



This is a repository copy of *Librarians publishing in partnership with other researchers: roles, motivations, benefits, and challenges*.

White Rose Research Online URL for this paper:
<https://eprints.whiterose.ac.uk/183422/>

Version: Accepted Version

Article:

Borrego, Á. and Pinfield, S. orcid.org/0000-0003-4696-764X (2020) Librarians publishing in partnership with other researchers: roles, motivations, benefits, and challenges. *portal: Libraries and the Academy*, 20 (4). pp. 655-675. ISSN 1531-2542

<https://doi.org/10.1353/pla.2020.0031>

Author accepted manuscript. © 2020 by John Hopkins University Press. Final published version: Borrego, Á., & Pinfield, S. (2020). Librarians publishing in partnership with other researchers: Roles, motivations, benefits, and challenges. *Portal: Libraries and the Academy*, 20(4), 655–675. <https://doi.org/10.1353/pla.2020.0031>

Reuse

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

Librarians Publishing in Partnership with Other Researchers: Roles, Motivations, Benefits, and Challenges

Ángel Borrego and Stephen Pinfield

Accepted author manuscript

Final published version: Borrego, Á., & Pinfield, S. (2020). Librarians publishing in partnership with other researchers: Roles, motivations, benefits, and challenges. *Portal: Libraries and the Academy*, 20(4), 655–675. <https://doi.org/10.1353/pla.2020.0031>

Abstract: Building on previous research on the contribution of librarians to scholarly journals in fields outside library and information science (LIS), this study uses a qualitative approach to gain a richer understanding of the nature of research collaborations between librarians and faculty. It explores librarians' motivations for becoming involved, the benefits believed to accrue from such partnerships, and the challenges faced. Sixty librarians who had coauthored a research paper with scholars in fields other than LIS replied to a qualitative online survey. Results show that librarians become involved in the whole range of roles throughout the research process, with contributing to the writing of papers (particularly reviewing and editing the final version) being the most common. Coauthorship often results from a long-term working relationship between the librarians and researchers involved. Although librarians are seldom funded as part of the research project, coauthorship is seen as beneficial—it improves job satisfaction and enhances the reputation of the individual and the library as a whole. Challenges faced relate mainly to time pressures, although the participants acknowledge the need to develop relevant skills.

They also must feel confident in the role they fulfill in the research process and the professional skills they can contribute.

Introduction

Academic and research libraries have come under increasing pressure to demonstrate their contribution to the institutional mission.¹ One possible path toward achieving this goal is to collaborate (and demonstrate collaboration) in research projects conducted by faculty. Such collaboration may result in coauthorship of publications by scholars and librarians.²

Conducting research benefits librarians by improving their problem-solving and decision-making skills and making them critical consumers of academic literature. Carrying out research in partnership with faculty offers librarians the opportunity to gain valuable experience in how research operates. This knowledge may help them provide better library research support services. In some cases, research and publishing are compulsory for librarians to advance on a tenure track in their professional career.³

Research collaboration with academics may also create reputational benefits for library services. Faculty will likely have greater appreciation of library staff and the services librarians provide if they view the library as playing an active role in knowledge creation, beyond the traditional task of managing information. Librarians' skills can also be helpful in improving the quality of research outputs by contributing at different points throughout the research process. Leslie Foutch describes her own experience to illustrate how the integration of an academic librarian into a faculty research team can lead to individual and institutional benefits.⁴ Librarians gain valuable knowledge and experience

about how a research project unfolds, while faculty develop an appreciation for the services librarians provide.

Collaboration between librarians and other researchers seems to exemplify “the embedded librarian model in working directly with the faculty they serve as collaborators on research projects or as an integral part of a research team.”⁵ During the past decade, much literature has been published on the “embedded librarianship” model, as shown by Bharati Pati and Sabitri Majhi, who recently reviewed over 60 papers focusing on the practical roles of embedded librarians.⁶ Most of this literature, however, takes a theoretical approach to discuss the model or describe individual case studies. Few authors analyze the impact of the embedded approach on coauthorship of publications between faculty and librarians.

Very few studies have explored the collaboration patterns between academics and librarians on research topics other than library and information science (LIS), and most of them are small-scale case studies.⁷ The chief exception is the medical literature, where librarians have frequently been involved in the preparation and publication of systematic reviews,⁸ and, to a lesser extent, in other research tasks, such as grant and manuscript writing or data collection and analysis.⁹ In these areas, some scientists recognize librarians as partners in their research by including them as authors on publications. However, Robin Desmeules, Sandy Campbell, and Marlene Dorgan surveyed supervisors of Canadian academic health librarians conducting systematic reviews and found little consensus with regard to whether librarians should be coauthors, receive some form of acknowledgment, or obtain no formal credit at all.¹⁰ Despite evidence that the participation of librarians in a systematic review improves its quality,¹¹ their involvement often appears restricted to the

health sciences. A recent analysis of 40 systematic reviews on K–12 mathematics education found that none acknowledged a librarian, let alone included one as a coauthor.¹²

Shailoo Bedi and Christine Walde interviewed eight Canadian academic librarians to describe their experience participating in faculty research projects.¹³ The results show that at least some librarians have become full members of research teams, largely because of previous relationships with faculty built through traditional liaison work. Also in Canada, Ada Ducas, Nicole Michaud-Oystryk, and Marie Speare surveyed librarians working in research-intensive universities to understand how the profession is being redefined in such areas as research support, teaching and learning, digital scholarship, user experience, and scholarly communication.¹⁴ Respondents reported delivering such services as grant application support, systematic reviews, bibliometric services, or data management at rates ranging from 23 to 28 percent. Innovative strategies, such as librarians attending weekly lab research meetings, can foster opportunities to engage in the full research life cycle.¹⁵

