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Factors that Affect Integrity of Authorship of Scientific Meeting Abstracts

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Abstract

Background—Strict criteria for manuscript authorship exist to guide decisions on who should be considered an author. Less is known about how authorship for scientific meetings is determined. Our goal was to explore factors that influence decisions about authorship of conference abstracts.

Methods—In 2010, we conducted qualitative focus groups with a stratified sample of 36 trainees, 19 junior faculty, and 11 senior faculty. Focus group transcripts were coded using a coding scheme derived from an initial review of the transcripts and a preliminary theoretical framework, which was based on the literature, anecdotes, and personal experience.

Results—We identified 6 themes related to abstract authorship: comparisons with manuscripts; collaboration dynamics; time; experience and professional development; standards for authorship; and funding. We found that: views of abstracts as a lesser form of publication lead to diminished integrity of authorship; trainee inexperience and the dynamics of collaboration adversely influence the integrity of authorship independently of the perceived difference between an abstract and an article; and early communication about authorship appears to increase the integrity of authorship decisions.

Conclusions—Authors do not hold abstracts to the same standard as manuscripts. As such, authorship decisions are frequently inconsistent with authorship criteria pertaining to manuscripts. Such inconsistencies might be improved with stricter institutional rules, clear and consistent authorship guidelines for abstracts submitted to conferences, a requirement that all authors verify their contributions to the abstract, and additional training in the responsible conduct of research.

Keywords

Authorship; Abstracts; Ethics, Research; Qualitative Research; Communication

INTRODUCTION

The pressure to present and publish research findings is considerable. Presentations and publications establish an evidence base, promote authors' reputations, and contribute to funding and promotion decisions. Exposure at conferences as well as in the peer-reviewed literature maximizes opportunities for networking and collaboration.

Because individual contributions to research are recognized through authorship, integrity in assigning authorship is a critical aspect of the responsible conduct of research (Brice, Bligh et al. 2009; Macrina 2007; Steneck 2006). Yet issues surrounding integrity of authorship decisions have been estimated to occur in 10-60% of all manuscripts (Bates, Ani et al. 2004; Flanagan, Carey et al. 1998; Mowatt, Shirran et al. 2002; Ross, Hill et al. 2008; Steneck 2006). Concerns about the inclusion of individuals who did not contribute to the work and failure to recognize others who did contribute have led journals to adopt guidelines for determining who should be considered an author (Brice, Bligh et al. 2009; International Committee of Medical Journal Editors (ICMJE) 2007; Macrina 2007).

To date, most research on authorship has focused on peer-reviewed manuscripts, with little focus on abstracts presented at conferences. Abstracts are typically portrayed in the media as scientific fact, ignoring the preliminary nature of many of those findings (Condit 2004; McBride, Sanders et al. 2007; Schwartz, Woloshin et al. 2002). In addition, physicians sometimes change their clinical practices based on conference abstract data alone (Giordano, Duan et al. 2006; Schwartz, Woloshin et al. 2002), even though fewer than half of accepted conference abstracts ever beget a published full-length manuscript (Estelle and Simons 2007; Macmillan, Moore et al. 2007; Sanossian, Ohanian et al. 2006; Scherer, Langenberg et al. 2007; Weber, Callahan et al. 1998). It stands to reason, therefore, that authorship of abstracts should be managed with the same rigor as authorship of manuscripts. Nevertheless, guidelines for assigning authorship to scientific meeting abstracts remain relatively scarce. Given the estimated rates of irresponsible authorship in manuscripts, it is likely that similar problems occur with a similar or greater frequency with conference abstracts.

Many factors are likely to impact integrity of authorship assignment for scientific abstracts. First, because scientists worry about receiving adequate credit for collaboration, the submitting author might overcompensate by including authors who had very little involvement in the work (Wilcox 1998; Wray 2006). Assigning credit where it is not due, particularly with extensive authorship lists, can decrease the authors' sense of ownership and responsibility for content (Rennie and Yank 1998).

