Funding Sources for Open Access Article Processing Charges in the Social Sciences, Arts, and Humanities in the United States

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Abstract: Article processing charges (APCs) are one method of many to ensure open access to research literature, but studies that explore the funding sources for such payments, especially as related to open access publications in the arts, humanities, and social sciences, have been limited. This study seeks to understand the range of funding sources that are available and used by faculties in these disciplines to pay for APCs associated with publishing in open access journals, as well as attitudes towards and awareness of available institutional funds that may inflect future engagement with open access publishing. The authors distributed a survey to faculty who had an open access journal article published in 2017 from three doctoral granting, high research activity universities in the United States. Twenty-two scholars participated in the final survey, ten of whom indicated that they paid an APC for their publication. While the results cannot make generalizations about funding sources, they do suggest that both the prevalence of APCs as well as attitudes about open access engagement may be influenced by disciplinary self-identification. This research contributes to discussions around the future of open access funding models as well as to disciplinary outreach regarding APC funding for journal publications.

Keywords: open access; article processing charges; APC; funding sources; social sciences; arts; humanities

1. Introduction

Article processing charges (APC) leveraged on authors have been developed by publishers as one of many business models for financing open access journal publishing [1]. In the Directory of Open Access Journals (DOAJ), approximately 27% of journals indexed are noted as having journal article processing charges [2]. For the social sciences, arts, and humanities, a 2010 study of sample titles found that total expenditures for APCs in the social sciences was USD 3.4 million, and for arts and humanities it was USD 84,000 [1] (p. 1490). The expenditures highlighted in the 2010 study raise questions about where the money to pay for these fees is coming from, and who is paying for these charges.

Previous research suggests that there is no single predominant source of funding to pay for article processing charges across disciplines and authors actually prefer the availability of multiple funding sources such as grants, the university, and a campus or library fund [3,4]. While journal publication output in the social sciences, arts, and humanities may be less than journal publication output in the sciences, researchers in these disciplines do continue to engage in authoring articles [5,6]. Amongst authors who published in social sciences and law journals, discretionary, personal, and grant funding were found to be used roughly evenly, while for authors who published in arts and humanities journals, fee waivers were the most common [3]. Even amongst science researchers, who may have access to grant or external funding, often that external funding is either no longer available or researchers
are reluctant or not authorized to use the external funding at the time of payment [7]. A common problem is that grant funding closes before open access fee payments are actually made [4]. Outside of the United States, in a study of three European universities, author discretionary funds and, when available, an institution APC fund were used most often to pay for publication charges, with authors preferring to use the institution’s APC fund over discretionary funds, if given the option [8].

The APC model, which can be viewed as leveraging fees on authors, may be concerning for researchers in the social sciences, arts, and humanities [5,6,9], even those who have previously published open access [5]. Across all disciplines, perceived barriers to publishing open access among authors include not having access to funding for publications and being unable to pay for such charges, while for humanities and social sciences authors, an additional concern includes an unwillingness to pay for APCs [6,9]. Specific disciplinary barriers may also exist, such as in the arts, where obtaining permissions for the reproduction of in copyright content may be a legal or financial burden [10].

Nearly three-fourths (73%) of open access journals indexed in the Directory of Open Access Journals (DOAJ) do not charge an APC, but even as overall support for open access grows authors are found to be resistant to payments over USD 500, which would be considered minimal given the DOAJ average of USD 908 [11,12]. While grant funding may help some researchers, local support and particularly that which comes from the libraries is still crucial to enabling open access publishing for some researchers [13,14]. For the humanities some view economic challenges, particularly related to APCs, as one of the most pressing issues related to open access publishing, due in part to the lack of external funding for research in the humanities [15]. For the social sciences, others view conversations with scholarly societies about the economic models for funding as important for wide-scale adoption of open access [15]. While funding provided by institution, such as through departmental or a university library funds, can remove barriers for faculty and students publishing open access, in a survey of the Association of Research Libraries, the majority of libraries that responded either did not have, with no plans of implementing, or no longer had a fund to subsidize APCs [16].