A previous study explored the contribution of librarians to scholarly journals in fields other than LIS.¹⁶ Results showed that the number of papers published by library-affiliated authors in non-LIS journals nearly doubled between 2006 and 2015. Papers fell broadly into four categories: articles on topics related to LIS published in non-LIS journals (9.5 percent); higher education and information literacy (4.4 percent); systematic reviews and meta-analysis (36.4 percent); and research collaboration in the faculty member's areas of expertise (49.7 percent).

The present study builds on this research. Using a qualitative approach, this study aims to gain a richer understanding of the collaborations undertaken by librarians with faculty, their motivations for becoming involved, the benefits believed to accrue from such

partnerships, and the challenges they face. The research attempts to identify why, in what ways, and with what challenges and benefits library staff coauthor non-LIS research articles in partnership with academics. Specifically, the study addresses the following research questions:

1. What roles do librarians assume in non-LIS research collaboration?
2. Does librarians' coauthorship relate to the LIS skills they can bring to the research?
3. How do librarians become involved in research teams and coauthorship?
4. What are the perceived benefits of their involvement in research?
5. What challenges do librarians face in conducting research with faculty coauthors?

Throughout the text, this study uses the terms “academics,” “faculty,” “researchers,” or “scholars” as synonyms, in contradistinction to “librarians.” Such terminology is not intended to suggest that librarians are not scholars or do not conduct research. On the contrary, this study aims to illustrate librarians' involvement in research tasks despite that such work frequently is not considered part of their job.

Methods

In November 2018, the authors of this study searched Scopus for articles and reviews published in 2018 with the string “librar*” in the “affiliation name” field. They retrieved 2,607 records. Papers published in 202 journals that Scopus classifies as “Library and Information Sciences” and papers signed by a single author (that is, with no collaboration) were removed from the analysis.

The study authors then analyzed the remaining 1,510 records to recruit participants among library-based coauthors and to obtain their e-mail addresses. At this stage, they further removed numerous records, including:

- “False matches” (for example, papers including affiliations such as “Library Road”).
- Papers by academics affiliated with schools or departments of “library” science.
- Papers by authors with a double affiliation (usually a “library” plus an academic department).

Additionally, some records were removed because Scopus provided e-mail addresses for the corresponding author only. When the Scopus record provided no e-mail address for the library-based author, the investigators searched for that person online to locate a reliable e-mail address. Unfortunately, in many cases, they could not obtain an address, and the records had to be removed.

As a result of this process, the investigators identified 169 potential participants who had coauthored a research paper. Based on the subject classification provided by Scopus, most of the articles selected were in the health sciences (106 articles, 63 percent), with a much lower presence of articles in the life sciences (35, 21 percent), physical sciences (34, 20 percent), social sciences (28, 17 percent), and multidisciplinary journals (11, 7 percent). The percentages total more than 100 percent since some journals were classified in several categories. From a geographical point of view, most participants were based in the United States (75 participants, 44 percent), followed by Canada (26, 15 percent), China (24, 14 percent), and the United Kingdom (11, 7 percent). Twenty additional countries were represented in the sample, but none with more than 10 potential participants.

A survey instrument was designed that took the form of an online questionnaire asking open questions, aiming to collect data from an asynchronous online “interview.” Although initially the study authors considered conducting conventional synchronous interviews, they feared that participants from non-English-speaking countries might be reluctant to participate. They anticipated that an online form, which could be filled in when and where participants preferred, at their own pace, would be less intrusive and would make them more inclined to reply.

Between April 1 and 3, 2019, the 169 potential participants were sent an e-mail invitation to respond to the online interview. To increase the level of participation, the e-mail message was personally addressed to each participant. A critical incident technique was employed, and e-mail messages mentioned the article of which the participants were coauthors. Participants were requested to have that article in mind when replying to the interview form. A reminder was sent to all potential participants on April 11, 2019. Responses were collected through Google Forms. When the survey closed, on May 9, 2019, 60 participants had replied, making a response rate of 36 percent.

The research methods were approved according to the research ethics process at the University of Sheffield in the United Kingdom. Respondents gave explicit informed consent to take part and were granted anonymity for themselves as individuals and their organizations.

Results

When analyzing the results, it became clear that one-third of the papers retrieved in Scopus were reviews: 491 (33 percent) of the 1,510 papers included the term “review” in the title. The share of reviews in the sample was similar: 50 papers (30 percent) of 169 included the

word “review” in the title. The investigators do not have information about the percentage of librarians coauthoring reviews among the respondents since the survey was anonymous. However, the large presence of reviews in the sample will likely have an impact on the results and should be acknowledged.

Research and Professional Qualifications

From the point of view of their qualifications, respondents were divided into two groups of similar sizes: those who had a research degree, that is, a PhD or similar doctorate (n = 26, 43 percent) and those who had not (28, 47 percent). Five respondents (8 percent) reported not clearly understanding the question, although they acknowledged not having a PhD. Nearly three-quarters of the respondents (44, 73 percent) had a professional LIS qualification, but even more (52, 87 percent) said they considered themselves “librarians” or “library and information professionals.”