Second, experience and professional development likely play a role in assigning authorship. Although courses in responsible conduct of research can increase understanding of authorship standards (Hren, Sambunjak et al. 2007), how this translates to actually assigning authorship across a researcher's career is unknown. Specific to scientific meeting abstracts, it is often the case that to obtain travel funding to attend a conference an attendee must present an abstract, thereby influencing selection of authors and author order.

Further, the need to meet submission deadlines and the perception that there is sufficient time to fix any mistakes between the abstract submission date and the date of the meeting may lead researchers to take shortcuts in assigning appropriate authorship. Finally, sponsors may provide "ghost authors" as they push for disseminating results rapidly (Merry 2008; Steneck 2006).

Our goal in this study was to explore the factors that influence decisions about authorship of conference abstracts. We ascertained what value researchers attributed to abstracts in relation to full-length manuscripts and clarified the roles that collaboration, experience and

professional development, time, and financial pressures play in the decisions researchers make about assigning authorship.

METHODS

We conducted a qualitative focus group study at an urban academic health center during 2010. Stratified purposive sampling was used to include a broad range of researchers at different levels of experience and professional development. We identified and recruited participants from lists of students who had been enrolled 8-18 months prior in a Responsible Conduct of Research class required for all research trainees funded by the National Institutes of Health (NIH) and from a list of individuals requesting consultations with a clinical research consultation service.

After obtaining informed consent from participants, an experienced moderator conducted the focus groups using a semi-structured moderator guide (Appendix A). The guide was based on our preliminary framework, which was based in turn on consensus among the research team about the primary issues and themes from the literature, as well as anecdotes from colleagues and personal experience (Figure 1a). Focus groups were audio- and videotaped. Audiotapes were transcribed, and the videotape was used to verify the transcript and distinguish each speaker.

A coding scheme was developed that incorporated deductive codes based on focus group questions and inductive codes based on an initial review of the transcripts. Two trained readers independently applied the coding scheme to 30% of the transcripts. Agreement between coders was assessed using Cohen's kappa with a minimum value of .61 used to indicate substantial agreement (Landis and Koch 1977). For all codes for which Cohen's kappa was less than .61, the coding scheme was reassessed and revised where necessary, and the coders were retrained and recoded the sample. Final kappa values for codes ranged from .62 to .99. After substantial agreement between the two coders was achieved, the remaining transcripts were coded by 1 of the 2 readers.

We then used the coding results to develop a revised model of factors influencing authorship that was validated through investigator triangulation, where multiple researchers are used to overcome potential biases or shortcomings in the interpretations of any single researcher and convergence of interpretations enhances the validity of a proposed model (Denzin 1970).

The study was approved by the University of Cincinnati's Institutional Review Board.

RESULTS

We conducted seven focus groups: 3 with trainees (defined as graduate students through postdoctoral fellows; $n=36$); 3 with junior faculty (defined as pre-tenure assistant professors and instructors; $n=19$); and 1 with senior faculty (defined as tenured associate and full professors; $n=11$). Participants were drawn from a broad range of research areas (see Table 1).

We identified six themes affecting abstract authorship from the transcripts: comparisons with manuscripts; collaboration dynamics; time; experience and professional development; standards for authorship; and funding.

Comparisons with manuscripts

Overwhelmingly, participants said that abstracts differ substantially from full-length manuscripts. One junior faculty member noted, "The level of peer review is dramatically

different.” A trainee claimed, “You can be a little more vague in your abstract because you don’t want to give away critical findings before you are ready to publish them.” That perspective was used to justify attributing lesser value to abstracts and thus less stringent adherence to authorship standards: “An abstract is not as important in terms of credentials, like a CV, compared to publications.”

