please explain ‘history of AI’” (Fig. S1):

The history of artificial intelligence (AI) is a fascinating journey that spans several decades and has seen significant milestones in technology, research, and development. The idea of creating machines capable of human-like intelligence and decision-making can be traced back to ancient times, but the modern history of AI begins in the mid-20th century. Here’s a summarized overview of the key milestones in the history of AI:

1. Early Concepts (1940s–1950s):
   - The term “artificial intelligence” was first coined by computer scientist John McCarthy in 1956 during the Dartmouth Conference, which is considered the birth of AI as a field of study.
   - In the 1940s, early pioneers like Alan Turing and others developed the concept of a “universal machine” that could simulate any human-designed computing machine.
   - The development of the first programmable digital computers during World War II laid the groundwork for AI research.

2. The Dartmouth Conference (1956):
   - John McCarthy, along with other prominent researchers, organized the Dartmouth Conference in 1956, which is considered the birth of AI as a field of study.
Conference, which marked the official beginning of AI research as a separate field.

- Participants at the conference were optimistic about the potential for creating intelligent machines within a few years, which turned out to be overly ambitious.

3. The “AI Winter” (1960s–1970s):
- Despite initial enthusiasm, progress in AI research faced significant challenges, and the high expectations from the Dartmouth Conference were not met.
- Funding for AI research reduced due to unfulfilled promises, leading to a period known as the “AI winter” characterized by a decline in AI research activities.

- In the 1980s, AI research saw a revival with the development of expert systems, which used knowledge representation and inference rules to mimic human expertise in specific domains.
- Expert systems found practical applications in various fields, such as medicine and finance.

5. Machine Learning and Neural Networks (1990s):
- In the 1990s, machine learning algorithms gained prominence, allowing AI systems to learn from data and improve their performance over time.
- Neural networks, which mimic the structure of the human brain, saw renewed interest and contributed to significant advances in AI.

6. AI in the 21st Century:
- The 21st century witnessed a surge in AI research and applications, fueled by the availability of large datasets and computational power.
- Breakthroughs in machine learning, particularly with deep learning techniques, led to remarkable progress in areas like computer vision, natural language processing, and robotics.
- AI applications became ubiquitous in various industries, including healthcare, finance, transportation, and entertainment.

7. Ethical and Societal Challenges:
- The rapid advancement of AI has raised ethical and societal concerns, such as bias in AI algorithms, job displacement, privacy issues, and the implications of autonomous systems.

What are the Issues with AI-assisted Writing?

As highlighted in the final section of the discussion, LLMs raise numerous concerns. Below is the answer to the query, “What are the problems of AI-assisted writing?” (Fig. S2):

As of my last update in September 2021, AI-assisted writing had some challenges and problems associated with it. These issues might still be relevant in 2023, but it’s also possible that advancements and improvements have addressed some of these concerns. Here are some of the problems associated with AI-assisted writing:

1. Lack of originality: AI can generate text based on patterns learned from vast amounts of existing data. While this can be useful, it might also lead to content that lacks originality and creativity, potentially producing generic or repetitive results.

2. Contextual understanding: AI models may struggle to grasp the full context and meaning of a text, leading to misinterpretations or inaccurate responses. This can be especially problematic for complex or nuanced writing tasks.

3. Biases in data: AI models learn from the data they are trained on, and if that data contains biases, the AI-assisted writing might perpetuate those biases. This can lead to discriminatory or prejudiced content being generated.

4. Ethical concerns: There are ethical considerations related to using AI to produce content without proper attribution or acknowledgment. Plagiarism and copyright issues may arise if AI-generated content is not appropriately handled.

5. Difficulty in creativity and critical thinking: AI is excellent at replicating patterns and information from existing data, but it may struggle with true creativity and critical thinking, which are essential for producing high-quality, original content.

6. Inconsistency in quality: The quality of AI-generated writing can be inconsistent, and there may be a need for human intervention to ensure that the output meets the desired standards.

7. Complex writing tasks: While AI can excel in some writing tasks, such as generating straightforward articles or product descriptions, it may struggle with more complex forms of writing, such as poetry, creative storytelling, or technical manuals.

8. Over-reliance on AI: Over-reliance on AI-assisted writing can lead to a decline in human writing skills, as individuals might become dependent on AI tools rather than developing their language and communication abilities.

9. Legal concerns: There might be legal issues surrounding the ownership and copyright of content produced using AI, as well as potential liabilities arising from inaccuracies or errors in AI-generated content.

10. Data privacy and security: AI writing tools might require access to sensitive information, and there could be
concerns regarding data privacy and security if the data is mishandled or misused.

ChatGPT has identified all these points, they are entirely reasonable and are issues that all authors should consider.

**What are the Policies Regarding AI-assisted Writing for Popular Journals?**

In light of the above points, I looked into how well-known journals are responding to ongoing advances in AI models. My next question was: "What are the policies on AI-assisted writing for popular journals?" (Fig. S3):

As of my last update in September 2021, the specific policies on "AI-assisted writing" for popular journals may vary depending on the journal and its editorial guidelines. Since journals frequently update their policies and guidelines, it's essential to refer to the individual journal's website or contact their editorial office directly for the most up-to-date information.

However, I can provide you with some general considerations and practices that might be relevant to AI-assisted writing in academic and scientific publishing:

1. **Authorship and attribution**: Journals typically require that authors take responsibility for the content they submit. If AI is used to generate parts of the manuscript, it should be appropriately acknowledged, and the authors should disclose the extent of AI assistance. This is crucial to ensure transparency and avoid potential issues related to plagiarism and intellectual property.

2. **Originality and novelty**: Journals often emphasize the importance of originality and novelty in submitted manuscripts. While AI can be a valuable tool to assist in writing, it should not compromise the novelty of the research or the authenticity of the findings presented in the manuscript.

3. **Ethical considerations**: Authors using AI-assisted writing should consider the ethical implications, including potential biases and implications for data privacy and security. Journals may require authors to address these ethical considerations in their manuscripts.

4. **Peer review**: AI-assisted manuscripts are subject to the same rigorous peer-review process as other submissions. Reviewers and editors will assess the quality, validity, and originality of the work, regardless of whether AI tools were used.

5. **Data availability and code sharing**: Some journals might require authors to make the AI-generated content, data, and code available to readers to promote transparency and reproducibility. This can be particularly relevant if AI algorithms play a significant role in the research.

6. **Compliance with guidelines**: Authors using AI should ensure that their AI-assisted writing complies with any relevant guidelines or regulations in their field, especially if the research involves sensitive data or specialized practices.

7. **Language and readability**: While AI can help with writing, it is essential that the manuscript adheres to the journal's language requirements and maintains readability and clarity.

Remember that each journal may have its own specific policies and guidelines on AI-assisted writing, so it's crucial to check the journal's "Instructions for Authors" or reach out to the editorial office for guidance when preparing and submitting a manuscript that involves AI-assisted writing.

These answers appeared quite reasonable too. As advised, I searched for guidelines for each journal. Elsevier described authors' responsibilities as follows [2]:

Authors must disclose the use of generative AI and AI-assisted technologies in the writing process by adding a statement at the end of their manuscript in the core manuscript file, before the References list. The statement should be placed in a new section entitled 'Declaration of Generative AI and Assisted technologies in the writing process'.

**Statement**: During the preparation of this work the author(s) used [NAME TOOL/SERVICE] in order to [REASON]. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

This declaration does not apply to the use of basic tools for checking grammar, spelling, references etc. If there is nothing to disclose, there is no need to add a statement.

There are also guidelines for the editor, which involve finding the disclosure statement at the end of the received manuscript and following the journal's protocol for editing AI-assisted writing [3]. I also found related information in Nature, which contained the following brief description [4]:

Large Language Models (LLMs), such as ChatGPT, do not currently satisfy our authorship criteria. Notably an attribution of authorship carries with it accountability for the work, which cannot be effectively applied to LLMs. Use of an LLM should be properly documented in the Methods section (and if a Methods section is not available, in a suitable alternative part) of the manuscript. […] The fast-moving area of generative AI image creation has resulted in
novel legal copyright and research integrity issues. As publishers, we strictly follow existing copyright law and best practices regarding publication ethics. While legal issues relating to AI-generated images and videos remain broadly unresolved, Springer Nature journals are unable to permit its use for publication.

The Evolving Issue of AI-assisted Writing

Despite the limitations of the GPT-3.5 model, which is not the most recent one, but a noncommercial version, its content is reasonable and currently applicable. While LLMs are introducing new challenges, one can hope that they will bring their own solutions. As technology advances, so too do these AI-assisted writing capabilities. However, this progress also introduces more concepts that we need to be aware of compared to before. Therefore, writing an AI-assisted research paper could potentially be more complex than writing one in a traditional manner. To bring about the future of academic writing, efforts to establish a general rule for AI-assisted writing are necessary, and a well-designed LLM model can facilitate this.

Declaration of Generative AI and Assistive Technologies in the Writing Process

The primary content of this article consists of responses from the GPT-3.5 model. The remaining portions of the content have been deliberately translated from Korean to English by GPT-3.5 and was then edited by human editors.

Conflict of Interest

Jaegyun Park has been the Editor-in-Chief of Science Editing since 2023.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

Supplementary Materials

Supplementary materials are available from https://doi.org/10.6087/kcse.318.

Supplementary figures

Fig. S1. Answer of ChatGPT (ver. July 20, 2023; OpenAI) to the inquiry, “Please explain ‘history of AI’” (cited 2023 Jul 23).

Fig. S2. Answer of ChatGPT (ver. July 20, 2023; OpenAI; cited 2023 Jul 23) to the inquiry, “What are the problems of ‘AI assisted writing’?” (cited 2023 Jul 23).

Fig. S3. Answer of ChatGPT (ver. July 20, 2023; OpenAI) to the inquiry, “What are the policies on ‘AI assisted writing’ for popular journals?” (cited 2023 Jul 23).

References


How to review and assess a systematic review and meta-analysis article

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Abstract

Systematic reviews and meta-analyses have become central in many research fields, particularly medicine. They offer the highest level of evidence in evidence-based medicine and support the development and revision of clinical practice guidelines, which offer recommendations for clinicians caring for patients with specific diseases and conditions. This review summarizes the concepts of systematic reviews and meta-analyses and provides guidance on reviewing and assessing such papers. A systematic review refers to a review of a research question that uses explicit and systematic methods to identify, select, and critically appraise relevant research. In contrast, a meta-analysis is a quantitative statistical analysis that combines individual results on the same research question to estimate the common or mean effect. Conducting a meta-analysis involves defining a research topic, selecting a study design, searching literature in electronic databases, selecting relevant studies, and conducting the analysis. One can assess the findings of a meta-analysis by interpreting a forest plot and a funnel plot and by examining heterogeneity. When reviewing systematic reviews and meta-analyses, several essential points must be considered, including the originality and significance of the work, the comprehensiveness of the database search, the selection of studies based on inclusion and exclusion criteria, subgroup analyses by various factors, and the interpretation of the results based on the levels of evidence. This review will provide readers with helpful guidance to help them read, understand, and evaluate these articles.

Keywords

Evidence-based medicine; Meta-analysis as topic; Patient care; Research design; Systematic review as topic

Introduction

Borenstein et al. [1] begin the preface of their textbook entitled Introduction to Meta-Analysis by giving an example of sudden infant death syndrome (SIDS). Dr. Benjamin Spock, who was
considered to be one of the most famous and influential American pediatricians of the 20th century, wrote, “I think it is preferable to accustom a baby to sleeping on his stomach from the beginning if he is willing” in his book entitled The Common Sense Book of Baby and Child Care, which is one of the best-selling books of the 20th century. About 50 million copies of this book were sold between the 1950s and 1990s [1]. Many pediatricians also gave similar advice at the time. During the same period, more than 100,000 babies died of SIDS [1]. In the meantime, in a systematic review and meta-analysis of 40 observational studies published in 2005, Gilbert et al. [2] reported that front sleeping, compared with back sleeping, statistically significantly increased the risk of SIDS by about three times by 1970 (pooled odds ratio [OR], 2.93; 95% confidence interval [CI], 1.15 to 7.47). The authors concluded that a “systematic review of preventable risk factors for SIDS from 1970 would have led to earlier recognition of the risks of sleeping on the front and might have prevented over 10,000 infant deaths in the UK and at least 50,000 in Europe, the USA, and Australasia” [2]. This example shows the importance of systematic reviews and meta-analyses in the field of medicine.

Recently, systematic reviews and meta-analyses have emerged as a frequently used and central method in many fields of research such as psychology, pedagogy, criminology, business, ecology, and other scientific fields, as well as medicine. This review aims to help the readers of this journal learn about what systematic reviews and meta-analyses are and how to review and evaluate those papers, especially in the field of medicine.

What is a Systematic Review?

At a simple level, research articles can be divided into two types: original research articles and review articles. Original research articles are the most common type of research articles published in scientific journals, and they report the research question, methods, results, and conclusions of an original study actually conducted and written by the author(s). These articles are classified as primary literature [3,4]. On the contrary, review articles report a summary and/or synthesis of the research findings from the existing published literature on a certain topic, and they are classified as secondary literature [4]. Review articles can be further divided into two types: narrative review articles and systematic review articles. A narrative review, also known as a traditional nonsystematic review, is a subjective overview and broad qualitative summary of the current knowledge on a certain topic by an expert using selected literature without prespecified or documented selection criteria and methods to support their conclusion [5]. On the contrary, according to the glossary of terms in the Cochrane Collaboration updated in 2005 [6], a systematic review is “a review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyze data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyze and summarize the results of the included studies.” The main difference between narrative reviews and systematic reviews is that systematic reviews answer a clearly defined, narrow question through explicit search strategies with predefined selection criteria and data extraction and appraisal in a structured way, with or without a quantitative method such as meta-analysis [7].

What is a Meta-Analysis?

The idea of dealing quantitatively with various individual observations emerged in the 17th century, when the French mathematician Blaise Pascal developed mathematical ways of handling games of chance in gambling. Although Karl Pearson’s “Report on Certain Enteric Fever Inoculation Statistics” in 1904 is considered to be the first meta-analysis, it was not until 1976 that the term “meta-analysis” was coined by Gene V. Glass, who is an American statistician and educational psychologist [8,9]. In his article published in the journal Education Researcher in 1976, he used the term “meta-analysis” to refer to “analysis of analyses,” specifically referring to “the statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings” [10]. That is, a meta-analysis is a quantitative statistical analysis combining individual results to estimate the common or mean effect. Since then, meta-analyses have been conducted in various fields of study, such as psychology, sociology, pedagogy, and medicine, and meta-analysis has come to be seen as an important component of a systematic review. In particular, systematic reviews and meta-analyses generally provide the highest level of evidence in evidence-based medicine (EBM), supporting the development and revision of clinical practice guidelines, which are recommendations for clinicians when caring for patients with specific diseases and conditions [11].

EBM, the Levels of Evidence Pyramid, and Systematic Reviews with Meta-Analyses

In 1972, Archie Cochrane, who was a Scottish doctor and is now known as one of the pioneers of modern clinical epidemiology and EBM, articulated the criticism that many practices in medicine that had previously been believed to be effective lacked evidence from randomized controlled trials in his book entitled Effectiveness and Efficiency [12]. Since then, the term “evidence-based” began to be used regarding clinical practice guidelines, and several papers discussing evidence-
based guidelines and policies were published in the *Journal of the American Medical Association* between 1990 and 1997. The term "evidence-based medicine" was first used by Gordon Guyatt of McMaster University in 1991 [13]. In their editorial published in *British Medical Journal* in 1996, Sackett et al. [13] clearly defined EBM as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. The practice of EBM means integrating individual clinical expertise with the best available external clinical evidence from systematic research" (emphasis added) [14]. Since the publication of this editorial, EBM has been the basis for the development of clinical practice guidelines, which provide doctors recommendations for the medical treatment of various diseases.

The most important point in the definition of EBM is “current best evidence.” In general, several types of study designs are used to investigate the causal relationship between a risk factor and a certain disease in epidemiology or to evaluate the efficacy and safety of an intervention, such as a pharmaceutical drug or a certain treatment method in medicine. There is also a hierarchy in terms of levels of evidence among different study designs. In 1979, a report by the Canadian Task Force on the Periodic Health Examination [15] first proposed levels of evidence regarding recommendations for the examination. For example, the task force graded the effectiveness of interventions based on the quality of the evidence as follows: grade 1, evidence is obtained from at least one properly randomized controlled trial (RCT); grade 2-1, evidence is obtained from well-designed cohort or case-control studies; grade 2-2, evidence is obtained from comparisons between times or places with or without the intervention or dramatic results in uncontrolled experiments; and grade 3, evidence derives from the opinions of respected authorities, based on clinical experience and so forth [15]. Since then, various versions of the "levels of evidence pyramid" have been described, and a standard levels of evidence pyramid has been established (Fig. 1) [16]: weaker evidence pyramid has been established (Fig. 1) [16]: weaker evidence pyramid has been established (Fig. 1) [16]: weaker evidence pyramid has been established (Fig. 1) [16]: weaker evidence pyramid has been established (Fig. 1) [16]: weaker evidence pyramid has been established (Fig. 1) [16]: weaker evidence pyramid has been established. The pyramid (middle levels of evidence) is located in the middle of the pyramid (middle levels of evidence). Thus, in general, when there are inconsistent findings on a certain research topic across various study designs, it can be concluded that study designs located in the higher rows of the pyramid are more reliable, valid, and preferred in practice than those in the lower rows of the pyramid. Because systematic reviews and meta-analyses are located at the top of the pyramid, they generally provide the highest level of evidence among all types of study designs.

**Procedure of a Meta-Analysis**

This review briefly summarizes how to conduct a meta-analysis, as follows.

**Define a research topic**

A well-defined research topic is the most important starting point for an excellent systematic review with meta-analysis. Even if a certain research topic seems fantastic or excellent, conducting a meta-analysis is impossible or not meaningful if there are no published individual studies or very few studies (usually fewer than five or so). Theoretically, if at least two individual studies are published on a certain topic, a meta-analysis is possible. However, a meta-analysis with only two studies would generally have too small a sample size to draw a conclusion and provide any new knowledge. Thus, in general, if the number of individual studies published on the same topic is at least five or, if possible, more than 10, it would be appropriate to conduct a meta-analysis. It is also preferable if no meta-analysis has yet been published on a certain topic. However, in most cases, at least one meta-analysis on a certain topic already exists. This should not deter researchers from conducting further meta-analyses on the topic, especially if subsequent individual studies on the same topic have been published since the most recent meta-analysis, the conclusions of the planned meta-analysis are expected to be different from those of the previous ones, or in some cases, it is considered meaningful to replicate and confirm previous findings.

**Select a study design**

In the field of medicine, the most common types of study de-
signs used for meta-analysis are case-control studies, cohort studies, and RCTs. Thus, it is very important to identify which type(s) of study design will be selected for a given research question at the very beginning of research.

Search the literature in electronic databases

The core databases used for meta-analysis in the field of medicine are PubMed (MEDLINE), Embase (Excerpta Medica database), and CENTRAL (Cochrane Central Register of Controlled Trials). Among them, CENTRAL is a database for bibliographic reports of RCTs taken from published and unpublished sources such as CINAHL (Cumulative Index to Nursing and Allied Health Literature), ClinicalTrials.gov, and the International Clinical Trials Registry Platform from the World Health Organization (WHO), as well as PubMed and Embase. Thus, if researchers plan to conduct a meta-analysis of observational studies, such as case-control studies or cohort studies, they do not need to search CENTRAL. Instead, searching the two core databases of PubMed and Embase suffices.

When searching a database, appropriate search keywords (terms) related to the research topic should be selected and combined. Both the National Library of Medicine (NLM) Medical Subject Headings (MeSH) terms and a wide range of free-text search terms are used in order to identify as many relevant articles as possible. Usually, two types of search terms, such as a keyword for an intervention or an exposure variable and a keyword for an outcome variable, are combined. For example, if the topic is the association between the intake of vitamin C and the risk of lung cancer, by using Boolean operators for all possible MeSH and free-text terms, the following search terms can be used: (vitamin C OR ascorbic acid) AND (lung cancer OR lung neoplasm).

Select relevant studies

The PICO (patient, problem, or population; intervention; comparison, control or comparator; and outcome) criteria regarding the research topic are used for selecting relevant studies. The types of study designs, such as case-control studies, cohort studies, or RCTs, should be determined. In general, the selection process is conducted stepwise, with an initial screening of titles and abstracts followed by a final full-text screening. Based on the predetermined selection criteria for the individual studies that will be included in the meta-analysis, at least two of the authors should independently assess the eligibility of the studies and select relevant studies.

Conduct a meta-analysis

In meta-analyses in the field of medicine, the most commonly used effect sizes are odds ratios (ORs) or relative risk (RRs) for dichotomous variables and weighted mean differences (WMDs) or standardized mean differences (SMDs) for continuous variables. In the case of dichotomous variables, an arrangement of four cells in a 2 × 2 table in each RCT is used to combine the results of the included studies in meta-analyses of RCTs, whereas an adjusted OR in each case-control study or an RR in each cohort study with lower and upper limits of the 95% CI are used in meta-analyses of observational studies. For continuous variables, the WMD is used for outcomes on the same scales, such as blood pressure (mmHg) or serum glucose levels (mg/dL) across studies, and the SMD is used for the outcomes on different scales, such as fatigue score measures using different questionnaire-based tools across studies. A meta-analysis involves combining these individual effect sizes to estimate the overall or summary effect size. In general, the common software programs used for performing meta-analysis to estimate the overall effect size are Stata (Stata Corp), RevMan5 (Cochrane), R (R Foundation for Statistical Computing), Excel (Microsoft Corp), Comprehensive Meta-analysis (Biostat Inc), and IBM SPSS (IBM Corp). In addition to the main analysis on a specific research topic, subgroup meta-analyses by various factors such as sex/gender, dosage of a certain drug, follow-up period, study quality, study region, funding source, and other variables can be performed as appropriate for a given topic.

Assessment of Findings from a Meta-Analysis

Interpretation of a forest plot

The main findings of meta-analyses are presented by creating a forest plot, also known as a blobbogram, which is a graphical display of individual results from studies included in the analysis and an overall combined result.

Fig. 2 shows an example of a forest plot using RR for a dichotomous variable from a meta-analysis of three cohort studies or RCTs. The left column lists the names of individual studies included in the analysis using the year and family name of the first author of each study in chronological order, and the center column is a plot of individual results, with a square representing each RR and a horizontal line representing its CI. The overall combined result is shown using a diamond, the right and left vertices of which represent its CI. A central vertical line indicates no effect or association. Thus, because the CI (0.76 to 2.25) for the overall RR, as shown in Fig. 2, overlaps with the vertical line indicating the number 1, it is interpreted that there is no significant association between two variables (e.g., a risk factor or an intervention vs. an outcome of a disease). The left column lists the values for RRs with their CIs in individual studies, an overall RR with its CI in combined studies, and weights as percentages, which are usually proportional to the sample size of each study.
Fig. 2. An example forest plot using a relative risk (RR) from a meta-analysis of three cohort studies or randomized controlled trial. CI, confidence interval.

<table>
<thead>
<tr>
<th>Study</th>
<th>RR (95% CI)</th>
<th>Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson (1904)</td>
<td>1.20 (0.80–1.50)</td>
<td>35.19</td>
</tr>
<tr>
<td>Cochrane (1972)</td>
<td>2.20 (1.50–3.00)</td>
<td>34.32</td>
</tr>
<tr>
<td>Glass (1976)</td>
<td>0.80 (0.50–1.30)</td>
<td>30.49</td>
</tr>
<tr>
<td>Overall (I² = 84.3%)</td>
<td>1.31 (0.76–2.25)</td>
<td>100</td>
</tr>
</tbody>
</table>

Fig. 3. An example forest plot using a weighted mean difference (WMD) from a meta-analysis of three randomized controlled trials. CI, confidence interval.

<table>
<thead>
<tr>
<th>Study</th>
<th>WMD (95% CI)</th>
<th>Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cochrane (1972)</td>
<td>10.00 (7.95–12.05)</td>
<td>34.41</td>
</tr>
<tr>
<td>Glass (1976)</td>
<td>3.00 (0.82–5.18)</td>
<td>34.13</td>
</tr>
<tr>
<td>Sackett et al. (1996)</td>
<td>5.00 (1.83–8.17)</td>
<td>31.46</td>
</tr>
<tr>
<td>Overall (I² = 90.9%)</td>
<td>6.04 (1.43–10.68)</td>
<td>100</td>
</tr>
</tbody>
</table>

Fig. 4. An example forest plot using a standardized mean difference (SMD) from a meta-analysis of three randomized controlled trials. CI, confidence interval.

<table>
<thead>
<tr>
<th>Study</th>
<th>SMD (95% CI)</th>
<th>Weight (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cochrane (1972)</td>
<td>−0.79 (−1.02 to 0.55)</td>
<td>33.22</td>
</tr>
<tr>
<td>Glass (1976)</td>
<td>−0.18 (−0.38 to 0.02)</td>
<td>34.58</td>
</tr>
<tr>
<td>Sackett et al. (1996)</td>
<td>−0.28 (−0.55 to −0.02)</td>
<td>32.20</td>
</tr>
<tr>
<td>Overall (I² = 87.3%)</td>
<td>−0.41 (−0.79 to −0.04)</td>
<td>100</td>
</tr>
</tbody>
</table>

Fig. 3 shows an example of a forest plot using a WMD for a continuous variable from a meta-analysis of three RCTs. Because the CI (1.43 to 10.65) for the overall WMD does not overlap with the vertical line indicating the number 0, it is interpreted that a certain intervention or treatment group has a significant effect of 6.04 (actual value, e.g., mg/dL for blood glucose levels) compared with a control group.