Librarians’ Role in the Research Process

Respondents were asked to describe their role in the research that led to the publication they had coauthored. To enumerate the possible tasks in which they had been involved, the investigators used CRediT (contributor roles taxonomy, <https://casrai.org/credit/>), which includes 14 activities typically undertaken by contributors to scholarly outputs.²³

On average, each respondent reported participating in five different tasks. As shown in Table 1, the most usual activity among library coauthors was writing—especially reviewing and editing the final publication—with nearly four of five respondents having collaborated in this task. To a lesser extent, half the respondents (30, 50 percent) had taken part in writing the original draft. Nearly two-thirds of the participants had participated in

conducting the investigation (38, 63 percent) or designing the methodology (38, 63 percent). More than half of the respondents (33, 55 percent) had collaborated in conceptualizing the research. Around one-third had participated in data curation (22, 37 percent) or the presentation of data or preparation for visualization (20, 33 percent). Other activities were ticked less frequently, although all tasks were selected by some participants.

Table 1: Roles assumed by library professionals in research collaboration

Role	n	%
Writing – review & editing: Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages	47	78%
Methodology: Development or design of methodology; creation of models	38	63%
Investigation: Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection	38	63%
Conceptualization: Ideas; formulation or evolution of overarching research goals and aims	33	55%
Writing – original draft: Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation)	30	50%
Data curation: Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use	22	37%

Visualization: Preparation, creation and/or presentation of the published work, specifically visualization/data presentation	20	33%
Formal analysis: Application of statistical, mathematical, computational, or other formal techniques to analyse or synthesize study data	17	28%
Project administration: Management and coordination responsibility for the research activity planning and execution	16	27%
Resources: Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools	16	27%
Supervision: Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team	13	22%
Software: Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components	12	20%
Validation: Verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs	11	18%
Funding acquisition: Acquisition of the financial support for the project leading to this publication	5	8%

Respondents were asked to describe what, in their opinion, constitutes “authorship,” compared with supporting research as a nonauthor. The most usual reply referred to the International Committee of Medical Journal Editors (ICMJE) guidelines, a set of

recommendations to review best practice and ethical standards in the reporting of research and other material published in medical journals. The ICMJE guidelines set out four simultaneous criteria required to be an author of a paper:

1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work;
2. Drafting the work or revising it critically for important intellectual content;
3. Final approval of the version to be published; and
4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.²⁴

The criteria were cited exactly, rephrased, or mentioned by 10 participants (17 percent). Fourteen additional respondents, without directly mentioning the ICMJE guidelines, expressed themselves in terms similar to the first criterion and described authorship in terms of making “intellectual,” “original,” “significant,” “substantial,” “substantive,” or “unique” contributions to the research project:

An author should make an original and novel intellectual contribution to a publication. Simply providing resources at the request of a researcher does not warrant authorship.

Significant intellectual contribution that actually helps to shape the research and the communication of the research would count as authorship, whereas basic support activities, such as providing a literature search or referring PIs [principal investigators] to other resources and services would not.

A large share of the articles in the sample were literature and systematic reviews. Not surprisingly, 13 respondents (22 percent) justified their authorship by referring to their involvement in designing and conducting the literature search, managing the references, and writing the corresponding methodological section of the paper. Those participants who mentioned other tasks most typically (17, 28 percent) referred to “writing” one or several parts of the article, in line with the replies to the previous question on the roles assumed in research collaboration (Table 1). To a much lesser extent, designing the research or

providing, collecting, or analyzing data were also mentioned. Five respondents (8 percent) stated they believed they deserved authorship based on the “time” and “effort” devoted to the project, summarized by one as “time spent and amount of work done.”

Finally, four participants (7 percent) indicated that the offer of authorship had come from the principal investigator as a surprise to them: “I was added to the authorship at the request of one of the partners in the project. I would not normally expect my contribution to be marked in this way.”

The definition of “authorship” is indeed difficult and has been widely debated in the literature. One respondent reflected on the issue in the following terms:

I struggle with this question sometimes: Does “authorship” in the scholarly realm lie purely in the act of writing, as the formal definition of “author” would suggest? But I perceive that it is broader than that in the scholarly realm. Contributing substantively to the scholarship—that is, the conceptualization or methodology, the data collection or data analysis, and so forth—still constitutes participation in “authorship,” because without those contributions, there would be nothing about which to write. In contrast, I would consider a librarian supporting research as a nonauthor to involve less substantive activities—perhaps assisting in developing a literature review search strategy; advising on tools and best practices for data collection without actually performing the collection; research assistance in identifying or locating a specific source or piece of information; general consulting on aspects of citation or formal writing style; or similar.

According to the information provided by the respondents, their involvement in research was not funded. Fifty (83 percent) stated that neither they nor their library had received any income for their time or any other costs. Just three respondents (5 percent) said that they were funded. One described negotiating a separate contract as a senior research assistant, while the other two did not provide further details. Seven respondents (12 percent) reported not having been funded for this specific publication, although they had received funding for other projects in which they had been involved.