Typically, the difference in importance was framed as developmental; conference abstracts were perceived as a milestone en route to writing a manuscript. One trainee said, “Our [abstracts] are almost like baby papers. We’ll submit it and then do the larger study.” Some participants said submitting preliminary results presented an opportunity to receive feedback on a project. One junior faculty observed, “It is a good opportunity to present interim analyses and sometimes get feedback on that, you know. I think that helps.” Few participants indicated that abstracts and papers should be held to the same standards.

Because abstracts were perceived to differ in value from manuscripts, changes in authorship from the conference abstract to the manuscript were considered acceptable. A common example was a trainee first-authoring a conference abstract but playing a lesser role in writing the article, and therefore not serving as first author of the manuscript. One junior faculty member noted, “If one of our students [has] actually done a lot of work and wants to go to a meeting, then he creates the poster, and he’s the first author of the poster. But he doesn’t go on to write the manuscript.”

Another issue raised was the need to add or remove authors when transitioning from an abstract to an article. As one trainee noted, “To push it to the next level, you [would have] to add collaborators, because you just couldn’t really pull it off. I mean you could, but it would be expensive or you might get scooped.” Another noted,

I just submitted an abstract for a conference and it included technician-level type people. And probably you wouldn’t do that for a paper, unless they had some significant intellectual contribution other than just analyzing the data.

Despite these comments, other participants viewed authorship as immutable, especially the position of first and senior authorships. One senior faculty participant observed,

In my experience, it [has] been the same authors on the abstract that end up being the authors in the paper, and the first author takes the lead for the abstract and does the same for the paper.

Collaboration Dynamics

Participants noted that geographic separation and disciplinary boundaries encountered in collaborations can influence authorship assignment. A particular concern was the ability to get timely input from co-authors. One senior faculty member observed,

I think there’s a difference also whether you’re looking at abstracts that involve small case-report-type situations, versus abstracts that are involving multi-center studies. When you have coordinating centers and 6 or 8 different study sites, that takes a lot more coordination.

A junior faculty member noted,

There are clearly challenges with that. You’re not around with ... these people all the time. You can’t just go knock on their door and say, ‘Hey, I need this done now. It’s taking too long.’

Good communication from the outset of the project was touted as a solution to potential authorship problems. One trainee, reflecting on a collaboration, mused, “You know, it went

really well. Why? Because, you know, he made sure he communicated with me, and I made sure I communicated with him.” A junior faculty member declared, “Very early discussion is just absolutely mandatory.”

Yet, challenges exist to communicating about authorship explicitly. One junior faculty member noted,

If you’re working with a big team, someone’s feelings are going to get hurt. And it’s so hard to stay, at least, for me, to stay true to what it should mean and to various guidelines of what authorship criteria are.

A related issue involved instances in which collaborators abused their authority or control over vital resources to force authorship. The most extensive discussion of abuses of power occurred among senior faculty participants. One senior faculty member observed, “There are also people that when they provide something, they provide it with the stipulation that they will be an author [on both abstracts and papers].” Another remarked,

But if it’s a sample or if it’s a tissue bank, I would say – it’s more often than not, that that happens, where it comes out that you will not get this unless I am an author, and sometimes they even want [the] senior author spot.

In addition to the examples of researchers abusing their control of a resource to demand authorship, senior faculty members indicated that no recourse was available to those forced to grant authorship that would not lead to retaliation. One senior faculty participant recalled,

We had talked to our division director, and said, ‘Hey, is there somewhere we can go with this [to challenge the authorship assignment]?’ And he [said], ‘Not unless you want to get us all fired, basically.’

Time

We observed time constraints to be a primary driver of abstract authorship decisions. One common occurrence was learning about being listed as an abstract author only after the abstract was submitted and accepted for presentation. One junior faculty member said, “I get some that are like, ‘By the way, we submitted this. It’s already accepted. Hope that’s OK.’”