The purpose of this study is to understand the range of funding sources that are available to and used by social sciences, arts, and humanities faculty who are at universities in the United States to pay for APCs associated with publishing in open access journals. This study looks at researchers from the social sciences and humanities who have published an article in an open access journal. The primary research question for this study is what funding sources do faculty at universities in the United States from the social sciences, arts, and humanities use to pay for APCs? A secondary question is, for these faculty who have published in an open access journal, what is their awareness of funding available through library sponsored grant programs that exist at their institution specifically for APCs? The authors of this study hypothesize that there may be limited sources of grant or sponsored research funding available to these faculty from the social sciences, arts, and humanities, and that faculty may rely on university or personal funds for publication fees. The authors also hypothesize that for these faculty already engaged in open access publishing, there is little awareness of library sponsored funding sources for APCs.

While this research asks similar questions to research previously conducted on the availability and sources of funding for APCs and attitudes towards open access among faculty in the social sciences, arts, and humanities, what differs in this research is both the methodology and scope. The authors identify participants based on their departmental affiliation, rather than the disciplinary affiliation of the publication. Similar research notes limitations of assigning a single discipline at the article level [17].

This study is also multi-institutional in nature, which, unlike a single-institution study, seeks a broader range of participants. By identifying participants based on departmental affiliation, this research aims to view discipline from the perspective of the university and libraries, rather than the perspective of a publication. By expanding the study to multiple institutions, the findings of this research can begin to examine researcher responses that go beyond the context of a single institution.
2. Materials and Methods

2.1. Sampling

The sampling technique used is a non-probabilistic, purposive sample, meaning the eligible participants were identified based on specific criteria and attributes, and not randomly identified. Three doctoral granting institutions in the United States (U.S.) with high research activity as defined by the Carnegie Classification of Institutions of Higher Education [18] provided data on faculty research outputs from 2017, and collected through the institution’s use of the product Elements from software and service provider Symplectic [19].

Elements enables institutions to collect and aggregate faculty citation data and research output data from external sources with minimal manual input from researchers. All three institutions identified deploy the use of Elements across all departments and units on campus. These institutions were identified based on their deployment of Elements, their Carnegie Classification status, the existence of an open access subvention fund on campus, and their ability to share the Elements faculty citation data for this study. After identifying institutions based on Carnegie Classification and the existence of active open access funds, the CU Boulder Scholarly Impact Liaison identified those institutions deploying Elements, and those final institutions were contacted individually to inquire about the extent of deployment. The three institutions from the U.S. that participated in this research are Duke University, located in Durham, North Carolina, Texas A&M, located in College Station, Texas, and the University of Colorado Boulder, located in Boulder, Colorado.

The faculty research citation data was provided by each institution in an Excel file dataset that included faculty member’s name and email address, article citation information, and an indicator for journals indexed in the DOAJ. Two out of the three datasets included the faculty member’s school, department, or academic unit. For the dataset that did not include departmental affiliation, researchers manually looked up faculty names in the institution’s faculty profiling system, and included the departmental affiliations listed in the system. From the datasets, thirty schools, departments, or units across the three universities were identified as an arts, humanities, or social sciences discipline. This methodology of identifying participants based on departmental affiliation differs from methods used in previous research that sampled participants by identifying open access journals by discipline, and surveying authors from specific discipline-based journals. The authors sought to identify participants through this approach in order to capture the interdisciplinary research that may be occurring, and capture authorship in open access journals that may fall outside of one’s departmental discipline. From these datasets, the authors identified all faculty members’ journal article publications from 2017 published in a journal indexed in DOAJ. This process was enabled by the fact that “Indexed in DOAJ” is now a field indicated within the Elements dataset.

As part of the terms of sharing the datasets, the participating universities requested that the researchers be mindful of communication with faculty and minimize the impact on faculty time. Because of this request, the authors decided to send only one survey to each identified faculty member, with reference to only one article. For faculty members who authored multiple articles in open access journals in 2017, the article identified for use in the survey was randomly selected. Similarly, in order to prevent conflicting data in the results, when multiple authors from the same institution co-authored a single article, only one faculty member was selected, at random, to receive the survey. The final list consists of 83 participants from the arts, humanities, and social sciences departments across three universities, who authored an article published in a DOAJ indexed journal in 2017. All participants whose responses are included in the results gave their consent for inclusion prior to participating in the study. This research was conducted in accordance to the exempt research protocol approved by the University of Colorado Boulder Institutional Review Board (Protocol # 18-0474) on 31 August 2018.
2.2. Data Collection

The researchers used an online survey for data collection, consisting of ten multiple-choice questions, including sub-questions and skip logic. A template of the survey is provided in Appendix A. The survey was created using the online survey creation tool Qualtrics. All questions were voluntary, and with skip logic some participants saw fewer than ten questions, depending on their responses. Participants were recruited to participate in the research via an email sent in January 2019 that included a link to the Qualtrics survey. The survey was open for three weeks, closing in early February 2019. The recruitment email for each participant was personalized and included a citation of the article that they authored and published in an open access journal in 2017. Participants were asked to respond to the survey questions based on their experience with the cited article.

