

ISSUES OF AUTHORSHIP THREATENING RESEARCH INTEGRITY: POINTERS FOR ETHICAL PUBLICATION PRACTICES

R. Albertyn

Department of Curriculum Studies / Stellenbosch Business School

Stellenbosch University

Stellenbosch, South Africa

<https://orcid.org/0000-0002-3022-5409>

ABSTRACT

Publication imperatives have insidious consequences resulting in academic misconduct and “ghostly” authorship practices. If not exposed, these behaviours threaten research integrity and credibility in higher education. This article explores the systemic forces spawning gaming practices regarding the incentives in the neoliberal era and the implications for science. An investigation of ethical publication practice information was conducted by analysing the author guidelines of the 163 journals where academics in the largest faculty at a research-intensive university published articles in 2022. Findings reveal the issues where guidelines are not consistently clear and information not easily accessible. Guidelines for ethical publication practices regarding journal guidelines for authors, collegial discussion, research integrity education, and author support could contribute to constructively navigating the pressures associated with ethical publication.

Keywords: academic misconduct, professional writers, ghostwriting, authorship, research integrity, publication.

INTRODUCTION

Academic misconduct is a reality despite increased debate about research integrity in higher education (Barde, Peiffer-Smadja and De la Blanchardière 2020). The more blatant forms of misconduct, such as unethical research practice, plagiarism and ghostwriting, are well known and appropriately sanctioned (Hass 2022; Mahomed, Mackraj and Blewett 2023; Matheson 2023; Oravec 2019). But what about those prevalent insidious forms of misconduct, such as authorship and publication ethics within the competitive neoliberal context, that are seldom discussed?

Concerns about the loss of integrity of science have serious implications for higher education (HE). Universities should therefore take all forms of misconduct seriously and eliminate it wherever possible (Singh and Remenyi 2016). Factors such as indiscriminate

reliance on Large Language Models (LLMs) in academic writing and research as well as systemic factors affect researchers and result in misconduct and unethical publication practices (Anekwe 2010; Artino, Driessen and Maggio 2019; Bekker 2024; Martinson, Anderson and De Vries 2006; Roy and Edwards 2023). Academic misconduct has been defined by Foltynnek et al. (2023, 2) as:

“Unauthorized content generation (UCG) is the production of academic work, in whole or part, for academic credit, progression or award, whether or not a payment or other favor is involved, using unapproved or undeclared human or technological assistance.”

Universities therefore need to counter misconduct and promote research integrity not only in the easy-to-police misconduct such as plagiarism (Hass 2022) but in the often more hidden practices regarding publication ethics and authorship. These hidden practices ought to be explored. Gallant (2016) warns that academic misconduct casts doubts about the competency development of those academics and the systems that produced them. Unethical practices, specifically publication practices, are thus an indictment of the HE system and thus warrant attention. This article exposes some of the hidden or “ghostly” practices that threaten research integrity and provides guidelines for ethical practices in publication within the realities of the publish-or-perish academic milieu.

This article first discusses the theoretical perspectives on the systemic forces that influence questionable behaviour and ghostly practices threatening research integrity. It then describes an investigation of authorship guidelines, and finally provides pointers for ethical publication practice to navigate a more productive outcome for academics.

SYSTEMIC FORCES INFLUENCING MISCONDUCT

Understanding the context driving publication is important. In a neo-liberal system, the focus on research and publishing can cause researchers to lose sight of accountability. In the South African subsidy context, many universities are driven to engage in what Tomaselli (2018, 40) calls “the pursuit of perverse incentives” which reflects the “culture of consumerism in higher education” (Oravec 2015, 322). Thus, international rankings drive the value of competition rather than collaboration and education for the common good. Biagioli (2022) blames evaluation metrics that emphasise impact (citations) causing authors to focus on visibility in getting many articles out (even with minimal involvement) to accrue more citations. Knowledge becomes a commodity and academics resort to gamification strategies focusing more on quantity rather than quality, with an individualistic self-serving mindset (Bavdekar 2012;

Oravec 2019). Academic misconduct is therefore a reality in a context where metrics mean prestige in the competitive resource-constrained HE environment (Oravec 2019). Barde et al.'s (2020) study showed that scientific misconduct was reported by between 2 per cent and 33 per cent of researchers. Oravec (2019) refers to using manipulation techniques to increase an academic's perceived impact without producing the necessary intellectual content. There is an added issue of academics with resources who employ writers to contribute substantially to or "refurbish" manuscripts, while those without resources are at a disadvantage (Oravec 2015, 317). Moffatt (2013) contends that the reality driving academics is that they are expected to do more and deliver more in a pressurised HE environment that seems to reward (or turn a blind eye to) shortcuts.

