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ESSAY

REVISED The role of senior researchers in promoting good science: Obstacles and enablers

[version 2; peer review: 2 approved, 2 not approved]

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Abstract

This essay examines senior researchers' professional responsibilities in fostering ethical research practices within their teams, as outlined in the ALLEA European Code of Conduct for Research Integrity. Senior researchers have an important role in preventing research misconduct and promoting a supportive academic environment. However, pressures within academia - particularly the 'publish or perish' culture - can lead to stress and potentially unethical practices, including power misuse, exploitation, and neglect of supervisory responsibilities. This essay explores the challenges senior researchers face in fulfilling their responsibilities and highlights a 'slow science' approach and targeted training to prioritize quality over quantity and to promote better supervision practices.

Keywords

research ethics, research integrity, research misconduct, research culture, senior researchers, slow science

This article is included in the Research on Research gateway.

This article is included in the Horizon Europe gateway.

Open Peer Review

Approval Status ✗ ✓ ✓ ✗

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version 1 23 Jan 2025	✗ view	? view	✓ view	

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3. **Simon E Kolstoe**, University of Portsmouth, Portsmouth, UK
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Any reports and responses or comments on the article can be found at the end of the article.

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Author roles: van den Hooff S: Conceptualization, Investigation, Writing – Original Draft Preparation, Writing – Review & Editing; **Mežinska S**: Conceptualization, Investigation, Writing – Original Draft Preparation, Writing – Review & Editing

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REVISED **Amendments from Version 1**

We thank the reviewers for their thoughtful and constructive comments. We have addressed the concerns raised by the reviewers. First, we added a clarification that a unified definition of the term 'senior researchers' is not prevalent in the literature, but we have amended our definition for this article and explained why discussion is still possible without a single definition. While acknowledging that the use of this term can vary by field and region, we believe it is still meaningful to discuss the role of senior researchers in fostering research integrity based on our suggested definition, which aligns with the ALLEA European Code of Conduct for Research Integrity. Second, we have expanded the "Discussion and Conclusions" section to include more information on enablers of good science and provided examples of best practices. Additionally, we have implemented other changes suggested by reviewers in the comments to the manuscript. We hope these revisions address reviewers' concerns and improve the manuscript.

Any further responses from the reviewers can be found at the end of the article

Introduction

Senior researchers, like all researchers, bear the responsibility of upholding research integrity in their work. Nevertheless, they also carry significant responsibility for ensuring that their research group engages in good scientific practices and for taking necessary steps to prevent research misconduct and unacceptable research practices. In this article, we define senior researchers as those who have extensive experience and expertise in their field of research and who supervise a research group. The use of the term 'senior researcher' can vary depending on the scientific field and country. Nevertheless, despite these differences, it is still possible and meaningful to broadly reflect on the role of senior scientists in fostering research integrity, as exemplified by the ALLEA European Code of Conduct for Research Integrity (All European Academies, 2023). In general, senior researchers are tasked with creating a positive and supportive research environment through implementing effective supervision, offering clear guidance and serving as ethical role models (Pizzolato & Dierickx, 2023). Compared to mentoring, which offers broad and informal support, supervision is a more task-oriented and formal activity, focusing on managing specific responsibilities and ensuring tasks are completed responsibly and efficiently.

The ALLEA European Code of Conduct for Research Integrity (All European Academies, 2023) providing an EU wide framework for research integrity outlines several professional responsibilities of senior researchers. Section 2.2 of the ALLEA code "Training, supervision and mentoring" mentions that *"senior researchers, research leaders, and supervisors mentor their team members, lead by example, and offer specific guidance and training to properly develop and structure their research activities"* and *"researchers across the entire career path, from early career to most senior level, undertake training in ethics and research integrity"* (p.6). Additionally, the ALLEA code identifies *"Misusing seniority to encourage violations of research integrity or to advance one's own career"* as an example of research misconduct.

The consequences of not adhering to these ethical standards are illustrated by recent cases where senior researchers have been held accountable for the misconduct or unacceptable practices of colleagues under their supervision. For example, the resignation of Stanford's president (Kozlov, 2023) illustrates the serious consequences of failing to foster research integrity and motivate the laboratory staff supervised by a senior researcher to work with integrity.

