Perspectives from a publishing ethics and research integrity team for required improvements

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Abstract

It is imperative that all stakeholders within the research ecosystem take responsibility to improve research integrity and reliability of published research. Based on the unique experiences of a specialist publishing ethics and research integrity team within a major publisher, this article provides insights into the observed trends of misconduct and how those have evolved over time, and addresses key actions needed to improve the interface between researchers, funders, institutions and publishers to collectively improve research integrity on a global scale.

Keywords: Research integrity; Publishing ethics; Training; Education

1 Introduction

When research integrity is compromised, the perceived reliability of science and other types of scholarly work is undermined, and we all suffer as a consequence. In recent years there has been increased focus on research integrity, the limited reproducibility and replicability of research (Munafò et al., 2017), the “pressure to publish” culture that can drive unethical behaviours (COPE & STM, 2022; Gopalakrishna et al., 2022), insufficient research ethics and integrity training, and required investment to embed research rigour (Koroshetz et al., 2020). The responsiveness and efficiency of journals in dealing with integrity concerns about submitted or published content is also much debated, and there is a higher level of engagement and scrutiny from all types of consumers of scholarly publications, leading to increased detection of errors, misconduct and the possible causes behind

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those (Fanelli et al., 2022; Parker et al., 2022).

As publishers of research, much of which directly impacts human health and progress, we take this responsibility seriously. This article aims to provide a publisher perspective, specifically based on the experience and insights of a specialist publishing ethics and research integrity team, on observed trends in misconduct over several years, and on what collaborations are needed between researchers, funders, institutions and publishers to collectively improve research integrity at a global scale.

Editorial policies which keep pace with how research and technologies are evolving, a commitment to uphold publishing ethics standards, and engaging with research communities to inform and develop training needs and methods, are some of the core ways publishers and editors can achieve this.

2 Why correcting the scholarly record is crucial

Whether critical flaws in published work have arisen due to honest mistakes or intentional misconduct, it’s imperative for the scholarly record to be corrected after careful and appropriate investigation. Most scholarly publishers follow COPE guidelines (COPE, 2019) for this, which ensures a consistency of practice where Retractions, Expression of Concern or a Correction notice is necessary. This information is also transmitted via metadata so that indexers can update the information on their databases, ensuring that readers will be alerted to the update across multiple platforms.

This is particularly vital, because when researchers design their ongoing research around, or cite retracted research without being aware of its retracted status, this propagates the spread of flawed research and wastes resources. The RISRS project (Reducing the Inadvertent Spread of Retracted Science) (Schneider et al., 2022) is providing recommendations on stopping the inadvertent spread of retracted research, as well as improving retraction taxonomies and processes.

3 Publishing Ethics and Research Integrity-Publisher responsibilities

Publishers are in a unique and privileged position to work with researchers from all over the globe and in different roles (e.g., editors, authors, peer reviewers, and advisors) across many different disciplines and types of research. This means we continuously test and refine our editorial policies and engagement around publishing ethics to ensure it keeps pace with how research is evolving and how researchers’ needs vary by region and discipline.

We are responsible for ensuring that we disseminate ethically conducted research
which is accurately reported and does not pose a risk of harm. This is why to ensure transparency, we require key declarations to be included (e.g., ethical approval, informed consent, competing interests, funding, etc) (Taylor & Francis Editorial Policies). Some journals and publishing platforms such as F1000Research go even further by requesting that the original data underlying the reported results is also made available (F1000Research Publishing Policies).

Publishers are responsible for driving and establishing coherent publishing ethics guidelines, and for ensuring the consistent application of these. Much of this is informed by the different and evolving types of misconduct we deal with, which can arise due to sub-optimal education and awareness of publishing ethics and research integrity standards (Mayyas & Alzoubi, 2022) or due to deliberate misconduct, including systematically organised fraud driven by paper mills (Abalkina, 2021; Bik et al., 2016). With generative AI technologies becoming more available (e.g., large language models like ChatGPT), editors and publishing ethics specialists have been adapting policies to stipulate that the use of any such technology needs to be transparent and clearly acknowledged, and this is an example of how evolving issues require continuous assessment to clarify the boundaries of responsible behaviours.