There are ramifications of gaming in the university system. Oravec points to double standards where universities are hard on students who plagiarise but softer on "prized" academics (2015, 317). Universities tend to have vague guidelines as they stand to benefit from these publications (Oravec 2015). Moffatt (2011) agrees that there is too much attention on research fabrication and too little attention on everyday practices, like honorary authorship, that cause a weakening of scientific accountability. Misrepresentation or lying about the authorship of the work is considered more serious than plagiarism due to the violation of academic trust (Singh and Remenyi 2016). However, rather than being valued for highlighting unethical practices, whistleblowers regarding gaming practices are perceived as jealous (Bavdekar 2012; Oravec 2019). Furthermore, junior academics are afraid to speak up about gaming practices due to the power differential between themselves and established academics or supervisors (McDowell et al. 2019). Often, unethical practice is seen as an individual issue and not as a systemic problem, therefore clear guidelines could help reduce conflict within departments. Academics must be aware of these issues to reduce negative effects and find ways to navigate a more productive outcome for academics in this context.

Researchers are aware that being transparent and conducting science properly are essential for maintaining research credibility (Anekwe 2010; Moffat 2011). Although researchers generally uphold research ethics during research, it is important that they apply the same standard of research integrity to authorship practices (Stretton, 2014). While Taylor and Francis (2017) note that authorship provides credit and implies accountability for published work, Shamoo and Resnik (2015) emphasise that it is the means of allocating both professional credit and blame. Martinson et al. (2006) and Matheson (2016) insinuate that academic authors seem willing to accept the laurels for authorship due to self-interest and pressures in academia. As such, misuse of credit allocation is an ethical issue (Matheson 2023).

The responsibility of communicating how research risks were managed lies with the author. Hendrick (2011, 1) indicates that the problem with unethical publication and authorship practices is that it is unclear who will “stand up for the integrity of the data” to ensure trust in the scientific publication. Similarly, use of generative AI and AI-assisted technologies requires human oversight and control as authors are ultimately responsible for giving an account of the published work. Moffatt (2011) indicates that an author taking credit for work they did not do is a misrepresentation, which is incompatible with the qualities of a responsible researcher. In addition, questionable authorship practices harm science as an institution as it undermines the public trust in science. It is not ethically permissible for an author to mislead the scientific community about the contribution to a research project. This quest for status attached to authorship invites ways of gaming the system which can be detrimental to both scientists and the research enterprise (McNutt et al. 2018; Oravec 2015). The importance of retaining the integrity of science, research and education calls on academics to apply ethical reasoning skills to the authorship quandary in current-day academia.

GHOSTLY PRACTICES EVIDENT IN ACADEMIA

Ghostwriting, one of the earlier forms of unethical publishing practice, gained a bad reputation due to misuse in the medical sciences (Hendrick 2011; Stretton 2014; Yadav and Rawal 2018). Industry partners utilised research to their advantage by using ghostwriters but co-opting an academic to lend credibility to their products (Bavdekar 2012; Matheson 2023; Matheson 2016; Moffatt 2018; Moffatt 2013; Moffatt 2011; Oravec 2019). Hendrick (2011, 1) says that ghostwriting is “pernicious” as it is marketing disguised as science. Outside academia, ghostwriting is acceptable as an author is paid to assist by providing the skilled work of writing for someone (for example biographies). As pointed out by Gallant (2016), context matters. In scientific ghostwriting malpractice, the ethical dimension relates to power associated with academic publication and rankings within departments or faculties (McDowell et al. 2019). Matheson (2016) indicates that the problem of ghostwriting is not secrecy, but insufficient transparency about how the text was developed. Ghostly authorship results in a situation where neither the ghost authors who produce the article nor the academic authors who claim authorship can defend and explain the results (Moffatt 2013). The acknowledged dangers of merging marketing and science have led to fewer sinister incidents being reported in the medical field (Yadav and Rawal 2018). Therefore, a need exists for increased awareness of academic misconduct related to authorship and publication (Matheson 2023).

Authorship and author order are important markers in HE because of the relationship between credibility and power in publication. Unfair allocation of credit results when the role is exaggerated or diminished (Matheson 2023). Questionable authorship practices identified by McNutt et al. (2018, 2558) are reflected in Table 1 where the relevant terminology is defined and the pertinent points are discussed further.