In 2024, a high-profile case in the Netherlands drew widespread media attention to a professor accused of gross negligence. The case pertains to the article discussing excess mortality across Western countries since the COVID-19 pandemic (Mostert *et al.*, 2024). This article first-authored by a postdoctoral researcher raised doubts about the safety of COVID-19 vaccination, asserting that the ongoing excess mortality observed since the pandemic was caused by COVID-19 vaccines. The supervisor of the postdoctoral researcher, who was a co-author of the manuscript, expressed concerns about the first draft of the paper and even stated that it would be better if he did not associate his name with it, as showed by the description of the case in a Dutch newspaper 'De Volkskrant':

> "In May 2023 the supervisor showed his hesitation towards the article. "Still food for thought" is the brief response he sends back four days later. He added comments in the margins of the draft text, such as: "I really can't imagine that there are no reliable figures on the COVID vaccines. You need to look these up and cite them." Further down: "I find this difficult, as it suggests that many people have died due to the vaccines. Also, there is nothing about the protection offered by vaccines." He even deems it "unscientific". Perhaps it would be better if he did not associate his name with it, he suggests. "What I miss is an explanation of why we are writing about this from our affiliations." And later: "What I also miss is something about children, and childhood cancer. You and I are paid for that. (...) If that's not included, I don't want to be a co-author, and I think you should write this on a personal basis." (Keulemans, 2024)

Nevertheless, the paper was published with the supervisor being included as one of the co-authors. The research paper garnered significant media coverage, including reports from The Telegraph, New York Post, and Berliner Zeitung, and was shared extensively on social media. At the same time, the paper sparked substantial academic debate. The Princess Maxima Center listed as the affiliation of three of the authors, started a research integrity investigation, and the journal issued an expression of concern (BMJ, 2024). The postdoc who authored the paper resigned. While the Scientific Integrity Committee of the Princess Maxima Center did not conclude that the senior researcher violated scientific integrity, it criticized him for gross negligence. After receiving a revised version of the paper in which his feedback had not been addressed, the senior

researcher as a supervisor failed to ensure that the article met scientific standards and was based on facts. Despite this, he did not object to remaining listed as a co-author. He also failed to review later versions containing feedback from the journal. (Keulemans, 2024)

This and similar cases (Caron *et al.*, 2025) underscore the serious consequences senior researchers may face due to insufficient supervision and challenge the common assumption that senior researchers are invulnerable due to their institutional position and authority. Supervision is inherently subject to scrutiny and accountability in academia. Research misconduct cases often involves supervisors who did not perform the research themselves but are responsible for overseeing the work, and the responsibility of senior researchers in these cases may be evaluated based on the concept of recklessness. (Caron *et al.*, 2025) Both the early career researcher and the supervisor may be held accountable for research misconduct or unacceptable practices carried out by the supervisee. Also, accusations of power abuse can severely harm the reputation and career of senior researchers. (Lasser *et al.*, 2021) Senior researchers are indeed responsible for high-quality supervision; nevertheless, the pressure that supervisors may experience when they are overwhelmed by their workload and unable to dedicate sufficient time to effectively oversee their teams can lead to decreased quality of supervision, increased risk of recklessness, and potential issues with research integrity. This is not merely an individual problem for senior researchers; it must be addressed as a systemic issue and a matter of academic culture. Institutions need to implement policies and practices that ensure adequate support and time for supervision to maintain high standards of research integrity.

In this essay we seek to address how senior researchers are expected to implement the professional responsibilities outlined in the ALLEA code in their daily practice. We conclude this essay by sharing insights on how to support senior researchers in becoming good supervisors, team managers, and fulfil their responsibilities in an ethical manner.

Responsibilities of senior researchers

To uphold their responsibilities to supervise, guide, and train research teams, senior researchers must recognise and understand their obligations outlined in the ALLEA code, particularly their implementation in the context of demanding academic culture of "publish or perish". This culture values frequent publishing in high-impact journals as a key measure of a researcher's success. As a result, there is a risk that researchers may prioritise the quantity of publications over the quality of research and supervision, potentially leading to research misconduct, unacceptable practices or extreme publishing behaviour. (Ioannidis *et al.*, 2024)

A qualitative study by Wäscher *et al.* (2020) explored what senior researchers themselves see as their professional academic responsibilities, how they assume them, and what challenges they perceive with respect to their responsibilities. Their results showed that senior researchers hold themselves responsible for doing good science, which was described by one researcher as "First of all, to do good science, being honest, being critical. The foundation is being self-critical and then start questioning (IP12)" (Wäscher *et al.*, 2020).

