

CDR Authorship Guidelines

The CDR strongly encourages its students to aim for a cumulative doctoral thesis. This means that you are expected to publish the results of your research in international peer-reviewed journals. Many issues are attached to writing manuscripts for journals and one key issue is deciding on who will be an author on a manuscript and in what order the authors will be listed.

This guideline gives you key information on issues surrounding authorship and on how to proceed when deciding who is an author and in what order authors should be listed.

Why is authorship an issue?

Authorship is becoming increasingly important for academic and professional writers. Careers, promotions, tenure, and collaborations can depend upon successful publications. A number of factors can lead to problems with assigning authorship:

- **Pressure to publish.** Funding and promotion, particularly within academic areas, are often based on the number of publications. This creates an artificial pressure for researchers to be listed as an author on publications.
- **Inter-disciplinary conventions.** Different fields of study often have vastly different conventions when it comes to allocating authors. While a lot of disciplines tend to list authors in decreasing order of contribution, others may list authors in alphabetical order, regardless of the individual contribution. The issue of determining whether or not “lesser” contributors should be listed at all will often be applied completely differently across the “hard” and “soft” sciences.
- **Multiple authors.** Collaborative research is often highly regarded, again creating artificial pressure to list multiple authors on publications.
- **Unequal power relationships.** Unequal power between contributors will often mean that those in positions of power are more likely to insist they be a co-author on publications where their contributions are minor. This unequal power balance is often observed within student-supervisor relationships.

Who is an author?

The Vancouver Protocol is internationally recognised as the standard for determining authorship on publications and is now applied across all disciplines in the world's top universities (<http://www.icmje.org/>). The principles of the Vancouver Protocol are simple, it states that to be credited as an author, each and every author on a publication needs to have been involved in the:

1. Conception and design, or analysis and interpretation of data
AND
2. Drafting the article or revising it critically for important intellectual content
AND
3. Final approval of the version to be published.

Note the "AND"s here. It is not enough to have done just one or two of these things – a legitimate author would need to be involved in all three to be acknowledged as an author.

‘Approval of the final version’ means that every author must take full responsibility for the content and scientific integrity of the research reported. This is seen as a way to combat scientific dishonesty, increase transparency and improve accountability (see DFG 1998). However, not in all cases should

this be understood as meaning that each author must understand the theoretical basis and implications as well as the technical procedures involved in full detail. In some cases, e.g. when the work is interdisciplinary or involves very complex procedures or techniques there will hardly be any scientist who is able to comprehend every small measurement and processing step, or has a profound understanding of the theories in a different discipline. Thus, in practice you do need to trust your co-authors. However, this does not free you from full responsibility for the content of the paper: in case of scientific fraud, all co-authors share responsibility equally.

But to decide who should be author, it remains a useful test: each and every author, without the help from co-authors, should be able to understand, to present and to defend the general ideas and findings published in the paper.

Who is not an author?

Participation solely in the acquisition of funding or the collection of data or general supervision of the research group is not sufficient for authorship. Simply by virtue of being the head of the department or institute, one does not get an automatic right to be an author. Though excluding a non-contributing colleague or the head may at times be difficult, authorship should not be granted for departmental peace and amity. Authorship should not be gifted as a means for appreciation or encouragement. Providing help in literature search, technically editing the manuscript, or helping with statistical analysis themselves do not deserve listing as a co-author. Technical help, without intellectual participation in writing and reviewing the manuscript, that otherwise would have been done as per the work schedule, too, is not worthy of credit as an author. In other words, all non-scientific contributions do not lead to authorship (see Table 1).

Table 1: Scientific vs. non-scientific contributions to a paper.

Scientific contributions	Non-scientific contribution
Design of the study	Obtaining funds for the research
Contributing to data analysis decisions	Providing supervision in a research group
Interpretation of data	Running an experiment, providing technical support
Interpretation of results (e.g. in light of the literature)	Involvement in the collection and assembly of data
Major modifications of existing model or implementation of a new model	Running models with only slight (if any) modifications to existing models
Developing a new conceptual model	Statistical analysis (if done according to instructions)
Integrating diverse theoretical perspectives	Proof-reading, commenting on the paper
Intellectual contribution that significantly alters the content of the paper	Literature search
Writing portions of the manuscript	Providing data or important materials

Source: Adapted from Sommerfeld and Shaher (s.d.)