Table 1: Terminology and definitions regarding authorship

Ghost authorship	Authors who contributed to the work but are not listed, generally to hide a conflict of interest from editors, reviewers and readers
Guest/gift/honorific authorship	Individuals given authorship credit who have not contributed in any substantive way to the research but are added to the author list by virtue of their stature in the organisation
Orphan authorship	Authors who contributed materially to the work but are omitted from the author list unfairly by the drafting team
Forged authorship	Unwitting authors who had no part in the work but whose names are appended to the article without their knowledge to increase the likelihood of publication

The terms ghostwriting and ghost authorship are often used interchangeably. A ghostwriter is a person who is not credited with authorship even though they made a substantial contribution to the research or writing of an article (Yadav and Rawal 2018; Moffatt 2013). A ghost author is a broader concept as it refers to someone who participates in research but is not given appropriate and fair credit for their involvement. Examples include junior researchers, paid researchers, and writers who provide better-quality manuscripts to save the “author’s time” (Bavdekar 2012, 79). This hidden contribution may be worthy of authorship credit, but the writer may not have the freedom to demand authorship or contest author order due to power differentials at play (McDowell et al. 2019; Oravec 2015).

Another dimension of authorship is honorary or gift authorship when someone who is not worthy of authorship claims it nonetheless – possibly due to rank, funding position or other factors (Biagioli 2022; Youmshajekian 2024). Moffatt (2011) asserts that listing someone as an author who does not meet authorship standards is a breach of research ethics and harms the profession by creating unfair advantages. A survey among Academy of Management academics revealed that honorary authorship was more prevalent than ghostwriting (Pruschak and Hopp 2019). Anekwe (2010) asserts that honorary authorship is a form of plagiarism because it entails claiming authorship for work that was done by others. Moffat (2011) agrees that honorary authorship is dishonest and non-transparent and undermines the scientific communication system. Another form of “ghostly behaviour” is found in peer review where more senior academics ask early career academics (students, post-docs or junior academics) to review

articles on their behalf without giving credit for their contribution. This common practice goes against the ethical principles of review (McDowell et al. 2019).

“Ghostly” practices are often rationalised with a positive justification, such as being part of the education or orientation of junior academics, bolstering further career progression, repaying favours, improving the feelings of camaraderie among academics, or increasing prestige to attract future funding (Bavdekar 2012; Moffatt 2011; McDowell et al. 2019). Biagioli (2022, 466) points out that a researcher’s name is attached to the article for which credit and responsibility are attributed, which explains why “inclusion or exclusion of names ... can lead to acrimonious disputes”. Authorship issues need to be discussed openly to avoid dissent.

For non-author contributions, there is agreement that all assistance needs to be mentioned either in an acknowledgement section or in a footnote (ICMJE 2017). The rise in the use of AI also raises authorship issues especially when used for more advanced tasks. The use of AI for lower-level tasks and technical help can be accepted and welcomed (Bekker 2024), but using AI for more advanced tasks is contestable due to reported inaccuracies, the quality of sources used, and the technology’s inability to take responsibility for the research conducted (Akın Saygın and Aydın Kabakçı 2023). The general opinion is that currently AI should not be mentioned as a co-author as it cannot take responsibility for the work. This issue of co-authorship of AI may be appropriate in some fields and thus specific guidance is needed. Co-authorship will need to be a continuing point of discussion in the future as technology develops (Akın Saygın and Aydın Kabakçı 2023). These authors affirm that technology can be used in conducting research, but it needs to be properly reported. Bekker (2024, 4) asserts that transparency (showing work and thought processes) is key to “scientific accountability, reproducibility, peer accessibility, and public trust”. The use of LLMs such as ChatGPT for technical-level assistance can help to “level the playing field” especially in low-resource contexts or for non-native speakers (Bekker 2024, 2). The increased use of AI calls on academics to be more aware of the ethics involved, as well as the long-term effects on the cognitive development of scholars and the credibility of science (Ansari, Ahmad and Bhutta 2023; Bekker 2024).

Although there are negative connotations associated with ghostwriting, there are documented benefits of using professional academic writers who receive credit for their contribution, either in the acknowledgements or as co-authors if they made a substantial contribution (Kennedy, Roush and Barnsteiner 2012; Matheson 2016). Hendrick et al. (2011) assert that professional writers fill a needs gap because not all researchers can write well, or do not have the time required to produce publications; representing a more efficient use of

resources. Professional writers can and do improve the timeliness and quality of reporting the volume of research produced in HE that needs to be translated into a presentable scientific document (Yadav and Rawal 2018; Stretton 2014). These writers convert raw data into an intelligible document to bring the research results into the public domain.