3. Results

An email invitation to complete the survey was sent to eighty-three faculty at Duke University, Texas A&M University, and the University of Colorado Boulder. Twenty-two faculty responded to the survey for a response rate of 26.5%. This response rate does not lend itself to draw generalizable conclusions. The results discussed in this study are descriptive of the experiences of each respondent with open access publishing, but the results are not able to be extrapolated beyond these respondents.

The survey was sent to faculty identified by the authors of this study using the Elements data provided by each institution as faculty within departments in the social sciences, humanities, or the arts. Each respondent was asked to answer the survey questions with regards to a specific open access article from 2017. Respondents were asked if they paid an article processing charge (APC) for the article in question, and if they responded that they had paid an APC, a follow-up question asked them to provide an estimate of the amount of the charge. As Figure 1 shows, twelve respondents did not have an APC associated with the article inquired about in the survey. For the remaining respondents who did pay an APC, five paid between USD 501–2000, and four paid more than USD 2000. No respondents who paid an APC paid less than USD 500.

![Figure 1. Prevalence and Amount of APC.](image_url)

The survey also asked respondents who did pay an APC to indicate how that fee was paid for, and respondents could select as many payment strategies as were applicable (Figure 2).
Four respondents indicated that the source of APC funding was through the department, college, or school. Three indicated that the source of funding was through sponsored research funding. Two respondents indicated that they paid for the APC through funding provided by their university library. Though no respondent indicated payment out of their own pocket, one respondent’s co-author paid for the article out-of-pocket. Only two respondents used multiple funding sources to pay the APC, and no respondents had more than two sources of funding.

All respondents, regardless of whether they paid an APC or not, were asked about how important open access is in making a determination about where to submit an article (Figure 3).

Thirteen respondents reported that open access publishing is at least “Moderately important” when making a decision about submitting a paper. Seven respondents reported that open access publishing is either “Not at all important” or only “slightly important.”

As stated before, all of the universities participating in this study provide funding for open access publishing through their libraries. When asked about their awareness of funding assistance through the library, eleven respondents positively indicated that they were aware of the availability of open access funding (Figure 4). Of the 11 respondents who were aware of funding, six said that they were aware of but did not apply for funding, four were aware, and did apply for funding, and one respondent was aware but no funding was available at the time of publication. It is notable that four respondents...
indicated applying for funding given the response shown in Figure 2 that suggests only two received funding through this route.

![Figure 4. Awareness of University Library Funding.](image)

Additionally, eleven respondents gave no response to this question and none of the respondents to the survey selected the option “No, I was NOT AWARE of funding.”

When asked about future or upcoming publications, sixteen respondents said that they had submitted one or more articles for publication since the 2017 article inquired about in the survey, and another four said that they had not yet submitted another article, with one responding that they would “soon” be submitting one. Figure 5 exhibits the type of publications respondents submitted articles to since publishing in an open access journal in 2017. Each respondent was able to select more than one type of new submission.

![Figure 5. Venue of More Recent Articles Submitted for Publications.](image)

Of the 29 new article submissions, sixteen were to open access journals, with an equal proportion submitted to open access journals with and without APCs. Thirteen of the new article submissions were to traditional subscription journals.

Finally, the survey participants were asked to indicate what other funding opportunities for open access they would be likely to take advantage of in the future (Figure 6). Respondents were allowed to
indicate interest in more than one funding source. Eighteen respondents selected at least one funding option with which they would be likely to engage, and eight respondents selected more than one type of funding.

By far, funding for APCs of an open access article was the most popular option, with 17 respondents saying that they would be likely to take advantage of this form of funding in the future. Nine of the respondents said they would take advantage of a grant for an open access monograph, and five expressed an interest in funding for an open access book chapter.

4. Discussion

While not generalizable for all faculty in the social sciences, arts, and humanities, this research shows a snapshot of the experiences with open access publishing for these respondents selected from three doctoral granting institutions in the United States (U.S.) with high research activity. Contrary to the authors’ hypothesis that social sciences, arts, and humanities faculty would have limited access to sponsored research funding and instead would rely on university or personal funds to pay for APCs, within this limited sample the sponsored research funding was available and used by some respondents to pay for APCs. Funding from the school, department, or colleges was most prevalent for these respondents. Multiple funding sources, including sponsored research funding and funding from university sources, were used, but the prevalence of one funding source over another to those in the social sciences, arts, and humanities is not evident. Previous studies have indicated that there is not a single predominant source of funding that authors use to pay for APCs [3,4].