Senior researchers are responsible for preventing unacceptable practices and research misconduct in their team. In a study by Glerup *et al.* (2017) senior researchers acknowledged these responsibilities and described them as a part of their daily scientific practice for producing good science, such as taking care of social and ethical challenges, doing research in meticulous ways, taking care of the people in their research group, managing professional relationships within and beyond the group for all, securing funding (ongoing collective work of writing grant applications and political lobbying for their field of research), creating 'impact', and producing scientific results that are legitimate in the eyes of the public by participation in public debate about developments related to their own discipline or technological area (Glerup *et al.*, 2017).

From a different perspective, Conesa Carpintero & González Ramos (2018) interviewed academics who said that they devote more hours to work than established in their labour contracts. They have to work in a "high-pressure environment, abuse in power relations and lack tools and support (..)", that "eventually led to feelings of isolation and anxiety that produced a lack of selfcare and emotional dependence on giving results to their boss (..)"(Conesa Carpintero & González Ramos, 2018). It seems that it is often difficult for senior researchers to balance between the different tasks of their professional responsibility in team management - ensuring good scientific practices and responding to the pressures to produce scientific results, such as publications. At the same time, research shows that senior researchers lack rewards and recognition for their work in ensuring research integrity, as well as specific training (Pizzolato & Dierickx, 2023).

Pressure to perform and the risk of power misuse

The high level of pressure to perform in some cases may lead to the situation where senior researchers misuse their seniority to pressure their team to perform so that the academic goals that are set are achieved. Misuse of power in academic settings manifests in several potentially harmful ways, particularly affecting early career researchers. One common issue is the exploitation of labour (Conesa Carpintero & González Ramos, 2018). Senior researchers, who hold significant authority, may assign excessive workloads to early career researchers, expecting them to perform tasks well beyond their responsibilities, such as administrative duties. This exploitation is often exacerbated by the pressure early career researchers feel to comply in order to secure future recommendations, publications, or career opportunities.

Horbach *et al.* (2020) results showed that early career researchers did not report misconduct due to their fear of negative consequences, such as losing future opportunities or hampering their social relations at work, the distrust of the management's willingness to take any corrective action, and the belief that

reporting would not lead to any changes, notably due to certain individuals being protected. These responses showed "how seniority, hierarchy and power issues affected respondents' decision not to report an alleged case" (p. 1604) and that misuse of seniority may actually be one of the causes of misconduct (Horbach *et al.*, 2020).

Another example of misuse of seniority is unjustified appropriation of intellectual credit. In some cases, senior researchers may claim sole or disproportionate credit for the work and ideas of their early career colleagues, even when the early career researchers have made significant contributions to a research project. This can severely hinder the professional development of early career researchers, as their names may not be adequately featured in publications or grant applications, which are critical for academic advancement. For example, the qualitative data from a study on misuse of co-authorship in medical theses in Sweden by Helgesson *et al.* (2018) highlighted misuse of power by senior researchers and several reasons why authorship is often not handled in line with authorship guidelines. Respondents suggested that some senior researchers disregard these guidelines to ensure that their own or other colleagues' names appear on as many articles as possible, by adding co-authors without meaningful contribution. Doctoral students often find it difficult to whistle blow these practices, sometimes facing negative consequences when they do (Helgesson *et al.*, 2018).

The misuse of seniority and power might play a role in the prevalence of research misconduct amongst early career researchers and a higher incidence of unacceptable research practices. A Dutch survey among academic researchers showed that, due to insufficient supervision, early career researchers and PhD candidates engage more frequently in unacceptable research practices than other academic ranks (Gopalakrishna *et al.*, 2022). Another Dutch study of academics postulated that this may be in part explained by the consistent lack of good supervision and mentoring of early career researchers (Haven *et al.*, 2019).

Discussion and conclusions

How can the academic community and policy makers support senior researchers in becoming good supervisors, ethically responsible team managers and trustworthy leaders?