The European Medical Writers Association indicates that a professional writer needs to consult with the researcher throughout the process regarding the target journal and content of the publication before preparing the draft. They should provide an outline of the publication and agree on the message for the target journal. The professional writer facilitates the development of the publication, but the researcher takes responsibility for the content. If there are disagreements, the researcher would have the final say. All contributors need to see and approve the final version before submission. The professional writer can manage timelines during the process (Jacobs and Wager 2005).

What makes ghostwriting and professional writing distinct is that there is transparency about relationships; all contributions are recognised without window dressing (Matheson 2023). The scope and nature of the work done by the professional writer may be different in more technical fields and therefore need to be discussed and handled separately as appropriate for the specific discipline. The guiding principle for due diligence is the consideration of both credit and accountability for ethical practice in the higher education publication context. Critical reflection on the ethical publication issues can help academics navigate the pressure responsibly.

INVESTIGATION OF AUTHOR GUIDELINES

The ghostly practices surrounding publication centres on credit and accountability of authors; therefore authorship guidelines need to be more transparent. A comprehensive definition of authorship has been provided by the Council of Publishing Ethics (COPE 2019):

“The term authorship can refer to the creator or originator of an idea (e.g., the author of the theory of relativity) or the individual or individuals who develop and bring to fruition the product that disseminates intellectual or creative works (e.g., the author of a poem or a scholarly article). Authorship conveys significant privileges, responsibilities, and legal rights; in the scholarly arena, it also forms the basis for rewards and career advancement. Various disciplines have norms, guidelines, and rules governing authorship; some of those rules preserve the lineage of ideas or works, assign credit for the conception, implementation and analysis of studies or experiments to validate theory or explain hypotheses, and the actual writing of work to disseminate knowledge. Authors are accountable for following discipline-specific guidelines when they engage in authorship activities ... At a minimum, authors should guarantee that they have participated in creating the work as presented and that they have not violated any other author’s legal rights (e.g., copyright) in the process.”

There is agreement regarding the criteria of substantial contribution and accountability (COPE 2019). However, a criterion that may vary between disciplines is what is considered a substantial contribution (Stretton 2014). McNutt et al. (2018) suggest that due to the variations between disciplines, disciplines regularly investigate, update and educate academics on authorship issues to guide ethical practices in specific contexts. This article reports on an analysis of the author guidelines of the journals in which scholars in the largest faculty at a research-intensive university in South Africa (Economic and Management Sciences) publish articles.

The first of three phases entailed exploring the range of relevant authorship issues of the professional bodies, publishing houses and journals that mention authorship criteria to identify variations and similarities. The search resulted in identifying criteria such as specification of author order, guidelines for non-authorship, whether a disclosure form was required, how to refer to AI use, and other aspects of interest. These criteria were used in the following two phases of the investigation. During the second phase to identify the level of detail and the kinds of information provided in the guidelines, I randomly selected every 10th journal on the 2022 research output report for the Faculty of Economic and Management Sciences. If a journal had already been covered, I selected the next journal on the list. During this phase, it became apparent that scholars in this faculty publish in journals from a range of other disciplines such as the medical field, and Education and Law, among others. Therefore, it was necessary to expand the analysis. Thus, the third phase entailed a search of all 163 journals on the 2022 list – except two foreign language journals – to identify variations, level of detail provided on authorship and ease of access to the guidelines. The research analysed data that is openly available on the journal websites and therefore it is considered a minimal risk study. Findings are reported in Table 2.

Table 2: Guidelines for authors in Economic and Management Sciences Faculty target journals (n=163)

Guideline	Per cent included
Authorship criteria	74
Non-author acknowledgements	66
No guidelines on website but direct link to professional body's established guidelines	60
Author order	48
Statement of role	46
AI reference	41
Use of CRediT (contributor roles taxonomy) specified	25
No reference to authorship issues/inaccessible	20