Order of authorship

The credit associated with a manuscript is usually judged by the order in which the authors are listed. Traditionally, especially in the natural sciences, the first author is the one who does most of the work and the last name is reserved for the head or the most senior colleague. However, with the changes in literature indexing policies (listing only three, six, or twenty four names), and non-uniform policies of journals, even this aspect has been debated at length. The various suggestions have been to list authors by alphabet, by seniority and by importance of contribution.

The most accepted and the logical one is that the order should be based on the relative contribution: the one with the maximum contribution should lead the list while the one with the least input should bring up the rear. The first author is also usually the one who has done most of the writing. The Vancouver Protocol states that 'the order of the authorship on the byline should be a joint decision of the co-authors. Authors should be prepared to explain the order in which authors are listed...'.¹

In case you choose to list the authors following a different reasoning (e.g. equal contribution, listing alphabetically), you should include a footnote in the published article explaining your logic. If the same group of authors publish several papers together, they might want to agree on taking turns as a first author. In this case too the authors might want to include a footnote stating that “The authors contributed equally to the publication”.

Next to the first author, the corresponding author is also widely recognised as being a key contributor to the paper. The corresponding author is responsible to communicate with the journal the paper is submitted to (including responding to reviewers’ comments), and to make sure that all authors listed agree with the final version of the paper to be submitted. Usually the first author will be the corresponding author, but other agreements are of course possible (especially if two authors contributed equally to the manuscript).

Journals usually do not question the order of the authors. This means it is entirely up to the authors to decide in which order they should be listed.

In complex cases, a weighting schema may be useful in determining which tasks are required for a given level of authorship credit (for an example, see Table 2). The number of points for each contribution varies depending on its scholarly importance. A contributor must earn a certain number of points to earn authorship credit, and the individual with the highest number of points is granted first authorship. This procedure has the advantage of helping all parties involved to carefully examine their respective responsibilities and contributions.

Table 2: Weighing the importance of each author’s contribution to the article

Manuscript content	Importance	Authors (% for each item)			Relative weighting
		George	Lilly	Florence	
Research design					
Data collection / recording					
Quantitative data analysis					
Qualitative data analysis					
Literature review					
Concepts and ideas					
Outline of the manuscript					
Manuscript writing					
....					
Total					1

Importance: e.g. A=most important, B=intermediate, C=least important for the manuscript

Weighing: e.g.: A=0.15 (i.e. 15%), B=0.1 (i.e. 10%), C=0.05 (i.e. 5%)

Total: sum of relative weighting x author contribution

Source: authorder (www.authorder.com)

Authorship for student-faculty manuscripts

The relationship of a student with his senior faculty member is a very delicate one, built on trust, dependence and respect, and is vulnerable considering the benefits of authorship. Misuse of power by the teacher and ignorance of a student about her/his rights can be the basis for irresponsible authorship. Fine and Kurdek (1993) argued that the faculty and students are not meaningfully different with reference to the authorship decision-making process, because faculty and students (particularly graduate students) have the autonomy, rationality, problem-solving ability, and fairness to mutually decide on authorship credit. Early in the collaborative endeavour, the supervisor should provide the student with information related to authorship, the meaning of authorship credit and order, and the importance of both the parties agreeing on what contributions will be expected of

each collaborator for a given level of authorship credit. Based on the specific abilities the collaborators should discuss and agree on what contributions and efforts are required of both the parties to warrant authorship and to determine the order of authorship.