Publishers serve the research community by embedding systems and processes to ensure the entire body of work we publish can be relied upon. With increasing concerns about systematic manipulation of the publishing process, recurring academic misconduct, and the necessity to monitor trends across multiple articles and journals, publishers are increasingly investing in defence and detection mechanisms. For these reasons, it is becoming more common for investigations to be driven by publishers, rather than individual editors.

At Taylor and Francis, the Publishing Ethics and Research Integrity (hereafter, Ethics team) team works with journals across all disciplines to develop and embed key editorial policies, as well as to investigate and resolve complex ethics and integrity issues which arise at any stage of the submission, review, publication and post-publication process, across all of our journals. While the journal editorial teams can handle straightforward ethics cases on their journals directly, when it becomes more complex or sensitive in nature, these are escalated to the Ethics team so that we can maintain oversight on the trends in ethics and integrity case types, monitor and report how and where these arise and evolve, and most importantly to ensure a consistent and objective approach to investigations and resolutions is maintained. Education and training are also a core focus for the team, as we can apply our ongoing experiences and observations into author workshops, as well as editor training and resources.

The Ethics team at Taylor and Francis, has been in place from 2017, and since then
we have experienced a sharp increase in cases, which often includes concerns such as duplicate submissions/publication, problems with reuse of third-party content, concerns regarding competing interests and concerns regarding research ethics. However, the top three recurring case types are data and/or image integrity concerns, authorship issues (including disputes), and plagiarism (primarily text plagiarism).

Figure 1 shows how the trends of the top three case types have changed between 2017-2022. In particular, data integrity cases (which includes image integrity) have increased by 20% between 2017 and 2022. This substantial increase in volume also includes increased complexities as data integrity issues are not always due to fraud, but can also occur due to data mismanagement or disputes over data ownership. There has been a reduction in standard plagiarism and authorship ethics cases escalated to the team since 2019 due to the implementation of internal ethics training, resources and detection tools so these can be identified and resolved earlier on, therefore not requiring escalation to the Ethics team. However, misconduct methods involving plagiarism and authorship issues have evolved over time, and so even though the total number of cases has reduced, the complexity of these has increased which therefore requires more detailed investigations.

Figure 1. Percentage of top three recurring case types handled by the Publishing Ethics and Research Integrity team at Taylor and Francis between 2017-2022. Data integrity (including image integrity) cases comprised over 26% of total cases in 2022. There has been a reduction in standard plagiarism and authorship cases escalated to the team since 2019 due to the implementation of internal ethics training and detection tools, but the cases have increased in complexity. Note, this data does not include case investigations on paper mills as a single paper mill case involves multiple types of integrity issues.
Overall, the total number of cases handled by the Ethics team has grown substantially every year (Figure 2) and between 2019 to 2022, approximately 25% of those cases involved data and/or image integrity concerns which were mostly the result of deliberate misconduct. This increased detection is partly due to being alerted to articles of concern by whistleblowers and ‘data sleuths’, our investigations into paper mills which have become an increasingly common case type since 2020, as well as our enhanced checks to detect attempts to manipulate the peer review and publishing process. In turn, this is leading to a sharp increase in retractions, as shown in Figure 3 for Taylor and Francis journals (including Dove Press), and reported elsewhere (Candal-Pedreire, et al., 2022). This is a trend we expect to continue as publishers become more adept at detecting misconduct, collaborating with other stakeholders, and helping to develop technology for detection at scale (Else, 2022).

![Figure 2](image)

**Figure 2.** Total number of ethics cases involving articles at published or unpublished stages, handled by the Publishing Ethics and Research Integrity team at Taylor and Francis between 2017-2022. Dark blue bars show standard ethics cases involving published articles; light blue bars show standard ethics cases involving unpublished articles; dark orange bars show paper mill ethics cases involving published articles; light orange bars show paper mill ethics cases involving unpublished articles.