Research Skills Brought by Library Staff

Respondents were asked to describe the skills they had brought to the research and whether their presence in the authorial team was justified by the LIS-related skills they had contributed. Most respondents (40, 67 percent) referred to their expertise in conducting literature reviews, including such tasks as the selection of databases, definition of search strategies, use of reference management software, and use of specific software for systematic reviews. Respondents mentioned systematic review tools such as Covidence or DistillerSR, or guidelines such as the PRESS (Peer Review of Electronic Search Strategies) checklist:

I'm an expert in conducting systematic reviews. For me, this is methodological knowledge similar to a statistician's. For this specific research, my input influenced the methodology that was used (switch from systematic review to scoping review) and therefore also the research question. My other "skills" for assisting with systematic reviews are: advanced search technique (search syntax, database selection) and providing tutorials for the rest of the process in order to improve workflow and transparency (downloading references, deduplication in a reference manager and selection of a tool for screening the results).

I was part of this team because I understand how systematic/scoping reviews work. I know how to structure the project properly, do the protocol, translate the question to a search, identify appropriate and sufficient databases, follow the PRESS guidelines for executing the search, execute the search, store the references in a citation management software in an orderly way and document the search and the appendix for publication.

To a lesser extent, 21 respondents (35 percent) mentioned skills in research data management and analysis, and 6 respondents (10 percent) cited their writing competencies. A few individuals referred to expertise in qualitative analysis software, bibliometrics, or scholarly communications:

LIS-related skills were one of the reasons I was asked to participate. The first author also know [*sic*] of my writing and editing skills. In fact, the first author decided that I should be second author since I contributed more than the other nurse-faculty authors.

Besides literature searching, data management, my knowledge of expertise also include[s] bibliometrics, predatory open access, information retrieval, and scholarly communications.

Relationship with the Research Team

Respondents were asked whether they had worked in the past with the same academic partners and, if so, whether they had been recognized as coauthors previously. In most cases (37, 62 percent), the librarian and the research group had collaborated earlier. In some instances, coauthorship had always been granted but, in other cases, initial partnerships were just acknowledged or received no recognition until, progressively, librarians became part of the authorial team:

I have co-authored 25 articles with the PIs of this study already. They valued my input from the beginning, I think I have always been co-author for them.

Yes, but more and more I've been included as a co-author.

Respondents were also asked how the author order in the article had been decided. Replies can be classified in three main categories: 24 participants (40 percent) stated that the order was based on the contribution made by each author; 15 participants (25 percent) responded that they did not know or were unsure how the order was decided; and 14 respondents (23 percent) answered that the decision was made by the principal investigator. Some replies referred to other criteria, such as the use of alphabetical order, disciplinary practices, taking turns in the order of signature, or journals' policies. In some cases, more than one of these criteria went into making a decision, as exemplified in the following

excerpt that shows a combination of disciplinary practices, level of contribution of the authors, and the role of the principal investigator:

The life sciences have a pretty clear precedent for this. Students are listed in order of contribution for first most to middle. Senior/corresponding author are listed in order of contribution from last to middle. This is usually decided by the project PI.

Some respondents stated that this issue was not a particular concern to them (a notable contrast to the sensitivity to this issue among many faculty):

If we discussed author order, I don't remember. It's not important to me.

I didn't really care where I was listed and deferred to the first author.

Participants were asked about disciplinary differences. Specifically, they were asked whether, if making the same contribution in another discipline, they considered it likely they would have been added as coauthors. Most respondents (32, 53 percent) believed that this would possibly happen, but eight respondents (13 percent) replied negatively, stating that they were unlikely to be included as coauthors. The remaining participants (19, 32 percent) expressed doubts, as exemplified in the following excerpts:

I support a lot of researchers who do a systematic review. Not all of them grant me a co-authorship. And it is not a requirement, so I don't mind. I see my work as similar to the help [of] a statistician and they also don't always get co-authorship. Almost all researchers mention my contribution in the acknowledgements and/or the method section.

Different disciplines have different standards. I have had a lively debate with a libraries humanities professor that has very different ideas of authorship, especially with regards to students being featured prominently. In my view, applying the humanities standard to the life science[s] would be borderline unethical.

Still in relation to the acknowledgment of the tasks performed by librarians, respondents were asked whether they, or any colleagues they knew of, had made similar

contributions to a paper and had not been included as coauthors. Most respondents (37, 62 percent) had experienced this situation or were aware of colleagues who had done so:

Yes, many times. I carry out evidence searches regularly. My searches have been used in presentations and publications and I have not been cited, and this is wrong. I have reminded people to cite the librarian as an author/researcher when they have failed to do so. I think it comes down to forgetfulness or just not realizing that they should acknowledge the work of the researcher—it is good for the authors/writers and good for the library service when we are cited. Most of my library colleagues who carry out evidence searches have never been cited as authors.

At the other extreme, 21 participants (35 percent) had not experienced this situation. Many of their replies suggested that they stipulated coauthorship at the beginning of the project:

If I am involved beyond simply searching and providing document delivery, I require authorship or I will not participate.

I have been very systematic and clear about authorship expectations with my research collaborators.

In responding to this question, two participants reported asking to have their names removed from papers because they believed their work had been altered without consent or they did not agree with the interpretation of data.

Personal and Institutional Benefits

Participants were asked whether the research collaboration with faculty had brought any benefits to them. The overwhelming majority of the respondents replied affirmatively. Half (30, 50 percent) pointed toward an increased sense of personal and professional fulfillment, job satisfaction, and the acquisition of greater reputation among researchers:

People take me more seriously. When I started doing this, my manager didn't understand why I'd spend so much time on helping a researcher. Now he respects what I do and is even considering hiring a second person to do the same job because the demand for help is steadily growing. The researchers also take me more seriously. Some have approached me because they read a paper that I co-authored.