Students should be aware of their right to publish papers independently of their supervisors. In the vast majority of cases, a student should be the first author on any multiple-authored article that is based primarily on the student's dissertation or thesis. Where students are working as part of a larger project team, or where joint supervisor/student publications are proposed, questions of intellectual property rights should be carefully considered. Specific factors that may serve as the basis for claims to authorship and order of authors (these factors can also be helpful when you specify how each co-author has contributed to each paper included in a cumulative thesis):

1. The Idea. An important consideration for authorship is based on an answer to the question "Whose idea was it?" Having the idea for the study is one basis for a claim to authorship, but most projects evolve over time and there are many revisions in the initial idea along the way. As a result, from time to time the relative intellectual contribution of joint authors may have to be reassessed.

2. The Literature Review. In some cases a faculty mentor will ask a graduate student to conduct a literature review on the topic of a jointly authored paper. Literature reviews may be extensive or focused, and may be directed to a greater or lesser degree by the faculty advisor. In some projects, an extensive literature review forms the basis of the subsequent research, whereas in other cases it plays a more limited role. At the minimal end of the continuum, literature reviews involve going to the library to photocopy articles from a pre-established list. At the other extreme, literature reviews may take the form of long memos about previous research in a field, and go beyond summarizing individual papers to synthesize the findings in the field and the gaps in the literature. The more extensive and independent the literature review, and the more decisive with respect to the ideas developed in the paper, the more this contribution entitles one to authorship credit. But a literature review by itself typically would not be sufficient basis for authorship on a paper.

3. Data Collection. There are instances in which a faculty member may have spent years, even decades, collecting data on a particular topic, perhaps following a sample of individuals over time. Such data collection efforts can be extremely expensive and time consuming. In collaborative research, "ownership" of the data can serve as the basis for a claim to authorship. Conversations about authorship are particularly important in cases where graduate student research is based on data collected by their faculty advisor. In other instances, the graduate student may have collected his or her own data and the faculty joins the student in shepherding the paper through the publication process. Here again, the fact that the student collected the data would typically entitle the student to some form of authorship recognition.

4. Data Analysis. In many cases of statistical research, a faculty member supervises the data analysis, which is conducted principally or exclusively by the graduate student. In some cases the graduate student receives a wage as a research assistant, while conducting tasks closely directed by the faculty advisors. Some faculty would feel this situation entitles the graduate student to no authorship credit, while others feel it is appropriate for graduate students to receive junior authorship credit in such cases. At the other extreme is a case where the graduate student selects the variables to be examined, makes many substantive decisions about the data analysis, and shapes the statistical approaches used in the research. In this case, the graduate assistant certainly should receive credit and possibly authorship, although the scope of this contribution must be determined relative to inputs.

5. Writing. Writing the text of a paper often involves much more than simply summarizing the results of the data at hand. This is certainly true for qualitative work, where the selection of appropriate material from the rich body of collected data is an essential part of the research process. Writing is no less of a creative undertaking in research based principally on quantitative data. Sometimes the writing of a paper is shared, but more often one author takes the lead in writing a portion or the entire text. Many involved in collaborative research feel that writing is the decisive contribution, that

whoever wrote the paper is entitled to be first author. Situations where the graduate student "did the research" but the faculty member "wrote the paper" may produce misunderstandings regarding authorship and credit. Collaborators should keep in mind that writing is an important component of the final project, but that there may be other important contributions as well.

6. Editing. Editing can range in intensity from light copy-editing to a thorough reworking of the text. Often one partner in a collaboration writes and the other edits. There may be several rounds of editorial revisions before a paper is published. Situations where one author drafted the paper and the other "substantially revised" or "re-wrote" it may well lead to disagreement about authorship and credit. Here, as before, writing and editing are both potentially important contributions to the final product.

7. Financial Remuneration. In some cases graduate students serve as paid research assistants working on faculty grants. Some faculty feel that students who are paid in wages are less entitled to authorship than student collaborators who are working for free. The latter group, it is thought, are "compensated" with authorship rather than with wages. Other faculty feel that only intellectual contribution and not salary should determine authorship. Students who work as paid research assistants for a faculty member are particularly dependent on that faculty member for both intellectual guidance and financial support. Consequently, it is particularly important for issues of authorship to be discussed in such cases.

