The gradual diffusion of responsibility for multi-authored, collaborative studies has led to publications for which no single author can or is prepared to take full responsibility. Publications may thus have two (usually fairly co-equal) authors or three or more authors. Complex studies may lead to the production of multiple publications, each with its own set of lead, senior, corresponding, and other authors. For ease of explication here, we assume that one study yields one publication, but the criteria and decision-making procedures generalize to multiple publications.

Research can be divided into six areas:

- Conception
- Design (procedures, method)
- Collection and analysis of data
- Interpretation of results
- Manuscript preparation
- Publication of results

The relative importance of each area varies considerably among various disciplines, and some areas may not exist at all in certain disciplines. Some investigations are innovative and emphasize an original idea rather than the extensive collection of data. In other investigations, the idea of the research is not new and most of the effort is in the collection and/or analysis of data. Nevertheless, each participant should be aware of the emphasis, and every research participant should be aware of the work involved in writing publications from the research.

In all multi-authored publications, each co-author must actively participate in verifying the part of the manuscript falling within his or her specialty area and in designating one author to be responsible for the validity of the entire manuscript. In some cases, as for peer-reviewed articles, all authors must affirm that they can take responsibility for the entire article.

Authorship credit and authorship order are not trivial matters. Because of the importance of authorship credit, disputes may arise when more than one person is involved in a research study that produces written publications. Thus, determining who the authors will be for any given publication and deciding on the order in which authors will be listed are significant steps in publishing from research or other projects.

Both decisions (who is an author, and what is the order of authors) should be based on contributions in one or more of the facets of the research noted above, and those decisions should reasonably represent the proportions of effort in the overall project and publication. That is, all authors on a given publication should have made some significant contribution to the research and to the publication itself, and their responsibilities should determine the way they are listed in any resulting manuscript or publication.

All parties should agree to the authorship lists and the ordering, and the eventual authorship should be announced.

No single criterion or algorithm exists for determining authorship. Each research study presents a particular set of circumstances that should be considered when deciding about authorship, and different publications from a single study may themselves present different circumstances. In general, to qualify as an author, significant participation in at least three of the following criteria should be established:

- Contribution of research ideas
- Leadership in the study
- Design of experimental procedure, model, or protocol
- Responsibility for acquisition and/or analysis of data
- Interpretation of results of the data analysis
- Writing (drafting, revising) the manuscript
- Approval of the final manuscript
- Ability to defend part or all of the publication related to the professional discipline
- Acceptance of responsibility for final manuscript

RTI Press publications are bound by the same authorship policies (detailed below) that govern authorship of all scholarly manuscripts written by RTI International authors.
For example, a minimal requirement may be active participation in conception and design or analysis, interpretation of the data, and writing (drafting, revising) the manuscript. In addition, authors must be able to defend part or all of the publication related to the professional discipline. The lead, senior, or corresponding author must accept responsibility for the final manuscript.

The lead, senior, or corresponding author is responsible for obtaining permission to use any copyrighted material pursuant to the provisions of the RTI International's copyrighted/proprietary data and materials policy.

Authorship depends on the person's contribution rather than on the importance of the person's discipline or position relative to the study, the publication, or any organization. Spending a large number of hours working on the project is not a basis for authorship unless the above criteria for authorship are also met.

The following guidelines may be useful, although they are not intended to be binding, in differentiating between authorship and acknowledgment status on a manuscript:

- If a contribution is clearly of a technical nature (such as performing routine chemical analyses, transcribing interview records, or tabulating raw data), an acknowledgment would be sufficient.

- If a contribution relates to the financial or administrative management of a project or to document preparation activities (technical editing, graphics, word processing), an acknowledgment would be sufficient.

- If, however, a contribution relates to the central topic of a publication that involves a technique or method, the technical contribution may be of sufficient importance to merit authorship. Examples include, but are not limited to, a new preparation to detect cell wall damage, study of the reliability or validity of a new questionnaire or scale, and development of new software (e.g., a program to calculate the factual dimension of the contour of a particle silhouette).

- If an individual suggested an idea that had an impact on the work development but the individual did not actively participate in its implementation, acknowledgment of the contribution would be sufficient.

Finally, authorship consists of contributions of intellectual thought, effort, understanding, and responsibility for the published work. The concepts of “honorary authorship” and “ghost authorship” are unacceptable for RTI staff.

**Authorship Decisions**

The decision about authorship is best made collegially and collectively by those individuals involved in the study. As implied above, the first decision may actually concern the number and focus of multiple publications, including the ways in which the publications “work together” and the order in which they will be produced. These decisions should be made as early as possible in the study but no later than the time at which responsibilities are assigned for the preparation of a (or the first) manuscript for a paper, book, book chapter, monograph, etc.

Primary responsibility for initiating such discussions rests with the individual who expects to make the principal contribution to the published work. In cases in which the person contributing most to a research study has no intention of publishing the results, for any number of reasons (assuming that the client has not placed a restriction on publication), then any person involved in the research should have the right to assume responsibility for authorship. In cases in which that person has left RTI, then any person involved in the research should have the right to assume responsibility for authorship; however, consideration should be given to the former colleague(s) who may wish to retain a role in authorship.