It is beneficial to be able to point to your work. Certainly some colleagues in the medical community treated me differently because I had written in a peer-reviewed research journal. I have been invited to review other journal submissions and contribute to conferences.

Some respondents (12, 20 percent) pointed out that research collaboration had an impact on their professional development, facilitating the acquisition of new skills that they could employ in their job. Similarly, research partnerships allowed librarians to better understand the needs and behavior of scholars, knowledge that was useful to improve research support library services. Partnerships with researchers also raised the profile of the library. A number of participants summarized benefits from their perspectives:

It has been good for my professional development, both in terms of developing higher level search and reference management skills and in developing project management/time management as this work has been done on top of the "day job." It has challenged my existing search practices and made me question what I do and why. I have learnt a lot from a lot of mistakes! I also have a much better understanding of the whole research process/life cycle and can empathise with academics in terms of getting published and the REF [Research Excellence Framework, a system in the United Kingdom for assessing the quality of research in higher education institutions]. I have also been able to transfer my new skills and knowledge into my teaching sessions and one to one consultations with students, researchers and staff. I have also developed closer links with LIS staff in local NHS [National Health Service] libraries and [a local medical school research team].

Through this work, we get to know the research teams and the directions of the Departments' research much better. We have the opportunity to serve our users better. The presence of a librarian/expert searcher on a systematic review research team is explicitly recommended in the Cochran Handbook [the *Cochrane Handbook for Systematic Reviews of Interventions*]. With a librarian more systematic reviews get published, because they have strong searches.

New skills in data analysis and visualization; highlights the role of library personnel as potential partners in research.

A better understanding of research processes, networking through collaboration outside my field, and acquisition of “the coin of the realm” in academia, i.e. authorship on published research.

In some cases (12, 20 percent), the benefits were more tangible, with authorship of scholarly outputs having a positive impact on performance evaluations or promotion:

It counts heavily toward my annual evaluation. It has raised my perceived status among faculty members.

It will be included in my upcoming promotion package.

Useful for [personal] rank and promotion at my institution.

I was recently promoted to Associate University Librarian and feel certain the publications helped ensure the promotion, since publication is required for promotion. I also believe it has opened review opportunities for me.

Respondents were asked whether they could point to any evidence of these benefits. Participants mentioned a wide range of evidence: bibliometric indicators (citations), congratulations from university administrators, additional requests from researchers to participate in other projects and publications, invitations to teach and give conferences, requests to review manuscripts for publication, professional opportunities, and the like:

My *h*-index [a measurement based on the quantity of publications by a given researcher and the number of citations these items have received] has increased; some researchers specifically note to me that I publish (indicates it is important to them).

I got paraded around for the financial managers of the university. And they actually really liked what I told them (I’ve gotten several emails afterwards with follow up questions). My manager sends me congratulations every time I publish something, and I get positive feedback on this in my yearly evaluation.

Other faculty have invited me to participate and offered author status at the initial conversation. On annual evaluations, I have received larger raises when I have been an author on a paper.

More and more individuals and teams are contacting me for help and advice with literature searching, especially for support with systematic reviews. I am starting to see demand from across the University (not just the Medical School) as library colleagues recommend me as someone to talk to. This raises the profile of the Library as a whole.

5 applications, 5 interviews scheduled. All expressed interest in my SR [systematic review] experience, including my publication record.

A similar question was asked about possible institutional benefits of research collaboration. Replies resembled those given for the previous question. Most respondents pointed toward a greater sense of reputation among researchers that sometimes is difficult to prove with hard evidence beyond an increasing number of requests for collaboration:

Increasingly seen as collaborators vs people who check out books.

Faculty respect and value our work. We are treated as equal colleagues.

It enhances the perception of what librarians are doing among college faculty and administrators.

Continued requests for collaboration with teams across the university.

Challenges

Respondents were asked about the challenges they had faced in their research partnerships. The most usual concern among participants (18, 30 percent) regarded time constraints and difficulties in meeting deadlines. Librarians did not work full-time on a single project but had to share their time among different research collaborations and other duties:

Researchers work according to deadlines, and expect you to review, provide input, etc. a version while you're also juggling your other responsibilities.

Time commitment and level of involvement is always an issue. I can only handle a limited number of projects.

The pace—they want things faster sometimes than I am able to deliver.

Ten respondents (17 percent) referred to difficulties related to the research process itself. Some of them stated that sometimes they had trouble clearly understanding the research question or complained about having enrolled in a project at a stage when problems in the definition of the research question or an inadequate research design could no longer be addressed. Other problems related to the “publish or perish” pressure on scholars, resulting in researchers making decisions with which librarians did not necessarily agree. This pressure might have caused the situations, mentioned earlier, of librarians requesting their names be removed from papers because they believed their work had been altered without consent or they did not agree with the interpretation of data. These problems were summarized by several participants:

As a non-clinician, understanding the actual question being asked and getting academic researchers to explain the background to the question and the wider clinical area. There is an assumption that searches can be put together very quickly and that not very much evidence will be found. It can also be hard to maintain continuity with the search when you need to contact researchers for clarification or send them something to look at and they take time to reply. It can [be] frustrating when/if researchers change their mind part way through a search but it shows that they are engaging with it.

Brought into project after research question was defined.

Faculty members are under intense pressure to publish, and at this university, quantity and speed is more important than quality. I am often met with resistance when I describe standards.