A second challenge was noted to occur when the lead author receives co-authors’ comments on an abstract too late to change it, or receives no feedback at all. One junior faculty member complained, “You want everybody to approve it, look at it, give feedback, and then sometimes you don’t hear from, you know, some of the main people you’d like to hear from.” Some participants established deadlines after which reviews would be ignored. One senior faculty member said, “I usually say that I have to get the comments by such-and-such a time, and if I don’t get them by then, then I assume that you’re OK with it.” The converse is when insufficient time is given to co-authors. A junior faculty member described sending out abstracts for review only one day before the deadline: “I say, ‘You know, we have to get this done by tomorrow. Let me know if you have a major issue with this.’”

Experience

Discussion of the impact of experience on authorship decisions focused on trainees and issues that arose with their mentors and colleagues. Participants identified trainee inexperience with writing and submitting abstracts as a challenge to maintaining the integrity of authorship. One trainee discussed a situation in which inexperience led to conference abstracts being submitted without review by all authors:

I've seen that go down very negatively in some departments where someone, particularly like maybe a newer grad student or someone who doesn't really know that they're supposed to run it by all of the co-authors, just submits it.

Inexperienced researchers also seemed prone to having mentors wanting credit for perceived minimal input. One trainee observed,

I've got 2 supervisors and, one I would send the abstract to and it will come back and he'll have done his own revisions, and it will look almost nothing like what I sent to him, and it will typically read far better. And the other one, I'll send it to him and it'll come back, and I'm not even sure if he's read it.

Standards

Discussion of standards for abstract authorship raised three notable points. First, although participants knew about the International Committee of Medical Journal Editors (ICMJE) standards for manuscript authorship, they did not believe that those standards applied to abstracts. One junior faculty member observed, "When you submit an abstract, it doesn't ask each author on it to sign the same waiver ... like [when] you submit to [*The New England Journal of Medicine*]."

Second, some participants discussed conferences that do adhere to ICMJE standards (e.g., the American Diabetes Association annual meeting), but indicated that applying those requirements to abstracts would be onerous. One junior faculty stated, "Seems like a lot of paperwork."

The third and most common issue raised was the need for clear communication of standards. One junior faculty said, "It's good to have the discussion upfront." One trainee observed that in his/her department, "there are very specific written guidelines for an abstract – for a conference – and authorship and how that's determined." A junior faculty participant stated, "What's worked best is delineating it up way beforehand, even before the study starts, how the authorship agreements are going to be, whether it's an abstract or a manuscript."

Funding

Issues related to acquiring funding for travel or fulfilling requirements placed on research funding were those least discussed by participants from among the six major themes. Mandates by funding agencies to present research at conferences were noted, however. One senior faculty member explained,

In my contract with one of my funding sources, one of the deliverables is that I will submit an abstract on the results at a specific meeting, because they want that – the data – out there for that meeting.

Funding for travel was also raised. One junior faculty said, "It's easier to legitimize my going to a conference and spending \$2500 if I'm also presenting something."

Model

Based on our findings, we refined our model of factors affecting the integrity of abstract authorship (Figure 1b). Issues related to time (deadlines, gap between submission and presentation); funding (both sponsor mandates and the need for travel funding); and inadequate standards for abstract authorship all contribute to perceptions of differences between abstracts and manuscripts. Views of abstracts as a lesser form of publication in turn diminish integrity of authorship. Trainee inexperience, complications in the mentor-mentee relationship, and the dynamics of collaboration adversely influence the integrity of authorship independently of the perceived difference between an abstract and an article. In

contrast, early communication about authorship appears to increase the integrity of authorship decisions.

DISCUSSION

Our findings indicate that researchers not only fail to hold scientific meeting abstracts to the same standard as manuscripts but also that authorship decisions are frequently inconsistent with authorship criteria pertaining to manuscripts. Participants identified a range of issues that impact abstract authorship. These corroborated our initial expectations that collaboration dynamics, experience level, funding issues, and time factors related to the opportunity to review abstracts and to submission deadlines would impact authorship decisions. In addition, the findings expanded on those themes to include standards for abstract authorship and the lesser value given to abstracts in comparison with manuscripts.