Fig. 4 shows an example of a forest plot using an SMD for a continuous variable from a meta-analysis of three RCTs. Because the CI (−0.79 to −0.04) for the overall SMD does not
overlap with the vertical line indicating the number 0, it is interpreted that a certain intervention or treatment group has a significant effect compared with a control group. Here, because the SMD used for the outcome on the different scales across studies is an effect size standardized to a uniform scale by dividing a mean difference between two groups by the pooled standard deviation from two groups, the value -0.41 is not an actual one, but a measure of distance or difference between two groups. In general, according to Cohen’s suggestion, an SMD of 0.2 is interpreted as indicating a small effect or difference, an SMD of 0.5 is interpreted as a medium effect, and an SMD of 0.8 or higher is considered indicative of a large effect.

Interpretation of a funnel plot
A funnel plot, which is mainly used to examine the existence of publication bias, is also important for interpreting a meta-analysis. A funnel plot is a scatter plot of the effect size, such as OR or RR, on the x-axis against a measure of the study precision, such as each study’s sample size or standard error, on the y-axis. Studies with higher precision (e.g., larger studies) have a small standard error, located towards the top, and are placed near the average, whereas smaller studies are scattered widely at the bottom. Thus, the plot resembles a symmetrical inverted funnel. However, visually apparent asymmetry or a P-value of < 0.05 from the Egger indicates the existence of publication bias. Other than publication bias, possible sources of funnel plot asymmetries are other reporting biases (e.g., selective outcome reporting), poor methodological quality, true heterogeneity, and chance [17].

Interpretation of heterogeneity
Any kind of variability across studies included in the meta-analysis is called heterogeneity. There are three types of heterogeneity: clinical, methodological, and statistical. Statistical heterogeneity, which is variability or difference in effect sizes across studies and might be a consequence of clinical or methodological heterogeneity, or both, is assessed by using the Cochrane Q statistic or I^2 index. Usually, a P-value of less than 0.1 for the Q statistic is used to provide evidence of heterogeneity. As a rough guide to interpretation of the I^2 index, percentages of 25%, 50%, and 75% indicate low, medium, and high heterogeneity, respectively [18]. I^2 values greater than 50% are considered as showing substantial heterogeneity [19].

Important Tips for Reviewing Systematic Reviews and Meta-Analyses
When reviewing systematic reviews and meta-analyses, reviewers should consider the following important tips, which were originally presented on the BMJ website and have been adapted for the review of systematic review and meta-analysis articles [20].

Originality
Originality is one of the most important criteria for good research. Thus, reviewers should assess whether the submitted research article presenting a systematic review and meta-analysis adds new knowledge to what is already known and also whether the systematic review and meta-analysis design is appropriate and adequate to answer the research question. They should describe the originality of the work and cite relevant references to support their comments on its originality. In order to check originality, they should search the previous literature to identify systematic reviews and meta-analyses on the same topic published in the electronic core databases. As mentioned earlier, even if multiple meta-analysis articles on the same topic have already been published, if subsequent individual studies on the same topic have been published since the most recent meta-analysis, or if the findings or conclusions of the current meta-analysis would be different from those of the previous ones, the work might be of value.

Importance of the work
Reviewers also should assess the importance of the work. For example, if a systematic review and meta-analysis article is submitted to a general medical journal, they should assess whether it matters to the readers of the journal such as medical doctors, clinicians, medical researchers, or professors in medical colleges. That is, reviewers should evaluate whether the journal is the right place for the work.

Database search
As described earlier, it is recommended to search three core electronic databases—PubMed (Medline), Embase, and CENTRAL—for the purpose of meta-analysis of RCTs in the field of medicine. Searching just one electronic database, such as PubMed, is insufficient. For a meta-analysis of observational studies, such as case-control studies or cohort studies, it suffices to search PubMed and Embase.

Selection of studies (inclusion and exclusion criteria)
It is important to evaluate which studies are selected and included in the meta-analysis. As mentioned earlier, it is important for authors to use the PICO framework to select relevant studies on the research topic. Above all, reviews should evaluate whether the type of study design (e.g., case-control studies, cohort studies, or RCTs) as an inclusion criterion is appropriate and adequate to answer the research question. Reviewers should also determine whether the intervention, comparison, and outcome measures are appropriate. The de-
Conclusion

I briefly summarized what systematic reviews and meta-analyses are and how to review and assess systematic review and meta-analysis articles in the field of medicine. I hope this review provides useful assistance regarding how to read, interpret, and evaluate these articles.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Funding

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Subgroup analyses by various factors

It is important for the authors of a systematic review and meta-analysis to perform subgroup meta-analyses according to various factors. In many cases, even if a main meta-analysis including all the studies does not find any significant association or effect, subgroup meta-analyses according to some important or interesting factors might show significant findings. For example, in subgroup meta-analyses by study quality, those with high quality might show no significant effect of a certain intervention, while those with low quality show significant effects. Additionally, a funding source from a pharmaceutical company constituting a conflict of interest might affect the results of an RCT for the effect of a new drug. Other important factors considered in subgroup meta-analyses are the type of participants (age, sex/gender, race/ethnicity), type of intervention or risk factor, type of comparison, type of outcome, dosage, and the intervention or follow-up period.

Interpretation based on levels of evidence

It would be ideal to conduct a meta-analysis of individual studies with the same study design, such as a meta-analysis of case-control studies, a meta-analysis of cohort studies, or a meta-analysis of RCTs. However, it is possible to combine two different study designs, such as case-control studies and cohort studies, in one meta-analysis, if the study designs are similar (e.g., observational studies). In such cases, caution is required in the interpretation of the results of the meta-analysis. Suppose that a meta-analysis of combined case-control studies and cohort studies shows a significant association between a risk factor and a disease, but the subgroup meta-analysis of cohort studies finds no significant association between them, while that of case-control studies does show a significant association. Based on the levels of evidence, the correct interpretation of these findings should be that there is no significant association between the variables because cohort studies generally provide a higher level of evidence than case-control studies. For example, a large meta-analysis of 222 articles in 2013 including both case-control and cohort studies concluded that light alcohol drinking (up to one drink per day) increases the risk of oral cavity and pharynx, esophagus, and female breast cancer [21]. This meta-analysis contributed to the revision of the European Code Against Cancer fourth edition, published in 2015, which newly recommended that “Not drinking alcohol is better for cancer prevention.” However, in my opinion, the authors of the meta-analysis made an erroneous conclusion because there was no significant association between light alcohol drinking and the risk of oral cavity and pharynx cancer or esophagus cancer in the subgroup meta-analysis of cohort studies, although a significantly increased risk was found for those cancers in the meta-analysis of only case-control studies [22]. When there is a difference in findings between case-control studies and cohort studies, the findings from cohort studies are generally more reliable than those from case-control studies.

Others

A common mistake made by authors of meta-analyses is to combine the same dataset that is duplicated in multiple publications from a study. Another is to combine nonindependent data partly shared or overlapping among study participants. It is possible to combine each effect size, such as an OR or an RR in each sex/gender or different datasets of the completely independent subgroups in a study. Reviewers also should evaluate the following: Does the introduction section well describe the backgrounds and aims of the systematic review and meta-analysis? Are the findings of the previous literature on the same research topic, such as individual studies and systematic review and meta-analysis articles, well summarized? Are the overall methods adequately described? Does the Results section answer the research question reliably? Are the findings from the analysis well presented in Tables and Figures? Does the Discussion section clearly address the main findings, comparisons with the previous literature, possible mechanisms underlying the association between the risk factors or interventions and outcomes, and limitations of the work? Is the conclusion clear? Are the references up to date and relevant?
Data Availability

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

Supplementary Materials

The author did not provide any supplementary materials for this work.

References

Research information service development plan based on an analysis of the digital scholarship lifecycle experience of humanities scholars in Korea: a qualitative study

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Abstract

Purpose: Given the impact of information technologies, the research environment for humanities scholars is transforming into digital scholarship. This study presents a foundational investigation for developing digital scholarship (DS) research support services. It also proposes a plan for sustainable information services through examining the current status of DS in Korea, as well as accessing, processing, implementing, disseminating, and preserving interdisciplinary digital data.

Methods: Qualitative interview data were collected from September 7 to 11, 2020. The interviews were conducted with scholars at the research director level who had participated in the DS research project in Korea. Data were coded using Nvivo 14, and cross-analysis was performed among researchers to extract central nodes and derive service elements.

Results: This study divided DS into five stages: research plan, research implementation, publishing results, dissemination of research results, and preservation and reuse. This paper also presents the library DS information services required for each stage. The characteristic features of the DS research cycle are the importance of collaboration, converting analog resources to data, data modeling and technical support for the analysis process, humanities data curation, drafting a research data management plan, and international collaboration.

Conclusion: Libraries should develop services based on open science and data management plan policies. Examples include a DS project liaison service, data management, datafication, digital publication repositories, a digital preservation plan, and a web archiving service. Data sharing for humanities research resources made possible through international collaboration will contribute to the expansion of new digital culture research.

Keywords

Digital humanities; Digital scholarship; Digital scholarship research life cycle; Digital scholarship service
Introduction
Background and rationale
Digital scholarship (DS) seeks to obtain innovative and collaborative results through the digital curation of resources, the multidisciplinary nature of research, and sharing research processes and outcomes. DS refers to the use of digital evidence and methods, digital authoring, digital publishing, digital curation and preservation, and digital usage and reuse of scholarship [1]. The definition of DS is clarified by its associated activities, which include text and data mining, machine learning, data visualization, digital mapping, and digital editions [2,3]. The Association of Research Libraries also offers research support services for DS [4,5]. Some examples of DS research include Slave Voyages (https://www.slavevoyages.org), Mapping the Republic of Letters (http://republicofletters.stanford.edu), and the Perseus Project (http://www.perseus.tufts.edu/hopper/).

In Korea, institutional database construction projects began as part of a national digitization project for analog humanities resources, starting in the late 1990s and running through 2010. A vast number of institutional records was digitized. However, DS in Korea can be succinctly in digitized databases. The conversion of analog resources into data and subsequent analysis have not yet been performed adequately or fully and, furthermore, DS research support services are rarely provided [6–8].

Objectives
By analyzing DS lifecycle research, this study aims to propose a DS service strategy. This is achieved by conducting foundational research on the characteristics of DS research services requisite for each research stage. The analysis focuses on openness, interoperability, usefulness, reusability, integration, and participation in the DS information service within libraries.

Methods
Ethics statement
The interview data collected in this study were recorded after obtaining consent, in compliance with research ethics regarding personal information protection and the use of data for research purposes.

Study design
This was a qualitative study based on interviews. It was described according to Standards for Reporting Qualitative Research [9].

Qualitative approach and research paradigm
A representation of the entire DS research cycle was developed based on Brügger’s schematic representation of the research process (Fig. 1) [10]. In response to the changes in analog, digitized, and born-digital materials, DS experts divided the re-
search programs according to access, analysis, discussion, and the dissemination of data into research planning, execution, publication of results, dissemination, preservation, and the reuse of research findings.

**Researcher characteristics and reflexivity**
The researchers are experts in library and information science with over 18 years of experience.

**Context**
Interviews were conducted in a question-and-answer format based on a semi-structured questionnaire (Suppl. 1), and the data were analyzed using semantic unit coding and clustering.

**Sampling strategy**
The participants in this study were researchers with experience equivalent to or greater than principal investigators who had planned and established national database projects in the humanities and obtained research results in DS.

**Data collection methods**
Data were collected through interviews. The interviewer experts also collected empirical data about data collection, analysis, curation, and reuse within the DS research program and then conducted data analysis.

**Data collection instrument and technologies**
Face-to-face online interviews were conducted, with each interview lasting an average of 1 hour and 7 minutes (Table 1). The voice recordings were transcribed into written documents and used as the primary data for the study.

**Units of the study**
The interviews took place from September 7 to September 11, 2020. The participants’ academic fields included history, Korean literature, and cultural anthropology. The participants held doctoral degrees and were professors and researchers at universities and government agencies.

**Data processing and analysis**
The interviews were transcribed, and responses were categorized by theme using NVivo 14 (Lumivero). Content analysis was performed by creating group clusters while coding to restructure relevant theme nodes (Suppl. 2). To evaluate the study’s reliability and validity, cross-analysis among researchers was conducted. Based on the results of coding performed by two coders, intercoder reliability was measured using Cohen κ statistic and was found to be 0.838, which falls within the range of substantial reliability [11].

**Techniques to enhance trustworthiness**
No further process was implemented.

**Results**

**Synthesis**
Transition from individual research in the humanities to DS through interdisciplinary collaboration
The central nodes of the DS research cycle comprise five stages: research planning, implementation, publication of results, dissemination, and the preservation and reuse of research data (Fig. 2, black rectangles). Additionally, there were 32 subnodes within the central nodes. “Collaboration” was the central topic throughout all the stages. As shown in Fig. 2, the “collaboration” node was extracted from the research planning and data preservation and reuse processes because the researcher considered it to be the most significant characteristic of DS (Fig. 2, red circles).

First, collaboration is needed for digitizing research data in the research plan stage. Second, cooperating with data analysts and information managers is required for converting the research implementation stage into data and technical analysis. Third, technical collaboration is essential for publishing results online, in addition to publishing in academic journals. Fourth, DS institution networking is vital to facilitate research dissemination. Fifth, working with data management institutions is needed for sharing data for preservation and reuse.

**Table 1. Interviewee backgrounds, interview modality, and interview duration**

<table>
<thead>
<tr>
<th>ID</th>
<th>Research discipline</th>
<th>Affiliation type</th>
<th>Gender</th>
<th>Position</th>
<th>Degree</th>
<th>Interview duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>History</td>
<td>University</td>
<td>Woman</td>
<td>Professor</td>
<td>PhD</td>
<td>50 min</td>
</tr>
<tr>
<td>P2</td>
<td>History</td>
<td>Government institute</td>
<td>Man</td>
<td>Researcher</td>
<td>PhD</td>
<td>1 hr and 11 min</td>
</tr>
<tr>
<td>P3</td>
<td>Korean literature</td>
<td>University</td>
<td>Man</td>
<td>Professor</td>
<td>PhD</td>
<td>1 hr and 20 min</td>
</tr>
<tr>
<td>P4</td>
<td>Korean literature</td>
<td>University</td>
<td>Man</td>
<td>Professor</td>
<td>PhD</td>
<td>45 min</td>
</tr>
<tr>
<td>P5</td>
<td>Korean studies</td>
<td>University</td>
<td>Man</td>
<td>Professor</td>
<td>PhD</td>
<td>1 hr and 15 min</td>
</tr>
<tr>
<td>P6</td>
<td>Cultural anthropology</td>
<td>University</td>
<td>Man</td>
<td>Professor</td>
<td>PhD</td>
<td>1 hr and 5 min</td>
</tr>
</tbody>
</table>

https://www.escienceediting.org
However, difficulties arise in finding and collaborating with researchers from each academic field during each stage of the DS project processes. A liaison service for DS project management is necessary, such as public service librarians supporting the organization of an interdisciplinary research team or technical services librarians consulting during the conceptualization, planning, and implementation stages where interdisciplinary collaboration is required [12].

Converting analog humanities resources into data

Humanities scholars access and interpret information through answering academic questions based on data. The first DS stage is converting original analog forms of cultural heritage, such as ancient documents, maps, or records, into digital resources. The basic activities of digital humanities (DH) scholarship involve either making analog materials, including maps, manuscripts, archaeological remains, specific editions, or primary documents of historical or recent events, available in a digital format or creating and using born-digital materials. Converting information from one form into another is the activity of remediation. This preserves information in a file format, which a computer can then process. DH projects often engage with both original analog materials and born-digital materials, but all are managed in the form of digital assets [13].

In Korea, national digital database projects have been conducted at institutions that have old historical resources. However, the problem is that most of the databases were built by scanning original analog texts in the form of images. These digital images should be converted to data for DS research. This is the case because nationally supported database con-
struction projects were conducted as job-creating initiatives for the digitization of analog resources. Moreover, the focus was on digital preservation during the IMF (International Monetary Fund) economic crisis in Korea. As a result, a standardized data structure in which humanities resources can be read and interpreted as data was not provided from an information usage perspective. Therefore, to support DS research, technical support services are needed for designing a standard data structure and converting analog and image texts into data.

**Support for data modeling and analysis training**

For humanities data to be analyzed according to research purposes, data modeling and analytic technologies should be used. Data modeling refers to datafication and modeling. This process involves abstracting discrete values from a phenomenon or artifact. These values may be expressed either in numbers or texts and are necessarily a reduction of complex materials into a computational form. With data, one can automate processes, such as sorting, counting, comparing, or making statistical assessments. Materials or phenomena of almost any kind can be turned into quantifiable or discrete data [13,14].

Of the six participants in this study, four had personally performed data modeling and analysis tasks. However, each researcher employed a different data processing method in their collaborative research, resulting in difficulties like unbalanced datasets. Although research data should be modeled, constructed, and analyzed according to their characteristics, there is hardly any one program in which the process can be studied systematically. Therefore, libraries need training support on the data characteristics most suitable for DS research, modeling, data construction guidelines, and data analysis technologies. For instance, curricula of various levels on the analysis of social networks based on data, texts, and using databases should be developed. Furthermore, it is necessary to provide support to facilitate collaborative research among participants by forming networks.

**Humanities data curation**

In DS research, the crucial point is not to obtain hundreds of gigabytes of rapidly increasing data, but rather to select valuable resources. Researchers need the development, creation, and structuring processes of qualitative resources worthy of cultural studies and emphasize the need for qualitative data management of resources, such as the origination of metadata, whose context can be interpreted for the reuse of data.

Data curation has been defined as the active and ongoing management of data throughout its entire lifecycle of interest and usefulness to scholarship. Curation has also been closely associated with DH practice, in addition to digitally preserving and curating cultural heritage material. It includes the following activities and processes: description (documenting the context and relationship of various forms of research data), annotation (enhanced information on the data with more granularity and context), collection and aggregation (connecting data and teams), storage (maintaining a platform for stable and accessible data), and migration (to ensure continued access via emulation or preservation) [14,15]. The DS research projects undertaken by this study’s participants were not conducted in collaboration with libraries from the data curation process. Instead, the research team collected and processed data themselves.

In the future, a foundation services should be established so that data curation, which can support research projects through collaboration among libraries at the beginning of the research project, can be conducted collaboratively early on. It is essential to describe and annotate the context of data and to develop and provide services where such data can be used collaboratively between librarians and researchers.

**Sustainable research data management policy**

Open science, which is based on sharing and collaborating on the latest research data, drives the policies and trends of global research fields. Depending on the characteristics of research areas, data sharing policies and data management plans (DMPs) should be submitted before research projects begin. Recently, the National Endowment for the Humanities, which supports DS research, has started requesting planning, preservation, and management plans for research data at the preparation stage for DS projects. This follows the National Science Foundation’s “Managing and Sustaining the Project Assets” guideline [16].

The importance of research data, which originated in scientific and technological fields, is now expanding to support humanities and social science work. The goal is for data to be managed, preserved, and reused by third parties during the curation process; that is, the aim is to extend beyond just managing research data. While data management refers to the direct creation and use of data by researchers during the data lifecycle’s active stages, curation ensures that data can continue to be managed both during and after research.

In Korea, services for DS projects often face the threat of discontinuation because maintaining web publications on servers becomes difficult given the lack of funding after the research ends. Unfortunately, this leads to the loss of national research and cultural resources, as well as the inability to reuse data in follow-up studies. To address this issue, the infrastructure for preserving and reusing data must be strengthened by expanding digital preservation strategies and digital archives as large as data centers in libraries for DS work.
International collaboration to expand DS research

DS is based on openness, sharing, and collaboration in research. Furthermore, the dissemination, sharing, and openness of research results in the humanities, in addition to scientific and technological research, are gradually expanding. The majority of DS research in Korea, which has abundant cultural resources, originates from data derived from the historical relationships among Korea, China, and Japan. Conducting research on and providing open access to data, and sharing results are the starting points for disseminating human cultural heritage research in the future.

Discussion

Key results

DS should be able to datafy, which is not just a matter of digitizing, but also transforming into an analyzable format, related resources and interpret them using humanities research questions. This study found that although DS research has remained at the database construction stage, it is expanding into individual or team research. However, researchers have experienced difficulties in collecting, managing, applying, and analyzing data because of the lack of library-based, collaborative research support services. This has been the case regarding research data curation, data management, and analysis processes, all the way from the early to the final stages of DS research. Therefore, this study analyzed the DS research cycle, explained the five stages of the research process, and proposed library services needed at each stage (Fig. 3).

First, the most significant characteristic of DS research is “collaboration.” This is because DS interprets humanities questions from various viewpoints based on humanities data. In addition to humanities researchers and those working in other disciplines, data management, and analysis specialists collaborate to derive results. Second, because DS research is based on humanities data, data curation and management policies, as well as data management such as data collection, management, analysis, and preservation, are essential, and the role of the library is crucial. Third, the following stages of DS research were identified: research plan, research implementation, publication results, dissemination of research results, and the preservation and reuse of research data. Fourth, the library information services required at each stage are as follows. For the research planning stage, there is a need for DH conceptualization support services and DS project liaison services. In the implementation phase, technical support and training services, such as data curation and management, datafication, and data modeling, are necessary.

In the publication stage, content management system support should be provided to researchers for submitting and publish-
ing their work, and for publishing their results on the web. Additionally, support should be given for operating a content management system. In the dissemination phase, support for collaboration should be offered by constructing an international standard framework support service and a network for sharing domestic and international DH resources to share data internationally. In the preservation and reuse stage, data management, long-term hosting, and web archiving services should be included in digital preservation plans.

As such, libraries should not limit themselves to constructing and providing digital resources. Rather, they need to continue opening up resources and sharing services, such as data structuralization, technology analysis, training program development, data management, web archiving services, and international collaboration.

Interpretation
If libraries actively engage in collaboration processes with reference to the service strategies for each stage of DS research proposed in this study, establish curation strategies from project planning, and implement management through the DMP process, then DS research data will be preserved for an extended period and reused by future generations in their studies. As such, digital cultural research will continue.

Limitations
This study has conducted an empirical investigation with a limited number of researchers who have experience in DS research. If expanded to include librarians and other stakeholders for the application of DS library services, a more detailed service improvement plan can be proposed.

Conclusion
DS is a convergent field of research based on open science. If libraries serve as the center of DS collaborative research, they can truly empower future generations to reuse research data and maintain the sustainability of DS research resources. This could be done via research support throughout the DS research cycle, as well as research data management, data curation, and web archiving.

Conflict of Interest
No potential conflict of interest relevant to this article was reported.

Funding
This work was supported by a Joongbu University Research and Development Fund in 2022.

Data Availability
Data sharing is not applicable to this article as no new data were created or analyzed in this study.

Supplementary Materials
Supplementary materials are available from https://doi.org/10.6087/kcse.309.

Suppl. 1. Interview questionnaire on research experience based on digital scholarship research lifecycle.
Suppl. 2. Interviewee’s comments.

References


Current status and demand for the advancement of *Clinical Endoscopy*: a survey-based descriptive study

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Abstract

**Purpose:** This survey study aimed to investigate the current status, issues, and needs related to *Clinical Endoscopy* (*CE*), the official international journal of the Korean Society of Gastrointestinal Endoscopy (KSGE).

**Methods:** A 10-item survey was emailed to domestic KSGE members between May 1 and May 15, 2023. The results were analyzed using descriptive statistics.

**Results:** In total, 216 complete responses were analyzed. Most respondents (46.8%) read *CE* once or twice monthly. The proportion of respondents who read the journal once or twice a year or did not read it at all was quite high, at 36.6%. The most informative article type was review articles (53%), and the least-read type was editorials (33%). Ninety-nine respondents (45.8%) stated that they did not want to submit their articles to *CE* because *CE* is not a Science Citation Index Expanded (SCIE) journal (38.4%). Eighty-nine respondents (41.2%) did not cite *CE* articles in their manuscripts. Furthermore, 41.2% of the respondents declined review invitations because they were too busy (73.0%). The two most common requests for *CE* were to increase the number of guidelines and review articles (38.0%) and to improve the journal quality (34.7%).

**Conclusion:** Although *CE* is a representative journal of KSGE, the level of interest and concern for *CE* among society members was relatively low. Nonetheless, this survey offers valuable insights into the needs and current status of *CE*, paving the way for its further development. It is clear that more efforts and investments from the society and the editorial board are necessary.

**Keywords**

Surveys; Questionnaires; Medical journalism; Gastrointestinal endoscopy; Quality improvement

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Introduction

Background and rationale
The Korean Society of Gastrointestinal Endoscopy (KSGE) was established on August 14, 1976, and published its journal, Taehan Sohwagi Naesigyŏng Hakhoe chi (Korean Journal of Gastrointestinal Endoscopy, pISSN: 1225-7001) in Korean from November 1981 to July 2011. Since the September 2011 issue, the journal has been published in English under the official title, Clinical Endoscopy (Clin Endosc; CE; pISSN: 2234-2400, eISSN: 2234-2443).