Seven respondents (12 percent) complained of the challenge of securing acknowledgment of their contribution as coauthors by researchers:

That they might not recognize my contribution as being that of a co-author.

To get the researcher to agree on co-authorship.

Four respondents (7 percent) complained about challenges posed by administrative barriers, whereas just one pointed to a lack of skills as a hurdle in research collaboration:

Usually it came down to funding agencies or administrative units in the university who would not accept a non-PhD being involved.

A typical challenge though for some instances has been in statistical analysis. I have experience cleaning and organizing data but I've missed out on some projects due to not having advanced stats knowledge via SPSS.

Finally, 17 participants (28 percent) replied, perhaps surprisingly, that they had not experienced any major challenges in collaborating with researchers.

Recommendations

At the end of the survey, respondents were asked whether they had any recommendation for library staff involved in research partnerships with academics. Nearly all supplied some advice. Most suggestions can be classified in three categories. Firstly, 26 respondents (43 percent) referred to the need for librarians to be confident about the value of their own work and their contribution to the research. Participants recommended that other librarians make sure that their help would be valued and suggested they negotiate authorship from the beginning of the project to avoid future misunderstandings:

Negotiate author status before agreeing to participate. Spell out in writing what librarian authors will and will not do. Work out how to handle slipped deadlines caused by the other authors.

Be very clear that you are a colleague, not support staff. Be up front and assertive in your communication. Define what your role is. Educate your researchers about your role. Most researchers are happy to have a librarian colleague as a co-author—they've just never thought

about it before or realized that it was possible. For many, it is a relief to hand off that technical piece, in the same way it is a relief to hand off the statistical part to the statistician colleague. Do your part of the research well. Deliver the work promptly, and in a polished, professional form.

Secondly, 13 respondents (22 percent) focused on the need to engage with researchers and become fully involved in the research process:

Get involved in research, as co-authors you can make sure that the searches you have been working on are documented in a repeatable way. The involvement of the library doesn't stop after the search has been executed. Don't just throw the results over the fence and let the researchers sort them out, but get involved in more of the review process.

Get involved. It is demanding and challenging but you will learn a lot and you will get respect and acknowledgement from your academic colleagues. Be prepared to ask lots of questions and be prepared to make mistakes and have to re-run searches.

Finally, nine respondents (15 percent) mentioned the need to acquire research skills:

Invest time in learning the specific domain knowledge of your client base.

Never turn down an opportunity to become involved in a research project. And take every opportunity to get further education in research skills and methods.

Discussion and Conclusion

The results of the study illustrate the main features of librarians' involvement in research partnerships with faculty to produce coauthored publications. It is difficult to determine accurately the frequency of these partnerships through searches in bibliographic databases such as Scopus. In fact, most of the records initially identified in this study had to be removed from the analysis for a variety of reasons, including missing data in the Scopus database. However, more than 7 of 10 respondents surveyed had a professional LIS qualification, and nearly 9 of 10 defined themselves as "librarians" or "library and

information professionals,” which reflects their involvement in research and shows that they are not staff with other professional backgrounds based in libraries. Not all library staff, however, have research-level qualifications. In this sample, 43 percent of the participants had a PhD, a figure possibly higher than the average share of librarians in general.

Librarians’ participation in research spreads throughout the whole research process, from the conceptualization of the original idea to the publication of the results. Writing is the most usual task performed by librarians, possibly because they write the section of the paper about the tasks they have performed. These results are consistent with those provided by Robert Janke and Kathy Rush, who identified several “nontraditional” roles for librarians supporting research, including grant and manuscript writing.¹⁹ Librarians’ involvement in data curation is lower than expected, given the current prominence of the topic, with slightly more than one-third of the participants stating they had collaborated in this task. A larger proportion of librarians may, however, be involved in delivering data management services but are not named as authors in the publications derived from those projects. Recent research shows that, despite data management services becoming more usual, advisory services are more common than technical ones.²⁰ It is possible that more involvement in technical support services would make the inclusion of librarians as coauthors more likely.

The definition of authorship among librarians is strongly attached to the ICMJE criteria, possibly due to the high number of participants involved in the preparation of reviews in the health sciences. Similarly, many librarians justify their presence in the authorial team given their involvement in reviewing the literature. In the words of Genevieve Gore and Julie Jones, librarians “are likely to assume responsibility for the

search strategy—which counts as a substantial contribution—and are natural candidates to write the methods sections for the manuscript.”²¹

The participation of librarians is generally not funded by research projects. Librarians consider research support as one of the services they provide, and libraries do not charge research teams for the assistance offered. The relationships between librarians and research teams seem to grow progressively, with researchers requesting more assistance as they experience the benefits of librarians’ partnership in research. At some point, collaboration results in librarians becoming coauthors of the resulting publications. This is consistent with results provided by Bedi and Walde, who observed that librarians “are making this transition [toward becoming full members of investigative teams] as a result of prior relationships with faculty brought about through traditional liaison work.”²²

Participants see research support as core in their jobs. However, the importance attached to coauthorship varies among individuals. Most librarians who responded regard it as important to be credited as authors and insist on the significance of being acknowledged as such. On the other hand, some do not request authorship, and it may even have come as a surprise to them when offered. Nevertheless, once they have been included as a coauthor of a paper, they think it is fair to continue doing so and would like their colleagues involved in similar work to be acknowledged in the same way. This issue might become a source of conflict, since Desmeules, Campbell, and Dorgan show that “when thinking about performance evaluation, pay incrementation, tenure, and promotion, supervisors valued librarian co-authorship more than acknowledgements.”²³ Therefore, it might be in the direct interests of librarians to press for listing as a coauthor even if the researchers involved do not consider it appropriate. Disciplinary differences emerge, although the sample in this study is too small to sustain any firm inferences about the differences across research fields.