Participants noted that scientific meeting abstracts are generally considered to be mere precursors to a publishable article. Because abstracts were considered preliminary, authorship on abstracts was viewed as fluid and open to change as an article was being written. Such perspectives potentially contributes to diminished integrity of abstract authorship (as well as the abstract itself), especially if researchers believe that the preliminary nature justifies less effort to adhere to abstract authorship standards—if and when they exist.

Although we do not challenge the idea that abstracts are preliminary, we do not believe that non-adherence to authorship standards is justified. For example, the ICMJE standards require authors to have played a substantial role in the research process, the writing of the abstract or article, and the approval of the final draft. That standard allows for open interpretation by different research groups for what counts as “substantial contribution,” reflecting the disciplinary norms, organizational cultures, and interpersonal ethical obligations concerning fairness and reciprocity within a laboratory or collaborative group (Louis, Holdsworth et al. 2008). Adhering to an ICMJE-like standard for conference abstracts does not preclude new researchers from making substantial contributions to the article or for a shift in author order based on relative increasing or decreasing contributions.

Collaboration dynamics complicated authorship considerations, but their impact on authorship integrity overall was not clear. Explicit, early discussion of authorship was identified as essential for successful collaborations. The fatalism expressed by senior faculty members over abuses of power implied a resignation to abuse, and such resignation undercuts the integrity of abstract authorship and efforts to improve adherence to authorship criteria. Surprisingly, abuse of power as a factor influencing authorship was not raised by trainees or junior faculty. Two possible explanations are that trainees and junior faculty have received training only on current, stricter authorship criteria that explicitly prohibit forms of gift and honorary authorship described by senior faculty or that newer researchers have not been involved in research long enough to have witnessed abuse. Future research should assess whether experience and fatalism regarding inappropriate authorship are related.

When discussing experience in authoring abstracts, participants of all levels emphasized that trainees’ inexperience with norms for reviewing and vetting abstracts could harm the integrity of authorship: The greater the trainee’s inexperience, the more likely that all authors might not be given the opportunity to review an abstract or receive sufficient time to review the abstract. As such, as trainees are taught the norms for authorship and become familiar with the expectations of their mentor, lab and/or division, the problem of insufficient review ideally should decrease.

We identified funding issues as a factor potentially influencing authorship, but discussion on that topic was minimal. The need to cover the cost of travel could lead to adding authors or changing author order so that submitting authors could receive travel funding. The role that research sponsors play in authorship should be examined further to see if funding mandates impact authorship decisions.

Participants were generally aware of the ICMJE authorship criteria, and while they noted that some conference organizers applied those criteria to abstract authorship, participants either felt that the criteria did not apply to meeting abstracts or that applying them to meeting abstracts was cumbersome. Whereas conference organizers and scientific organizations should have a role in upholding standards for abstract authorship, the specifics of that role require further study. A key issue to consider is how they uphold those standards and the degree to which the mechanisms impede submission and whether those mechanisms encourage submitters to think about the authorship decisions they have made or will make. Also, future educational efforts should emphasize developing and applying appropriate authorship standards to scientific meeting abstracts. Such educational efforts must go beyond merely informing researchers about a standard's existence and its details: a recent study indicated that the moral intuitions of medical students played an important role in their judgments about authorship dilemmas (Hren, Sambunjak et al. 2012). Therefore, educational efforts that encourage students to consider the interface between their moral intuitions and authorship standards might improve adherence to those standards.

Two main issues were raised in relation to time. The first was insufficient time to circulate the abstract to co-authors for their review or failure of co-authors to provide timely feedback. Second, the length of time between submission and presentation was felt to yield abstracts that do not adequately reflect authors' contributions to the project because the research is evolving at the time of submission and authorship assignment might not reflect what ultimately transpires.