CE is currently the joint official journal of KSGE, International Digestive Endoscopy Network (IDEN), Vietnam Association of Gastroenterology (VNAGE)/Vietnam Federation for Digestive Endoscopy (VFDE), and Thai Association for Gastrointestinal Endoscopy (TAGE). IDEN is an international organization established by KSGE in 2019 to promote and share advances in digestive endoscopy research. VNAGE and TAGE officially designated CE as the official journal of the societies in March 2021. CE publishes peer-reviewed articles bimonthly and features original articles, state-of-the-art review articles, instructive case reports, brief communications, and letters to the editor on experimental, diagnostic, and therapeutic gastrointestinal endoscopy. CE was indexed in KoreaMed on September 22, 2011; PubMed Central (PMC)/PubMed on June 28, 2012; Scopus on November 11, 2013; EBSCO on June 29, 2015; Emerging Sources Citation Index (ESCI) on June 6, 2016; Directory of Open Access Journals (DOAJ) on April 28, 2018; and Embase on January 1, 2019.

Although CE is a representative professional journal in the field of endoscopy, no survey has yet been conducted on awareness and concerns related to the journal among the general members of KSGE. A comprehensive investigation is needed to identify the specific requests that could further advance the development of CE. Thus, it is necessary to conduct an evaluation and analysis of the needs and current concerns of the domestic members of KSGE.

Objectives
This survey study aimed to better understand the perceptions of CE, including needs, among domestic members of KSGE. The study specifically explored the members’ interest in journal information, submission and citing behavior, participation as peer reviewers, and expectations for the journal.

Methods
Ethics statement
This study was based on anonymous online survey results from society members, which included no sensitive personal information. Therefore, this study did not require approval from the Institutional Review Board.

Study design
This was a descriptive study based on an online survey.

Data collection methods
A survey consisting of 10 questions and five subquestions (Suppl. 1) was developed by the editors (THL, GHK) of CE and emailed to domestic KSGE members three times between May 1 and May 15, 2023, through Google Forms (Google). The survey questions consisted of basic information on the respondents (three items), interest in journal information (three items), submission and citing behavior (two items), participation as peer reviewer (one item), and expectations for the journal (one item). Initially, 221 responses were collected for analysis. Among them, five inadequate responses were excluded. Finally, 216 responses were analyzed.

Participants and variables
After sending the survey questionnaire to email addresses listed in the KSGE database, 221 responses were collected. There were no exclusion criteria, and the total target number was 8,659. All items of the survey questionnaire were analyzed as variables.

Data analysis
The study focused on analyzing the responses of domestic KSGE members concerning their interest, perceived usefulness, and expectations regarding CE. Descriptive statistical analyses were performed to evaluate respondents’ current concerns and trends. There was no selection bias. Sample size estimation was not done because this was a survey-based descriptive study conducted among domestic society members.

Results
Characteristics of the participants
Among the 8,659 members of KSGE who agreed to receive emails from the society, 221 members (2.55%) responded. The basic demographic characteristics of the respondents are described in Table 1. Data on gender, age group, and working area were analyzed. Male physicians were predominant (81.5%), and the age group with the most respondents was people in their 50s. About 50% of physicians worked at a university or tertiary referral hospital. Raw response data are available from Dataset 1.

Interest in journal information
Questions 4 to 6 related to the frequency of reading CE, the
most beneficial article type, and the least-read article type. About half of the respondents (46.8%) said they read CE once or twice monthly. The proportion of respondents who read the journal once or twice a year or did not read it at all was 36.6%. A common reason for not reading CE was that CE is not a Science Citation Index Expanded (SCIE) journal, but rather a domestic journal (Table 2). Considering that CE is published bimonthly, the reading rate was meager. The most informative article type was reviews (53%), followed by case reports (11%) and guidelines (10%). The most unnecessary or unread article type was editorials or commentaries (33%), followed by quizzes (27%), case reports (14%), and original articles (11%) (Fig. 1).

Table 1. Demographic characteristics of the participants (n=216)

| Characteristic               | No. (%)
|------------------------------|--------
| Gender                       |        |
| Men                          | 176 (81.5) |
| Women                        | 40 (18.5)  |
| Age (yr)                     |        |
| 31–40                        | 48 (22.2)  |
| 41–50                        | 83 (38.4)  |
| 51–60                        | 56 (25.9)  |
| > 60                         | 29 (13.4)  |
| Work type                    |        |
| University hospital or tertiary referral center | 109 (50.5) |
| Secondary hospital           | 49 (22.7)  |
| Fellow                       | 6 (2.8)   |
| Private clinic               | 52 (24.1)  |

Table 2. Responses for question no. 4: CE subscriptions and usefulness (n=216)

<table>
<thead>
<tr>
<th>Question and response</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you read CE?</td>
<td></td>
</tr>
<tr>
<td>&gt; 1–2 times/wk</td>
<td>36 (16.7)</td>
</tr>
<tr>
<td>1–2 times/mo</td>
<td>101 (46.8)</td>
</tr>
<tr>
<td>1–2 times/yr</td>
<td>48 (22.2)</td>
</tr>
<tr>
<td>Never</td>
<td>31 (14.4)</td>
</tr>
<tr>
<td>If your response included numbers 1–3, CE was</td>
<td>185</td>
</tr>
<tr>
<td>Very helpful</td>
<td>111</td>
</tr>
<tr>
<td>Not so good</td>
<td>73</td>
</tr>
<tr>
<td>Not helpful</td>
<td>1</td>
</tr>
<tr>
<td>If your choice was “never,” the reason was</td>
<td>31</td>
</tr>
<tr>
<td>Lower quality</td>
<td>4 (12.9)</td>
</tr>
<tr>
<td>Not an SCIE journal</td>
<td>10 (32.3)</td>
</tr>
<tr>
<td>No recent trends</td>
<td>3 (9.7)</td>
</tr>
<tr>
<td>No interest about it being a domestic journal</td>
<td>11 (35.5)</td>
</tr>
<tr>
<td>Do not know how to access the journal</td>
<td>3 (9.7)</td>
</tr>
</tbody>
</table>

Submission and citing behavior

Regarding the submission of articles to CE, 99 respondents (45.8%) did not want to submit their articles to CE because CE is not an SCIE journal (38.4%), has a relatively low acceptance rate (25.3%), and has a difficult submission process (15.1%) (Fig. 2). The survey asked about whether authors cited articles from CE when preparing manuscripts for submission.

Fig. 1. Most useful (A) and least useful (B) article type in Clinical Endoscopy.
sion to SCIE journals. Eighty-nine respondents (41.2%) stated that they did not cite CE papers as references. The most common reason was that they did not know CE well, even though CE is the official journal of KSGE. Other reasons were that CE is not an SCIE journal, and some respondents also stated that there was no need because they did not write papers (Fig. 3).

Participation as a peer reviewer
In response to the question, “Are you willing to accept a review request from CE?” 41.2% of respondents stated that they would decline a review invitation because they were too busy (73.0%) or the review process was too difficult (10.1%) (Fig. 4).

Expectations for CE
The two most common requests for CE were an increased number of clinical practice guidelines and review articles (38.0%) and quality improvement (34.7%). The desire for an increased frequency of publication and becoming an SCIE journal was relatively low (Fig. 5). A minor opinion was that CE was less readable than before, when it was published in Korean.

Discussion
Interpretation
Interest in journal information
Although CE is the official journal of KSGE and there are
and clinical practice guidelines by experts and academic societies are required. Becoming an SCIE journal will increase the submission of higher quality original articles. Therefore, more efforts are needed to meet the needs of the KSGE members and improve the quality of CE. Attempts have recently been made to enhance the visual quality of communication using graphical abstracts and to conduct publicity through Facebook [2–4]. These efforts are expected to help improve the editing quality and raise awareness of CE, which were noted as problems in the survey results. Still, more communication with international researchers and investment by KSGE are needed to meet readers’ needs and concerns.

Comparison with previous studies
Similar studies have been conducted in the past. In 2020, a total of 310 members of the British Orthodontic Society participated in a survey. Among them, 230 (74.2%) indicated they read a minimum of one article from each issue. The Journal of Orthodontics received positive feedback, with 197 participants (63.6%) ranking it as excellent and 109 (35.2%) marking it as satisfactory. Members of the society found the journal to be pertinent to the current clinical practice and expressed a high level of satisfaction with it. Additionally, there was a notable demand for increased online engagement with the members as a part of the society’s role [5]. In 2013, an email containing a readership survey was distributed to all active members of the Aerospace Medical Association. The members expressed a preference for the publication of more clinical articles, and the journal was committed to addressing that goal [6]. An international email survey was conducted among authors who published articles in five general surgery journals (Annals of Surgery, British Journal of Surgery, World Journal of Surgery, Archives of Surgery, and Surgery) between January 1, 2007, and December 31, 2008. The survey found that the journal’s reputation was deemed “very important” (5 points) by 62% of the respondents. This was closely followed by the journal’s impact factor, which was considered “very important” by 61% of the participants. When combining several factors into categories, the journal’s prestige and turnaround time were identified as the most critical attributes [7]. A survey was distributed to a random selection of 1,000 domestic members of the British Dental Association, from whom 587 completed questionnaires were collected. That year, the “News” section of the British Dental Journal was the most widely read, followed by “Research summaries.” Readers expressed a desire for a greater emphasis on practical clinical techniques and “How to do it” articles, and less emphasis on nondental-related topics [8]. The topics of the above earlier reports are not exactly the same as those of the present study. However, a major incentive to submit the research results was a journal’s prestige, and the most society members

Submission and citing behavior
The most common reason for not submitting papers or not citing them was that CE is not an SCIE journal. Of particular note, many Korean universities include only SCIE journals when evaluating academic achievements. Therefore, there is a strong tendency to avoid submitting papers to non-SCIE journals as the first option. Becoming an SCIE journal is essential for attracting higher quality manuscripts. Therefore, more effort and investments from KSGE, including joint academic conferences, are needed. Eighty-nine respondents (41.2%) stated that they did not use CE papers as references. The most common reason was that they did not know CE well, even though it is the official journal of KSGE. It seems that more active publicity for CE is needed. Furthermore, some respondents said that acceptance was very difficult. This perception could be attributed to the notably low acceptance rate for case reports, which stood at just 6% in 2022. The overall CE acceptance rate was 45% in 2022. The mean time to acceptance was 62 days in 2022 and 14 days to rejection.

Participation as peer reviewer
Being busy was the most common reason for declining review requests. Thus, this result could be interpreted as indicating that the respondents had no strong interest in reviewing articles, and the fact that CE is not an SCIE journal was also an important reason.

Expectations for the journal
Importantly, many members requested an increase in the number of clinical practice guidelines or review articles and quality improvement. Therefore, high-quality review articles
read at least one article per issue in the society journals.

Limitations
This survey study was based only on descriptive statistical analyses. Thus, the results showed the current state of concerns regarding CE among respondents. However, only a small number of the KSGE members participated in this survey. Future studies will need to include larger sample sizes, including international participants.

Conclusion
Although the presented results are based on survey responses from a few respondents, they help understand the current interest of the KSGE members and perceived needs for CE. Although CE is a representative international journal of KSGE, it had low awareness and reading rates. This is further compounded by its non-SCIE status, which results in a low submission rate of high-quality manuscripts and infrequent citation of CE articles. Still, many requests are for outstanding research results, review articles, or clinical practice guidelines. Thus, more active guidance and investment from KSGE and the Editorial Board are needed to raise awareness and publish high-quality papers.

Conflict of Interest
No potential conflict of interest relevant to this article was reported.

Funding
This work was supported by the Soonchunhyang University Research Fund.

Data Availability
Dataset file is available from the Harvard Dataverse at https://doi.org/10.7910/DVN/79UEV1.

Supplementary Materials
Supplementary materials are available from https://doi.org/10.7910/DVN/79UEV1.

Suppl. 1. Survey for the advancement of Clinical Endoscopy (CE).

References

Dataset 1. Raw response data from participants to the survey for the journal.
Korean scholarly journal editors’ and publishers’ attitudes towards journal data sharing policies and data papers (2023): a survey-based descriptive study

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Abstract

Purpose: This study aimed to ascertain the attitudes of Korean scholarly journal editors and publishers toward research data sharing policies and the publication of data papers through a survey.

Methods: Between May 16 and June 16, 2023, a SurveyMonkey survey link was distributed to 388 societies, including 270 member societies of the Korean Council of Science Editors and 118 societies that used an e-submission system operated by the Korea Institute of Science and Technology Information. A total of 78 societies (20.1%) responded, from which 72 responses (18.6%) were analyzed after excluding invalid responses.

Results: Out of the representatives of 72 journals, 20 editors or publishers (27.8%) declared a data sharing policy. Those journals that did not have such a policy often expressed uncertainty about their future plans regarding this issue. A common concern was a potential decrease in manuscript submissions, primarily due to the increased workload this policy might impose on editors and manuscript editors. Four respondents (5.6%) had published data papers, with two of them including this as a publication type in their author guidelines. Concerns about copyright and data licensing were cited as drawbacks to publishing data papers. However, the expansion of publication types and the promotion of data reuse were viewed as benefits.

Conclusion: Korean scholarly journal editors’ and publishers’ attitudes toward data sharing policy and publishing data papers are not yet favorable. More training courses are needed to raise awareness of data sharing platforms and emphasize the need for research data sharing and data papers.

Keywords

Data paper; Data sharing policy; Journal editors; Republic of Korea; Surveys and questionnaires
Introduction

Background and rationale
The term “data sharing” refers to the disclosure and distribution of data generated during research when authors publish their findings. A data availability statement within a publication informs readers about the location and method of accessing the data that underpins the presented findings and analyses. As of July 1, 2018, biomedical journals adhering to the guidelines of the International Council of Medical Journal Editors (ICMJE) have been mandated to include a data availability statement [1]. A study conducted from December 2018 to January 2019 surveyed data sharing policies across 100 Korean journals. The results showed that 13 journals had introduced such a policy, with 10 of these being recommendation only [2]. A subsequent survey in June 2020 [3] examined 201 Korean journals listed in both Scimago Journal and Country Ranking and Web of Science Core Collection. The findings revealed that only one journal had implemented mandatory data sharing policies. Meanwhile, 43 journals had chosen to adopt discretionary data sharing policies, while 127 journals had no such policies in place.

Data sharing policies have subsequently been incorporated into training courses for editors at the Korean Council of Science Editors (KCSE), to ensure that research articles maintain a high level of reproducibility and transparency. In the current survey, the author aims to understand the status quo as of 2023. Beyond data sharing, there have also been conversations about data papers within Korea. A qualitative study conducted by Lee and Kim [4] involved interviews with seven researchers who had published data papers in 2019. These researchers expressed that, similar to traditional research articles published in conventional journals, data papers also gain academic recognition through citations. However, they also noted that it can be challenging to receive the same level of academic acclaim for data papers as for research articles. The researchers interviewed highly valued the practical benefits of data journals. They also suggested that data journals should evolve into innovative academic dissemination platforms that encourage data sharing and reuse. Consequently, this study investigated the attitudes of editors and publishers toward data sharing policies and data papers. The results will help to shape how these topics should be approached within the KCSE in the future.

Objectives
Specifically, this study sought to identify the following: (1) the extent to which journals have policies on research data sharing; (2) the perceived drawbacks and benefits of data sharing, according to editors or publishers; (3) the frequency with which journals have published data papers; (4) the perceived drawbacks and benefits of data papers, as seen by editors or publishers; and (5) the perceived necessity of data sharing and data paper platforms, according to these professionals.

Methods

Ethics statement
Informed consent was not deemed necessary as the study did not involve the collection of sensitive or personally identifiable information.

Study design
This descriptive study was based on an online questionnaire survey.

Study setting and participants
Representatives of 388 societies, comprising 270 KCSE member societies and 118 member societies using ACOMS, an e-submission system run by the Korea Institute of Science and Technology Information (KISTI), were sent a survey link via SurveyMonkey (SurveyMonkey Inc) between May 16 and June 16, 2023. The recipients of these survey invitations were typically either journal editors or official contacts of professional societies. As such, the journal’s editor or publisher was requested to respond. In this context, the term “publisher” refers to all staff members within the societies and publishing companies, excluding content experts who are part of the editorial board. Each journal was represented by a single respondent. Out of the total, 78 societies responded, representing a 20.1% response rate. However, six responses were discarded due to their lack of sufficient information, leaving 72 (18.6%) to be included in the final analysis.

Validity and reliability of the questionnaire
The authors drew upon previous research to develop the survey items. The questionnaire was constructed using questions from a survey previously conducted on editors in Korea [2] (Suppl. 1, 2). Initially, the authors drafted the survey items, which were then enhanced with input from a literature and library information expert from KISTI and an executive from KCSE. Following revisions, they concurred that the questionnaire was valid for use in a survey on data sharing policy and data paper. The questionnaire comprised 30 items: 26 were nominal scale or descriptive items, and four items included 21 detailed subitems on a 7-point Likert scale. The reliability of each group of items (pertaining to the disadvantages or benefits of adopting a data sharing policy and data papers), was verified. The reliability, as measured by Cronbach α, was as follows: 0.907 for the seven items on disadvantages and 0.916 for the five items on benefits related to adopting a data shar-
Variables
The characteristics of the respondents and their respective journals, detailed in Table 1, were considered as variables. The outcomes were the questionnaire items other than the respondents' and journals' characteristics.

Data sources and measurement
All variables and outcomes were derived from the responses to the survey questionnaire. We conducted a comparative analysis of the respondents' attitudes toward data sharing policies and the publication of data papers. The raw response data from participants can be found in Dataset 1.

Bias
There was no bias in selecting participants, as all eligible journal editors were included.

Study size
No sample size estimation was done, as all target journal editors were surveyed.

Statistical methods
The survey results were analyzed for descriptive and comparative statistics. The statistical analysis was conducted using dBSTAT ver. 5.0 (dBSTAT Co; http://dbstat.com/). The degree of agreement according to the characteristics of responders and journals was compared by two-way repeated-measures analysis of variance (ANOVA). The Kruskal-Wallis test was utilized to compare the level of agreement on each item regarding disadvantages and benefits.

Results

Participants
The characteristics of the journals and respondents are shown in Table 1. There were 33 items in the National Science and Technology Standard Classification of Korea, which were then clustered into the eight Korea Citation Index (KCI) disciplines defined by the National Research Foundation of Korea (NRF). The majority of respondents hailed from the fields of medical and natural sciences. In an effort to gather representative opinions of the journal, many respondents boasted over 20 years of research experience. Those with more than 6 years of editing experience were the most prevalent. Over half of the journals were published in English. The majority of the journals were open access (n = 64, 88.9%), and the cost of publishing

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>4 (5.6)</td>
</tr>
<tr>
<td>Social sciences</td>
<td>11 (15.3)</td>
</tr>
<tr>
<td>Natural sciences</td>
<td>12 (16.7)</td>
</tr>
<tr>
<td>Engineering</td>
<td>5 (6.9)</td>
</tr>
<tr>
<td>Medicine</td>
<td>31 (43.1)</td>
</tr>
<tr>
<td>Agriculture and fisheries</td>
<td>5 (6.9)</td>
</tr>
<tr>
<td>Arts and sports science</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Multi-disciplinary science</td>
<td>4 (5.6)</td>
</tr>
<tr>
<td>Role</td>
<td></td>
</tr>
<tr>
<td>Content experts (editor, editorial board members)</td>
<td>55 (76.4)</td>
</tr>
<tr>
<td>Publisher (manuscript editor, society staff, company staff)</td>
<td>17 (23.6)</td>
</tr>
<tr>
<td>Research experience (yr)</td>
<td></td>
</tr>
<tr>
<td>&lt;5</td>
<td>12 (16.7)</td>
</tr>
<tr>
<td>≥ 5 or &lt;10</td>
<td>9 (12.5)</td>
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<tr>
<td>≥ 10 or &lt;15</td>
<td>9 (12.5)</td>
</tr>
<tr>
<td>≥ 15 or &lt;20</td>
<td>17 (23.6)</td>
</tr>
<tr>
<td>≥ 20 or &lt;30</td>
<td>21 (29.2)</td>
</tr>
<tr>
<td>≥ 30</td>
<td>4 (5.6)</td>
</tr>
<tr>
<td>Editorial experience (yr)</td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>2 (2.8)</td>
</tr>
<tr>
<td>≥ 1 or &lt;2</td>
<td>8 (11.1)</td>
</tr>
<tr>
<td>≥ 3 or &lt;6</td>
<td>20 (27.8)</td>
</tr>
<tr>
<td>≥ 6</td>
<td>42 (58.3)</td>
</tr>
<tr>
<td>Full-text language of the journal</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>39 (54.2)</td>
</tr>
<tr>
<td>English or Korean</td>
<td>29 (40.3)</td>
</tr>
<tr>
<td>Korean</td>
<td>4 (5.6)</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Open access</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>64 (88.9)</td>
</tr>
<tr>
<td>No</td>
<td>8 (11.1)</td>
</tr>
<tr>
<td>Major source of publishing budget</td>
<td></td>
</tr>
<tr>
<td>From authors (including if authors are awarded research grants)</td>
<td>18 (25.0)</td>
</tr>
<tr>
<td>Supported by national funds such as research foundations, grants, etc.</td>
<td>13 (18.1)</td>
</tr>
<tr>
<td>Paid for by the publishing entity (society, publisher, etc.)</td>
<td>41 (56.9)</td>
</tr>
</tbody>
</table>

an article was most frequently borne by the publishing organization, such as a society or publishing house (n = 41, 56.9%)
Attitudes towards data sharing policies
Twenty of the 72 journals (27.8%) had a data sharing policy, and only one required mandatory data sharing. Of the 52 journals without a data sharing policy, 20 had plans to introduce such a policy (Table 2).

Shortness and merits of data sharing
Concerning the disadvantages of data sharing, out of seven potential issues, the most common concern was “the increased workload of editors or editorial staff following the implementation of a data sharing policy” (P < 0.05) (Suppl. 4). Out of the advantages of data sharing policies, “facilitating peer review” was identified as the least likely (P < 0.05) out of five items, including the following: ensuring research objectivity, improving the quality of papers, promoting the reuse of data, and increasing citations of the journal (Suppl. 5).

Attitudes toward data sharing policies according to the characteristics of journals and respondents
An analysis was conducted to determine if there were variations in attitudes towards the disadvantage (seven items) and benefits (five items) of data sharing, based on the KCI reference discipline, role in journal publishing, implementation of an open access policy, and adoption of a data sharing policy. This was done using a two-way repeated ANOVA (Suppl. 6). The results showed no significant differences in attitudes towards disadvantage (P = 0.303) and benefits (P = 0.872) across different disciplines. Similarly, no significant differences were found in attitudes towards disadvantage (P = 0.303) and benefits (P = 0.808) based on the role in journal publishing (whether editor or publisher). The study also found no significant differences in attitudes towards disadvantages (P = 0.820) and benefits (P = 0.702) based on whether the journal was published as open access. Respondents who had not adopted a data sharing policy identified more disadvantages (P = 0.008) (Fig. 1). However, the adoption of a data sharing policy did not significantly affect attitudes toward the benefits of data sharing.

Attitude toward data papers
In terms of familiarity with data papers, eight respondents (11.1%) indicated they were “very familiar,” while 28 (38.9%) claimed they were “not at all familiar.” The majority, 36 respondents (50.0%), had some level of awareness. Only four responses revealed that they had published a data paper (Table 3). The survey also inquired if they had ever published a data paper as a type of publication, to which only two respondents affirmedatively. Most had not yet published a data paper, with 27 (37.5%)
expressing no intention to do so and 47 (65.3%) indicating they did not have a timeline or plan for such a publication.

Disadvantages and benefits of data papers
The survey inquired about any perceived disadvantages and benefits regarding data papers. The most significant disadvantage was related to copyright and licensing issues (P < 0.05). When asked about the benefits or roles of data papers, the statement “being recognized for research by publishing data” received fewer responses compared to the statement “promoting the reuse of data” (P < 0.05) (Suppl. 7).

Table 3. Attitudes toward publishing data papers from the 72 editors or publishers in Korea

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of data papers</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4 (5.6)</td>
</tr>
<tr>
<td>Included in the publication type</td>
<td>2 (50.0)</td>
</tr>
<tr>
<td>Not included in the publication type</td>
<td>2 (50.0)</td>
</tr>
<tr>
<td>No</td>
<td>68 (94.4)</td>
</tr>
<tr>
<td>Plan to adopt</td>
<td></td>
</tr>
<tr>
<td>Willing to adopt actively</td>
<td>3 (4.2)</td>
</tr>
<tr>
<td>Willing to adopt to some extent</td>
<td>13 (18.1)</td>
</tr>
<tr>
<td>Neutral</td>
<td>19 (26.4)</td>
</tr>
<tr>
<td>Little intention of adopting</td>
<td>27 (37.5)</td>
</tr>
<tr>
<td>Not willing at all</td>
<td>6 (8.3)</td>
</tr>
<tr>
<td>Missing values</td>
<td>4 (5.6)</td>
</tr>
<tr>
<td>Planned timing of adoption (yr)</td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>1 (1.4)</td>
</tr>
<tr>
<td>≥ 1 or &lt; 3</td>
<td>7 (9.7)</td>
</tr>
<tr>
<td>≥ 3 or &lt; 6</td>
<td>3 (4.2)</td>
</tr>
<tr>
<td>No plans</td>
<td>47 (65.3)</td>
</tr>
<tr>
<td>Missing values</td>
<td>14 (19.4)</td>
</tr>
</tbody>
</table>

Attitudes towards data papers according to the characteristics of journals and respondents
An analysis was conducted to determine whether there were any differences in attitudes towards the disadvantage (five items) and benefits (four items) of data paper publishing. This was based on the KCI academic classification, roles in journal publishing, implementation of an open access policy, and the adoption of a data sharing policy. The analysis was conducted using two-way repeated ANOVA (Suppl. 8). The academic classification showed no significant difference in attitudes towards the disadvantages (P = 0.769) or benefits of publishing data papers (P = 0.665). Similarly, the role in journal publishing did not significantly affect attitudes towards disadvantages (P = 0.941) or benefits (P = 0.544). The open access status also did not significantly influence attitudes towards the disadvantages (P = 0.901) or benefits (P = 0.385) of data paper publishing. However, respondents who had not adopted data sharing expressed a stronger preference for disadvantages (P = 0.008) (Fig. 2). The adoption of a data sharing policy did not significantly affect attitudes towards the benefits of publishing data papers.