Similarly, it is difficult to draw any conclusions from the data on the concept of authorship, other than that the research demonstrates it to be a fluid concept. Interestingly, results regarding the variety of tasks performed by librarians seem to support the shift to a contributorship model that some journals are now applying, under which all those who make substantial contributions to a project are credited, even if they did no writing.²⁴

Involvement in research is a source of benefits, both for librarians and for libraries. It improves job satisfaction and enhances the reputation of both the individual concerned and the library as a whole. Collaboration in research improves librarians' skills, makes them aware of scholars' research interests and practices, and improves the image of library services.

The challenges librarians face when collaborating in research are primarily related to practical issues, such as meeting deadlines. Concerns about lack of skills were mentioned but not regarded as important for those involved as coauthors, suggesting that those librarians feel well-equipped to become members of research teams. Even the participants who had been coauthors, however, identified problems in some instances.

The results show that librarians who collaborate in research projects bring skills that improve the quantity and quality of research outputs and, therefore, contribute to the institutional mission of academic and research centers. Future research could explore how researchers view these partnerships and what kind of gains they obtain from the participation of librarians in research.

Ángel Borrego is a professor agregat (associate professor) in the Departament de Biblioteconomia, Documentació i Comunicació Audiovisual (Department of Library and Information Science and Audiovisual Communication) and the Centre de Recerca en

Informació, Comunicació i Cultura (Center for Research in Information, Communication, and Culture) at the University of Barcelona in Spain; he may be reached by e-mail at: borrego@ub.edu.

Stephen Pinfield is a professor of information services management in the Information School at the University of Sheffield in the United Kingdom; he may be reached by e-mail at: s.pinfield@sheffield.ac.uk.

Appendix

Interview Questions

1. Describe your current role and your involvement in research in general.
 - a. Do you have a research degree? [Yes/No/Other]
 - b. Do you have an LIS degree or similar professional qualification? [Yes/No/Other]
 - c. Do you consider yourself a “librarian”/“library and information professional”?
[Yes/No/Other]
2. Describe your role relative to the other coauthors in the identified publication of which you were a joint author.
 - a. How does your role relate to the following standard author role descriptors? [e.g. CRediT, <https://casrai.org/credit/>]
 - b. What constitutes “authorship,” compared to, for example, supporting research as a nonauthor?
 - c. Was your involvement in the research funded (i.e. did you or the Library receive any income for your time or any other costs)?

3. What skills did you bring to the research? Were you on the authorial team because of LIS-related skills which you could contribute e.g. literature searching, data management?

4. Had you worked with the same academic researcher(s) before but without being a coauthor?

5. To what extent do you believe that your coauthorship reflects the norms of authorial attribution in the relevant discipline?

a. How was author order on the paper decided?

b. If you had made the same contribution in another discipline, is it likely you would have been a coauthor?

c. Have you previously made similar contributions to a paper and not been cited as an author? Are you aware of colleagues who have?

6. Why did you choose to become involved in this research in general and coauthoring the paper in particular?

a. Has it brought about any particular benefits (personal or otherwise)?

b. What are the benefits?

c. What evidence can you point to of any benefits?

7. Has your involvement in the writing the paper benefited the Library in any way?

a. What are the benefits?

b. What evidence can you point to of benefit to the Library?

8. Did you face any particular challenges in working with academic researchers as a coauthor?

a. What were the challenges?

b. How did you overcome them?

9. Do you have any recommendations for other library staff involved in this kind of work based on your experience?

10. Would you be happy for us to contact you by e-mail as part of this research to ask you to clarify any of your responses given above? If so, please provide your e-mail address.

Notes

1. Megan Oakleaf, *The Value of Academic Libraries: A Comprehensive Research Review and Report* (Chicago: Association of College and Research Libraries, 2010), http://www.ala.org/acrl/sites/ala.org.acrl/files/content/issues/value/val_report.pdf.
2. Ángel Borrego, Jordi Ardanuy, and Cristóbal Urbano, “Librarians as Research Partners: Their Contribution to the Scholarly Endeavour beyond Library and Information Science,” *Journal of Academic Librarianship* 44, 5 (2018): 663–70.
3. Ronald R. Powell, Lynda M. Baker, and Joseph J. Mika, “Library and Information Science Practitioners and Research,” *Library & Information Science Research* 24, 1 (2002): 49–72.
4. Leslie J. Foutch, “A New Partner in the Process: The Role of a Librarian on a Faculty Research Team,” *Collaborative Librarianship* 8, 2 (2016): 80–83.
5. Jake Carlson and Ruth Kneale, “Embedded Librarianship in the Research Context: Navigating New Waters,” *College & Research Libraries News* 72, 3 (2011): 167–70, here 167.
6. Bharati Pati and Sabitri Majhi, “Pragmatic Implications of Embedded Librarianship in Academics: A Review of Eminent Literatures,” *Library Hi Tech News* 36, 2 (2019): 11–16.
7. Helen M. Seeley, Christine Urquhart, Peter Hutchinson, and John Pickard, “Developing the Role of a Health Information Professional in a Clinical Research Setting,” *Evidence*