### 4 Insights on how the Ethics team deals with research integrity and publishing ethics issues

In the Economist, 2023 (The Economist, 2023), it was stated that there is a “worrying unwillingness to do anything” about fraud in medical research by journals and publishers. In our experience, publishers are not sitting back. We are receiving a high volume of concerns from multiple directions, which must all be handled in a consistent and appropriate way in line with publisher policies and established industry practices.
When handling an allegation of misconduct, we must ensure investigations are handled comprehensively, confidentially and with caution. In Table 1, we have outlined some of the key principles of conduct for our team which we follow to ensure the findings of the investigation are fair and valid.

Table 1. Principles followed by the Ethics team when handling an ethics investigation.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
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<tbody>
<tr>
<td>Assessment</td>
<td>Assess the allegation on the merit of the concerns raised- what evidence is there, how does this impact the article? Are there competing interests?</td>
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<tr>
<td>Due diligence</td>
<td>Ensure appropriate due diligence at every step.</td>
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<tr>
<td>Objective</td>
<td>Make no assumptions- approach any investigation with an open mind.</td>
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<tr>
<td>Care &amp; attention</td>
<td>Ensure that any allegation is taken seriously; any documentation or correspondence must be handled carefully.</td>
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<tr>
<td>Timeliness</td>
<td>Ensure actions are taken in a timely way, with clear expectations about deadlines, and a process to monitor those.</td>
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<tr>
<td>Confidential</td>
<td>Ensure any sensitive information during an investigation remains confidential and is not shared with any third parties (including complainants), as premature sharing of sensitive information can compromise the process.</td>
</tr>
<tr>
<td>Professional tone</td>
<td>Ensure all correspondence remains professional and respectful, even when being on the receiving end of unprofessional correspondence.</td>
</tr>
<tr>
<td>Right of reply</td>
<td>Where possible, ensure that individuals are given an appropriate amount of time to reply to any concerns.</td>
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<tr>
<td>Anonymity</td>
<td>Where complaints are made by people who do not wish to reveal their identity, efforts must be made to keep them anonymous. Similarly, anonymity for additional reviewers (which may even be after an article has been published) must be assured, unless they consented to be identified.</td>
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With the rise in systematic manipulation of the publishing process, we must conduct due diligence at all levels. Whilst complainants, whistleblowers and data sleuths provide an invaluable service in identifying concerns, they may have their own implicit biases, be it a previous relationship with that author, or assumptions about how research is conducted in a particular region. Editors can have their own competing interests too, and sometimes, as a result, this means that publishers must lead investigations to ensure objectivity is always applied.

Many authors are not aware that concerns can emerge years after an article is published, and some authors may move institutions within that time, which may lead to additional requests being made to institutions for the required files. Therefore, while it may appear externally that there is inaction to resolve a concern, behind the scenes, work is often underway by multiple parties to collate and review the required information.

Requesting assistance from institutions in investigations can have mixed results, ranging from institutions who are actively engaged, versus those who remain silent, or where serious conflicts of interest exist because the researcher under investigation is a member of their own ethics committee or investigatory panel. More work needs to be done across all stakeholders to improve the investigation process and any resulting consequences.

5 Transparency, training, and technology – key factors for improving trust

5.1 Strengthening content verification, validation, and reproducibility

Even though digital/online publishing is now the norm, the way that research is reported is still heavily influenced by traditions around word limit restrictions. While editorial decisions often focus on novelty, equal weight should also be consistently given to assessing the standards of reporting of the research and verification of analysis and data. In the experience of the Ethics team at Taylor and Francis, the increase in data integrity cases is due to a number of reasons, including sub-optimal sharing of detailed methodologies, limited infrastructure to support data sharing practices and verification of that data, and exploitation of publishing needs via generation of fraudulent content which is then included in submissions.