Repositories of data sharing and data papers
Table 4 displays the repositories where data is deposited, as per the data sharing policies of the 20 journals. Regarding the use of a submission management system for data article submission, four journals responded, citing ACOMS and Editorial Manager (Aries Systems Corp) as their systems of choice.

Discussion
Key results
Fifty journals had not established a data sharing policy, whereas 20 (27.8%) had. Among the journals with a data sharing policy, it was optional in all but one instance. Editors expressed the most concern about the increased workload associated with data sharing, but they also acknowledged the benefits of ensuring research reproducibility. Four journals (5.6%) had already published data articles. Of the 68 journals that had never published data papers, 11 (16.2%) planned to do so within the next 6 years. The primary concern regarding the publi-
cation of data papers was the copyright and licensing of the data. However, the advantages of facilitating data reuse were highly valued.

**Interpretation**
These results suggest that Korean academic journals have not yet widely adopted data sharing policies. Even among those that have declared such a policy, only one journal has implemented a mandatory data sharing policy, while the majority have introduced optional ones. Essentially, these journals have announced a policy but left the decision to share data up to the authors. The number of international journals that have declared mandatory data sharing policies remains relatively small. The lack of motivation to introduce additional policies may be due to the fact that data sharing is already obligatory in fields such as oceanography, ecology, and genetics [5]. In particular, ICMJE has mentioned a clinical data sharing policy [1]. However, it is presumed that many medical journals have adopted this model because it simply requires the declaration of a policy, leaving the decision to share data up to the authors. The potential for an “increased workload of editors or editorial staff after implementing a data sharing policy” is a concern for publishing professionals. However, if the publisher understands the data sharing process, it is not a daunting task—even the editor-in-chief can deposit data into the repository [6]. The crux of data sharing lies in first announcing the policy itself.

The next factor to consider is whether data sharing is optional or mandatory. There are over 2,000 research data repositories worldwide, a list of which can be found at https://www.re3data.org/. Some of them are free to deposit. Some of these repositories allow free deposits, so the existence of repository sites does not pose a barrier to data sharing policies. As of 2023, one data journal in Korea is GEO DATA (https://geodata.kr/). In addition to data journals, the recent introduction of data papers in journals is another emerging topic in journal publishing [4]. It appears that the concept of a data paper is not yet widely recognized among Korean editors and publishers, as only four journals (5.6%) accept data papers as articles. The decision to accept a data paper as a type of publication lies with the editor. When a data paper is submitted, it must adhere to a specific format [7].

**Comparison with previous studies**
A survey was conducted in Korea in 2019 to examine data sharing policies among editors. At that time, out of 100 journals, 13 had implemented data sharing policies [2]. One of these journals had even made data sharing mandatory, with a peer review process for the data. Four years later, the rate of journals announcing data sharing policies had increased to 27.7%. However, it is difficult to definitively state that this is an increase, as the survey was not randomized. To obtain accurate information, it would be necessary to collect complete data by visiting each journal’s website. Among the reasons for not implementing data sharing policies, the increased workload for editorial staff was cited as the primary concern in this study.

A new US federal regulation mandates data sharing by 2023, regardless of the type of data involved [8]. Mozersky et al. [9] conducted a survey of US qualitative researchers, with a sample size of 425, to gain insight into the challenges and incentives associated with sharing sensitive or health-related qualitative research data. The majority of researchers (96%) reported that they had never deposited qualitative data in a repository. Their primary concerns were the lack of participant consent for data sharing, the sensitive nature of the data, and the potential breach of trust. The concerns of medical researchers differ from those of the respondents in this study. According to a 2020 survey [10], among 78 noncommercial funders, 30 (38%) had implemented a data sharing policy. Of these, 18 (60%) required data sharing, while 12 (40%) merely encouraged it. Additionally, 41 out of 100 commercial funders (41%) had established a data sharing policy. In Korea, no funders currently require a data sharing policy. However, if funders, including governments, were to request researchers to share their research data, the adoption of data sharing policies could be expedited. In 2018, of the 21,793 articles published by PLOS, 93.7% included data availability statements. Similarly, 88.2% of the 31,956 articles published by BMC included such statements. These data availability statements typically provided a link to the data in a repository [11].
In Korea, there has been no prior study conducted on the attitudes towards data papers in a journal. The only related research was a qualitative study on the process of writing data papers. Of the 224 researchers surveyed from five Korean government research institutes, 180 (80.4%) reported having experience with collecting or creating research data. Of these 180 researchers, 32 stated that they had never shared their research data, leaving 148 respondents who had shared at least some of their data, as per the survey conducted in June 2022 [12]. In the present study, four journals were found to accept data papers. However, a comprehensive review of all journals that accept data papers is necessary for a more accurate understanding of the situation. Fu et al. [13] provided evidence in 2023 that research articles accompanied by a corresponding data paper garnered more citations than other papers published in the same issue of the same journal. These results can incentivize editors and researchers to share their research data.

Limitations and generalizability
A survey on editors’ perceptions of data sharing was previously conducted in Korea [4]. This time, however, the survey focused on the content of data papers, with a larger and more complex set of questions. Therefore, a simple comparison with the results from four years ago is not feasible. Furthermore, both surveys were primarily conducted among organizations affiliated with scientific, technological, engineering, and medical journals. This makes it impossible to garner a broad spectrum of responses from journals in the humanities and social sciences. The study also did not employ random sampling, which complicates the generalization of the results. There is a likelihood that editors with a particular interest in this content may have responded selectively, suggesting that the actual situation could be less prevalent than these results indicate. Also, the low rate of responses to the survey may reflect low recognition of the data sharing policy and the data paper in Korean editors.

Conclusion
Some Korean journals have implemented data sharing policies. However, the experience of editors and publishers with data articles remains limited. Despite this, editors and publishers are cognizant of the advantages of data sharing in ensuring the reproducibility of research. The most effective approach would be for funding bodies, including the Korean government, to enforce mandatory data sharing policies. For this to occur, a national or societal consensus on data sharing is necessary. Additionally, regulations concerning data protection in the medical field would need to be considered in the context of data sharing. Without such external impetus, the development of data sharing policies in Korean journals will likely continue at a slow pace. Furthermore, well-organized training programs on data sharing and data paper publishing for editors should be developed together with establishing mandatory policies for wide acceptance from the community.

Conflict of Interest
No potential conflict of interest relevant to this article was reported.

Funding
This work was supported by the National Research Council of Science and Technology of Korea (No. NST-02).

Data Availability
Dataset file is available from the Harvard Dataverse at https://doi.org/10.7910/DVN/C4JOGX.

Supplementary Materials
Supplementary materials are available from https://doi.org/10.7910/DVN/C4JOGX.

Suppl. 1. Survey questionnaire on the opinions of Korean scholarly journal editors and publishers regarding journal data sharing policies and data papers in 2023 in Korean.

Suppl. 2. Survey questionnaire on the opinions of Korean scholarly journal editors and publishers regarding journal data sharing policies and data papers in 2023, translated into English.

Suppl. 3. Reliability analysis of four groups of items: shortness (seven items) and merits (five items) of data sharing policy, and shortness (five items) and merits (four items) of data paper publishing.

Suppl. 4. Statistical results for comparison of seven items on the disadvantages of data sharing policies.

Suppl. 5. Statistical results for comparison of five items on the benefits of data sharing policies.

Suppl. 6. Statistical results for comparison of items on disadvantages and benefits according to the characteristics of the journals and respondents.

Suppl. 7. Statistical results for comparison of attitudes towards items on the disadvantages (five items) and benefits (four items) of publishing data papers.

Suppl. 8. Statistical results for comparison of attitudes towards the disadvantages (five items) and advantages (four items) of publishing data papers according to the characteristics of the journals and respondents.

References
Plagiarism detection in manuscripts submitted to the *Journal of Surgical Sciences* between 2020 and 2021: a case study

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**Abstract**

The aim of this study was to share our experience with plagiarism detection in manuscripts submitted to the *Journal of Surgical Sciences*, a Romania-based medical journal, between 2020 and 2021. We analyzed similarity score reports from 200 articles submitted consecutively for publication between 2020 and 2021 generated by PlagScan, a software tool for plagiarism detection. The similarity score ranged from 0% to 92.4%, and 45 articles presented scores over 25.0%. According to PlagScan’s results, more than half of the submitted articles had a similarity score of more than 10% and one-third of them had a similarity score above 20%. Among submitted manuscripts with a similarity score of less than 20%, a larger proportion of the original research and review manuscripts than case reports used more than 10 sources. All articles with a similarity score below 20% were evaluated qualitatively before the final decision of rejection.

**Keywords**

Plagiarism; Detection; Software; Articles; Journal

**Introduction**

**Background and rationale**

Plagiarism is the act of presenting someone else's work, ideas, or words as one's own without giving proper credit or citation. Plagiarism is one of the most common violations of academic writing ethical principles, and it may lead to the severe sanctions to both authors and journals. Avoiding plagiarism requires a combination of careful rewriting, effective paraphrasing, diligent referencing, and meticulous editing [1]. This is a detailed and time-consuming process that demands the author's attention to ethical writing practices and academic integrity. Several useful, well-known plagiarism detection software programs are available, including Turnitin (Turnitin LLC), iThenticate (Turnitin LLC), PlagScan (Turnitin LLC), Grammarly (Grammarly...
Inc.), and Copyscape (Indigo Stream Technologies Ltd) (Suppl. 1). These tools can help prevent or identify plagiarism before publication. In the initial editorial screening of submitted articles, the similarity score is used as the first rejection criterion, but in our experience, some instances where the similarity score exceeds the accepted threshold are unintentional.

This study presents a comprehensive analysis of the plagiarism instances documented within a medical journal. We want to provide valuable insights into the prevalence of plagiarism in the context of the journal, shedding light on the extent of the issue and its potential implications. Our journal, *Journal of Surgical Sciences* (ISSN: 2360-3038, eISSN: 2457-5364, https://journalofsurgicalsciences.com/) is a double-blind peer review, open access, and Romania-based medical journal that publishes articles in the field of surgical specialties. We utilize the plagiarism detection software PlagScan to screen for duplication or plagiarism before the peer review process.

**Objectives**
The aim of this study was to analyze the records of plagiarism detection for submissions to the *Journal of Surgical Sciences* between 2020 and 2021.

**Methods**

**Ethics statement**
This study is based on submitted manuscript data; therefore, neither Institutional Review Board approval nor obtaining informed consent was required.

**Study design**
This was a case study on the editing process for a medical journal.

**Setting, data sources, and measurement**
We quantitatively evaluated the plagiarism reports from 200 articles submitted for publication between 2020 and 2021 to the *Journal of Surgical Sciences*. The reports were generated using PlagScan (Suppl. 1). The text uploaded for plagiarism analysis included the abstract, the entire content of the manuscript, and the figure and table legends. The reference list of the manuscript was not uploaded for plagiarism detection. The steps for plagiarism detection were as follows.

1. **Upload the document:** the user uploads the document to the PlagScan platform, either by uploading the file directly or by copying and pasting the text into the system.
2. **Analysis of the document:** the PlagScan software analyzes the document and creates a digital fingerprint of the text, which is used to compare it against other sources.
3. **Comparison to database:** the software then compares the document to a database of sources, which includes academic databases, internet sources, and other published works.
4. **Report generation:** PlagScan generates a detailed report that highlights any potential instances of plagiarism and provides information about the sources that were detected.
5. **Review of the report:** the user reviews the report and makes any necessary changes or corrections to the document to ensure that proper citation and attribution are provided.
6. **Based on the collected data and on personal editorial experience, some observations were made regarding plagiarism.**

**Statistical methods**
Descriptive statistics were utilized to analyze the results of plagiarism detection.

**Results**
In total, 200 manuscripts submitted between 2020 and 2021 to the *Journal of Surgical Sciences* were analyzed. Sixty-six (33.0%) were case reports, 91 (45.5%) were original articles, and 43 (21.5%) were literature reviews (Table 1).

The similarity score had values between 0% and 92.4%, and 45 articles had scores over 25.0% (Table 2). The chi-square

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**Table 1. Types of articles included in the evaluation and their similarity scores from PlagScan (Turnitin LLC)**

<table>
<thead>
<tr>
<th>Type of article</th>
<th>No. of articles</th>
<th>Mean similarity score (%)</th>
<th>Minimum similarity score (%)</th>
<th>Maximum similarity score (%)</th>
<th>Standard deviation (%)</th>
<th>Median (%)</th>
<th>Highest similarity score (%) from a single source</th>
<th>Total no. of sources identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case report</td>
<td>66</td>
<td>19.87</td>
<td>0</td>
<td>83.50</td>
<td>21.92</td>
<td>11.40</td>
<td>68.70</td>
<td>852</td>
</tr>
<tr>
<td>Original research</td>
<td>91</td>
<td>17.10</td>
<td>0.70</td>
<td>79.50</td>
<td>16.09</td>
<td>11.75</td>
<td>79.10</td>
<td>2,115</td>
</tr>
<tr>
<td>Review</td>
<td>43</td>
<td>15.70</td>
<td>0</td>
<td>92.40</td>
<td>19.39</td>
<td>12.75</td>
<td>61.40</td>
<td>859</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
A quantitative assessment of plagiarism

A test of independence was performed to examine the relationship between the similarity score and the type of manuscript. The chi-square statistic was 5.875, and the P-value was 0.208. The result was not significant at P < 0.05, indicating that the level of plagiarism was not dependent on manuscript type. Many of the articles contained similar fragments due to the misuse of the rules of quoting, citing and academic writing. The excessive repetition of expressions without the use of abbreviations or the adoption of clearly grounded definitions or concepts led to relatively high similarity scores without the intention of plagiarism. Although review articles showed similarity scores similar to those of original articles or case reports, the highest similarity scores (over 70%) were observed in case reports or original articles, not in literature reviews.

According to our PlagScan evaluations, more than half of the submitted articles had a similarity score of more than 10% and one-third of them had a similarity score above 20% (Fig. 1). There were no major differences in the proportion of manuscripts with a low similarity score (less than 10% or less than 20%) between the different types of research. The proportions of manuscripts with similarity scores of less than 20% were 70%, 73%, and 74% for case reports, reviews, and original research manuscripts, respectively (Fig. 2).

Among submitted manuscripts with a similarity score of less than 20%, a larger proportion of the original research and review manuscripts used more than 10 sources, compared to case report manuscripts (Fig. 3). In 69.5% of all submitted manuscripts, PlagScan identified more than 10 sources of similarity. The majority of manuscripts with high similarity scores (more than 20%) used more than 10 sources (93.0%).

The similarity score criterion used by our journal for accepting articles is less than 10%. Manuscripts with a similarity score between 10% and 50% are sent back to the author for correction of this issue. In our experience, articles with similarity scores of more than 30% usually do not reach the acceptable limit after revision.
Discussion

Interpretation
The results of our study indicate the presence of considerably high similarity scores in the analyzed manuscripts, implying that authors may not have a comprehensive understanding of how to properly attribute and cite sources in their work. This study suggests some possible reasons behind the occurrence of plagiarism, such as the misuse of quoting, citing, and academic writing rules. The excessive repetition of expressions without appropriate abbreviations or clearly grounded definitions or concepts can inadvertently contribute to a relatively high similarity score without the intention of plagiarism. Furthermore, the observation that higher levels of similarity were more frequently observed in case reports and original articles than in literature reviews suggests that authors of these manuscript types may face particular challenges in maintaining originality and properly citing sources. This could be due to the nature of these manuscript types, where authors may struggle to strike a balance between presenting novel findings and providing appropriate references.

Some people might speculate that case reports may have lower similarity scores than other types of manuscripts, as they typically describe unique or rare cases and do not involve a significant amount of background research or literature review. Review articles and meta-analyses tend to summarize and synthesize existing literature from multiple sources, which can make it more challenging to properly attribute and cite all sources. Original studies, such as randomized controlled trials and observational studies, are designed to generate new data and findings and may be less likely to involve plagiarism, as the research is based on original data and analysis. However, it is important to note that plagiarism can still occur in original studies if the authors fail to properly cite and attribute sources or if they recycle previously published work without appropriate citation.

There may be a correlation between the number of sources found by PlagScan and the similarity score, but it is difficult to make a general statement as this relationship can depend on various factors [2]. In our opinion, a manuscript with a higher number of sources may be more prone to plagiarism, as it can be challenging to properly attribute and cite all sources, especially if the authors are dealing with a large amount of information from multiple sources. This can increase the risk of accidental or unintentional plagiarism and lead to a higher similarity score. However, a manuscript with a higher number of sources may also be more likely to have gone through rigorous review and editing processes, which can help to identify and correct any potential instances of plagiarism. Additionally, if the authors are diligent in properly citing and attributing all sources, the similarity score may be low, even if the manuscript has a high number of sources. Ultimately, the similarity score depends on the specific content of the manuscript and the accuracy of the citation and attribution of sources, rather than only the number of sources identified by PlagScan.

Reducing the similarity score of a manuscript can be challenging if it is initially over 30%, for several reasons. A high similarity score often indicates that a significant portion of the manuscript's content has been directly copied from other sources without proper citation or attribution. To reduce the similarity score, authors need to extensively rewrite the relevant sections to ensure that the content is original and properly cited. This process can be time-consuming and require significant effort [3]. Authors may need to identify the original sources from which the plagiarized content was taken to properly cite and attribute the information. This task can be complex and require thorough research to trace back and find the original sources. If the plagiarized content consists of verbatim or slightly modified text from other sources, authors need to engage in effective paraphrasing and rephrasing to express the ideas in their own words while maintaining the meaning and integrity of the information. This requires skill in rewriting and avoiding plagiarism [4]. Reducing the similarity score should not lead to omitting necessary references or citations. Authors need to strike a balance between expressing their ideas in original language and properly acknowledging the sources that contributed to their work [5]. This can be challenging, as authors must ensure that all relevant sources are appropriately cited while maintaining the flow and coherence of their own writing. After revising to reduce plagiarism, authors must conduct thorough reviews and edits to verify the accuracy of citations, ensure proper attribution, and check for any remaining instances of unintentional plagiarism. This iterative process may need to be repeated multiple times to achieve a satisfactory reduction in the similarity score.

Comparison with previous studies
Some journals have reported their experience in plagiarism detection. One study that presented the authors’ experience with plagiarism regarding articles submitted to American Journal of Roentgenology found that out of 110 manuscripts, the initial overall similarity index ranged from 7% to 46% [2]. Those values are much lower than those found in our study.

In another study [6], analyzing a total of 400 consecutively submitted manuscripts (357 original research articles and 43 review articles) to Genetics in Medicine, it was found that 17% of the submissions contained levels of plagiarized material considered unacceptable. The unacceptable plagiarism level referred in that study to a median score between 17% and 32%, with a minimum of 9% and a maximum of 53%. Notably,
82% of these plagiarized manuscripts originated from countries where English was not designated as an official language. In our study, the median similarity score was 11.75%, with a minimum value of 0.0% and a maximum value of 92.40%.

Baždarić et al. [7] assessed the prevalence of plagiarism in manuscripts submitted for publication in the Croatian Medical Journal. Out of a total of 754 submitted manuscripts, the software flagged 105 (14%) as being potentially associated with plagiarism. Upon manual verification, it was determined that 85 manuscripts (11%) were indeed plagiarized. Specifically, 63 (8%) were classified as instances of true plagiarism, while 22 (3%) were categorized as cases of self-plagiarism. The extent of plagiarism was minor (11%–24%) in 31 out of 85 manuscripts. These results are similar to those from the present study.

**Limitations and generalizability**
All similar texts are not plagiarized ones. Even when references are added to the target text, PlagScan may show similarities. Therefore, the similarity score should not be interpreted as the true percentage of plagiarism. A line-by-line examination of similar text should be done to conclude whether plagiarism has taken place. Furthermore, this study reports the experience of one journal; therefore, it is difficult to generalize the results to other journals in the world.

**Conclusion**
All articles with a similarity score below 20% should be evaluated qualitatively before a final decision of rejection. More manuscripts had a minor level of similarity, with scores ranging from 11% to 24%, than had moderate or major levels of similarity. Overall, these findings highlight the presence of plagiarism in the analyzed manuscripts, emphasizing the need for improved adherence to academic writing guidelines and stricter enforcement of ethical standards in research publications. The results of this study suggest that authors may benefit from additional guidance on academic writing practices to avoid unintentional instances of plagiarism.

**Conflict of Interest**
The authors, as editors of the Journal of Surgical Sciences, pay a fee for using PlagScan. Octavian Andronic also serves as an editor of Science Editing since 2023, but has no role in the decision to publish this article. No other potential conflict of interest relevant to this article was reported.

**Funding**
The authors received no financial support for this article.

**Data Availability**
Dataset file is available from the Harvard Dataverse at https://doi.org/10.7910/DVN/CE7JPH.

**Dataset 1.** Raw data of the similarity score for each submission to the Journal of Surgical Sciences.

**Supplementary Materials**
Supplementary materials are available from https://doi.org/10.7910/DVN/CE7JPH.

**Suppl. 1.** Strengths and limitations of five popular plagiarism detection software programs.

**References**
Open access mirror journals: an experiment in brand loyalty

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Introduction

Open access (OA) mirror journals have been launched by Elsevier as an alternative or supplement to original non-OA journals [1]. These OA mirror journals have the same title, aims and scope, editorial board, and peer-review process as their parent journal, and are distinguished by an “X” after the name. However, because the OA mirror journals have their own ISSN (International Standard Serial Numbers), they are completely separate journals, which does not fit with Harrison’s [1] assertion that by publishing OA mirror journals, Elsevier is responding to authors’ need to publish in OA journals while simultaneously not wanting to sacrifice their association with the leading journal brands in their field. Asai [2] compared 22 pairs of Elsevier’s OA mirror journals with their parent journals and found that the parent journals were more preferred by authors. This essay analyses Elsevier’s OA mirror journals as an experiment of one publisher, which has a dominant position in the scientific publishing market. Elsevier has set an ambitious price level for article processing charges (APCs) in these OA mirror journals. The evolution of the price level for mirror journals, compared with the evolution of the price level for APCs for other Elsevier’s journals, is used to assess the success of Elsevier’s experiment.

Thinking About the Aim of OA Mirror Journals

The use of a journal name that may lead to confusion with an established scientific journal is considered a predatory practice by publishers [3]. The question then arises—why did Elsevier introduce these OA mirror journals that are only distinguished from their counterpart journals by the “X” in the title? Scholarly publishing has undergone significant changes in the past 30 years, driven mainly by the digitization of the publishing process and the development of electronic media and the internet. A small group of major commercial publishers has gained a dominant share of the scientific publishing market, the current situation in scientific publishing has been likened to an oligopoly [4]. The main disadvantage of oligopolistic markets is that the price is not only determined by the market but is significantly influenced by oligopolies through their decisions. The evolution of academic journal subscription prices over the past three decades has been the subject of a number of papers. The ever-increasing costs of providing access to scientific results and the resulting inaccessibility of research results for many sci...
entists led to the declarations in Budapest (February 2002), Budapest (June 2003), and Berlin (October 2003) at the beginning of the millennium. These declarations called for the introduction of OA to research results [5], which was intended to make research results available to everyone, without the need to pay huge amounts for journal subscriptions. The idea of OA is still controversial in the scientific community [6]. Firstly, this is because OA passes the cost directly onto the scientists who suddenly have to account for the cost of publication in their budgets, whereas in the case of subscriptions it was a “problem” for institutional libraries—that is, it was a problem for other organizational units of the institution. However, one of the main challenges of the introduction of OA is the creation of new equitable and sustainable models for funding the publication process that are not based on journal subscriptions.

Currently, the most common model for funding publication costs in OA is the pay-to-publish model, where authors of an article pay an APC to the publisher for services related to the publication of the work. However, the pricing policies of commercial publishers in particular are often criticized because APCs are “unprecedentedly high and are also very unfair to researchers in developing countries who simply cannot afford them” [7]. High APCs replace inequality in access to results with inequality in the ability to publish [8]. There is a rational core to this criticism, which is why most major publishers have publishing support programs for scientists from low-income countries.

Elsevier has been criticized for prioritizing the interests of shareholders over those of the scientific community, whose voluntary service on editorial boards or peer review is used to make its business highly profitable [9]. Elsevier more or less makes no secret of this when it directly states that APCs are set depending on journal quality, the journal’s editorial and technical processes, competitive considerations, market conditions, and other revenue streams associated with the journal [10].

Are OA Mirror Journals Successful or Not?