Findings revealed that authorship criteria are reported in most journals in which scholars publish. Twenty per cent (20%) do not have authorship guidelines or are inaccessible and could not be found. Generally, international journals have clearer guidelines than South African journals that either did not have any or were harder to locate. Journals often focus on the technical submission of articles and general research ethics. Many journals do not have individual authorship criteria but a direct link to the publishers such as Taylor and Francis and Science Direct or professional associations (COPE) with specific authorship criteria. Professional associations and medical journals also tend to be more explicit in their guidelines. Commonly, the journals refer to COPE or the International Committee of Medical Journal Editors (ICMJE). Findings concur with those of COPE (2019) and Stretton (2014) which indicate that the ICMJE (2017) is the most recognised guide for authorship that also acts as the reference for the Vancouver recommendations (n.d.). The ICMJE states that authorship credit should be given to those who fulfil the following requirements:

- Substantial contribution to conception and design, or acquisition of data, or analysis and interpretation of data;
- Drafting the article or revising it critically for important intellectual content;
- Final approval of the draft for publication; and
- Accountability and responsibility for the content of the published work.

Taylor and Francis (2017) have an additional criterion: that all authors have agreed to submit the manuscript to the target journal. According to COPE (2019), the variations between disciplines call for awareness and the need to conform to the guidelines of individual journals that authors are targeting for publication. Authors need to make sure they are aware of and comply with the guidelines of their selected journal.

Where AI guidelines are provided in the surveyed journals, the general guide is that if it is used for major tasks, there needs to be clarity regarding the extent of the use and how it was used, and this should be reported in the method section. Other uses for more general tasks can be mentioned in the acknowledgement section. AI guidelines vary depending on the field of study.

In terms of authorship assignment, journals generally mention the amount of work done as an indicator and some journals want a disclosure form indicating each author's contribution. CRediT provides guidelines for authors to describe their contributions to the published work and could be a useful resource when discussing authorship (see Table 3).

Table 3: CRediT criteria for author contributions

Term	Definition
Conceptualisation	Ideas; formulation or evolution of overarching research goals and aims
Methodology	Development or design of methodology; creation of models
Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms, testing of existing code components
Validation	Verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs
Formal analysis	Application of statistical, mathematical, computational, or other formal techniques to analyse or synthesise study data
Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection
Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools
Data curation	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse
Writing – Original draft	Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation)
Writing – Review and editing	Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages
Visualisation	Preparation, creation and/or presentation of the published work, specifically visualisation/data presentation
Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team
Project administration	Management and coordination responsibility for the research activity planning and execution
Funding acquisition	Acquisition of the financial support for the project leading to this publication

SOURCE: Genova (2023)

Author order is generally mentioned as being the authors' decision to be negotiated among themselves before submission. Suggestions by the British Psychological Society (2017) include prior conversations about author order but with ongoing discussions regarding what may be a shift in the amount of work that emerges during the research. Journals indicate that authors who do not meet the ICMJE's four criteria should be acknowledged and not included as authors. Bavdekar (2012) suggests that the author order be determined by their relative overall contributions to the research and the publication. Therefore, CRediT may serve as a useful guide.

Whenever there is a reference to student authorship, journals and associations such as the Academy of Management, Tourism Economics and the British and American Psychology associations (among others) specify that the student must be listed as the first author unless the supervisor has added content that the student would not have been able to provide. The

Academy of Management (2023) cautions about the sensitivity of this issue of authorship due to the power dynamics at play in the supervisory relationship also confirmed as an issue by McDowell et al. (2019).

The guidelines for Nature (n.d.) indicate the first two criteria of the ICMJE as an EITHER/OR (a significant contribution OR drafting of the work). Matheson (2016) believes that writing an academic article is an intellectual task and not akin to writing assistance as the traditional term ghostwriter may imply. These writers need high scientific literacy and often have a PhD themselves. It is thus important not to underestimate the intellectual importance of the crafting process.

POINTERS FOR ETHICAL PUBLICATION PRACTICE

McNutt et al. (2018) encourage universities to develop, post, distribute and regularly review and update authorship policies. Policies regarding guidelines for early discussions are imperative due to the emotive nature of these issues. Youmshajekian (2024) found that when authorship guidelines by associations, such as COPE, the APA or ICMJE, or by the author's research setting or context were not provided, academics were more likely to believe the final authorship decisions were not a fair reflection of their contribution. Issues, such as contributions that warrant first authorship, co-authorship, acknowledgements and no mention, need to be clarified. McNutt et al. (2018) also suggest early discussions regarding authorship. Discussions regarding how the faculty and the various disciplines view authorship are needed bearing in mind credit and accountability as guiding principles. Table 4 provides pointers for discussion and action.