First, adopting a slow science approach with a focus on quality over quantity in research could enable senior researchers to allocate more time for supervision their research teams. Stengers (2018) offers valuable insights for transforming the current research culture. She states that slow science should reject 'fast' accountability, blindly imposed by the management. (Stengers, 2018) The ever-growing publication pressure is impacting the academic world. To counter the hectic publication pressure "the assessment of research, researchers and research organisations should recognise the diverse outputs, practices and activities that maximise the quality and impact of research", which is the vision of the Coalition for Advancing Research Assessment (CoARA, 2022).

An example of a novel approach to rewarding academics, including the recognition of supervision and leadership roles, can be seen in the Dutch Recognition & Rewards programme. This programme shifts the focus from a one-sided emphasis on research performance, which often results in excessive pressure to generate fast results, to rewarding other qualities such as leadership, impact, and collaboration. (Lagendijk & Wiering, 2024) It encourages good academic leadership at all levels, from early career researchers to senior academics and aims at promoting a culture of thoroughness, ensuring that supervised research meets high standards of quality and integrity. By reducing pressure and the emphasis on speed, senior researchers could focus more on fostering long-term growth and development within their teams.

Second, more training courses specifically tailored to the unique challenges and responsibilities of senior researchers could meaningfully support them in their roles. (Pizzolato & Dierickx, 2023) Such courses might focus on advanced supervising strategies, balancing pressure to perform with high-quality science, strengthening conflict resolution skills, fostering ethical decision-making, and suggesting practical approaches for supervising diverse research teams. While some senior researchers may naturally excel in supervising and promoting good scientific practice, many may benefit from targeted training. Institutions and national level research integrity bodies should prioritize developing training programs to senior researchers for ensuring responsible research practices.

Useful materials and guidelines for development and implementation of training courses for senior researchers are recently compiled by several Horizon projects, e.g., SOPs4RI and BEYOND. The SOPs4RI project provides guidance to research institutions on developing research integrity education strategies for senior researchers by emphasizing the importance of education and training to equip them with tools to promote responsible practices. The guidelines are designed to be flexible and adaptable, catering to the diverse needs of various research institutions. (Labib *et al.*, 2023) The BEYOND project focuses on enhancing supervision skills that can help senior researchers more effectively guide early career researchers and foster a culture of integrity within their teams. (Pizzolato *et al.*, 2024) By incorporating these resources into training courses, institutions and organizations can promote a more balanced and supportive environment that values both individual and team achievements.

Furthermore, a valuable tool that can be used for training senior researchers and fostering a culture of research integrity is reverse mentoring. Pizzolato and Dierickx (2022) have suggested this novel approach, where early career researchers mentor senior colleagues to bridge generational gaps and promote continuous learning. (Pizzolato & Dierickx, 2022) They

suggest that reverse mentoring can improve intergenerational relationships and build a culture of transparency and trust, as well as support the professional development of both early career and senior researchers.

In conclusion we would like to emphasize that care and consideration should not only be given to early career researchers who need support but also to senior researchers who could be helped by a slow science approach and tailored training. While senior researchers hold the responsibility for providing high-quality supervision, the pressures they face in the academic environment can compromise its effectiveness. Addressing this issue requires a systemic approach and a shift in academic culture. Institutions must implement policies and practices that offer adequate support, ensure sufficient time, and reward supervision, thereby supporting high standards of research integrity.

Ethics and consent

Ethics and consent were not required.

Data availability

No data are associated with this article.

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Version 2

Reviewer Report 10 May 2025

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✓ **Johannes JM van Delden**
University Medical Center Utrecht, Utrecht, The Netherlands

I would like to thank the authors for their revisions, which have certainly improved the article

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Medical Ethics

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 07 May 2025

https://doi.org/10.21956/openreseurope.21816.r53593

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✗ **Elisa Reverman**
Cleveland Clinic Center for Bioethics, Cleveland, USA

Overall, this paper aims to contribute to an important topic. However, it struggles in 1) linking together disparate claims regarding issues with senior researchers, 2) mentorship and supervision, 3) integrating the insights from the chosen case studies to make a broader claim regarding the promotion of good science, and 4) making well-supported or thoroughly argued original claims.

On the first point, the authors often fail to build a strong and necessary bridge between claims.