Although scientists are willing to pay relatively high amounts for APCs [11], why should they pay several thousand US dollars to publish an article in a journal that is brand new, has no established reputation, and whose bibliometric indicators are effectively zero? Elsevier tried to make this dilemma easier for article authors by creating the aforementioned OA mirror journals, which at least had the appearance of being established reputable journals. This is a business strategy based on the assumption of brand loyalty, but (as I will show below and as Asai [2] illustrates) it was not successful.

<table>
<thead>
<tr>
<th>ISSN</th>
<th>Journal title</th>
<th>Currency</th>
<th>Year 2019</th>
<th>Year 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>2590-1621</td>
<td>Atmospheric Environment: X</td>
<td>USD</td>
<td>1,400</td>
<td>1,470</td>
</tr>
<tr>
<td>2590-1370</td>
<td>Biosensors and Bioelectronics: X</td>
<td>USD</td>
<td>3,500</td>
<td>1,790</td>
</tr>
<tr>
<td>2590-1516</td>
<td>Contraception: X</td>
<td>USD</td>
<td>3,200</td>
<td>2,100</td>
</tr>
<tr>
<td>2590-1532</td>
<td>Cytokine: X</td>
<td>USD</td>
<td>3,400</td>
<td>2,430</td>
</tr>
<tr>
<td>2590-1745</td>
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APC, article processing charge; ISSN, International Standard Serial Number.

In the present analysis, I compared Elsevier’s APC price lists, which can be downloaded from web.archive.org. In Elsevier’s APC list from June 23, 2019, there are 44 OA mirror journals with APCs ranging from $500 to $3,750 (average, $2,633). In the APC list from January 13, 2023, there are only 22 OA mirror journals, with APCs ranging from $1,470 to $2,630 (average, $2,022). These 22 OA mirror journals had APCs from $1,225 to $3,750 (average, $2,730) in 2019, i.e., the average APC decreased by 26.67%. Four OA mirror journals experienced an increase in the APC, while 18 experienced a decrease (Table 1).

It is also possible to compare the price development of APCs with other Elsevier journals offering OA publishing. In addition to the 22 OA mirror journals, 1,982 other Elsevier journals were found in both price lists. Twenty-two other journals
do not have an OA price in the 2023 price list, which may mean any of the following: (1) the APC is waived for new open access journals, (2) the APC is sponsored by a third party, or (3) the journal owner invoices authors directly. Thus, the total OA prices in 2019 and 2023 were compared for 1,960 journals. Of these, one journal (Musculoskeletal Science and Practice) did not have a listed business model in 2023 (it was a hybrid journal in 2019), 1,725 journals had a hybrid model, and 234 journals were OA journals (of which 29 journals used a hybrid model in 2019 that changed to the OA model). These journals had APCs ranging from $150 to $5,900 (average, $2,501) in 2019, rising to a range from $200 to $10,100 (average, $3,183) in 2023. That is, from 2019 to 2023, the average APC for these 1,960 journals increased by 27.25%. For 271 journals the APC decreased, for 136 journals the APC did not change, and for 1,553 journals the APC increased.

Table 2 shows APCs are increasing for all groups of Elsevier’s journals, except for the OA mirror journals. This suggests that the set APCs for OA mirror journals were too high and were not accepted by the authors. Elsevier responded to this by lowering the APCs of most OA mirror journals and closing 22 established OA mirror journals. However, a detailed analysis of the reasons for this development would require an analysis of both the behavior of the decisive players in the oligopolistic academic publishing market during this period and other factors influencing authors’ behavior in choosing the journals in which to publish their articles. Rational authors choose a journal for their article with a view to maximizing the utility it will bring. Here, the method of evaluation and remuneration established in a certain country or scientific institution may be an important factor, as evidenced by studies from many countries in the world, although these studies have also been challenged [12]. For example, in the Czech Republic, the current performance-based research funding system, the so-called Methodology 17+ [13], prioritizes articles in journals indexed in Web of Science or Scopus that are ranked in the first and second quartiles of the field. Conversely, articles published in journals located in quartiles 3 and 4 are considered undesirable, which has led to some universities banning publication in these journals [14]. Logically, these new OA mirror journals start their positions only in the fourth, or perhaps third quartile, and moreover only in the Scopus database. Therefore, it is not surprising that Czech authors have published their papers in only eight of the 22 OA mirror journals and the total number of articles is only 20, corresponding to 0.62% of the published articles in these 22 OA mirror journals (as of 19 February 2023). However, as of the same date, the total proportion of articles by Czech authors published in Scopus-indexed journals in the period 2019–2023 is only 0.73%—that is, the difference between the proportion of articles by Czech authors published in OA mirror journals and the proportion in all Scopus-indexed journals is not so large as to be statistically significant.

**Conclusion**

The founding of OA mirror journals was a kind of experiment by Elsevier. It is difficult to conclude whether the OA mirror journals were a successful experiment or not, because Elsevier’s real business objectives with these OA mirror journals are not publicly known and the observation period is still short. Only time will tell regarding the success and long-term impact of individual OA mirror journals. Nonetheless, this experiment showed one important thing in particular. Although scholarly publishing is in the hands of a few dominant, mostly private publishers, these dominant players cannot set APCs entirely of their own volition. The closure of many of these OA mirror journals and the change in the pricing policy set by Elsevier in 2018 have shown that scientists are still considering whether publishers are providing them with adequate value for money in the form of APCs, and publishers still have to reckon with this behavior by authors.

**Conflict of Interest**

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Data Availability

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

Supplementary Materials

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Are we at the start of the artificial intelligence era in academic publishing?

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\section*{Introduction}

Machine-based automation has long been a key factor in the modern era. However, lately, many people have been shocked by artificial intelligence (AI) applications, such as ChatGPT (OpenAI), that can perform tasks previously thought to be human-exclusive. With recent advances in natural language processing (NLP) technologies, AI can generate written content that is similar to human-made products, and this ability has a variety of applications. As the technology of large language models continues to progress by making use of colossal reservoirs of digital information, AI is becoming more capable of recognizing patterns and associations within given contexts, making it especially helpful in assisting with various professional writing tasks [1].

In this paper, we will discuss several key points regarding the current state and future of AI in academia. Furthermore, since in certain aspects, acts can speak louder than words, we will also present some of our hands-on experiences of working with ChatGPT.

\section*{Survival of the Best-Adapted}

In 2015, a group of investors, including Elon Musk, pledged more than $1 billion for the formation of OpenAI [2], which later led to the explosive emergence of their powerful NLP system—ChatGPT [3]. The early globally popular version of ChatGPT was built on GPT-3, the third iteration of OpenAI’s generative pretrained transformer (GPT) large language model [4]. Notably, GPT-3 has 175 billion parameters [5], approximately the same number of cells in the adult human brain.

The resources needed in order to build impressive NLP models such as those used in ChatGPT are huge. Independent researchers or small groups most likely cannot compete with tech giants in terms of funding, facilities, available engineers, training data, and so forth. The process of training an AI application can be extremely costly. A simplified workflow of AI training is shown in Fig. 1.Crudely speaking, developing an AI application needs much more than a couple of passionate, talented software engineers.
Thus, among the chaotic opinions surrounding the use and implications of advanced AI in science and particularly academic publishing, one question must be raised: are we really concerned about the impacts of AI on the entire scientific community? Or, deep down, are we actually concerned about the possibility that the power of AI might be preserved for a privileged few while the rest would find themselves in increasingly intense struggles? The competition regarding AI may gradually turn into a competition for investment (for model training).

**AI is Here to Stay**

Overworked editors, reviewers, and authors are becoming more and more normalized in today’s publish-or-perish academic publishing environment [6], leading to various errors and ethical lapses in science [7]. Slow paper-based processing procedures, lack of discipline experts, and formatting and standard language issues are common problems in the publishing system [8]. In this overloaded infosphere, AI-assisted information management, such as metadata/text searching, organizing, and editing, is not new for publishers and researchers. Most likely, this trend in AI usage will continue to rise as the pressure continues to mount.

Stronger reactions have also taken place, such as banning AI-generated content or any type of automated writing in prestigious academic journals like *Science* and the *Springer-Nature* group [9], policies have been established for evaluating scientific communications to eliminate texts produced by AI [10]. Such precautions, to say the least, reflect some deep-rooted negative experiences. The incident in 2005 where SCiGen (Massachusetts Institute of Technology)—a program that can generate nonsensical computer-science papers—produced an article that was later accepted in a conference proceeding sponsored by the Institute of Electrical and Electronics Engineers (IEEE) made a huge commotion [11].

A certain level of resistance to seemingly abrupt changes of large magnitudes is natural and understandable, and such resistance can be observed throughout human history. However, the use of AI in science is inevitable and quite certainly not a temporary trend. As science progresses, the integration of AI is most likely only becoming faster and deeper. Implementing regulations requires a high level of understanding of the system; otherwise, the pursuit of self-interest would likely lead to misconduct and exploitation behind the scenes, just like what has been happening in the current system [12,13].

**Editors and Publishers Should Be at the Forefront of Applied AI Technologies**

Various aspects of AI have become so familiar that they are no longer topics of debate at the moment, such as the use of grammar-checking software. More ambitiously, researchers are pondering and testing the idea of AI-assisted peer review [14]. AI does not currently have the capacity to handle peer review. We still need to emphasize the importance of open data, open resources, and open dialogues in science [7]. While reliable automated peer review is probably still quite far in the future, the notion should prompt the entire academic system to make proper preparations as soon as possible.

However, an important question arises here—how do we master the use of new AI capabilities? This can be achieved by proactively conducting research and practicing tasks involving these new capabilities. Imagine this scenario: in the near future, when most processes in the academic publishing system are handled by AI, knowledge would be controlled by algorithms. Then who would control those algorithms? Only by clearly understanding how AI works can scientists use it effectively without turning it into a constraint on their own activity. Being in an important position of decision-making regarding human knowledge, researchers (especially academic editors) should take the matter into their own hands by gaining AI-based knowledge management skills.

If editors do not catch up with AI applications, they will have a hard time assessing the quality of papers from authors who utilize AI support. Furthermore, if this gap becomes wide enough, said editors may not be able to tell the differences or even “what is going on with the papers.” Let us consider this one quick question: how many people in academia who actively discuss AI (whether for or against it) have actually worked with developing AI and know how it functions?

Once we can get past the verbal debates and move on to optimizing our practices, there are at least a few major benefits that AI can bring to academic publishing. Firstly, AI support
in information searching and filtering can significantly reduce the cost of science in various steps from data collection to analysis, manuscript writing, and publishing, which has been a major headache, especially for researchers from low-resource settings [6]. Secondly, AI can support researchers with tedious technical work so they can focus their energy more on creative research. This can also be helpful for editors who are under intense time pressure in the current publishing system. Thirdly, NLP-based AI can be a great help to researchers who are not native English speakers during the publication process, and even more so for early career researchers (ECRs) [15]. Non-native English speakers comprise a very large proportion of the global scientific community. With the help of AI in language editing, these researchers can put much more effort into the real essence of science: reasoning, methodologies, and finding key insights. Last but not least, it should be mentioned again that the open science movement is in alignment with open-source AI, facilitating transparent data sharing and collaborative development.

**It is Time to Evolve**

AI technologies are evolving every day. It is true that the scientific community needs to be cautious toward AI applications [16,17]. However, that is all the reason more why we should delve into the matter now rather than later. A good understanding of the problems and potentials at hand will save us countless trial-and-error situations in the future (Fig. 2).

Working with AI requires a highly compatible theoretical foundation, which is why it is likely advantageous to employ the information processing approach [18,19]. Conceptual debates are very valuable; but after that, it is time to act and gather objective evidence to optimize our course more accurately. Directly working on or with AI has several advantages for an institution and each of its individual members. Firstly, this is a strange and challenging journey, but also an interesting exploration. Secondly, it is a dynamic classroom where we cannot clearly foretell what some of the future lessons will be about. Thirdly, the benefits of AI are becoming rapidly clearer in both scientific practices and daily life [20].

**Is ChatGPT as Scary as People Fear It to Be?**

To test the logical ability of ChatGPT (GPT-3), we conducted two small experiments.

**First experiment: the math problem of colored balls**
The problem was presented as follows: One person put colored balls in a box in the following sequence: blue ball, red ball, yellow ball, then blue ball, red ball, yellow ball… so on. If we want 10 red balls in the box, how many balls does the person need to put in, at a minimum?

At first, ChatGPT answered: “30 balls minimum are needed.” We know that the 30th ball is yellow and told ChatGPT this, but again it reaffirmed that 30 balls are necessary. We then asked, “If the person put only 29 balls, how many red balls are in the box?” To this, it replied that there would be nine red balls (Fig. 3). The question was repeated with smaller total numbers each time (28, then 27, then 26, and so on). ChatGPT answered with one less red ball each time. By the time we asked, “If the person put only 20 balls, how many red balls are in the box?” it replied that there would be zero red balls.

When questioned about the inconsistency in its logic and answers, ChatGPT became very confused, then apologized, but still continued to contradict its former statements.

**Second experiment: playing chess**
In this experiment, we used a ChatGPT-integrated tool built in Python (Python Software Foundation) and React (Meta Platforms Inc) (Fig. 4). Instead of focusing on the match, ChatGPT seemed to “prefer” talking. Most notably, when being prompted with invalid moves, ChatGPT praised the human instead of reporting the moves as illogical (Fig. 5). It then proceeded to make invalid moves as well.

**Implications of the experiments’ results**
In our experiments, ChatGPT failed at the logic tests, but it did a good job at being a chatbot. In brief, these results indicate three major points about ChatGPT in its early state: (1) it lacks good logical capabilities; (2) it has good superficial chatting capability (which can make a good impression, especially on...
ChatGPT was developed as a general-purpose AI. In the future, NLP AI will most likely not stay simply as chatbots, but rather be integrated into many other programs to produce specific-purpose applications. Along the path toward practicality, AI applications will appear more and more like tools. There will be many situations where it is not possible or not necessary to make the distinction between the AI and the tool integrating it. When that time comes, how can one expect to
Fig. 5. ChatGPT’s silly reactions (OpenAI) to invalid moves.

One person put color balls in the box in sequence: blue ball, red ball, yellow ball, then blue ball, red ball, yellow ball... so on. If we want 10 red balls in the box, how many balls the person needs to put in minimum?

The sequence the person is following is: blue, red, yellow. In each cycle of this sequence, the person puts 3 balls in the box and one of them is red.

If the person wants to put 10 red balls in the box, he/she needs to go through this cycle 10 times (because in each cycle, one red ball is added). Therefore, the person needs to put a minimum of 3 (balls per cycle) * 10 (number of cycles to get 10 red balls) = 30 balls in the box.

but the last ball is yellow no need to put in order to get 10 red balls?

Yes, you’re correct. My apologies for the oversight.

To get to 10 red balls, we would need to go through the full sequence 9 times (which gives us 27 balls: 9 each of red, blue, and yellow). Then, we just need to add another blue and red ball to get the 10th red ball. This totals 29 balls (9*3 + 2), not 30. So, the person would need to put in a minimum of 29 balls to get 10 red balls in the box if following the sequence.

Fig. 6. The first experiment conducted using GPT-4 (OpenAI).

eliminate AI usage from the academic publishing system? Consider this scenario: in the (not very) far future, the most prestigious journals would only accept papers written on bamboo slips to preserve human “authenticity.”
Much Improved Problem-Solving Ability of GPT-4

The updated AI chatbot, GPT-4, appeared in March 2023. It is a payment-based service. The same first experiment was done using GPT-4. The answers became much more reasonable (Fig. 6). The final answer was 29 balls to get 10 red balls. It is correct. GPT-4 may be able to provide a more improved logic.

Conclusion

Academia needs to adapt to a more AI-integrated system, but we should be careful of new forms of resource-based inequality. AI assistance is not a temporary trend, but a tendency of technological progress, which should be treated with cautious openness. Considering the benefits of AI assistance to researchers, editors and publishers should gain more and make use of AI-based knowledge management skills. Proactively preparing and exploring AI using a compatible information processing framework is necessary. Although ChatGPT currently lacks good logical capabilities, a more recent NLP AI, GPT-4 showed much improved problem-solving competency. In the future, it will be integrated into applications with specific purposes, blurring the line between AI and tools.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

Supplementary Materials

The authors did not provide any supplementary materials for this work.

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Paper mills, fraudulent authors, and editorial responses

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Introduction

Misbehavior in the field of scientific research is not a new phenomenon, and one that probably dates back to the earliest scientific experiments, the earliest scholarly endeavor, and the earliest published articles. Indeed, plagiarism has been recorded back to Greek times and the plagiarism-checking company, Turnitin has a nice article tracing its history [1]. In journal publishing, one of the earliest articles to consider this type of bad practice was published in The Irish Monthly in 1879 [2].

The first article retraction is reported to be in 1756 when a notice appeared in Philosophical Transactions. The author, Benjamin Wilson, requested his article to be retracted due to recognizing problems with the research [3]. In this instance the retraction was not due to fraud, but it serves as a reminder that the scholarly record has always included problematic and misleading science.

More recently there have been well reported scandals collected and included in the database, Retraction Watch. The database catalogues problems, bad behavior, and fraud appearing throughout scholarly communication, including editors, reviewers, publishers, institutions, and of course, authors. Errors happen at all stages of scholarly communication, and although regrettable, they can often be explained without blame. However, fraud and unethical practices constitute a much more serious aspect of scholarly endeavor.

There are various definitions of fraudulent and unethical behavior, which usually (but not always) cover the same problems. For example, in the United States, the National Science Foundation defines research misconduct as belonging to one of three categories: fabrication, falsification and plagiarism. However, outside these three neat categories, it also recognizes other types of misconduct such as ghostwriting and other authorship and research ethics issues [4]. One point of note is the illegality of such behaviors. Fabrication and falsification may be penalized through legal systems, for example if grant money has been used inappropriately or the researchers have deliberately misled others. However, many behaviors considered unethical in the publishing and scholarly environment are not illegal, and judicial systems cannot be used to control or prevent them. Plagiarism is an interesting case in point here, since it is not illegal—although infringement of copyright is, and there is considerable overlap between the two activities.
When it comes to authorship fraud, such behaviors are not usually illegal whilst they remain highly unethical. Usually, the only penalties can be levied by employers using terms of employment conditions to dismiss staff or other disciplinary measures. This essay will explain different authorship problems and the relatively new problem of paper mills and will suggest some appropriate editorial responses.

**Authorship Problems**

In the first decade of this century there was a great deal of concern over pharmaceutical research, and the ghost- and guest-authorship issues associated with this. These unethical practices were centered on medical communications companies, who often work for pharmaceutical companies to help authors write and publish their pharma-funded research. Whilst most companies work completely ethically, there were cases where the communications company was supplied with data and the “story” to tell. They were also given the names of “authors” who were to be credited with the articles, even if they had never seen them and there was no correspondence with them [5,6]. The problem itself had started to emerge in the late 1990s, and a study published in *JAMA* in 1998 [7] reported that 11% of studied articles in major medical journals had evidence of ghost authors, and 19% had honorary authors (heads of departments, or influential individuals added to a paper to confer respectability).

Concern over ghost authorship and the influence of pharmaceutical companies led to the 2016 International Society for Medical Publication Professionals (ISMPP) Code of Ethics. This guide provides ethical benchmarks for all medical publication professionals (and can equally be applied in other disciplines). The guide has since been updated [8].

Many editors turned to the Committee on Publication Ethics (COPE) for help with authorship issues, and it has since issued a great deal of support as guidelines and flowcharts to help editors identify and respond appropriately to potentially fraudulent activity (e.g., “Systematic manipulation of the publication process” flowchart [9]).

Another insidious authorship problem is whether the named individuals deserved to be named as authors, according to the International Committee of Medical Journal Editors (ICMJE) criteria [10]. Guest authors are those who do not fulfil all (or any) of the ICMJE criteria but are included because they either confer respectability on an article or expect to be named because of their relationship with the authors or the research—for example, heads of department. It is still common in some institutions and some regions of the world for the head of department to be named as an author. In some cases, this is a reasonable request because of their involvement with the work for their laboratory or department, but in many it is simply a way for a person in power to obtain credit for more research than they have actually undertaken [11].

Guest authorship may be the reason why some authors are able to publish huge numbers of articles. For example, Yuri T. Struchkov was a Russian researcher who published over 2,000 articles, or approximately one article every 4 days in the 1980s. Whilst such output may have been legitimate, there was also concern that he obtained this quantity of publications through influence rather than through his own research. He worked in Russia and managed the crystallography equipment at his institute. Such equipment was in short supply so many researchers came to use it, and it was suggested that in payment for using the equipment his name was included in resulting papers [12,13].

**Buying Authorship**

In 2013 one of the first reports [14] was published of a system whereby authors could buy their way onto papers. Called “China’s Publication Bazaar,” the report in *Science* exposed an apparently new type of fraud—one in which companies sold authorship. The report described the journalist being approached by a company with an invitation to pay for authorship on an article which had already been submitted and accepted by a credible journal. The company were now offering authorship for sale—i.e., anyone willing to pay them could have their name added to the list of article authors. There were already article authors (presumably legitimate) but the business allowed them to sell co-authorship for a fee, some of which was retained by the company, and some given to the real author(s).

The article reported a 5-month investigation by *Science* reporters that uncovered a market in which corrupt scientists were willing to sell and buy authorship, using unethical companies who masqueraded as language editing services. In some cases, editors were also complicit in the market for authorship [14].

Several years later, in 2019 Retraction Watch reported a Russian company that was auctioning authorship [15]. The site bluntly advertised the sale of articles that had been submitted to, or accepted by, Web of Science or Scopus-indexed journals. Starting at $500 and rising according to the status of the journal and the position of authorship, the site had (at the time of the Retraction Watch 2019 article) 344 articles for sale on its website.

The saying “publish or perish” is well known, and it is also a recognized fact that many researchers feel under a great deal of pressure to publish—which can lead to unethical behaviors. Some authors, however, are simply dishonest. In the case of the pharmaceutical ghost authorship cases mentioned above,
although it may have been sufficient for the authors to have an additional article to add to their publication list, they were often paid by the pharmaceutical companies. In the cases of guest (or honorary) authorship, no money was usually paid to the guest author or by the guest author since the fact (or expectation) of having an additional article was usually sufficient incentive. The cases of ghost and guest authorship which had been well documented for several decades were to become commercialized with the emergence of “paper mills.”

**Paper Mills**

According to Wikipedia, the term “paper mill” in relation to academic authorship fraud dates to the mid-19th century in universities where students shared papers and submitted works produced by other students [16]. Although more commonly referred to as an “essay mill,” the term “paper mill” has become the term used in academic publishing, and the earliest reference I can find to this term dates back to 2014.

The 2014 article that appears to mention this term for the first time in relation to journal publications was published on the blog site, The Grand Locus [17]. The article reports finding a large number of articles with the title “something and something else: a meta-analysis” (“something” being replaced with a unique topic in each article). The author of the blog site looked at a sample of the 32 papers found indexed in MEDLINE and found that they had identical structures, figures, and overlapping text. One clue to the fact that these were duplicate papers with just the subject changed was that the same grammatical mistakes were found in multiple papers. After some investigation the authors contacted a Chinese website that offered them authorship of a paper for $10,000.

In the past few years, the subject of paper mills has become one of growing concern, and there have been some large-scale investigations leading to retractions. At the end of 2022 the Institute of Physics announced retraction of 494 papers largely due to paper mills. Most of the papers were published in its conference series, where editorial oversight was apparently deficient in checking submissions or undertaking sufficient peer review [18].

Another high-profile case concerned Hindawi (owned by Wiley) that retracted over 500 articles in September 2022 and a further 1,200 articles in early 2023. Again, these were mostly from special issues managed by guest editors in 16 journals, where article publications were identified after publication [19].

In light of the concerns that this is a growing problem, and one that can be difficult for smaller journals to catch before publication, COPE undertook a study of the problem in partnership with the STM organization and Maverick Publishing services [20]. COPE defines paper mills as “the process by which manufactured manuscripts are submitted to a journal for a fee on behalf of researchers with the purpose of providing an easy publication for them, or to offer authorship for sale” [20]. Paper mills are commercial companies that create articles (often copied from already-published articles, or submitted by corrupt authors), and then sell authorship. Corrupt authors will pay to have their name added as an author.

Because these companies want to have as many articles as possible, such articles are frequently based on templates, or are the same articles with the topic, chemical, condition, etc., changed. In isolation each article may look quite acceptable, and it is only when multiple articles are compared that they can be identified as the same article with a topic or other change to make them sufficiently unique that they are not picked up by plagiarism tools. (However, sometimes they are picked up by plagiarism tools because the templates are too similar!) An excellent overview of the workings of a paper mill can be read on Retraction Watch [21].

Such companies may operate at a “conference” level—providing multiple papers affiliated with a conference, or a special topic, and submit them to journals that have such special issues, often with guest editors who are not as experienced as the main journal editor; on the assumption that editorial oversight will be lax and not identify the similarities between the articles. There is also the problem of a complicit editor—i.e., a person who is in league with the paper mill, perhaps being paid to accept their articles [22]. Such companies will also try to influence the review process and suggest fraudulent reviewers if the journal asks for suggestions.

One case reported to me personally concerned two papers submitted to a journal at the same time, and using such similar templates that the editorial office spotted them as potentially fake. The editorial office then put the papers into the plagiarism checker and discovered that they were based on an article published a few years ago in another journal. In this case the company had taken an already-published article and dishonestly reused it twice as a “new” article, each article having a different set of authors (who would have paid for their names to be affiliated with it). It is also likely that there are other versions of this same paper submitted to other journals, each with different authors, in the hope that they will be published.