Verifying the integrity of research is an important responsibility for journals, but this is largely dependent on detailed information being available about the protocols, methods, underlying data, analysis, as well as recruiting the experts (i.e., editors, statistical editors and peer reviewers) with appropriate expertise to assess it. Without this verification step, it can lead to the publication of potentially flawed and
irreproducible research. Also, inadequate description of all the experimental conditions (e.g., animal care, specifics of reagents, method of obtaining informed consent, etc) means other researchers can’t fully replicate the conditions. As researchers who have failed to replicate another group’s work, or have achieved a null result, are less likely to publish their work, the reasons for the irreproducible work are left unexplored. Distinguishing between irreproducible research because of experimental flaws versus research that couldn’t be replicated due to different experimental conditions is an important distinction to make.

Enhancing research integrity and reproducibility via publications can be supported by providing various pathways to disseminate all supporting information related to a piece of research. This can range from data management and sharing (according to FAIR principles (Wilkinson et al., 2016)), registration of clinical trials, detailed reporting and cross-linking of protocols and methods, registered reports, and giving equal priority to the publication of null or negative findings and successfully replicated research. However, incentives for researchers to adopt these practices must be driven by institutions and funders, and publishers should provide the services to enable this, as proposed in the Hong Kong Principles for assessing researchers (Moher, et al., 2020).

5.2 Removing the stigma for honest authors of being associated with retracted research

As discussed above, publishers aim to ensure the integrity of the scholarly record and correct this where necessary. For this reason, sometimes retraction is necessary, but this is not done to punish or shame the authors- it is to maintain the self-correcting process of scholarly literature in a transparent way (COPE, 2019). Where honest error is the cause of the issue, authors should be encouraged and supported to request correction or retraction (as appropriate).

However, a barrier to this is the stigma connected to retracted articles. In our line of work, we receive feedback from authors who may suffer serious negative career consequences for being associated with retracted articles, even when they are the ones who requested retraction due to honest error on their part. Removing the stigma of retraction should be an aim for all stakeholders, as we need to encourage more researchers to flag their own published work if concerns are found. Another mechanism for this is via iterative publishing models like F1000Research, where appropriate corrections (i.e., where misconduct is not a concern) can be made by publishing new versions of articles which can then overlay the previous versions, while keeping all existing versions linked together.

Engaging with researchers and institutions to foster a culture of self-correction
and actively communicating with research integrity officers at institutions to ensure we are aware of different cultural and semantic issues will help to inform how we need to adapt retraction processes to ensure full credit is very clearly sign-posted where rejections are instigated by the authors. More also needs to be done to be able to distinguish between rejections which occur due to honest error, versus rejections which occur due to deliberate misconduct (e.g., manipulated or fake data, plagiarism, etc). This could be addressed via a consensus-based approach involving all key stakeholders (COPE, publishers, institutions, funders, and indexers) to determine how technology, as well as language /titles of the retraction notices, needs to be developed.

### 5.3 Training and education – establishing a feedback loop and interlinking training needs

Publishers engage with researchers at multiple levels (as editors, reviewers, and authors), and so play a core role in providing training and support on publishing ethics, peer review, and working with research communities to keep up with evolving needs (e.g., data sharing practices, research ethics, open research, etc). As research technologies and collaboration styles evolve, so too must publishing practices and options.

For training programmes on research integrity and the publishing process to be effective, we need a better mechanism for feedback to flow more openly between researchers, institutions, funders and publishers. The Ethics team conduct regular researcher webinars and workshops focused on research integrity and publishing ethics. In 2022 we delivered 26 webinars reaching over 40,000 researchers, and in our interactions with attendees from across the globe we see common trends in misunderstanding or lack of awareness regarding key principles - e.g., what constitutes plagiarism, why duplicate submission/publication is not allowed, why criteria for authorship is important, what the roles and responsibilities of authorship pre- and post- publication are, as well as queries about data-sharing practices. We also need to work together to introduce education on these topics at an early stage of the researcher’s career, so that common types of misconduct, which can occur due to lack of awareness or sub-optimal training can be avoided.