For instance, the authors introduce a case of misconduct with the publication on covid vaccination followed by claims related to insufficient supervision, the presence of recklessness, and accusations of power abuse. Within this section, substantially more discussion of the specific case is needed to show the presence and significance of insufficient supervision, recklessness, or power abuse. Without deeper connections being drawn here, the case doesn't do sufficient work for the authors. The following section begins with a discussion of senior researchers needing to recognize and understand their obligations, but the article doesn't previously argue that a lack of recognition or understanding is actually at the root of the issue. These are some instances of the underexplored or under-argued claims made in the paper.

On the second point, the authors take the time to distinguish mentorship from supervision early on in the paper, but the significance of this distinction isn't brought up again at any point. Further, the authors don't contribute any significant new ideas specific to instances where senior researchers fail to provide adequate supervision or mentorship and the downstream effects of this. While they do engage some of the relevant research on this topic, the authors themselves don't seem to make contributions that haven't already been made elsewhere on this topic.

On the third point, there is a significant disconnect between the case study on Covid vaccinations and the claims that it is supposed to support. The case, as written, details an instance where a junior (?) researcher who receives feedback from their supervisor on their seemingly questionable work, but proceeds to publish anyways with both themself and their supervisor as authors. The article then follows this case with a discussion of insufficient supervision, recklessness, and power abuse. However, as written, the case doesn't actually suggest a lack of supervision. In fact, the case seems to illustrate a case where a junior researcher was given appropriate feedback. The fact that they proceeded to publish anyways with their academic affiliation and with their supervisor as co-author is critically underexplained. Without more detail, it is unclear to what degree which party may or may not have participated in "recklessness" or power abuse. In some ways, the case describes a rogue post-doc who against best practices *despite* being advised not to proceed.

Finally, while the paper does engage with some relevant research to support the broader argument, the paper simply doesn't pose substantively original claims or arguments. The substantive evidence or support for their claims comes from other research, and the conclusions drawn have been discussed elsewhere in the literature.

While this paper as a whole addresses an important topic, it's disparately made claims and thin arguments lack the necessary substance to make a contribution to the literature on research integrity.

Is the topic of the essay discussed accurately in the context of the current literature?

Partly

Is the work clearly and cogently presented?

Partly

Is the argument persuasive and supported by appropriate evidence?

No

Does the essay contribute to the cultural, historical, social understanding of the field?

No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: research misconduct, transparency and research, clinical ethics, research ethics

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Version 1

Reviewer Report 03 March 2025

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Simon E Kolstoe
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Senior researchers are responsible for Questionable Research Practices, but not always to blame. I strongly agree with Susanne van den Hooff and Signe Mezinska that senior researchers play a critical role in fostering ethical research practices especially among their teams and those they are mentoring. Research is not an activity that can be learned from a text book, and as such all researchers learn by doing, and copying, the behaviours of their mentors. The senior researcher role is therefore the single most important role for promoting reliable, high quality and ethical research.

Even so, and as van den Hooff & Mezinska rightly state, the "publish or perish" culture creates significant pressure on senior researchers to either cut corners perhaps through poor supervision, or at worst actively cheat so as to game the system and ensure their own personal success (or maybe survival in some cases). These perverse incentives are undoubtedly a major cause of concern, and also reason for the ever increasing problem of questionable research practices (QRPs). It is therefore critical that researchers are aware of documents such as the ALLEA code, and are encouraged to abide by its principles (alongside other documents such as the Declaration of Helsinki).

In a recent survey of QRPs reported in https://tinyurl.com/yay8sa3m it was found that the requirement to publish regularly led to high pressure environments that subsequently made mistakes more likely. It might therefore be concluded that the majority of QRPs are not necessarily

deliberate, but rather a consequence of high pressure environments, inadequate quality control, and thus potentially poor supervision or oversight from senior researchers. The results of the QRP survey seem to match the discussion in this article.

Where inadequate supervision crosses over into exploitation of junior researchers is a related issue. If the pressure is to get results, and junior researchers are struggling to do this, it is not suprising that tensions, and potentially bullying, occur. Furthermore, power imbalances make it hard for junior researchers to take action, or defend themselves, when so much of their career success relies on their supervisors or group leaders. van den Hooff and Mezinska are therefore again accurate in emphasising this problem.