Table 4: Authorship discussion pointers

Issue	Clarification	Recommendation/Action
Terminology	"Ghostwriter"/ academic writer/ professional writer/ article writer	Decide on appropriate and consistent use of term to reflect the role
Criteria	Draw up unique or subscribe to existing criteria	For example, ICJME or COPE or professional bodies Definition of substantial contribution for departments/faculty Credit and responsibility implications
Guidelines	Author order	Use CRediT as guide Student as author Order when professional writer an author Supervisor role Negotiations regarding author order
Action	Education	Consulting and complying with journal guidelines Ethics in publishing Whistleblowing and power relationships
Roles and responsibilities	Professional writer and researcher	Roles and deliverables according to time frames clearly demarcated What happens to the article after it leaves the professional writer? Who approves the final version? What happens if the article gets rejected? Whose responsibility is it to revise the article? When does the writer's responsibility end? Decisions regarding authorship and order (to include as author or mention in acknowledgments?) Qualification (content/discipline expertise or writing expertise or both)
Remuneration	Research incentives	Does professional writer get paid if they are listed as co-author? Does professional writer have a research incentive fund? When and how is the professional writer paid? After first draft? After revision? After acceptance? Per hour? Per article? Allowing a professional writer the choice regarding either remuneration or authorship or variations of credit for work done How are funds for professional writers allocated to various departments with differing writing support needs?

CONCLUSION

Publication ethics, authorship and academic misconduct are universal issues that affect higher education and impact research credibility. Since disciplines and contexts vary, there is a need for robust discussion and transparency. Factors contributing to misconduct and various authorship practices provided the background to the analysis of author guidelines. Findings reveal variations in the information provided and lead to the following implications for practice:

Journal guidelines for authors

As there are inconsistencies in information provided between various journals and discrepancies between local and international publications, author guidelines should be clearly communicated and easily accessible on the website. There needs to be sufficient information regarding the journal's authorship policy, or links should be provided to the policies of relevant publication bodies. Journal websites need to be user-friendly, comprehensive and easy to navigate.

Collegial discussion

Each field needs to address academic integrity related to its context. The “how” needs to be discussed specifically because of the subjective nature of the authorship issue. Disputes around unethical publishing practices can negatively affect the academic culture and relationships; therefore, the hidden dimensions of ethical publication and ways to handle power relationships need to be discussed. Guiding principles for authors to create an atmosphere of openness and fairness include considering credit and accountability in all decisions.

Research integrity education

As students are being prepared with transferrable skills for independent research, research integrity education should not only focus on ethical procedures and plagiarism training during their studies but also include hidden misconduct practices that may affect them after qualification. In the competitive neo-liberal context, academics may need to be reminded of authorship issues and provided with tools to assist in ethical authorship practices. A more nuanced understanding of the various factors influencing practices removes the punitive dimension of misconduct and provides a constructive platform for mitigating associated risks. Universities and departments need to ensure that the policies guiding ethical publication practices are as well-known as those related to ethical research practice.

Author support

As publication pressure seems to encourage competition and gamification practices, more support is needed for academics, especially for those in resource-scarce contexts. Support can be provided in the form of relief from other duties for dedicated writing time, access to writing support and technology, and ethical use of writing professionals.

Further research could focus on the variations in authorship between disciplines and contexts and on academics’ perceptions of misconduct. Insights into the contested nature of the topic and the ethical dilemmas could facilitate discussion to ensure access to research results for the public and broader academic community and for retaining the integrity of research and the credibility of academics in higher education.