- Based Library & Information Practice* 5, 2 (2010): 47–62; Diane L. Lorenzetti and Gayle Rutherford, “Information Professionals’ Participation in Interdisciplinary Research: A Preliminary Study of Factors Affecting Successful Collaborations,” *Health Information and Libraries Journal* 29, 4 (2012): 274–84; Robert Janke and Kathy L. Rush, “The Academic Librarian as Co-Investigator on an Interprofessional Primary Research Team: A Case Study,” *Health Information and Libraries Journal* 31, 2 (2014): 116–22.
8. Annette Swinkels, Jason Briddon, and Jane Hall, “Two Physiotherapists, One Librarian and a Systematic Literature Review: Collaboration in Action,” *Health Information and Libraries Journal* 23, 4 (2006): 248–56; Rosalind F. Dudden and Shandra L. Protzko, “The Systematic Review Team: Contributions of the Health Sciences Librarian,” *Medical Reference Services Quarterly* 30, 3 (2011): 301–15; Angela J. Spencer and Jonathan D. Eldredge, “Roles for Librarians In Systematic Reviews: A Scoping Review,” *Journal of the Medical Library Association* 106, 1 (2018): 46–56.
9. I. Diane Cooper and Janet A. Crum. “New Activities and Changing Roles of Health Sciences Librarians: A Systematic Review, 1990–2012,” *Journal of the Medical Library Association* 101, 4 (2013): 268–77; Mary L. Edmunds Otter, Judy M. Wright, and Natalie V. King, “Developing the Librarians’ Role in Supporting Grant Applications and Reducing Waste in Research: Outcomes from a Literature Review and Survey in the NIHR [National Institute for Health Research] Research Design Service,” *New Review of Academic Librarianship* 23, 2–3 (2017): 258–74.
10. Robin Desmeules, Sandy Campbell, and Marlene Dorgan, “Acknowledging Librarians’ Contributions to Systematic Review Searching,” *Journal of the Canadian Health*

Libraries Association/Journal de l'Association des bibliothèques de la santé du Canada
37, 2 (2016): 44–52.

11. Jonathan B. Koffel, “Use of Recommended Search Strategies in Systematic Reviews and the Impact of Librarian Involvement: A Cross-Sectional Survey of Recent Authors,” *PLOS [Public Library of Science] One* 10, 5 (2015): e0125931; Lun Li, Jinhui Tian, Hongliang Tian, David Moher, Fuxiang Liang, Tongxiao Jiang, Liang Yao, and Kehu Yang, “Network Meta-Analyses Could Be Improved by Searching More Sources and by Involving a Librarian,” *Journal of Clinical Epidemiology* 67, 9 (2014): 1001–7.
12. Ashlynn Kogut, Margaret Foster, Diana Ramirez, and Daniel Xiao, “Critical Appraisal of Mathematics Education Systematic Review Search Methods: Implications for Social Sciences Librarians,” *College & Research Libraries* 80, 7 (2019): 973–95.
13. Shailoo Bedi and Christine Walde, “Transforming Roles: Canadian Academic Librarians Embedded in Faculty Research Projects,” *College & Research Libraries* 78, 3 (2017): 314–27.
14. Ada Ducas, Nicole Michaud-Oystryk, and Marie Speare, “Reinventing Ourselves: New and Emerging Roles of Academic Librarians in Canadian Research-Intensive Universities,” *College & Research Libraries* 81, 1 (2020): 43–65.
15. Alexander J. Carroll, Honora N. Eskridge, and Bertha P. Chang, “Lab-Integrated Librarians: A Model for Research Engagement,” *College & Research Libraries* 81, 1 (2020): 8–26.
16. Borrego, Ardanuy, and Urbano, “Librarians as Research Partners.”
17. Alex O. Holcombe, “Contributorship, Not Authorship: Use CRediT [contributor roles taxonomy] to Indicate Who Did What,” *Publications* 7, 3 (2019): e48.

18. International Committee of Medical Journal Editors (ICMJE), “Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals,” 2018, <http://www.icmje.org/icmje-recommendations.pdf>.
19. Janke and Rush, “The Academic Librarian as Co-Investigator on an Interprofessional Primary Research Team.”
20. Carol Tenopir, Sanna Talja, Wolfram Horstmann, Elina Late, Dane Hughes, Danielle Pollock, Birgit Schmidt, Lynn Baird, Robert Sandusky, and Suzie Allard, “Research Data Services in European Academic Research Libraries,” *Liber Quarterly* 27, 1 (2017): 23–44; Andrew M. Cox, Mary Anne Kennan, Liz Lyon, Stephen Pinfield, and Laura Sbaffi, “Maturing Research Data Services and the Transformation of Academic Libraries,” *Journal of Documentation* 75, 6 (2019): 1432–62.
21. Genevieve C. Gore and Julie Jones, “Systematic Reviews and Librarians: A Primer for Managers,” *Partnership: The Canadian Journal of Library and Information Practice and Research* 10, 1 (2015): 1–16, here 5.
22. Bedi and Walde, “Transforming Roles,” 325.
23. Desmeules, Campbell, and Dorgan, “Acknowledging Librarians’ Contributions to Systematic Review Searching,” 47.
24. Holcombe, “Contributorship, Not Authorship.”