Acknowledge help and support

The names of the contributors who do not meet the criteria for authorship, including those who provided purely technical help or writing assistance, should be listed in the Acknowledgment. The general support provided by the head of the department, if any, and financial and material support should be acknowledged. The groups of persons who have contributed materially to the paper but whose contributions do not justify authorship should be listed and their function or contribution should be described; for example, "served as scientific advisors," "critically reviewed an early draft of the manuscript," or "helped in data collection."

The readers may infer that all those whose names have been cited in the "Acknowledgment" agree with the contents of the study and may feel that the study findings and conclusions as well as the manuscript carry their endorsement. Therefore, a written permission should be obtained from all the persons before their names are acknowledged. The Acknowledgments are, however, meaningless if they include people who were doing their jobs and who offered no intellectual contribution or technical expertise. For example, acknowledging the permission of the head of institute or department to publish the manuscript.

How to avoid authorship disputes

At least tentative decisions on authorship should be made, if possible, at the beginning of the study, after the potential authors have agreed on its design. At the latest, the list of authors (and the order of authors) should be included on the first draft of the manuscript. Make sure that no one is deprived of the deserving rights of authorship. A reasonable way to decide whether a contribution is important could be to consider whether, without the putative contributor, the integrity of the work would essentially change.

If you are using data someone else obtained, who is not available for writing or is not willing to write, take his/her permission to use his/her data.

Do not change the order of authorship, or delete or add names once it has been agreed on, without the consent of all the contributors, the new as well as the old ones.

Get a signed agreement, or at least put the agreement in writing, e.g. write an email or a memo following the meeting where the manuscript was discussed. Include a reference to the Vancouver Protocol, agreeing that if one criterion is not fulfilled, the author will be dropped. While this is not always necessary; it can avoid conflicts later on.

Despite these preventive steps, irritations regarding authorships are frequent. For example, when discussing the outline of the study or manuscript, it was agreed that 'John' would be co-author. But when time comes to write the manuscript, he does not contribute (e.g. due to a high workload or other commitments). Or, while he might have contributed somewhat in the early stage of the manuscript, now that it is being revised and readied for submission, he does not answer his emails. The best way to handle such situations is context dependent (e.g. is John your thesis supervisor or a colleague?), but communicating is always important: write an email giving clear deadlines and indicating consequences. This is when a written/signed agreement comes in handy, as you can refer to the initial agreement, e.g. referring to the fact that you had agreed on the Vancouver Protocol. If this is a first submission, it is always possible to add John as an author once the reviews come in and the manuscript is revised (assuming he does contribute significantly to the revisions).

Misuse of authorship

Authorship is not simply a pleasant honour to be conveyed easily, such as calling a man slightly your senior, "sir."

Authorship establishes accountability, responsibility, and credit. Any deviation from the set guidelines for authorship is misuse or irresponsible authorship. Giving an undeserved authorship in the form of 'honorary authorship' or 'gift authorship' promotes multiple-authorship, which dilutes the credibility and accountability associated with authorship and makes literature indexing difficult. The 'gifter' should be aware of the fact that the honorary author can snatch his credit in future. The receiver should also be aware that she or he might in turn have to return something to the 'gifter' and can even face problems in the event of a controversy coming up related to the manuscript.

The disputes and discussion around authorship have added newer terminologies to the dictionary – gift or honorary authorship, pseudo-authorship, surprise authorship, ghost authorship, polyauthoritis giftosa.

Honorary authors are named authors who have not met authorship criteria. Honorary authorship, for example, may be bestowed as a tribute to a department chair or to the person who acquired funding for the study. Ghost authors are individuals not named as authors but who contributed substantially to the work. Both types of 'authorships' are fairly common: studies from publications in the medical sciences estimate that approximately 20-25% of articles show misapplication of authorship criteria and inappropriate assignment of authorship (Flanagin et al. 1998).

Surprise authorship is another form of gift authorship in which gift comes as a surprise to the receiving author. On many occasions the receiver may be happy to receive the gift; however, if not, there can be trouble for the 'gifter'.

Sources and further reading

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