REFERENCES

- Academy of Management 2023. "Code of Ethics." <https://aom.org/about-aom/ethics/code-of-ethics> (Accessed 8 February 2024).
- Akın Saygın, Duygu, and Anil D. Aydın Kabakçı. 2023. "The use of controlled artificial intelligence as a co-author in academic article writing." *European Journal of Therapeutics* <https://doi.org/10.58600/eurjther1801>
- Anekwe, Tobenna D. 2010. "Profits and plagiarism: The case of medical ghostwriting." *Bioethics* 24(6), 267–272. <https://doi.org/10.1111/j.1467-8519.2008.00705.x>
- Ansari, Aisha N., Sohail Ahmad, and Sadia Bhutta. 2023. "Mapping the global evidence around the use of ChatGPT in higher education: A systematic scoping review." *Education and Information Technologies*. <https://doi.org/10.1007/s10639-023-12223-4>
- Artino, Anthony R., Erik W. Driessen, and Lauren A. Maggio. 2019. "Ethical Shades of Gray: International Frequency of Scientific Misconduct and Questionable Research Practices in Health Professions Education." *Academic Medicine* 94(1): 76–84. <https://doi.org/10.1097/ACM.0000000000002412>
- Barde, F., N. Peiffer-Smadja, and A. de La Blanchardière. 2020. "Fraude scientifique: une menace majeure pour la recherche médicale" ("Scientific misconduct: A major threat for Medical Research"). *La Revue de Médecine Interne* 41(5): 330–334. <https://doi.org/10.1016/J.REVMED.2020.02.004>
- Bavdekar, Sandeep B. 2012. "Authorship issues." *Lung India* 29(1): 76–80. <https://doi.org/10.4103/0970-2113.92371>
- Bekker, Martin. 2024. "Large language models and academic writing: Five tiers of engagement." *South African Journal of Science* 120(1–2). Academy of Science of South Africa. <https://doi.org/10.17159/sajs.2024/17147>
- Biagioli, Mario. 2022. "Ghosts, brands, and influencers: Emergent trends in scientific authorship." *Social Studies of Science* 52(3): 463–487. <https://doi.org/10.1177/03063127221095046>
- British Psychological Society 2017. "Ethical Guidelines." chrome extension://efaidnbmnmbnibpcajpcglclefindmkaj/<https://cms.bps.org.uk/sites/default/files/202206/Statement%20of%20Policy%20on%20Authorship%20and%20Publication%20Credit%20%282017%29.pdf> (Accessed 7 February 2024).
- COPE 2019. "COPE Council Discussion Document: Authorship." September 2019. <https://doi.org/10.24318/cope.2019.3.3> (Accessed 7 February 2024).
- Foltynek, Tomas, Sonya Bjelobaba, Irene Glendinning, Zeenath R. Khan, Rita Santos, Pegi Pavletic, and Július Kravjar. 2023. ENAI "Recommendations on the ethical use of Artificial Intelligence in Education." *International Journal for Educational Integrity* 19(1). BioMed Central Ltd. <https://doi.org/10.1007/s40979-023-00133-4>
- Gallant, Tricia B. 2016. "Response to White's 'Shadow Scholars and the Rise of the Dissertation Service Industry'." *Canada Journal of Research Practice Page 1 of 5 Journal of Research Practice* 12(1). AU Press. <http://jrp.icaap.org/index.php/jrp/article/view/553/452>
- Genova, Zoë. 2023. "CRedit where its due." <https://www-elsevier-com.ez.sun.ac.za/connect/credit-where-credits-due> (Accessed 14 February 2024)
- Hass, Atrimecia. 2022. "Using plagiarism feedback as assessment for learning to socialise students into disciplinary writing: A theoretical perspective." *South African Journal of Higher Education* 36(2): 133–150. <https://dx.doi.org/10.20853/36-2-4648>
- Hendrick, Rachel. 2011. "Ghosts in the machine." *BMJ (Online)* 343(7835). <https://doi.org/10.1136/bmj.d7860>
- ICMJE 2017. "Defining the Role of Authors and Contributors." https://www.icmje.org/news-and-editorials/updated_recommendations_dec2017.html (Accessed 8 February 2024)