Given the above, the question at the beginning of the conclusion to the article "*How can the academic community and policy makers support senior researchers to be good supervisors, team managers and to ethically fulfil their responsibilities?*" is highly relevant.

The authors give two solutions - a "*slow science approach with a focus on quality over quantity*", and second "*more training courses specifically tailored to the unique challenges and responsibilities of senior researchers*". It is hard to disagree with these solutions, but at the same time hard to see how they can be implemented in the current research environment. To implement these a further step back is needed to the level of research funding, wherein such solutions become an expectation of funding, alongside the expectation of publication. Indeed until "slow science" and "researcher development" are rewarded equally to research publication, it is difficult to see how the current situation will change.

I commend the authors on this thoughtful essay as any effort to publicise these issues is welcome. But it is also important that these topics (and indeed essays) are brought to the attention of those who hold the purse strings of research if any change is to occur.

Is the topic of the essay discussed accurately in the context of the current literature?
Yes

Is the work clearly and cogently presented?
Yes

Is the argument persuasive and supported by appropriate evidence?
Yes

Does the essay contribute to the cultural, historical, social understanding of the field?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Research Ethics

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Author Response 07 Apr 2025

Signe Mežinska

Dear Prof. Kolstoe, Thank you for your insightful and positive review! The role of senior researchers in fostering ethical research practices is indeed critical, especially given the pressures of the 'publish or perish' culture. Implementing solutions such as the slow science approach and tailored training courses will require significant changes in the academic culture and research funding landscape. Your support and recognition of these efforts are greatly appreciated.

Competing Interests: No competing interests were disclosed.

Reviewer Report 25 February 2025

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Johannes JM van Delden
[1] University Medical Center Utrecht, Utrecht, The Netherlands
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This is a fine article, that addresses a pervasive problem in science. It is disappointing that a decade after the Lancet published its series on research waste, the scientific community still has to be reminded of the detrimental effects of a publish or perish culture. Not only detrimental for the scientists but also for society, which keeps paying for the production of too many articles too much of which is still research waste.
The article contributes to the awareness of the problem and unfortunately that is still necessary to do. It nicely describes how publish or perish leads to increased pressure which comes with power misuse and reluctance to report misconduct.
The article could win in influence if more text was written about the enablers of good science. That part is now restricted to the conclusion, but given the title, I would have expected more indications of how to promote good science. Currently the authors advocate slow science (please elaborate!), the recognition of diverse outputs and training courses. But I think more should be added here. In my institution for instance the matrix to evaluate researchers was radically changed from looking at H-indices only to the TRIPLE system, which looks at Team spirit, Research output, societal Impact, professional performance, Leadership and Education. By valuing all these areas researchers get the clear message that publishing is not the only way to be a good scientist.

Is the topic of the essay discussed accurately in the context of the current literature?
Yes

Is the work clearly and cogently presented?

Yes

Is the argument persuasive and supported by appropriate evidence?
Partly

Does the essay contribute to the cultural, historical, social understanding of the field?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Medical Ethics

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 07 Apr 2025

Signe Mežinska

Dear Prof. van Delden,

Thank you for your thoughtful and constructive feedback.

We appreciate your positive evaluation of the manuscript and thank you for your suggestions for improvement of the paper, particularly regarding the expanding information on enablers of good science. We have addressed these suggestions by expanding the “Discussion and conclusions” part and including examples of good practices.

Thank you once again for your insightful comments and support!

Competing Interests: No competing interests were disclosed.

Reviewer Report 07 February 2025

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Mohammad Hosseini
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This paper aims to provide a perspective on the role of senior researchers in promoting good

science. The topic is interesting and relevant, but the analysis lacks depth or structure. Particularly, the lack of any structure is noticeable, since the paper moves rather haphazardly from one topic to the next. I suggest using a framework or some kind of structure to make the paper more readable.
Furthermore, the term “senior researcher” is vaguely defined as “those who oversee a research group”. I have seen PhD or postdocs who oversee the work of a few graduate students, but that doesn't make them senior. Groups can be anything from 2 researchers to hundreds of researchers and overseeing these could be very different. Depending on the domain, the role of supervisors can be very different as well, think, for example, about the difference between a supervisor in humanities versus a supervisor in ecology and conservation where most of the research happens outdoors. Another suggestion is to make a distinction between supervision and mentorship (and staying away from the latter to ensure focus). The use of the term “ethical responsibilities” is confusing.
While the paper uses statements from the ALLEA code of conduct (aimed for researchers in the EU) to highlight senior researchers’ responsibilities, it remains unclear whether ALLEA (or any of the cited papers) use the same definition for “senior researcher”.