**Why Do Authors Do It?**

To pay for authorship is a risky strategy for any researcher, since being discovered could lead to immediate dismissal from their employment and an end to their career. However, it is unlikely that there will be any legal recourse. It is also likely that the risk is lower than it appears at first, since practices of
confidentiality and the threat of libel action may prevent any institution sharing information about a fraudulent researcher. Therefore, they could easily find employment elsewhere, especially because it is likely that any prospective employer will not question the legitimacy of the researcher being named as an author so long as the topics of the publications appear legitimate.

In addition, as mentioned above, the pressure to publish may incite authors to take advantage of these companies to help their careers, especially if they have been unable to obtain sufficient publications to advance. Whilst many institutions would consider such behavior fraudulent and lead to immediate expulsion of the authors, some institutions are complicit, since these additional publications also add to the publication list of the institution and help its own ranking.

The Size of the Problem

It is impossible to accurately assess the scale of the problem, but there is concern that it is growing rapidly. The investigation done by COPE and its partners found that the incidence of suspect papers being submitted to journals at six publishers was in the range of 2% to 46% [20]. It appears that journals will receive a few articles, but if they are accepted a large number will subsequently be submitted.

What Editors Can Do

There is no easy way to identify paper mill articles, and no tools that can identify fraudulent authors. Some guidance is provided by COPE and STM [20] and Byrne and Christopher [23], which can be of some assistance. In summary, the following points should be noted by all editors and publishers.

- Editors should be aware of the potential problems of paper mills and other author problems and be vigilant.
- Any submission done on behalf of an author (i.e., from a generic or company email address) should be investigated.
- Any submission from an institutionally based author that does not have an institutional email address should be questioned.
- Any change of authorship after submission should be considered suspicious and investigated.
- Editors should never exclusively use suggested reviewers (unless they are credible people already known to the journal); asking authors to suggest reviewers is very useful where obtaining reviewers is difficult, but in general an editor should use at least one reviewer from the journal’s own database or the editor’s own network.
- Guest editors should be trained and monitored to ensure that quality does not slip, and that fraudulent authors do not take advantage of special issues.
- Special vigilance should be undertaken with conference proceedings since peer review quality is often lower than the regular journal.
- Any report of problematic publications should be investigated, and every journal should be willing to retract articles where fraud or significant error is detected.
- Retraction Watch database may be of use to investigate any suspicious behavior, to see if the author has been identified in any previous scandals.

Conclusion

Authorship fraud and bad practice is a problem that has existed for many years probably back to the start of research communication. Guest and ghost authorship have been replaced as the main ethical issue by the growth of a business in which individuals can buy the position of author on research articles. Companies are emerging which either create spurious articles or copy already-published ones, and then sell authorship. Scholarly journal editors should be alert to these kinds of publication misconduct to keep the scientific integrity.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Funding

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Data Availability

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

Supplementary Materials

The author did not provide any supplementary materials for this work.

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Meeting report on the Online Workshop for Academic Journal Editors (2023-A02)

Dong-Woo Ko
Faculty of Architecture, Jeju National University, Jeju, Korea

Meeting: Online Workshop for Academic Journal Editors (2023-A02)
Date: May 24, 2023
Venue: Virtual conference
Organizer: Korean Council of Science Editors (KCSE)
Theme: Checklists and algorithms for establishing journal policies

As a person who has walked the path of a researcher for over 20 years, including my doctoral program, academic journals have always been a place for me to find necessary resources during my research journey. In essence, my engagement with these journals was largely passive and research focused. However, my perspective shifted in 2022 when I assumed the role of Editor-in-Chief for the *Journal of the Korean Society of Spatial Structures*. As I began receiving regular issues of the journal, I came to understand that it encapsulates not only the concerns and efforts of researchers like myself, but also those of many other individuals. Moreover, it offered me a unique opportunity to view the anxieties of various researchers submitting their papers from a third-party perspective. Amidst this, I was invited by email to a workshop organized by the Korean Council of Science Editors (KCSE), specifically tailored for editors-in-chief of academic journals. Motivated by my responsibilities as an editor and curiosity about the operations of other academic journals, I decided to attend the workshop. The sessions provided me with a wealth of knowledge and insights that I had not previously considered, and I am eager to share these experiences with my fellow editors.

In the first presentation, the Chairman of the Publication Ethics Committee of KCSE introduced a checklist and algorithm for formulating key policies of academic journals. This covered the management of complaints related to research findings and the publication policies of academic journals, as well as research ethics, though these may differ based on the field of study. The speaker outlined the steps to take when complaints emerge concerning academic journals and provided examples from international cases. Although these procedures seem straightforward, the truth is that many academic journals do not explicitly outline regulations for such scenarios. Specifically, the step of reaching out to the funding agency about the results of the actions taken was an aspect that had not been previously considered.

The second presentation, by the Chairman of the Information Management Committee, focused on the importance of copyright in academic journals and the need for digital archiving.
While the importance of copyright and related policies has been frequently discussed, the subject of digital archiving for academic journals introduced a fresh perspective. It was disheartening to acknowledge that our nation has historically failed to adequately preserve and transmit records of scientific and technological achievements. This has led to an inability to trace the origins of many scientific and technological contributions made by our predecessors, despite visible evidence of their existence. Viewed from this angle, even though the records in academic journals across various fields may seem insignificant at present, they could transform into valuable reference materials for future generations. These records could also provide a basis for understanding contemporary technologies. This underscored the urgency for digital archiving in academic journals, a sentiment that resonated powerfully.

The third presentation, which dealt with the peer review process, was extremely helpful. This topic is both delicate and demanding when viewed from the standpoint of an editor-in-chief of an academic journal. In the past, my perspective on the journal's review process was limited to the roles of a reviewer or a paper submitter. However, in my capacity as an editor-in-chief, I have become familiar with the tasks of choosing reviewers and facilitating prompt submission and review procedures. This workshop introduced various peer review policies tailored to diverse situations, offering me a wealth of ideas on how to manage the manuscript review process more impartially going forward.

There was also a presentation on the subscription fees associated with academic journals, the transparency of these journals, and the dissemination of data or papers. I frequently use the site called ResearchGate to access and download papers when conducting research via Google. This indicates that, despite the existence of various online platforms for sharing papers and data, academic journals have not entirely transitioned from their conventional offline structure. Numerous researchers, both domestically and internationally, approach these sites with caution, engaging in discussions about copyright issues with the journals. Participating in conversations about topics such as the distribution of academic journal papers can greatly contribute to the future growth of these journals and the dissemination of research findings.

Lastly, there was a presentation on conflicts of interest in papers and authorship. As a researcher in the field of engineering, the issue of conflicts of interest had practical implications for me, since it can also affect patent registrations related to papers. This is especially true in instances of industry-academia collaboration, where the responsibility for research outcomes can become contentious in the event of failure. I noted that conflicts of interest can also emerge in the distribution of benefits, even in cases of significant success. In recent years, research has expanded to cover a variety of topics, moving beyond simple papers to focus on industry-academia collaboration or interdisciplinary research. I appreciated the presentation addressing this critical issue, as I have come to understand the importance of conflicts of interest among authors.

Initially, my attendance at the workshop was driven more by obligation and curiosity than anything else. However, as I listened to the presentations, my sense of obligation faded, replaced by the realization that this was a valuable opportunity to acquire new information and knowledge. Even if it might seem that the content about the operations of academic journals would not be of much use to actual researchers, in reality, researchers cannot afford to ignore them. As an editor-in-chief involved in the publication of such journals, I have taken on a variety of responsibilities. This workshop, however, served to alleviate much of that burden. I would like to extend my deepest gratitude to the speakers who presented at the workshop.

**Conflict of Interest**

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**Funding**

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**Data Availability**

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**Supplementary Materials**

The author did not provide any supplementary materials for this work.
What is next for “transformation, trust, and transparency”?

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Meeting: 45th Society for Scholarly Publishing Annual Meeting
Date: May 31–June 1, 2023
Venue: Oregon Convention Center and Hyatt Regency Portland, Portland, OR, USA and online
Organizer: Society for Scholarly Publishing
Theme: Transformation, trust, and transparency

This marked my first time attending a meeting organized by the Society for Scholarly Publishing (SSP). This year, the 45th SSP Annual Meeting was hosted at the Oregon Convention Center and Hyatt Regency Portland (Portland, OR, USA). The theme of the meeting was “transformation, trust, and transparency.” The event spanned 2 days, May 31 and June 1, 2023, and featured numerous concurrent sessions. The meeting was conducted paperlessly, utilizing Whova (Whova Inc, https://whova.com/), an all-in-one platform for hosting and planning virtual conferences. This article is based on the 45th SSP Annual Meeting, and I have incorporated relevant concepts, background, and history where necessary throughout the report.

Before the meeting commenced, attendees had the opportunity to leave messages using Whova. These could be simple greetings to other participants, or they could express specific queries or interests, such as a visit to Powell’s Books, a breakfast gathering, jogging, and more. This platform allows for interaction with others, including organizers, fellow panelists (if you are a panelist), and poster presenters. While this tool is convenient, without a hardcopy backup and some training in using Whova, I found it challenging to access information quickly, especially during the four parallel sessions. In addition to the talks, I thoroughly enjoyed my brief visit to Powell’s Books, reputedly one of the largest bookstores in the world. The meeting kicked off with an “industry session” that showcased publishers and associated businesses. Despite my initial modest expectations, I found this session to be highly informative.

Research Square introduced AJE Digital Editing (Research Square, https://www.aje.com/services/digital/), an artificial intelligence (AI)-powered tool that has been trained on millions of edits by professional editors. This tool is designed to expedite the publishing process and make it more equitable. As a non-native English speaker, I, along with many others, have taken a keen interest in this development. We often encounter difficulties in enhancing the quality and clar-
ality of our manuscripts, focusing not on the results, but on the content. According to a representative from Research Square, AJE’s Digital Editing can effectively identify unclear or incorrect sentences within the context of technical and field-specific language, while also making improvements at the phrase level. The initial pilot of digital editing was launched on submissions to Scientific Reports in August 2022.

Strava presented a talk on how the AiKira platform (Strava) can enhance publishing workflows, titled “The Future of Publishing Workflows: How the AiKira Publishing Platform from Strava is Setting the Standard.” The discussion highlighted AuthorMate (Strava), a service designed to support authors, and Research Integrity (Strava), which ensure credibility and integrity in academic content. The talk also introduced Reviewer Finder (Strava), a tool that uses advanced algorithms to streamline the process of selecting reviewers, and AiKira, a next-generation publishing platform with an open architecture.

TNQ Books hosted a session titled “ChatGPT and other LLMs: Should We Celebrate or Be Afraid of These Technologies?” The session was moderated by Abhigyan Arun, the chief executive officer (CEO) at TNQ Technologies, and featured two panelists, Ravi Pardesi and Neelanjan Sinha [1]. ChatGPT (OpenAI), a generative AI model, is notably different from its predecessors and has recently emerged with the potential to disrupt the current status quo. Alongside ChatGPT, other large language models (LLMs) such as Google’s Bard and Facebook’s LLaMA are also transforming traditional business models. These models come in various forms, including proprietary (OpenAI), open source (Meta AI), or application-focused (Adobe Firefly, stability.ai, SciBERT). It is clear that a significant number of academic publishers and business service providers are exploring the potential of these technologies and considering how they might impact the future ecosystem. While these innovations offer certain benefits, they also pose significant risks and challenges that need to be carefully considered before adoption. As such, these changes are being viewed with a mix of optimism and caution. This is particularly true in areas such as ethics and legality, quality and specificity, security, cost, reliability, performance, scalability, and integration. Regulatory issues also add to the complexity of the situation.

Nonetheless, hundreds of professionals in artificial intelligence and other notable individuals signed the following concise Statement on AI Risk on May 30, 2023: “Mitigating the risk of extinction from AI should be a global priority alongside other societal-scale risks such as pandemics and nuclear war.” The statement can be found on the website of the Center for AI Safety, a nonprofit organization dedicated to AI research and activism [2].

A session, entitled “Maximizing Data Sharing Policy Impact through Implementation, Compliance, and Support Workflows” featured a discussion by the panelists, Ginny Herbert (editorial development manager), Graham Smith (open data program manager, Frontiers), Rebecca Grant (Head of Data and Software Publishing, Taylor & Francis Group LLC) and Tim Vines (founder and CEO, Dataser). Over the past few years, the landscape of data sharing has undergone significant transformation. With the growing demands for research transparency and efficiency, data sharing policies are gaining popularity among both funders and journals. The data sharing commitments outlined in the 2022 Nelson Memorandum [3] are poised to accelerate the adoption of these policies. This is because funded researchers are striving to meet these requirements, and publishers are adapting to the changing needs of the research community.

The session began with a series of questions, as follows: What policy changes are on the horizon? Will institutions become involved? Will you choose to be reactive or proactive? What does being proactive entail? Clearly, we need to closely monitor and understand the current situation to effectively answer these questions. Over time, it has become apparent that journals are shifting from lenient data sharing policies to more rigorous ones.

Most, if not all, research scientists believe that data sharing is crucial for adhering to funding policies and meeting the requirements for journal submission policies. Conversely, from the perspective of scholarly publishers, it is necessary to establish internal training and support systems to integrate data policies and facilitate the evaluation of author compliance. It is worth noting that publishers should assess the impact and challenges of fully open data policies in comparison to the constraints of journal data sharing policies, as well as the degree to which they promote the sharing of reusable data. Additionally, it may be beneficial to consider how advances in technology can strengthen data sharing policies.

Publishers and journals need to specify which elements of data sharing are not included, such as laboratory notebooks, preliminary analyses, completed case report forms, manuscript drafts, peer reviews, communications with colleagues, and physical objects like specimens. The policy often emphasizes the importance of metadata as a crucial part of data sharing and management plans. For example, the US National Institutes of Health (NIH) includes the following elements in their data management plan [4]: data type; related tools, software, and/or code; applicable standards; data preservation, access, and associated timelines; considerations for access, distribution, or reuse; and oversight of data management and sharing. The key NIH resource website can be accessed at https://sharing.nih.gov.

Fig. 1 provides an excellent example of the processes and
concepts involved in data sharing, offering a clear and familiar framework [5]. The discussion also included the FAIR (Findable, Accessible, Interoperable, Reusable) and CARE (Collective Benefit, Authority to Control, Responsibility, Ethics) principles. The FAIR principles, which guide scientific data management and stewardship, were introduced in 2016 through a collaborative effort involving academia, industry, funding agencies, and scholarly publishers. The goal was to establish a standard for data accessibility and reusability from both human and machine perspectives. This often pertains to the data itself and its associated metadata, which provides descriptive and contextual details to aid understanding and organization [6]. While the FAIR principles focus on the data, the CARE principles complement and expand upon them. Of note, indigenous peoples, asserting sovereignty over the application and use of indigenous data, can become uneasy when the sole objective is to increase data shareability [7]. In this context, it is worth mentioning that the CARE Principles for Indigenous Data Governance were developed by Global Indigenous Data Alliance (GIDA) in 2019.

Due to the release of the Data Management and Sharing policy by NIH, most grantees funded after January 23, 2023, are required to create and adhere to a comprehensive plan for managing and sharing their research data, as per NIH data sharing guidelines [8]. As depicted in Fig. 2, the Office of Data Science Strategy at NIH oversees the Generalist Repository Ecosystem Initiative (GREI) [9]. The primary mission of GREI is to establish a unified set of capabilities, services, metrics, and

![Data Life Cycle Framework](image1.png)

**Fig. 1.** The data life cycle framework for bioscience, biomedical and bioinformatics data. Adapted from Griffin et al. [5], in accordance with the Creative Commons License.

![Generalist Repository Ecosystem Initiative (GREI) Objectives](image2.png)

**Fig. 2.** The objectives of the Generalist Repository Ecosystem Initiative (GREI). Reused from US National Institutes of Health (NIH) [9], in the public domain.
social infrastructure across various generalist repositories. In addition to this, GREI aims to increase general awareness and assist researchers in adopting FAIR principles to enhance data sharing and reuse. Further details can be found in the GREI Workshop Summary Report 2023 [10].

Similarly, F1000 (formerly “Faculty of 1000”) has certain requirements for open data, software, and code (Table 1) [11]. This organization serves as an open research publisher for scientists, scholars, and clinical researchers. It is important to note that F1000Research is an open research publishing platform designed to provide rapid and transparent publication of all research outputs across all disciplines. This platform is recognized as a solution and service provider catering to research scientists, funders, research institutions, societies, and their associations. It offers a rapid and transparent publication of all research outputs, across all disciplines. In January 2020, F1000 was acquired by the Taylor & Francis Group, but it continued to provide publishing services [12].

Table 1. Requirements for submitting an article to F1000Research

<table>
<thead>
<tr>
<th>No.</th>
<th>What is required when submitting an article to F1000Research?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Your dataset(s) must be deposited in an appropriate data repository.</td>
</tr>
<tr>
<td>2</td>
<td>Your dataset(s) must have a license applied which allows reuse by others (CC0 or CC-BY).</td>
</tr>
<tr>
<td>3</td>
<td>Your dataset(s) must have a persistent identifier (e.g., a DOI) allocated by a data repository.</td>
</tr>
<tr>
<td>4</td>
<td>You must provide a data availability statement as a section at the end of your article, including elements 1–3.</td>
</tr>
<tr>
<td>5</td>
<td>You must include a data citation and add a reference to data to your reference list.</td>
</tr>
<tr>
<td>6</td>
<td>Your dataset(s) should not contain any sensitive information, for example in relation to human research participants.</td>
</tr>
<tr>
<td>7</td>
<td>You should share any related software and code.</td>
</tr>
<tr>
<td>8</td>
<td>Your dataset(s) must be useful and reusable by others, adhere to any relevant data sharing standards in your discipline and align with the FAIR data principles.</td>
</tr>
<tr>
<td>9</td>
<td>Your dataset(s) should link back to your article, if possible.</td>
</tr>
</tbody>
</table>

DOI, digital object identifier; FAIR, Findable, Accessible, Interoperable, Reusable. Adapted from F1000Research [11], in accordance with the Creative Commons License.

Table 2. Comparison of the data sharing policies between NIH and F1000

<table>
<thead>
<tr>
<th>Policy element</th>
<th>NIH</th>
<th>F1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which data</td>
<td>All data generated by the research project</td>
<td>Data underlying the findings of the manuscript</td>
</tr>
<tr>
<td>Data management plan</td>
<td>Required</td>
<td>Recommended</td>
</tr>
<tr>
<td>Informed consent for data sharing</td>
<td>Strongly encouraged</td>
<td>Required</td>
</tr>
<tr>
<td>Using established data repositories for sharing data</td>
<td>Strongly encouraged</td>
<td>Required</td>
</tr>
<tr>
<td>Align with FAIR data principles</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Open license</td>
<td>Not mentioned</td>
<td>Required</td>
</tr>
<tr>
<td>Data citation</td>
<td>Not mentioned</td>
<td>Required</td>
</tr>
<tr>
<td>Data availability statement</td>
<td>Not mentioned</td>
<td>Required</td>
</tr>
</tbody>
</table>

NIH, US National Institutes of Health; FAIR, Findable, Accessible, Interoperable, Reusable. Adapted from F1000 [13], in accordance with the Creative Commons License.

While there are parallels in the data sharing policies of NIH and F1000, certain differences are also present, as indicated in Table 2 [13]. For example, F1000 offers support and guidance on selecting a data repository and license, among other things, in exchange for the requirement of “using established data repositories for sharing data.” In the webinar, expert speakers Matt Cannon (Head of Open Research, Taylor & Francis Group), Rebecca Grant (Head of Data and Software Publishing, F1000), and Yvette Seger (Director of Science Policy, Federation of American Societies for Experimental Biology [FASEB]) discussed the key considerations that researchers need to address in order to comply with the NIH policy while maximizing the impact of their data, especially when compared to F1000. Regarding all the above factors, determining who will bear the cost and how it will be managed is a critical factor to consider in a data sharing policy.

At the session, Graham Smith presented a new policy regarding data availability statements, titled "Springer Nature:
4 Policy Types to Single Policy.” The data availability statement acts as a crucial connection between a paper’s conclusions and the supporting evidence, which should be grounded in transparency in original research articles. The data availability statement of an article informs the reader about the location and method of accessing data that substantiates the results and analysis. This statement may contain links to publicly accessible datasets that were analyzed or generated during the study, descriptions of the available data, and/or instructions on how to access data that are not publicly available.

Springer Nature has demonstrated its commitment to open science by mandating data availability statements across its entire portfolio of journals and books. It appears that fewer than 40% of authors currently make their data available, likely due to additional burdens and practical challenges, including a lack of clarity about what is required. Nature Portfolio, BMC, and SpringerOpen journals already require a data availability statement in original publications, with BMC being one of the first to implement this requirement.

Springer Nature has requested that the data availability statement should outline how one can access the data that supports the results reported in your paper, as follows [14]:

If your data are in a repository, include hyperlinks and persistent identifiers (e.g., DOI or accession number) for the data where available.
If your data cannot be shared openly, for example to protect study participant privacy, then this should be explained.
Include both original data generated in your research and any secondary data reuse that supports your results and analyses.

Maria Hodges, Executive Editor (BMC and Research Data) commented that “Moving to a single data policy for Springer Nature journals and introducing significantly reduces the complexity of the data policy for authors, helping them to know what is required. It makes clear our commitment to support authors in open research practice and better enable them to benefit from open science.” She continued, “Reproducibility of scientific claims is crucial to the integrity of the scientific record. At the heart of research findings is the data from which results are obtained and conclusions are drawn, and its availability is key in supporting the reproducibility of that research and opening up science to rigorous interrogation.” [15]

The observational study published in the journal Psychological Science by Hardwicke et al. [16] primarily attributed non-reproducibility to the unclear reporting of analytic procedures, emphasizing that open data alone is insufficient to guarantee analytic reproducibility. Consequently, additional measures are necessary to enhance the reusability and analytic reproducibility of scientific manuscripts.

At the end of the session, there was an open discussion about the desirable characteristics of a trustworthy data repository. Several factors were suggested, including unique persistent identifiers, metadata, curation and quality assurance, reproducibility, the ease of configuring common formats, and provenance.

A session, themed “research integrity” and titled “Stories of Learning from Overcoming Mass Retractions, Systematic Manipulation and Research Misconduct,” involved a discussion among Hannah Smith (Wiley), Yael Fitzpatrick (PNASNews), Luigi Longobardi (IEEE), and Michael Streeter (Wiley). Issues such as plagiarism, data fabrication, conflicts of interest, and authorship disputes frequently challenge research integrity and publication ethics. These are issues that the research and publishing communities need to openly discuss and resolve. By promoting education, transparency, collaboration, and the acknowledgment of responsible practices, the community can work collectively to enhance the system. This will allow for a focus on quality over quantity, ensuring genuine scientific progress for the benefit of society. All publishers and academic societies have been impacted by problems related to research integrity and publication ethics. This is due to the swift expansion of research output and the increasing pressure to publish more papers quickly. The panelists shared their individual and collective experiences to better support industry-wide initiatives. This was done with a wider community of practice across scholarly communities, including publishers, societies, authors, and editors.

In the panelists’ introductions, they noted that their initial professions were quite different from their current roles in research integrity at a publishing house. This is a relatively new career path in the field of ethics, often starting with a volunteer position. Yael Fitzpatrick stated, “The right thing to do is not always the easiest or most pleasant thing to do. For instance, when we have found misconduct and rejected a manuscript, and reported it to the institution.” She went on to describe an instance where a peer reviewer reported a manuscript being submitted to two different publishers. They then had to carefully consider how to address the issue while preserving editorial anonymity.

Luigi Longobardi provided an explanation for the retraction of over 1,000 conference abstracts. Currently, IEEE, the organization in question, is accountable for 25% of all rejections. They received complaints regarding the quality of certain conference abstracts and decided to conduct a thorough investigation, which encompassed 100,000 papers. They did not merely retract these articles; they also closed several chapters and dismissed certain volunteers. For future IEEE conferences,
there will be significantly stricter quality requirements and a higher level of technical review. However, Longobardi added, rebuilding trust will inevitably take time.

Michael Streeter from Wiley recently shared a story about the retraction of hundreds of papers from our Hindawi portfolio due to suspected paper mill activities. Yael Fitzpatrick noted, "Publishers are not legally able to conduct investigations, so there is no way for us to confiscate lab books. We are not in charge of it; the research institution is. We also don't deal with the individuals who are making the charges; instead, we focus on the scholarly record, or publications."

Following the introduction and brief anecdotes shared by the panelists, a series of questions were posed:

- Q1. How cautiously do you disclose facts about how, say, paper mill activities were discovered? The disclosure of such information could teach fraudsters new tricks.
  A1. We do not divulge all of the knowledge we have collected, but we do communicate that we found a paper mill activity (Michael Streeter). It is frustrating that we can retract documents but not the people who profit from these paper factories. In social media marketing, even a Twitter account tweets about fake journals and conferences. Who will find these organizations, though (Luigi Longobardi)?

- Q2. Based on what you learnt, how did your organization learn from that and [what does it now] do differently?
  A2. We focus more on tools to investigate image integrity (Yael Fitzpatrick). We introduced new screening tools and guidelines (Michael Streeter). AI tools will be both threat and opportunity (Luigi Longobardi).

- Q3. Does this increased screening include your preprint articles?
  A3. Yes, we are looking into policies for that (Luigi Longobardi).

