Title: "Ethical Authorship In Research Publication"

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Abstract

Substantial contribution and accountability are widely accepted as foundational criteria for crediting scientific work. Misunderstandings of authorship criteria and improper authorship designation remain widespread in published research however, and the resulting authorship conflicts have few formal avenues for resolution and leave early career and less experienced researchers disadvantaged. Recommendations are suggested to prevent authorship designation problems, respond more effectively when conflict arises, and achieve proper impartial resolution around questions of research credit, including:: use of prior agreements on authorship, notification to prospective publications of pending disputes, a "contributor-guarantor" model of contribution, third party dispute adjudication, journal 'expressions of concern' where authorship disputes go unresolved, and researcher expectation that when anticipated and well-prepared for, conflict can be generative to scientific collaboration

Keywords: ethics, authorship, dispute, ICMJE, resolution, misconduct

Main Article With References

Do prevailing authorship practices in medical science research rest on solid ethical ground? Inquiry suggests a crisis instead. As a study in *American Journal of Physiology-Cell Physiology* noted, "There is a disturbing and pervasive lack of understanding of what authorship on scientific papers means, of the responsibilities that it conveys, and of how it is determined."¹

Authorship would seem straightforward, and indeed more than 500 journals endorse the International Committee of Medical Journal Editors (ICMJE) commonsense guidelines, making them the leading ethical standard.² The ICMJE criteria are: (1) Substantial contributions to work conception or design or to acquisition and analysis of data; (2) manuscript draft and revision; (3) final approval; and (4) shared accountable for all aspects of the work, including appropriately investigating and resolving questions about integrity. All four criteria must be present to qualify for authorship.³ This emphasis on *substantial contribution* is shared beyond ICMJE institutions⁴; one study shows 92% of postdoctoral fellows consider substantial contribution to study design as central to authorship.⁵

Despite this, "there is a lack of knowledge and understanding of current authorship criteria."⁶ and published authorship frequently violate these standards.⁷ A systematic review determined that "the evidence shows that decisions on authorship are often not made according to the official criteria", and authors and editors were either not familiar with or disagreed with criteria.⁸ Authors frequently are included on improper grounds, such as being the department head or acquiring funding⁹ and included on a gift, honorary, or "ghost" basis, with many authors not making substantial contributions to the work. Such practices are often supported by researcher attitudes: 38% percent of respondents in one study reported published authorship on a paper where another author did not meet authorship criteria and nearly a third said they would agree to claim an undeserving author as author to advance their own career.¹⁰ This willingness more than doubled among those who had *previous* unethical experiences with authorship inclusion.¹¹ Thus improper authorship fuels further improper authorship, encouraging a systematic decay of publication ethics in research as a whole.

A significant number of researchers will enter conflict about the credit, acknowledgment, and appropriate participation in publication. Authorship disputes contributed to 7.4% of all paper retractions, even where the research was otherwise sound.¹² "High prevalence of authorship problems may have severe impact on the integrity of the research process, just as more serious forms of research misconduct."¹³ Unresolved disputes can result in "reputational harm" to innovative endeavors in research, setting back emerging fields and erecting new barriers.¹⁴ Negative impacts within institutions include limiting collaborations, alienation between colleagues, and providing fuel for retaliatory behaviors.¹⁵

The ICMJE asserts that substantial contribution also entitles researchers to *invitation* to authorship itself, highlighting the widespread problem of prior exclusion. The timing of the contribution or whether the research team has dissolved or changed are not relevant for authorship as long as the contribution has already been made: "These authorship criteria are

intended to reserve the status of authorship for those who deserve credit and can take responsibility for the work. The criteria are not intended for use as a means to disqualify colleagues from authorship who otherwise meet authorship criteria by denying them the opportunity to meet criterion #s 2 or 3. Therefore, all individuals who meet the first criterion [substantial contribution] should have the opportunity to participate in the review, drafting, and final approval of the manuscript."¹⁶

Especially vulnerable to improper prior exclusion are early career, less experienced, and short-term researchers, who are often ill-equipped to assert standards.^{17,18} The Committee on Publication Ethics (COPE), describes a common scenario: "The junior researcher would not qualify as an author according to the ICMJE criteria because he/she had no involvement in the writing of the paper nor final approval of the version to be published. However, the junior researcher may have had no opportunity to do so. He/she should have been offered this opportunity and at least included in the acknowledgment section if the opportunity was declined."¹⁹ In practice, junior research staff and those no longer part of a team when a paper is submitted are often most disadvantaged in proper assignment of authorship.²⁰