The paper also uses a 2024 case in the Netherlands that “drew widespread media attention to a professor accused of gross negligence” but offers no additional insights about what should have happened to the postdoc or their supervisor and kind of brushes everything off and notes that senior researchers are vulnerable like juniors and then goes on to some other examples. Please see attached file here- *https://s3-eu-west-1.amazonaws.com/openreseurope/linked/246028.reviewed_file.pdf*

Is the topic of the essay discussed accurately in the context of the current literature?
Partly

Is the work clearly and cogently presented?
Partly

Is the argument persuasive and supported by appropriate evidence?
Partly

Does the essay contribute to the cultural, historical, social understanding of the field?
No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Research ethics and integrity, AI Ethics, Open Science

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Author Response 07 Apr 2025
Signe Mežinska

Dear Prof. Husseini, thank you for your detailed and insightful comments!

They are very valuable for enhancing our manuscript. We are giving our responses to your comments below.

Reviewer Comment: *"This paper aims to provide a perspective on the role of senior researchers in promoting good science. The topic is interesting and relevant, but the analysis lacks depth or structure. Particularly, the lack of any structure is noticeable, since the paper moves rather haphazardly from one topic to the next. I suggest using a framework or some kind of structure to make the paper more readable."*
Author Response: Thank you for your valuable feedback. We appreciate your suggestion and have incorporated a more structured approach by changing some parts of the manuscript to enhance the readability and depth of our analysis.

Reviewer Comment: *"Furthermore, the term "senior researcher" is vaguely defined as "those who oversee a research group". I have seen PhD or postdocs who oversee the work of a few graduate students, but that doesn't make them senior. Groups can be anything from 2 researchers to hundreds of researchers and overseeing these could be very different. Depending on the domain, the role of supervisors can be very different as well, think, for example, about the difference between a supervisor in humanities versus a supervisor in ecology and conservation where most of the research happens outdoors. [..] While the paper uses statements from the ALLEA code of conduct (aimed for researchers in the EU) to highlight senior researchers' responsibilities, it remains unclear whether ALLEA (or any of the cited papers) use the same definition for "senior researcher"."*
Author Response: We appreciate your concern regarding the definition of senior researcher. In the amended manuscript, we have clarified the definition of senior researchers as researchers with extensive experience and expertise who oversee and supervise a research group. While we acknowledge that the use of this term can vary by field and region, we believe it is still meaningful to discuss the role of senior researchers in fostering research integrity based on the definition we suggest. Our definition aligns with the broad use of this term in the ALLEA European Code of Conduct for Research Integrity. Additionally, we note that no unified definition of senior researcher is available in the literature. We hope this clarification addresses your concerns.

Reviewer Comment: *"Another suggestion is to make a distinction between supervision and mentorship (and staying away from the latter to ensure focus)."*
Author Response: Thank you for this suggestion! We have explained the difference between supervision and mentorship and made necessary changes.

Reviewer Comment: *"The use of the term "ethical responsibilities" is confusing."*
Author Response: Thank you for your feedback regarding the use of the term "ethical responsibilities." We agree that this term may have caused some confusion. To clarify, we have revised the manuscript and changed the terminology.

Reviewer Comment: *"The paper also uses a 2024 case in the Netherlands that "drew widespread media attention to a professor accused of gross negligence" but offers no additional insights about what should have happened to the postdoc or their supervisor and kind of brushes everything off and notes that senior researchers are vulnerable like juniors and then goes on to some other examples."*

Author Response: Thank you for your feedback regarding this case! We appreciate your concern about the depth of analysis provided. However, we believe that an in-depth analysis of this specific case is not necessary for the scope of this paper. The references we have included offer readers the opportunity to explore the case further and gain more detailed insights. Our intention was to highlight the broader issue of vulnerability among senior researchers, similar to early career researchers, and to provide a range of examples to support this discussion. We hope this approach aligns with the objectives of our paper and provides sufficient context for our readers.

Competing Interests: No competing interests were disclosed.