One potential limitation to our study is the recruitment of participants from a Responsible Conduct of Research course, participants who might have had a prior interest in the topic. We believe that the potential impact of this limitation is minimal, because the course is required for all biomedical researchers who receive NIH funding at the University of Cincinnati and Cincinnati Children's Hospital Medical Center and because the length of time between the end of the course and the completion of the focus group sessions would help minimize the likelihood that participants would offer rote responses derived from the course to the issues raised in the focus group.

Those limitations notwithstanding, to the extent that problematic authorship assignments can be minimized by institutional rules, clear and consistent conference authorship guidelines, a requirement that all authors sign forms verifying their contributions to the conference abstract, and individual Responsible Conduct of Research training that encourages reflecting on one's moral intuitions about authorship, we believe that the integrity of scientific research conference abstract authorship should and can be improved.

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Appendix A: Moderator guide

Text in parentheses indicates alternate wording of questions. Text in brackets consists of directions for the moderator.

1. How do conference presentations differ from journal publications?
  - How do concerns about authorship differ?
    - Are standards different?
    - Are they aware of standards for manuscripts and for abstracts?
  - How does collaboration differ?
  - How does time for research differ?
  - How does time to review written materials differ?
2. What advice would you give a trainee for their first time submitting an abstract?
3. What are some of the opportunities and challenges (academic researchers/trainees) experience in researching and writing abstracts? [Use “academic researchers” or “trainees” as appropriate for the specific group]

Think about some abstracts that you have recently worked on, especially situations where writing and collaborating with coauthors went smoothly/ situations where writing and collaborating were complicated. [Repeat the prompt using the alternate phrasing; e.g., if you start with situations that ran smoothly, repeat the prompt and the following questions with a situation that was complicated.]
4. What motivated you to submit the abstract to this conference? [*Probe the following factors as necessary.*]
  - Number of abstracts submitted by author or coauthors
  - Need to attend specific conference (i.e., networking, job seeking)
  - Stipulation for funding/continued funding
  -
5. What factors made the situation (a) complicated or (b) run smoothly? [Moderator should break out (a) and (b) as appropriate for the specific prompt.]
6. Do you feel abstract submission can ever proceed smoothly? Why or why not?

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Figure 1a. Initial conceptual figure of authorship factors

Initial and refined versions of our conceptual model of factors impacting integrity of abstract authorship decisions. Initially (*1a*), the 4 factors identified from literature and anecdotal experience directly impact the integrity of abstract authorship decisions. In the empirically-based model (*1b*), funding, time between submission and presentation, and lack of clear abstract authorship standards influence perceived differences between abstracts and articles, which in turn influences the integrity of abstract authorship. The remaining factors influence the integrity of abstract authorship decisions directly. Collaboration dynamics and early communication about authorship interact, and mentor-mentee relationship complications and trainee inexperience interact.

Figure 1b. Refined conceptual figure of authorship factors

Initial and refined versions of our conceptual model of factors impacting integrity of abstract authorship decisions. Initially (*1a*), the 4 factors identified from literature and anecdotal experience directly impact the integrity of abstract authorship decisions. In the empirically-based model (*1b*), funding, time between submission and presentation, and lack of clear abstract authorship standards influence perceived differences between abstracts and articles, which in turn influences the integrity of abstract authorship. The remaining factors influence the integrity of abstract authorship decisions directly. Collaboration dynamics and early communication about authorship interact, and mentor-mentee relationship complications and trainee inexperience interact.

Table 1

Participant research areas (n=66)

	Trainee	Junior	Senior
Basic science ^a	12	1	3
Clinical ^b	10	14	3
Social/Behavioral/Economic	4	1	2
Other	9		2
Not reported ^c	1	3	1

^aIncludes all references to “bench science” or work with cell or animal models.

^bIncludes all discussion of research in clinical and T2 translational settings

^cFive participants joined the focus group after the introductions were finished. No indication of their research area was recorded.