Various studies have been published on training and education in research integrity, but recent findings confirm this is currently sub-optimal (Bain et al., 2022; Bairi et al., 2022; Chua et al., 2022; Han et al., 2023; Schroter et al., 2018), and our own experience confirms this. Misconduct like citation malpractice can also arise due to coercion by peer reviewers or editors (Fong et al., 2023), which highlights the importance of including publishing ethics training for all stakeholders.
Understanding each other’s processes and practices is necessary so we can work together to address these issues. In particular, close collaborations between institutions, publishers and funders will go a long way in improving our joint efforts to provide training and support on research integrity for researchers at all stages of their careers. The CLUE guidelines (Wager & Kleinert, 2021) and recent recommendations from a working group comprised of publishers, journal editors and US-based research integrity officers (Garfinkel et al., 2023) make important strides towards this.

5.4 Technological solutions, responsible use of metrics and information sharing across stakeholders

Rewards and recognition are key drivers for research integrity and publishing ethics compliance. What trust markers or contributions do researchers require publishers to display to help showcase the quality of their work? What do institutions and indexers want to see in journals?

Working together to understand stakeholder needs will ensure that rewards and recognition can filter through and be captured via various publishing-related activities (e.g., editing, peer reviewing, and authoring) and informative article- or researcher-level metrics, so that contributions can be measured across all stakeholders and can be displayed via persistent unique IDs such as ORCID.

Verification of identities, affiliations and funding is also essential, as many fraudulent practices involve identity theft of legitimate researchers, in order to gain trust or gift authorship in order to gain favour. Establishing a mechanism to verify author and funding information, requires a technical solution within submission systems so that checks can be conducted consistently and across multiple journals.

A typical biomedical article can contain 20+ images, which can be falsified, manipulated, or reused multiple times on unrelated articles. Citing valid sources is also a concern, not only because it’s important to check if these are retracted, but also because paper mills are known to manipulate references by ‘citation farming’, i.e., ensuring their articles are also cited in new articles they submit. Detecting these signals consistently requires technological solutions, which are interoperable as well as reliable. There are already various tools available for this, but all require further development.

Another area to consider is where new technologies emerge to generate content (e.g., large language models like ChatGPT), not only do the boundaries of publishing ethics need to be considered, so too must the methods of detection.

Spotting signals and trends across multiple journals and publishers is an increasing necessity, but for this to work, legal issues need to be addressed, any solutions need
to be intuitive and scalable, systems and technology need to be interoperable, and the process needs to be cost- and time-effective. Some of this is currently being developed within the STM Integrity Hub in collaboration with publishers (STM Association, 2023).

6 Conclusions

Based on our experiences in a specialist publishing ethics and research integrity function, we argue that it is the collective responsibility of all stakeholders to prevent all forms of research integrity misconduct, to play our part in developing incentives and rewards to encourage responsible behaviours, to increase and enhance opportunities for education on publishing ethics globally, and to work across the ecosystem to develop a consistent set of standards for ensuring research integrity via the publication process. Data integrity cases have been increasing due to a combination of factors which can be driven by fraud or data mismanagement and disputes, and so improving cross-stakeholder training and education on responsible data handling and sharing practices is of increasing importance. Technological solutions play a crucial role and all stakeholders, especially funders and publishers, should invest in this. Improving research integrity to foster and incentivise good practice, relies on having appropriate incentives, responsible use of metrics, and all key stakeholders having a mechanism in place to measure progress and efficacy.

Acknowledgements

We would like to thank our colleagues, Rebecca Barber for providing Figure 1 and Figure 2, and Jason Hu for helpful comments on the draft.

Author Contributions

Sabina Alam (Sabina.alam@tandf.co.uk) and Laura Wilson (Laura.Wilson@tandf.co.uk) contributed equally in conceptualisation, drafting, data interpretation, reviewing, and finalising.

Competing Interests

The authors are employees of Taylor and Francis.

Data availability

The data in Figure 1, Figure 2 and Figure 3 are derived from the Publishing Ethics and Research Integrity team case tracker. Due to the sensitive nature, the underlying
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