- Q4. What is the future of research integrity and what are you guys most excited about?
  A4. Unfortunately, there will be more bad stuff in the future. But I am excited that we will have increased tools against that (Yael Fitzpatrick). There will be potentially more paper mills in the future, but at least that will keep me employed (Luigi Longobardi)! Standardization of workflow of the editorial process will increase screening. And I am excited about collaboration (Michael Streeter).

The session was rife with intrigue and enigma, as evidenced by the numerous retractions of previously published pieces, which particularly piqued my curiosity. Despite this, the session was highly informative, providing valuable insights into the incidents, their repercussions, and future prospects for the development of tools and adherence to guidelines to address issues of integrity.

The session “Locally Sourced, Locally Owned: Independent Society Journal Publishing to Seed Trust and Transformation” examined the advantages of fostering academy-led publishing models, where the publisher is an expert in the field. These models have the potential to catalyze more effective and transparent practices, leveling a playing field that is increasingly dominated by large corporations with fewer incentives to do the same. The session asked two key questions as shown below.

1. What factors do you consider essential for scholarly societies and institutes to sustainably operate in-house publishing programs like yours?
   - Longevity and adaptability are ensured by using a committee to determine the journal's scope and target audience. Financial stability is essential for continuation. The Journal of Black Excellence in Engineering, Science, and Technology was given financing because it matched the objectives of National Society of Black Engineers (NSBE) and demonstrated the need for equity-focused STEM (science, technology, engineering, and mathematics) research. Success depends on persistence, marketing, and data validation. It took almost 6 years to complete the process (Derius Galvez, Editor-in-Chief of the Journal of Black Excellence in Engineering, Science, and Technology, NSBE).

2. To entice authors to publish with the press, RTI Press focuses on finding, utilizing, and communicating its assets to them. RTI Press provides an alternate path for publication rather than going up against established journals and/or bigger publishers. Peer-reviewed forms are offered, such as policy briefs and methods report, to accommodate various research outputs and reach a variety of audiences. Furthermore, RTI Press offers additional flexibility as a small press, enabling customized procedures and solutions catered to authors’ needs. Our Diamond Open Access Publishing strategy, which enables authors without financing to disseminate their findings widely, is one of the primary assets. Authors and RTI decision-makers have backed highlighting these distinct strengths (Anna Wetterberg, Director of RTI Press, RTI International).

The journal prioritizes the use of a cutting-edge publishing platform like Scholastica, allowing an efficient
publication workflow, to assure a long-lasting and significant presence. We place a strong emphasis on follow-ups and communication as a way to ensure that authors and reviewers have a great experience during the paper solicitation process. A platform for underrepresented STEM students to display their cutting-edge work is provided by the journal's active participation in engineering research poster competitions at national and regional conventions. The publication sets itself apart by addressing equity concerns in black STEM subjects and attempting to initiate discussions on these topics within the academic community (Derius Galvez).

- RTI Press is committed to maximizing resources in order to improve efficiency and equity. We have focused on making it easier for non-traditional research audiences to access their articles by working with authors to produce videos, blogs, and social media pieces that highlight the key findings. In order to target the right audience, we also promote free educational tools and form alliances with diverse businesses. They have assembled a library of publications on equity in order to address equity-related topics. Additionally, we are actively seeking editorial board members and reviewers from various career stages, geographical locations, academic fields, and research institutions, including a special review board for early career researchers, in order to incorporate diverse expertise and experience into the processes (Anna Wetterberg).

I had a discussion with Amanda Bartell, the Head of Member Experience at Crossref, about how we could enhance integrity in research and publication. We also explored potential future collaborations in this area (Fig. 3). I also had the opportunity to participate in a hybrid panel session titled: "Working Together to Preserve the Integrity of the Scholarly Record in a Transparent Way." The session was presided over by Amanda Bartell, Head of Member Experience at Crossref, and included panelists Nandita Quaderi, Editor-in-Chief and Vice President of Web of Science; Hylke Koers, Chief Information Officer at STM Solutions; Cheol-Heui Yun, a representative from Seoul National University and Vice President of the Korean Council of Science Editors (KCSE); and Patrick Franzen, Director of Publications and Platforms at SPIE and a COPE (Committee on Publication Ethics) Council Member. The session began by welcoming both the on-site and online audience, as it was conducted in a hybrid format. Following a brief introduction of the panelists and an overview of our roles within the session’s theme, each of us delivered a short presentation. Amanda Bartell initiated the session by highlighting the growing challenges and limitations surrounding research integrity, especially in maintaining the integrity of the scholarly record. She noted that these challenges are escalating due to various factors such as researcher errors, misconduct, dishonest publication practices, plagiarism, image manipulation, the use of chatbots, and paper mills. She pointed out that the scale of the problem has expanded as the scholarly record grows rapidly. For instance, in 2022 alone, 10 million new records were registered with Crossref, including over 6 million new journal articles. This number only represents Crossref members, indicating the enormity of the task of effectively policing scholarly integrity. She also mentioned that advancements in technology, including AI, have amplified deceptive publishing practices. She posed the critical questions: "What is the solution to this? And, more importantly, who is responsible?"

Amanda Bartell discussed the role of Crossref in collecting and openly disseminating metadata that can be used as trust signals, and how the Research Nexus is key for everyone in the community to evaluate research. Crossref metadata is integral to maintaining research integrity, ensuring reproducibility, facilitating reporting and assessment, and enhancing discoverability. Crossref improves the visibility and accessibility of research by providing indicators of the work’s reliability. It also fosters connections between literature, data, software, and protocols, and supplies benchmarking data. This makes it easier for others to identify and utilize the work.

In my presentation, I began by providing a brief history of KCSE. I then shifted my focus to the primary activities of the KCSE, with a particular emphasis on the seminars and training programs on publication ethics, a topic that has become particularly important during and after the COVID-19 pandemic.

Nandita Quaderi talked about how Web of Science, as a
foundation for trustworthy datasets and metrics, is using rigorous selection in tandem with transparent processes and policies. Hylke Koers delivered a presentation on STM Solutions, the operational arm of the STM Association responsible for creating and managing shared infrastructure and cooperative services to aid STM members and the broader academic community. His talk centered on the STM Integrity Hub (https://www.stm-assoc.org/stm-integrity-hub/), a collaborative initiative involving over 30 organizations. This initiative facilitates the exchange of expertise and information, and the development of shared solutions to uphold research integrity. The STM Integrity Hub offers publishers a cloud-based platform to scrutinize submitted manuscripts for potential issues related to research integrity. This is done in line with relevant laws and industry best practices, while also fully adhering to data protection and competition and antitrust legislation. In this environment, publishers have the freedom to partner with third parties of their choosing to create and implement screening technologies. This collaboration ultimately benefits the wider scholarly ecosystem.

In his presentation, Patrick Franzen highlighted how COPE is currently uniting publishers and institutions, particularly universities, and underscoring the intersections and commonalities between research integrity and publication integrity. While there were inquiries from the audience, we also had a set of prearranged questions within our group just in case. Here are some of the questions we had prepared in advance:

(1) What do you think is the biggest challenge in preserving research integrity?
(2) What do you think is a good example of the community working together to preserve research integrity?
(3) Where do you think there is currently a gap—a problem with research integrity that is not being tackled by anyone?
(4) Where should the audience focus their efforts?
(5) What are publisher’s responsibilities to other publishers, universities, etc.?
(6) How do we share information on potential “bad actors” more effectively?
(7) What should we do with the General Data Protection Regulation in research integrity [as an individual research scientist, journal, or publisher]?

I must admit, it was somewhat overwhelming to absorb all the previously mentioned information within a 2-day meeting. This was especially challenging given the nature of parallel sessions, which prevented me from accessing many of the discussions. Despite now having more questions than before, I am at least reassured that the future of publication and the scholarly community appears promising, with a virtuous cycle emerging among the stakeholders.

In truth, no single community has been able to address the issues previously mentioned. Undeniably, these are the types of problems that require a collaborative effort from all sectors of the community for resolution, leveraging shared knowledge and individual strengths. This could effectively be achieved through practices that are transparent and open.

Conflict of Interest
Cheol-Heui Yun serves as the ethics editor of Science Editing since 2020, but had no role in the decision to publish this article. No other potential conflict of interest relevant to this article was reported.

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Supplementary Materials
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What to tell and never tell a reviewer

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Abstract
The specialized literature abounds in recommendations about the most desirable technical ways of answering reviewers' comments on a submitted manuscript. However, not all publications mention authors' and/or reviewers' feelings or reactions about what they may read or write in their respective reports, and even fewer publications tackle openly what may or may not be said in a set of answers to a reviewer's comments. In answering reviewers' comments, authors are often attentive to the technical or rational aspects of the task but might forget some of its relational aspects. In their answers, authors are expected to make every effort to abide by reviewers' suggestions, including discussing major criticisms, editing the illustrations, or implementing minor corrections; abstain from questioning a reviewer's competence or willingness to write a good review, including full and attentive reading and drafting useful comments; clearly separate their answers to each reviewer; avoid skipping, merging, or reordering reviewers' comments; and, finally, specify the changes made. Authors are advised to call on facts, logic, and some diplomacy, but never on artifice, concealment, or flattery. Failing to do so erodes the trust between authors and reviewers, whereas integrity is expected and highly valued. The guiding principle should always be honesty.

Keywords
Standards; Publications; Research report; Writing; Reviewing

Introduction
Receiving a review report, hopefully with “conditional acceptance,” on the manuscript that you have submitted to a journal is a positive step, though it implies some additional work. Indeed, the accompanying letter often recommends, “Kindly provide point-by-point answers to the reviewers’ comments.”

Given the “good news,” the authors decide to deal immediately with each point and prove their goodwill and mastery of the research topic. However, after a thorough reading of the report and a few short discussions with the closest co-authors, the authors discover a number of difficult questions or troubling comments and remember an uncomfortable sentence in the editor’s letter: “The submission of a revised version does not mean the journal is committed to publish it.”
The authors then become no longer sure that the manuscript will not be rejected after the first or even a later revised version, but decide, nevertheless, to continue with the revision.

Now, although the authors have planned the answers and started to draft them, there are still a few recommendations, beyond the strict scientific or technical framework, that are worth keeping in mind.

**Guidelines for Judicious Responses**

**Accept without complaint**

**Accept all, or almost all, major criticisms**

Unless very perfunctorily or unclearly written, it can be presumed that a criticism has been pondered by the reviewer who took time and effort to formulate it [1]. Such a criticism cannot be lightly discarded. Ignoring it would suggest that the authors do not want to provide an answer, which, if repeated within the set of responses, would seriously expose the article to the risk of rejection. Besides, there are very few situations in which a criticism might be refuted: either it was inspired by an ambiguous argument or odd sentence the authors have written, in which case the argument or sentence should be clearly rephrased, or it is completely unrelated to the subject, in which case this should be politely explained [2].

**Accept nearly all suggestions to improve illustrations**

Suggestions to improve illustrations are made simply because the reviewer did not have, like the authors, his or her nose stuck to that illustration for weeks; instead, he or she first looked at that illustration with a certain detachment, and that first look sought for more simplicity or efficacy. Furthermore, the reviewer is keen to see and convey one or only a few messages from a given illustration, rather than scrutinizing it for all possible information available. This concerns mostly the flow charts, drawings, photographs, and maps from which the message is expected to leap almost immediately to the reader’s eye [3].

**Accept all minor corrections**

Minor corrections usually concern a set of formulations, a few points of terminology, and, mainly, English usage, grammar, and punctuation. Though some corrections are debatable (e.g., UK vs. US English or the places of particular parts of speech), refusing to make them would not reflect a good spirit and open mind [4]. On the contrary, abiding by them denotes consideration for the reviewer’s attention to the quality and details of the text (see below for how to describe any amendments).

**Never ever tell a reviewer**

**They have not read the manuscript or part of it**

This may be true (!), but think twice about the possibility it is not. In almost all cases, a reviewer who is not willing to read or continue reading a manuscript will simply decline the review or reject the manuscript (obviously, with arguments). In almost all cases, a reviewer goes through a manuscript several times and concentrates long on the most difficult parts of it; thus, he or she will surely not appreciate a suspicion of neglect.

**They have not understood what the authors wrote**

This too might be true [5], but be extremely cautious and insinuate that possibility in the most politically correct way possible [4,6,7]. The text might contain a lot of (highly) technical jargon, phrasing or style might be unclear, or sentences might be too long and convoluted. Avoid submitting for publication a text that has not been read by the other authors or that has been edited several times by successive co-authors without being finally checked, harmonized, and made fluent by a single author who is a proficient writer.

**They are not as competent as the authors in the field**

This is possible but very unlikely because most journals ask their authors the following: (1) to register several times in various databases that require accurately reporting their specialties and serve as a source of reviewer addresses and competencies; and (2) to give the names, affiliations, and competencies of potential reviewers. Besides, a serious reviewer who is incompetent in a certain field would decline the revision request. Furthermore, after unblinded peer review, the authors may appraise the competence of each reviewer. In any case, it is the responsibility of the journal’s editorial team to compare the review reports and detect important discrepancies indicating that one of the reviewers is not fully competent in the field. Finally, if the authors have doubts, they might discuss the issue with the manuscript’s handling editor.

**Authors have not understood the reviewers’ question or query**

This does happen, but very rarely [5]. In that case, consider two or three possible meanings of the question, express them clearly, and answer each of them fully and independently. It may also happen that the vast majority of questions are challenging to understand because the reviewer, though an eminent specialist, does not have full mastery of English. In the latter case, the authors should contact the manuscript’s handling editor to discuss the problem and receive solutions.

**Authors are not willing to consider the reviewers’ point of view**

Obviously, this depends on the specific point of view. If the point is secondary, authors may consider choosing not to
maintain it as originally stated and instead make an effort towards a consensus. If the point is essential, the authors may give their arguments and let the reviewer decide whether an amendment should be necessarily made. If the authors insist on overlooking a reviewer’s point of view without convincing arguments, the manuscript will be rejected, at least by one reviewer and possibly by both the reviewer and the editor.

Keeping a paragraph, table, or graph as is
If there are no sufficient arguments, sticking stubbornly to a given presentation does not reflect open-mindedness, a key attribute of a researcher. In principle, there is no single way to present a result, simply because of the need to avoid exhaustiveness and promote a clear and direct interpretation. Thus, make any effort to amend any part of a manuscript as suggested by the reviewer, especially the illustrations. Refusing to do so might offend the reviewer and expose the manuscript to the risk of rejection.

What the authors have said to another reviewer
Beginner authors imagine the reviewers of a given manuscript do, or would possibly, communicate before issuing their first (or later) review report. In fact, this is very unlikely, at least before a first review, because the editors are keen to respect the principles of blind or double-blind peer review. Sometimes, for specific reasons or after making a final decision, the editor may feel it is better to let the reviewers read each other’s reports to understand the reasons for rejection [8].

Avoid, to the maximum extent possible
Giving a single answer to several questions or comments
This may seem practical, but it will neither ease the reviewer’s task of checking the revisions nor speed up the whole review process, especially when those comments are gathered from distant places in the review report. If the authors choose to do so for practicality or any other reason, the reviewer may not understand this reason or like this idea; instead, the reviewer might consider that the authors are trying to mislead him or her by mixing several issues. The reviewer is expecting a straightforward and clear explanation for each specific issue [9].

Changing the comments’ order within a review report
A reviewer always expect point-by-point answers to their comments in exactly the same order they have chosen (usually, an order that follows the manuscript’s structure; i.e., IMRAD [Introduction, Methods, Results, and Discussion]) [10,11]. If the authors choose to reorder the questions for whatever reason, this reason might not be understood or agreed upon, and even worse, reordering may be viewed as irritating or offensive because it forces the reviewer to search for their own order within the authors’ [4], which is an unnecessary and frustrating waste of time and mental energy.

Skipping any question, comment, or query
As the reviewer expects successive answers to successive remarks, they will easily notice if a remark has been overlooked and suppose this was done on purpose to escape giving an answer. Be warned—this is a very risky strategy [12]. Thus, always give an answer, even a brief or obvious one [9,13]; the reviewer will appreciate a confirmation of a point of view or a clearer explanation of an inappropriately written statement.

Omitting to say what and where changes were made to the manuscript
This is quite a common omission. After a more or less long explanation, an author may consider that the point has been dealt with and forget to express that explanation concisely and insert it at the most convenient place in the manuscript. One tip is to write down that concise paragraph without delay, find it a place in the manuscript, and clearly indicate that place immediately after the answer [4,9,14].

Authors may, occasionally
Give a combined answer to two or three successive comments
A combined answer can be given, but only to successive comments and only when those comments are closely related or related to a single issue. Even in these conditions, start by informing the reviewer that the authors are answering that set of questions, and then try their best to follow the same order of ideas. First, this respectful attitude will surely be understood and positively perceived [9], and second, the common answer may be more efficient and timesaving.

Refer the reviewer to an answer given earlier in the response document
In a review report, the same question may be raised when the same unclear or incomplete idea is present in the Introduction, Methods, or Results, then again in the Discussion. When this happens, the authors may tell the reviewer they have tackled this issue in a previous answer and indicate clearly the place of that answer in the response document.

Reformulate a comment
Sometimes, a comment might not be clearly formulated by the reviewer or fully understood by the authors. If this happens, do not abstain from giving an answer [9]. First, submit the question to a co-author or other colleague; they may be more perceptive of its hidden meaning. If this attempt fails, the authors may rephrase, but only slightly, the comment and
give it the most adequate answer, for example, “If you mean [comment rephrased], then the answer is . . .” (see also “Authors have not understood the reviewers’ question or query” in the “Never ever tell a reviewer” section.)

Make minor changes without highlighting them

It may happen that a revision reveals a number of grammar or spelling flaws. Obviously, these errors should be corrected, but should they be highlighted? In my opinion, this depends on the number of errors. In case of only a dozen or so errors, scattered throughout the text, authors may choose to highlight them or not. In case of many more errors, it would be better to abstain from “overstaining” the text; highlight added whole sentences but do not let a great number of highlighted words or punctuation marks interfere with fluent reading. In that case, inform the reviewer that the authors have not highlighted a few or all minor changes and corrections.

Conclusion

When giving answers to the questions of a review report, call on knowledge, facts, logic, and some diplomacy, but never on artifice, subterfuge, concealment, or flattery. Respond from the perspective of what a reviewer would want to receive. This reciprocity eases the tasks of all contributors to science production and diffusion (sponsors, researchers, authors, reviewers, editors, etc.) and speeds the process of publication for the benefit of all knowledge providers and knowledge seekers. Finally, if I had to choose a single word as a link between authors and reviewers, I would simply opt for “honesty.”

Conflict of Interest

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Data Availability

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Supplementary Materials

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Get Full Text Research (GetFTR): can it be a good tool for researchers?

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Abstract
Technological advances have been an integral part of discussions related to journal publishing in recent years. This article presents Get Full Text Research (GetFTR), a discovery solution launched by five major publishers: the American Chemical Society, Elsevier, Springer Nature, Taylor & Francis Group, and Wiley. These founding publishers announced the development of this new solution in 2019, and its pilot service was launched just 4 months later. The GetFTR solutions streamlines access to not only open access resources but also to subscription-based resources. The publishers have assured that this solution will be beneficial for all relevant stakeholders involved in the journal publication process, including publishers, researchers, integrators, and libraries. They highlighted that researchers will have the ability to access published articles with minimal effort or steps, benefitting from existing (single sign-on) access technologies, ideally accessing the article PDF with a single click. While GetFTR is free for integrators and researchers, publishers are required to pay an annual subscription fee. To lower the barrier for participation, GetFTR supports smaller publishers by offering them a discount based on the number of digital object identifiers (DOIs), as recorded in Crossref data. While this project appears promising, some initial concerns were raised, particularly regarding user data control, which the project has responded to by more closely engaging the librarian community and by providing further information on how GetFTR supports user privacy.

Keywords
Get Full Text Research (GetFTR); Seamless Access; Digital object identifier; Library link resolver

Introduction

Background and rationale
Four groups of stakeholders—publishers, researchers, research institutions, and funders—work closely together and are intricately interconnected in the journal publishing process. Their collaboration has evolved alongside technological advancements. From Gutenberg’s typeface to the advent of the internet, technological innovations have transformed the way these four groups of stakeholders operate and interact within the realm of journal communica-
tion. Today, information and communications technology (ICT) is considered central to journal communication. Publishers leverage ICT both for business purposes and to assist researchers.

Objective
This article presents a platform known as “Get Full Text Research (GetFTR).” Readers will gain an understanding of what GetFTR is, how it functions for researchers. It also describes various concerns associated with GetFTR and how the project has responded to those concerns.

Initiation of GetFTR
In December 2019, five major publishers, the American Chemical Society, Elsevier, Springer Nature, Taylor & Francis Group, and Wiley, announced their plans to develop a new solution called “Get Full Text Research (GetFTR)” [1]. The pilot program for GetFTR was launched 4 months after this announcement. The publishers asserted that this solution would assist researchers in accessing published journal articles at no cost. The participants in the pilot service are listed below [1].

- Advisory Board: American Society of Civil Engineers, Atypon, Digital Science, Institute of Electrical and Electronics Engineers (IEEE), Mendeley, Silverchair, and Third Iron
- Scholarly platforms and discovery tools: Mendeley, ReadCube Papers, and Dimensions

When GetFTR was initiated in 2019, feedback suggested that the librarian community should have been included in the Advisory Group. In response, three librarians were added to the group in 2020 [2]. Since GetFTR’s inception in 2019, there has been a steady increase in the number of partners. The partners appear to be diverse and actively involved in scholarly communication, as detailed below [2]. Regrettably, no partners from Korea seem to be listed.


What is GetFTR?
GetFTR is a service that provides researchers with direct access to online journal articles, using existing access technologies such as IP-based authentication and federated access, bypassing the need to first log into their institution’s library system [3]. This service is offered free of charge to researchers and integrators, while publishers are required to pay an annual fee [4]. However, it is important to note that researchers typically use GetFTR via an integrated third-party service (such as those listed above) although GetFTR has recently also made available a browser extension that researchers can install themselves [5]. Still, there is a possibility that researchers may not even realize they are using GetFTR, although an integrator’s discovery tool displays the GetFTR indicator. To assist smaller publishers and frequent users, GetFTR offers discounts based on the number of digital object identifiers (DOIs) a journal utilizes [4].

How does GetFTR work for researchers?
GetFTR is very convenient for researchers, as it does not require much from them. A researcher can locate published articles on a discovery tool they typically use, like R Discovery (ResearcherLife), provided that the tool is linked to GetFTR. The GetFTR application programming interface (API) operates behind the scenes [3]. For example, the GetFTR API transmits the researcher’s affiliation and article DOIs to publishers participating in the GetFTR platform [6]. These publishers then verify the researcher’s access, allowing the researcher to directly access full-text articles on the discovery tool, both on and off campus. With a federated authentication process, users can benefit from single-sign on capabilities as provided by e.g., their university library, when they are off campus. Fig. 1 illustrates the streamlined work process of GetFTR [7]. In this process, a discovery tool like R Discovery can assist an author in finding articles of interest [8].

What benefits are expected?
Three types of users are expected to benefit from this service. First, researchers will find it easier access online full-text articles that they are entitled to through e.g., their institutes subscriptions or because they are available open access, published by participating publishers. Second, publishers can enhance the visibility of their published articles and offer an optimally streamlined access experience. By enabling more researchers
to access their journals and articles, they can also boost their brand power as academic journal publishers. The growth in readership will be facilitated by GetFTR, which streamlines the process by which researchers access reading resources [9]. This will reduce the time and effort required by publishers to direct readers to their published articles. Finally, GetFTR will serve as an additional channel for integrators and aggregators to connect researchers with more articles and journal publishers. This free tool will empower integrators and aggregators to enhance their own products [10].

Are there any concerns about how GetFTR works?
At first glance, GetFTR appears flawless, but will it truly be without issues? When GetFTR was launched, librarians have voiced several concerns regarding the operation of GetFTR [11]. The primary concern is the control of user data. questioning if the convenience offered by GetFTR would necessitate some sacrifices on the part of the user [11]. However, GetFTR clarifies that no user information other than DOIs and the user’s organization ID is required for entitlement checks [6]. GetFTR is interoperable with Seamless Access, but the proportion of the library user community utilizing Seamless Access is relatively small [12]. In response to user feedbacks and initial concerns from the library community, GetFTR also supports internet protocol (IP)-based access methods [6]. Another potential hurdle is technical friction, as GetFTR might not be “seamlessly” compatible with a university’s library system, such as the library link resolver [13].

Conclusion
“How will GetFTR evolve?” is an intriguing question. Contemplating the future of GetFTR prompts us to reflect on our work habits and lifestyle changes. For example, remote work has recently become common due to the COVID-19 crisis. Could “remote research” be next? GetFTR could potentially be an effective tool for remote learning, teaching, and research. We cannot discuss GetFTR without addressing the topic of open access. Open access journals now occupy a larger portion of the journal publication sector than ever before. It is projected that by 2025, 44% of journal articles will be published in an open access format, a significant increase from 31% in 2019 [14]. Even the top five funding publishers produce both open access and subscription-based journals. The debate over which format will prevail, open access journals or subscription-based journals, is contentious. However, if it aids researchers’ work, does it really matter which format researchers use?