Resolving Disputes

Widespread improper authorship is entrenched by a dearth of viable means for resolving disputes. The ICMJE and COPE recommend researchers resolve disputes on their own, as journals are poorly positioned to investigate.²¹ Such reliance on internal resolution, however, creates further problems resulting from power differentials, misuse of status by senior researchers, and the greater likelihood of outcomes unfavorable to under-represented and vulnerable groups.²² Disputes addressed through institutional, not editorial, norms rise up institutional hierarchies subject to often arbitrary decisions from above. "Because of hierarchy and the status of senior academics, there were often no formal avenues of appeal against authorship decisions made by the principal investigator. Resolution of difficulties was often too subjective and dependent on personality, instead of on policy."²³ While publisher Elsevier recommends institutions funding research oversee resolution²⁴, funders are also interested parties and may approach disputes without impartiality, seek to avoid difficulties to protect reputations, or fear legal exposure. Internal resolution is often out of reach, but there are few avenues elsewhere.^{25,26}

Recommendations

How can improper authorship be prevented, especially to support newer researchers collaborating across differences in background, power, and experience?

Many sources, including COPE, emphasize transparent authorship planning and dispute preparation at the *outset* of any project.^{27,28} Researchers should be familiar with and agree to ICMJE guidelines, and take active responsibility for any question about the work's integrity. "The peer-reviewed literature is full of examples where people who claim credit are quick to abdicate their responsibility when the work was found to be fraudulent or flawed."²⁹ Prior agreement to disclose any unresolved authorship disputes as part of journal submission would

also create a strong incentive for resolution. As Kevin Strange of Vanderbilt University notes, "No reputable journal that I am aware of will publish a manuscript if there are disagreements over its authorship or content."³⁰

Funders and accountable institutions can also plan beforehand by establishing dispute resolution avenues as conditions for the work. Peer review, involvement of ethics experts, and outside third party intervention allow for impartial investigation and create a prior deterrence to misconduct that might take root where impunity is anticipated.³¹ "People who now have the seniority to try to determine or influence authorship credit could have that power reduced if alternative dispute resolution services were well known and readily available to authors."³² Kings College recommended arbitration and right of appeal as especially important for vulnerable short-term researchers, relying on a designated external person or panel to avoid any conflict of interest.³³

Viable resolutions arise from transparent investigation by a legitimate body. If however a journal brings a dispute to a responsible institution such as a funder but they will not pursue an investigation or make a determination, an impasse ensues. The journal has no grounds for action, but publishing without acknowledging the dispute undermines confidence in the research and encourages impunity. One solution is to attach an "expression of concern" to the published article, to highlight the possibility of a problem in a published paper without questioning the soundness of the research findings themselves. "Expressions of concern" are a relatively new and non-standardized editorial notice compared to corrections or retractions, with considerable differences among journals.³⁴ The COPE guidelines suggest editors consider an expression of concern when they receive credible evidence of misconduct that is inconclusive; when affiliated institutions are presented with evidence but will not investigate; when editors believe investigation has not been or would not be impartial; or when an investigation is underway but a judgment is not available at the time of publication.³⁵

Especially in the internet era of rapid content revision and dissemination, a new "contributor-guarantor" model of authorship designation may be in order, where all contributions are described in detail and those responsible for the work are named as "guarantors".³⁶ Such granular transparency around the generation of the research and publication could replace the more opaque and increasingly antiquated author-acknowledgement-or-citation model. Works could link to explanatory details about each contributor's role, alongside transparency in other areas such as work plans and finances. Such explicit disclosure may be the most sensible way to discourage abuses of authorship, encourage appropriate credit for substantial contributions, and inform editors and readers who stands behind each key portion of the work and who vouches for it as a whole.³⁷

Finally, Faulkes noted that "rather than viewing authorship disputes as rare events that must be handled on a case by case basis, researchers and journals should view the potential for disputes as predictable, preventable, and soluble."³⁸ Disputes are better understood as learning opportunities: "We are going to do research and publish together" becomes "We are going to do research and publish together, and we prepare for conflict that we will approach generatively to further our collaboration." Such an atmosphere, along with new best practices, might replace

acrimonious disputes that set back shared goals with creative opportunities supported by outside accountability. Bringing authorship out of the shadows in this way would help reestablish confidence that publication authorship is based on transparent, ethical conduct.

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