The research collaborators should evaluate the criteria of authorship and make preliminary decisions on authorship. These decisions may need to be revised based on actual contributions to the book or article. In most cases, final authorship should be decided after completion of the first draft. If necessary, the principal investigator or project leader takes the lead in adjudicating any differences of opinion. The lead, senior, or corresponding author should ensure that all deserving individuals are included in the list of authors.

If the designation of a lead or senior author for any publication is necessary, then the choice should be based on

- overall leadership, guidance, and responsibility,
- substantive contribution to the key original ideas,
- active participation in interpretation of the results and the preparation of the manuscript, and
- ability to technically defend all aspects of the work.

As implied above, a lead or senior author is the most likely candidate to be a corresponding author. When that is not the case, the choice of the corresponding author should be based on seniority among the remaining authors.
The principal author of a publication stemming from a presentation at a conference may differ from the person who made the presentation at the conference. In addition, in the case of multiple authors, the named authors and the order may differ between a presentation and a publication. Nevertheless, decisions about authorship should follow the criteria noted earlier.

Supervisors of research units, centers, or laboratories should not automatically be listed as authors on research publications from their research organization; to be included as authors, such individuals must meet the criteria for authorship noted earlier. Neither should authorship be automatically granted to individuals associated with the entities that provided funding for research. Instead, all authors should be active participants in the actual design of the research and/or interpretation of the results. Individuals associated with funding agencies may be considered for authorship if they have had a major role in the design of the project and have contributed in substantive ways to the draft and/or final manuscripts.

Persons who were involved in the study but who do not qualify for authorship should be acknowledged in the manuscript.

**Authorship Order**

Decisions regarding the order of listed authorship are also best made collectively by the individuals involved in the study. The order of authors on a publication will depend on various circumstances. These can include, but are not limited to, journal requirements (e.g., ceilings on the number of named authors allowed), the traditional conventions of different disciplines, and special situations involving collective authorships (e.g., by committees). Some accepted ways to address these situations are noted below.

1. In situations in which several individuals make major contributions to a publication, the name of the individual who made the principal contribution to the publication should be listed as first author, with subsequent names listed in the order of decreasing contribution. In many such situations, the first author will be the person who has taken responsibility for compiling the first draft.

2. By convention in certain disciplines, an individual who makes a major contribution to a publication may sometimes be listed as last author. This position may identify the research group or unit in which the work was done, even though that individual’s overall contribution may not be less than those of individuals named earlier in the author list.

3. In other instances, authorship order may not reflect relative contributions. One example is the use of an alphabetical listing of author names (which rarely may be a journal requirement) or a “collective” authorship, such as a trialists, research group, or committee. In such cases an explanatory footnote should be provided.

Generally, however, individuals listed as first and last author are usually perceived as having major roles in the work or the publication (e.g., senior author). Some journals have specific rules for listing authors. For this reason, prospective authors (typically the lead or corresponding author, if different) should examine the journal’s guidelines for authorship on how to proceed. In addition, many journals require identification of a corresponding author as the point of contact for communications, revisions, galley proofs, and the like. As noted earlier, this may be the lead author or senior author, but it need not be, especially if those individuals do not want this responsibility or expect not to be affiliated with RTI by the time the publication appears.

**Acceptance of Responsibility**

By accepting credit for a publication, authors also accept responsibility for the content of the publication. All authors share responsibility for ensuring that

- The content of the publication is factually accurate and scientifically sound;
- Proper acknowledgment is given via complete and accurate citations for published materials that directly influenced the writing or research, including page numbers for any published materials that are quoted verbatim;
- Proper acknowledgment is given for unpublished information from another individual that directly influenced or was used in the publication via notations of “personal communication”;
- The publication contains no plagiarized material and all material subject to copyrights has been used pursuant to the provisions of RTI International’s intellectual property policy;
- Institutional and other requirements were met for protecting human or animal subjects used in the research; and
- Possible conflicts of interest (e.g., industry relationships or support) are disclosed or acknowledged.

The corresponding author (if different from the lead author) has the primary responsibility for addressing these issues.
Disputes in Authorship

Within RTI, disagreements about authorship or order of authorship should be first discussed by the collaborators in the study. The authors should review the criteria for authorship during such discussions. Authors are strongly encouraged to seek the advice of colleagues who have not participated in the research activity.

If an individual believes that he or she has been wrongly omitted from authorship altogether or believes that his or her position in the author list is inappropriate, he or she should discuss the matter first with the lead or senior author.

If a dispute still exists, the matter may be taken to the Project Leader or Principal Investigator of the project, assuming that individual has not been a party to the initial discussions. If, at this point, a dispute still exists, the individual with the complaint can appeal the matter to his or her administrative supervisor.

Misconduct and Proprietary Infringement

Plagiarism

A published article that contains plagiarized text, figures, or tables must be reported as research misconduct in accordance with RTI’s scientific integrity policy.

Copyrighted/Proprietary Data and Materials Infringement

Written materials (text, figures, and tables) that are obtained from an already published source and used in a manuscript for publication (e.g., a review article) must be obtained in accordance with copyrighted/proprietary data and materials policy.

©2016 RTI International. All rights reserved. RTI International is a registered trademark and a trade name of Research Triangle Institute.

www.rti.org/rtipress

RTI 10573 1216