- Jacobs, Adam, and Elizabeth Wager. 2005. "European Medical Writers Association (EMWA) guidelines on the role of medical writers in developing peer-reviewed publications." *Current Medical Research and Opinion* 21(2): 317–321. <https://doi.org/10.1185/030079905X25578>
- Kennedy, Maureen S., Karen Roush, and Jane Barnsteiner. 2012. "The Ethics of Authorship." *American Journal of Nursing* 111(9): 7.
- Mahomed, S., I. Mackraj, and C. Blewett. 2023. "An Innovative Online Plagiarism Course for Students at a South African University." *South African Journal of Higher Education* no 37 (2): 151–166. <https://dx.doi.org/10.20853/37-2-5046>
- Martinson, Brian C., Melissa S. Anderson, and Raymond de Vries. 2006. "Scientists Behaving Badly." *Nature* 43: 737–738.
- Matheson, Alistair. 2016. "Ghostwriting: The importance of definition and its place in contemporary drug marketing." *BMJ (Online)* 354. <https://doi.org/10.1136/bmj.i4578>
- Matheson, Alistair. 2023. "The "Monsanto papers" and the nature of ghostwriting and related practices in contemporary peer review scientific literature." *Accountability in Research*. <https://doi.org/10.1080/08989621.2023.2234819>
- McDowell, Gary S., John D. Knutsen, June M. Graham, Sarah K. Oelker, and Rebecca S. Lijek. 2019. "Co-reviewing and ghostwriting by early-career researchers in the peer review of manuscripts." <https://doi.org/10.7554/eLife.48425.001>
- McNutt, Marcia K., Monica Bradford, Jeffrey M. Drazen, Brooks Hanson, Bob Howard, Kathleen Hall Jamieson, Véronique Kiermer, Emilie Marcus, Barbara Kline Pope, Randy Schekman, Sowmya Swaminathan, Peter J. Stang, and Inder M. Verma. 2018. "Transparency in authors' contributions and responsibilities to promote integrity in scientific publication." *Proceedings of the National Academy of Sciences of the United States of America* 115(11): 2557–2560. <https://doi.org/10.1073/pnas.1715374115>
- Moffatt, Barton. 2011. "Responsible authorship: Why researchers must forgo honorary authorship." *Accountability in Research* 18(2): 76–90. <https://doi.org/10.1080/08989621.2011.557297>
- Moffatt, Barton. 2013. "Orphan Papers and Ghostwriting: The Case against the ICMJE Criterion of Authorship." *Accountability in Research* 20(2): 59–71. <https://doi.org/10.1080/08989621.2013.767115>
- Moffatt, Barton. 2018. "Scientific authorship, pluralism, and practice." *Accountability in Research* 25(4): 199–211. <https://doi.org/10.1080/08989621.2018.1437347>
- Nature (n.d.) <https://www.nature.com/natsustain/editorial-policies/authorship> (Accessed 8 February 2024).
- Oravec, Jo Ann. 2015. "The moral imagination in an era of 'Gaming Academia': Implications of emerging reputational issues in scholarly activities for knowledge organization practices." *Knowledge Organization* 42(5): 316–323. <https://doi.org/10.5771/0943-7444-2015-5-316>
- Oravec, Jo Ann. 2019. "The "Dark Side" of Academics? Emerging Issues in the Gaming and Manipulation of Metrics in Higher Education" *The Review of Higher Education* 42(Spring): 859–877.
- Pruschak, Gernot and Christian Hopp. 2019. "And the Credit Goes to... - Ghost and Honorary Authorship among Social Scientists." *Academy of Management*. <https://doi.org/10.5465/AMBPP.2019.12441abstract> (Accessed 7 February 2024).
- Roy, Siddharta and Marc A. Edwards. 2023. "NSF Fellows' perceptions about incentives, research misconduct, and scientific integrity in STEM academia." *Scientific Reports* 13(1). <https://doi.org/10.1038/s41598-023-32445-3>
- Shamoo, Adil E., and David B. Resnik. 2015. *Responsible Conduct of Research*. (Third Edition). Oxfordshire, UK: Oxford University Press.

- Singh, Shaween and Dan Remenyi. 2016. "Plagiarism and ghostwriting: The rise in academic misconduct." *South African Journal of Science* 112(5/6). <http://dx.doi.org/10.17159/>
- Stretton, Serina. 2014. The Cochrane Library 1988+, Medical Writing 1998+, The American Medical Writers Association (AMWA) Journal 1986+, Council of Science Editors Annual Meetings 2007+, and the Peer Review Congress 1994+ were searched electronically. *BMJ Open* 4. <https://doi.org/10.1136/bmjopen-2013>
- Taylor and Francis 2017. <https://authorservices.taylorandfrancis.com/editorial-policies/defining-authorship-research-paper> (Accessed 8 February 2024).
- Tomaselli, Keyan, G. 2018. "Perverse incentives and the political economy of South African academic journal publishing." *South African Journal of Science* 114(11/12). <https://doi.org/10.17159/sajs.2018/4341>
- Vancouver recommendations. n.d. "Authorship guidelines and ethical standards." <https://www.lib.chalmers.se/en/publish-and-analyse/publish-research/authorship-guidelines-and-ethical-standards/> (Accessed 8 February 2024).
- Yadav, Sankalp and Gautam Rawal. 2018. "Ghostwriters in the scientific world." *Pan African Medical Journal* 30. <https://doi.org/10.11604/pamj.2018.30.217.16312>
- Youshahajekian, Lori. 2024. Gift authorship common in psychology, survey suggests. *Newstex Blogs Retraction Watch*. <https://advance.lexis.com.ez.sun.ac.zaapi/document?collection=news&idurn:contentItem:6B4R-7RW1-JCMN-Y100-00000-00&context=1516831>. (Accessed 12 February 2024).