Conflict of Interest
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The research nexus and Principles of Open Scholarly Infrastructure (POSI): sharing our goal of an open, connected ecosystem of research objects

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Abstract
As a community, it is impossible to ignore the fact that sharing research and information related to research is a much broader proposition than sharing an article, book, or conference paper. In supporting an evolving scholarly record, making connections between research organizations, contributors, actions, and objects helps give a more complete picture of the scholarly record, which open infrastructure organizations like Crossref call the research nexus. Crossref is working to support this evolution and is thinking about the metadata it collects via its members and that it supplements and curates, to make it broader than the rigid structures traditionally provided by content types. Furthermore, because of Crossref’s commitment to the Principles of Open Scholarly Infrastructure (POSI), this network of information will be global and openly available for anyone in the community to access and reuse. The present article describes this vision in more detail, including why it is increasingly important to support the links between research and elements that contribute or are related to that research; how Crossref, its members, and the wider community can support it; and the work and planning Crossref is doing to make it easier to achieve this.

Keywords
Research nexus; Metadata; Principles of Open Scholarly Infrastructure (POSI); Crossref; Identifiers

Introduction

Background
As of July 2023, Crossref holds a metadata store of over 146 million records, containing information and identifiers for journal articles, grants, peer reviews, preprints, and more. This metadata is widely and intensively used by the research community, with over one billion monthly
queries hitting Crossref’s metadata retrieval services, meaning that the information on the records registered by Crossref members disseminates throughout the research ecosystem. This dissemination is also increasingly important as Crossref’s membership is diversifying, extending to more countries and across more types of organizations. For example, universities and research institutions are now Crossref’s largest member type, joining library publishers, scholar publishers, and funders who are also growing in number.

In parallel, open infrastructure and identifiers are being created to help establish more granular persistent links in the research ecosystem. Research Organization Registry (ROR; https://ror.org/) IDs for organizations and grant identifiers are important metadata elements that support funding and publication workflows, in turn showing the reach and return on grants and awards and adherence to funder policies, especially those focused on open science, including open access.

A critical component of providing the infrastructure to support this information, however, is that the community needs to be able to trust that infrastructure and know that the information will be openly available for the long term. This is why Crossref is publicly accountable to the Principles of Open Scholarly Infrastructure (POSI) [1] practices of governance, insurance, and sustainability and is making the commitment to better meeting these practices over time, alongside other like-minded organizations such as Directory of Open Access Journals (DOAJ), Europe PubMed Central (PMC), and Connecting Repositories (CORE) [2].

What Can a Network of Metadata and Relationships Help Achieve?

The research nexus is a vision to which Crossref aspires: a rich and reusable open network of relationships connecting research organizations, people, things, and actions. It provides support for a number of areas that the research community sees as critically important.

Research integrity has long been a focus of what Crossref does, most clearly demonstrated by the Similarity Check service that provides the iThenticate tool alongside a comprehensive database of scholarly content so that Crossref members can check submissions for originality. Beyond this, the metadata registered by Crossref members helps provide signals about the trustworthiness of the work including provenance information, such as who funded it, which people and organizations contributed, whether something was updated or corrected, perhaps with a retraction notice, expression of concern, or additional supplementary materials.

Discoverability has always been at the core of why organizations register content with Crossref. It makes it easier for anyone interested in the research to find it consistently over time, and having a store of rich metadata all in one place makes it easier for the thousands of systems that use Crossref metadata to ingest it and combine it with other data, tools, and services. A researcher might come to search the literature via many different entry points—the Open Researcher and Contributor ID (ORCID) or name of an author or investigator, the funder, the organization, the publication name, or the license a piece of work can be reused under. The research nexus supports making and discovering work via these routes, provided that the relevant metadata has been registered by the member or supplemented by Crossref.

Reproducibility is closely related to research integrity. Providing or adding relationships in the Crossref metadata to link literature, data, software, protocols, and more, can provide transparency and give context to the findings and processes that underpin any research output.

Finally, this network of information can help with reporting and assessment. Organizations such as universities, funders, and governments need to track and demonstrate the outcomes of their investment, show compliance with funder mandates, and inform their strategies such as deciding what other research to fund. This kind of information can and should be included in Crossref metadata to support this work (Fig. 1) [3].

The Importance of POSI

The areas described in the previous section are essential for the research community. The foundations of that information are also necessary, and need to be a shared resource that the community can rely on for the long term or until they are no longer needed. This is why in November 2020 the Crossref Board voted to adopt POSI. This means that Crossref has publicly placed importance on several key areas: governance, sustainability, and insurance. Broad community governance means that an organization is governed in a way that is representative of its membership, so it can be steered in a direction that serves its stakeholders and can respond to the needs of the community. This is especially important as those stakeholders can grow in breadth and diversity over time, as exemplified by funders joining Crossref specifically to register grants.

The organization itself also needs to be resilient. Crossref needs to be sustainable so that it can fulfill its mission and have a contingency fund underpinning it which can be used if needed. For Crossref, the “insurance” principle under POSI means openness. Making sure the metadata is open and the code for Crossref services is increasingly open and forkable means that the community is not “locked-in” if they think that Crossref is not serving their needs and they need to take their work in another direction. An added advantage is that the community
can also contribute to Crossref’s code, cocreating the infrastructure, tools, and services that can be used more broadly. It also means a commitment to transparent operations. Publishing policies, practices, and documentation means that the community can see the details of what Crossref is doing and why. It also means that Crossref publishes its progress towards fulfilling the POSI principles [4] so that the community can see the areas where it still wants to improve.

The POSI principles can also serve as a decision framework for evaluating new projects to work on (e.g., they need to be open source and based on open data), and also new partnerships, prioritizing those with other organizations who publicly commit to POSI.

Projects that Help Achieve the Research Nexus

Crossref has long advocated for its members to provide comprehensive metadata when they register their records, including supporting complementary industry projects like Metadata 2020 and the Initiative for Open Citations (I4OC). However, it is also important that Crossref does its own work to support its members in providing this information and the community in using it. As Crossref outlines in its strategic agenda and roadmap [5], there are a number of existing and upcoming projects that aim to build out the research nexus.

Crossref will continue adoption activities to focus on top metadata adoption priorities: the deposit of references, abstracts, grants, ROR IDs, and data citation. In 2022, Crossref started adding ROR IDs registered in the metadata to its representative state transfer (REST) application programming interface (API) [6]. As of July 2023, Crossref can see over 54,000 records, including grants, journal articles, peer reviews, and preprints that contain a ROR ID. This supports improving the accuracy and potential for reuse of affiliation information related to research, meaning that an institution could more easily come to Crossref to find the outputs produced by its researchers.

In the past, Crossref members were able to choose to keep their references closed, or only make them available to organizations who would pay for that portion of the metadata. The

![Fig. 1. Diagram depicting the relationships of interest groups and Crossref services for realizing the vision of the research nexus. Reused from Hendricks [3], available under the Creative Commons License.](image-url)
POSIX principles only support the generation of revenue via services, not via data. In support of this, Crossref opened all of the reference metadata registered by its members by default [7] so that they can be reused to maximum effect by the community to expose and explore relationships between research, for example how one piece of research has continued or contradicted the work of another, or patterns of citation related to works that have been retracted.

Crossref is also working to develop its metadata model so that it is increasingly clear who is asserting specific pieces of information, for example, where Crossref has made a digital object identifier (DOI) match to an associated record or the member has done so. These assertions could also come from external sources such as when the ROR registry asserts that a funder ID is equivalent to a ROR ID. This more flexible metadata model also aims to make it easier for anyone using the Crossref metadata to query it at a more granular level and via a larger range of entry points. The first test of this model is an early version of a relationships API endpoint [8] that combines event data with citation and relationship metadata from members. It reports whether a connection exists between two metadata records and is key to implementing the research nexus. This will be built out with a greater volume of Crossref metadata over time, and more functionality will be added so that users can use more filters to get the specific subset of information they are interested in, such as citations to related research data or software. Crossref will also undertake a larger project to revisit and expose its matching strategy and functionality, starting with improving how it identifies and provides information on suspected connections between preprints registered with Crossref and associated versions of record on publisher websites.

The metadata that Crossref collects is also key to making the connections. Crossref is working to develop a clear metadata development strategy and gather priorities from the community, as evidenced by a metadata survey conducted among Crossref members in early 2023. To support this, the Crossref Labs group is building a test environment for metadata schema updates so that Crossref members and service providers can test out what metadata updates look like and practice depositing that metadata before it is “live.” This work aims to help the early adoption of new metadata elements as they become available. Finally, Crossref’s main mechanism for metadata retrieval is the Crossref REST API, and improvements to it to ensure metadata can be delivered reliably and at scale are also ongoing.

There are, however, bigger societal challenges than metadata. Research is global in nature, and organizations should not be prevented from participating in the research nexus because of financial constraints. In December 2022, Crossref announced the launch of its Global Equitable Membership (GEM) program [9]. Based on the International Development Association (IDA) list [10] and excluding anywhere Crossref is bound by international sanctions, organizations in countries listed in the GEM program will be eligible to join Crossref and contribute with their metadata to a robust scholarly record at no cost. This program is also applicable to 187 existing Crossref members (as of December 2022) in eligible countries who are no longer charged for their membership or content registration. Crossref aims to grow the adoption of the GEM program so that it can include more of the world’s metadata and support more members in providing it.

**Conclusion**

Research and scholarship continue to exist in a changing ecosystem. One element that is evolving quickly is that funders, institutions, researchers, and providers of tools are services playing a larger role in shaping the policies and practices that accompany the sharing, assessment, and publication of research and objects related to that research. Crossref must help its diverse membership by capturing more provenance, relationships, and identifiers to meet their needs, but also the needs of the wider community. Its systems and metadata schema and infrastructure need to support this as well. Underpinning this is the commitment to POSIX, so that Crossref can continue to be well-guided and sustainable. With a more complete, open, and connected picture of the scholarly record available, everyone will be able to examine the integrity and outcomes of collective efforts to progress science and society.

**Conflict of Interest**

Rachael Lammy is the Director of Product at Crossref. No other potential conflict of interest relevant to this article was reported.

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**Data Availability**

Data sharing is not applicable to this article as no new data were created or analyzed in this study.
Supplementary Materials

The author did not provide any supplementary materials for this work.

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Book Review

The *AMA Manual of Style*, 11th edition: the ultimate guide to scholarly publishing in the digital age

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Infolumi, Seongnam, Korea

Product Information:
- Title: AMA Manual of Style: A Guide for Authors and Editors
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- Price: £69.00

The *AMA Manual of Style* is a comprehensive guide for authors, editors, and publishers in the fields of medicine and science. It is published by the American Medical Association (AMA). Several academic style guides are used for different academic fields, and the *AMA Manual of Style* contains guidelines specifically for the fields of medicine and biomedical sciences. Nonetheless, its contents cover an unrivaled range and depth compared to other manuals or style guides, making it a useful reference standard for other academic fields, as well as having a significant influence on many prominent international publishing houses.

The manual covers various types of manuscripts and writing rules. It discusses all aspects of publishing, including manuscript preparation, citation and reference formatting, and text and table composition, as well as manuscript review and publishing. It also covers essential topics in science communication, such as ethical considerations, privacy, and copyright issues. Authors can use the manual to prepare and submit their manuscripts, while editors can use it to edit and format texts and references according to the rules. Publishers can use the manual to improve the quality of their publications, comply with writing rules, and produce publications that are beneficial to the medical and scientific communities.

The first edition of the *AMA Manual of Style* was published in 1962 [1]. Since then, it has undergone several revisions to keep up with the rapidly changing world of science and tech-
The most recent edition of the manual, the 11th edition [2], was published in 2020 and includes significant updates and revisions from the previous edition.

One of the most notable changes in the 11th edition is the inclusion of new sections on data sharing and reproducibility. These sections emphasize the importance of making research data openly available and reproducible, in order to promote transparency and scientific progress. The manual provides guidance on how to cite data sets and repositories and encourages authors to make their data available through trusted repositories whenever possible.

Another important update in the 11th edition is the expanded coverage of ethical considerations in research and publication. The manual includes detailed guidelines on issues such as informed consent, conflicts of interest, and publication ethics, and it provides practical advice on how to navigate these complex issues. The manual also includes a new section on research involving human subjects, which provides detailed guidance on how to design, conduct, and report studies in accordance with ethical principles.

The 11th edition also includes updated guidance on the use of gender- and value-neutral language in medical and scientific writing. The manual provides examples of how to use gender-neutral language, including recommendations for using gender-neutral pronouns (such as “they” or “singular they”) when referring to individuals whose gender is unknown or irrelevant. It also recommends avoiding socioeconomic, ethnic, and genetic “labeling” in various contexts and provides several examples of how to do so. This guidance reflects a growing awareness of the importance of inclusive language in scientific communication, and the need to avoid reinforcing gender stereotypes or marginalizing certain groups.

From the perspective of an editor who deals with and edits manuscripts, there are some noticeable changes. These include minor changes such as using a space between the unit for degrees Celsius (°C) and the preceding number, and no longer requiring location information along with the publisher in the references list or for manufacturers of products mentioned in the main text. In addition, while the AMA style previously avoided citing references with unclear bibliographic information, it now allows a wide range of references from various media, including electronic and online sources; the manual has greatly expanded its guidance on citation formats for these references. For editors of academic journals who take a somewhat conservative approach to the reference type the authors cite, this may be a point to consider regarding potential policy changes.

Furthermore, a new concept called “retraction and replacement” has been introduced as a method for handling corrections and errors to previously published studies, which is a topic of interest to editors who need to address modifications made to academic articles. This concept involves retracting the article and replacing it with a modified version if there are “pervasive errors” due to “honest” mistakes that do not compromise the scientific integrity or conclusions of the study. The point to note is that along with the replaced version, both the precorrection version with the errors highlighted and the post-correction version with the modifications highlighted should be provided as supplementary material.

Overall, the 11th edition of the *AMA Manual of Style* reflects the rapidly evolving landscape of scientific communication and the need for clear and transparent reporting of research. If the reader’s academic journal is based on this manual or at least references it, there is no reason to hesitate to review the updated guidelines in this recent edition and apply them to the reader’s journal.

**Conflict of Interest**

No potential conflict of interest relevant to this article was reported.

**Funding**

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**Data Availability**

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

**Supplementary Materials**

The author did not provide any supplementary materials for this work.

**References**

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The corresponding author must inform the editor of any potential conflicts of interest that could influence the authors' interpretation of the data. Examples of potential conflicts of interest are financial support from or connections to companies, political pressure from interest groups, and academically related issues. In particular, all sources of funding applicable to the study should be explicitly stated.

5. Statement of human and animal right
Clinical research should be done in accordance of the Ethical Principles for Medical Research Involving Human Subjects, outlined in the Helsinki Declaration of 1975 (revised 2013), available from: https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/. Clinical studies that do not meet the Helsinki Declaration will not be considered for publication. Human subjects should not be identifiable, such that patients' names, initials, hospital numbers, dates of birth, or other protected health-care information should not be disclosed. For animal subjects, research should be performed based on the National or Institutional Guide for the Care and Use of Laboratory Animals, and the ethical treatment of all experimental animals should be maintained.

6. Statement of informed consent and institutional review board approval
Copies of written informed consent documents should be kept for studies on human subjects, which includes identifiable information or sensitive information. For clinical studies of human subjects, a certificate, agreement, or approval by the Institutional Review Board (IRB) of the author's institution is required. If necessary, the editor or reviewers may request copies of these documents to resolve questions about IRB approval and study conduct.

7. Process for managing research and publication misconduct
When the journal faces suspected cases of research and publication misconduct such as redundant (duplicate) publication, plagiarism, fraudulent or fabricated data, changes in authorship, an undisclosed conflict of interest, ethical problems with a submitted manuscript, a reviewer who has appropriated an author's idea or data, complaints against editors, and so on, the resolution process will follow the flowchart provided by the Committee on Publication Ethics (http://publication-ethics.org/resources/flowcharts). The discussion and decision on the suspected cases are carried out by the Editorial Board.

8. Process for handling cases requiring corrections, retractions, and editorial expressions of concern
Cases that require editorial expressions of concern or retractions shall follow the COPE flowcharts available from: http://publicationethics.org/resources/flowcharts. If correction needs, it will follow the ICMJE Recommendation for Corrections, Retractions, Republications and Version Control available from: http://www.icmje.org/recommendations/browse/publishing-and-editorial-issues/corrections-and-version-control.html as follows:

Honest errors are a part of science and publishing and require publication of a correction when they are detected. Corrections are needed for errors of fact. Minimum standards are as follows: First, it shall publish a correction notice as soon as possible detailing changes from and citing the original publication on both an electronic and numbered print page that is included in an electronic or a print Table of Contents to ensure proper indexing; Second, it shall post a new article version with details of the changes from the original version and the date(s) on which the changes were made through Crossmark; Third, it shall archive all prior versions of the article. This archive can be either directly accessible to readers; and Fourth, previous electronic versions shall prominently note that there are more recent versions of the article via Crossmark.

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The Editorial Board will continuously work to monitor and safeguard publication ethics; guidelines for retracting articles; maintenance of the integrity of the academic record; preclusion of business needs from compromising intellectual and ethical standards; publishing corrections, clarifications, retractions, and apologies when needed; and excluding plagiarism and fraudulent data. The editors maintain the following responsibilities: responsibility and authority to reject and accept articles; avoiding any conflict of interest with respect to articles they reject or accept; promoting publication of corrections or retractions when errors are found; and preservation of the anonymity of reviewers.

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1. Author qualifications
Any researcher throughout the world can submit a manuscript if the scope of the manuscript is appropriate.
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Manuscripts should be submitted in good scientific English.

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Research reports frequently omit important information. As such, reporting guidelines have been developed for a number of study designs that some journals may ask authors to follow. Authors are encouraged to also consult the reporting guidelines relevant to their specific research design. A good source of reporting guidelines is the EQUATOR Network (http://www.equator-network.org/home/) and the United States National Institutes of Health/National Library of Medicine (http://www.nlm.nih.gov/services/research_report_guide.html).

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1. Submission
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1. General requirements
- The main document with manuscript text and tables should be prepared in an Microsoft Word (docx) or RTF file format.
- The manuscript should be double spaced on 21.6 × 27.9 cm (letter size) or 21.0 × 29.7 cm (A4) paper with 3.0 cm margins at the top, bottom, right, and left margin.
- All manuscript pages are to be numbered at the bottom consecutively, beginning with the abstract as page 1. Neither the author’s names nor their affiliations should appear on the manuscript pages.
- The authors should express all measurements according to International System (SI) units with some exceptions such as seconds, mmHg, or °C.
- Only standard abbreviations should be used. Abbreviations should be avoided in the title of the manuscript. Abbreviations should be spelled out when first used in the text—for example, extensible markup language (XML)—and the use of abbreviations should be kept to a minimum.
- The names and locations (city, state, and country only) of manufacturers should be given.
- When quoting from other sources, a reference number should be cited after the author’s name or at the end of the quotation.

Manuscript preparation is different according to the publication type, including original articles, reviews, case studies, essays, training materials, editorials, book reviews, correspondence, and video clips. Other types are also negotiable with the Editorial Board.

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Original articles are reports of basic investigations. The manuscript for an original article should be organized in the following sequence: title page, abstract and keywords, main text (introduction, methods, results, and discussion), conflict of interest, acknowledgments, references, tables, figure legends, and figures. The figures should be received as separate files. Maximum length: 2,500 words of text (not including the ab-
abstract, tables, figures, and references) with no more than a total of 10 tables and/or figures.

- **Title page:** The following items should be included on the title page: (1) the title of the manuscript, (2) author list, (3) each author's affiliation, (4) the name and email address of the corresponding author, (5) when applicable, the source of any research funding and a list of where and when the study has been presented in part elsewhere, and (6) a running title of fewer than 50 characters.

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- **Acknowledgments:** All persons who have made substantial contributions, but who have not met the criteria for authorship, are to be acknowledged here. All sources of funding applicable to the study should be stated here explicitly.

- **Appendix:** If any materials are not enough to be included in the main text such as questionnaires, they can be listed in the Appendix.

- **Supplementary materials:** If there are any supplementary materials to help the understanding of readers or too great amount data to be included in the main text, it may be placed as supplementary data. Not only text, audio or video files, but also data files should be added here.

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### Journal articles:


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Conference papers:
8. Shell ER. Sex and the scientific publisher: how journals and journalists collude (despite their best intentions) to mislead the public. Paper presented at: 2011 CrossRef Annual Member Meeting; 2011 Nov 14-15; Cambridge, MA, USA.

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Case studies are intended to report practical cases that can be encountered during editing and publishing. Examples include interesting cases of research misconduct and publication ethics violations; experience of new and creative initiatives in publishing; and the history of a specific journal development. They are to be organized as follows: title page, abstract and keywords, main text (introduction, text, and conclusion), conflict interest, acknowledgments, references, tables, figure legends, and figures. There should be an unstructured abstract of 200 words maximum. The length of the text excluding references, tables, and figures should not exceed 2,500 words. The number of references is limited to 20.

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Essays are for the dissemination of the experience and ideas of editors for colleague editors. There is no limitation on the topics if they are related to editing or publishing. They are to be organized as follows: title page, main text (introduction, text, and conclusion), conflict interest, acknowledgments, references, tables, figure legends, and figures. The length of the text excluding references, tables, and figures should not exceed 2,500 words. The number of references is limited to 20.

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Training materials are for training editors or publishers. If there are new standards, policies, technologies, guidelines or trends, they can be submitted for training editors or publishers. It may be unsolicited or commissioned. This publication type will be able to provide the practical information for the journal advancement. They are to be organized as follows: title page, abstract and keywords, main text (introduction, text, and conclusion), conflict interest, acknowledgments, references, tables, figure legends, and figures. There should be an unstructured abstract of 200 words maximum. The length of the text excluding references, tables, and figures should not exceed 2,500 words. The number of references is limited to 20.
7. Editorials
Editorials are invited by the editor and should be commentaries on articles published recently in the journal. Editorial topics could include active areas of research, fresh insights, and debates in all fields of journal publication. Editorials should not exceed 1,000 words, excluding references, tables, and figures. References should not exceed 10. A maximum of 3 figures including tables is allowed.

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9. Correspondence
Correspondence (letters to the editor) may be in response to a published article, or a short, free-standing piece expressing an opinion. Correspondence should be no longer than 1,000 words of text and 10 references.

In reply: If the Correspondence is in response to a published article, the Editor-in-Chief may choose to invite the article’s authors to write a Correspondence Reply. Replies by authors should not exceed 500 words of text and 5 references.

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Video clips can be submitted for placement on the journal website. All videos are subject to peer review and must be sent directly to the editor by email. A video file submitted for consideration for publication should be in complete and final format and at as high a resolution as possible. Any editing of the video will be the responsibility of the author. Science Editing accepts all kinds of video files not exceeding 30 MB and of less than 5 minutes duration, but Quicktime, AVI, MPEG, MP4, and RealMedia file formats are recommended. A legend to accompany the video should be double-spaced in a separate file. All copyrights for video files after acceptance of the main article are automatically transferred to Science Editing.

11. Commissioned or unsolicited manuscripts
Unsolicited manuscript with publication types of original articles, case studies, essays, training materials, video clips, and correspondence can be submitted. Other publication types are all commissioned or invited by the Editorial Board.

Table 1. Recommended maximums for articles submitted to Science Editing

<table>
<thead>
<tr>
<th>Type of article</th>
<th>Abstract (word)</th>
<th>Text (word)</th>
<th>References</th>
<th>Tables &amp; figures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original article</td>
<td>250</td>
<td>2,500</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Review</td>
<td>200</td>
<td>5,000</td>
<td>100</td>
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<td>200</td>
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<td>Training material</td>
<td>200</td>
<td>2,500</td>
<td>20</td>
<td>10</td>
</tr>
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<td>Essay</td>
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<td>20</td>
<td>10</td>
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<td>No</td>
<td>1,000</td>
<td>10</td>
<td>3</td>
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<td>10</td>
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<td>Correspondence</td>
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<td>-</td>
<td>1,000</td>
<td>10</td>
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<td>Letter to the editor</td>
<td>-</td>
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<td>3</td>
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<td>In reply</td>
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<td>3</td>
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<tr>
<td>Video clip</td>
<td>No</td>
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Maximum number of words is exclusive of the abstract, references, tables, and figure legends.

7. Final preparation for publication

1. Final version
After the paper has been accepted for publication, the author(s) should submit the final version of the manuscript. The names and affiliations of the authors should be double-checked, and if the originally submitted image files were of poor resolution, higher resolution image files should be submitted at this time. Color images must be created as CMYK files. The electronic original should be sent with appropriate labeling and arrows. The EPS, TIFF, Adobe Photoshop (PSD), JPEG, and PPT formats are preferred for submission of digital files of photographic images. Symbols (e.g., circles, triangles, squares), letters (e.g., words, abbreviations), and numbers should be large enough to be legible on reduction to the journal’s column widths. All of the symbols must be defined in the figure caption. If the symbols are too complex to appear in the caption, they should appear on the illustration itself, within the area of the graph or diagram, not to the side. If references, tables, or figures are moved, added, or deleted during the revision process, they should be renumbered to reflect such changes so that all tables, references, and figures are cited in numeric order.

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NOTICE: The revised instructions for authors are implemented starting from the February 2019 issue.
Compliance of *Science Editing* to the principles of transparency and best practice in scholarly publishing

(joint statement by COPE, DOAJ, WAME, and OASPA; http://doaj.org/bestpractice)

Posted on July 7, 2018; Printed on February 20, 2019; Revised on February 20, 2023

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      Administrative Manager
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