What is notable from the findings is that most responses suggest that payment of an APC was not required for publication of the open access article. In a study examining journals that charge APCs across disciplines, Kozak and Hartley [20] found that journals in the sciences tend to charge APCs at a higher proportion than other disciplines. Specifically, nearly half (47%) of medical sciences journals charge an APC, while almost no humanities and arts journals do the same (4% and 0%, respectively). This suggests that faculty publishing in open access journals outside of the sciences more often may encounter fee waivers or no-APC journals.

A secondary research question asked about faculty awareness of funding for APCs through their library. The results are inconclusive. Half of the respondents for this survey gave no response to this question, and the remaining respondents answered some variation of indicating awareness. Given the high rate of “no response” for this question, it is possible that respondents found the question confusing or that none of the options accurately reflected their level of awareness. Social sciences, arts, and humanities faculty awareness of library-sponsored APC funding remains unknown.
An additional survey question explores respondents’ interest in funding options supporting open access publication through the university. The majority of respondents are interested in taking advantage of funding for journal APCs, if the university offers such funding. It is clear that university funding for APCs, whether through the library or through the department, college, or school, is a desirable source of funding for these faculty in the humanities and social sciences. Whether it is preferable for this funding to come from the library or department, college, or school is unclear.

These survey results raise additional questions about disciplinary affiliation that were not initially considered. While the authors selected only participants with a primary departmental affiliation within the social sciences, arts, or humanities, respondents were also asked to self-identify within a discipline, with “sciences” included as one of the potential choices. As Figure 7 illustrates, nine respondents self-identified their research discipline as social sciences, six self-identified as researchers in the sciences, and three self-identified as humanities scholars. No respondents self-identified within the discipline of arts.

![Respondents Self-Identified Discipline](image)

**Figure 7.** Respondents Self-Identified Discipline.

These responses indicate that for some respondents, how they self-identify differs from the discipline that is indicated by their primary departmental affiliation within a university.

For librarians and university staff engaging with faculty, this distinction is important to consider for future outreach. Disciplinary affiliation may be nuanced and self-determined rather than assigned by an institution or department. As conversations about research and open access occur across campus, understanding a faculty member’s self-identified discipline may be an important consideration on how to shape conversations, and suggests that assumptions about what faculty value or their level of engagement in open access based on departmental affiliation may be problematic. Conversations about open access in the sciences may be relevant to researchers in departments outside of traditional science departments, and as research is increasingly interdisciplinary, departmental affiliations may be an increasingly less valuable consideration for how those across campus, such as librarians, interact with faculty.

Figure 8 examines respondents’ answers to whether or not they paid an APC by how they self-identified within a discipline. All six respondents who self-identified as science researchers also indicated that they had a fee associated with the article’s publication. Six of the respondents who self-identified as researchers in the social sciences did not pay an APC, while the remaining three did pay one. The three respondents who self-identified as a researcher in arts or humanities did not pay an APC for their open access publication. Because scientific journals are more likely to charge APCs than other journals, this raises the question of whether self-identification within a discipline is tied more
closely to the category of journals one publishes in than to university departmental affiliation. Because
the authors survey results were anonymous and de-identified, the journals respondents published in is
not known. In addition, the survey did not ask respondents to identify the discipline of the journal
that they published in.

In looking at how respondents indicated the importance of open access when making publication
decisions, the three self-identified humanities respondents all indicate open access as at least
“moderately important” to publication decisions, while social sciences identifying authors are spread
quite evenly across the spectrum in their view of the importance of open access as a factor in publication
decisions. Respondents who identified with the sciences indicate open access as less important to
publication decisions, with four out of six indicating it is “slightly important” or “not important at all”.
While the sample is far too small to draw conclusions about whether self-identified discipline is related
to the perceived importance of open access to publishing decisions, the subtle difference in results
from these respondents raise additional questions about how factors such as cultural nuances, cost,
and the ubiquity or scarcity of open access journals in a given discipline might influence how open
access is prioritized.

4.1. Future Directions for Research

Future inquiries into the open access funding sources for researchers in the social sciences,
humanities, and arts would benefit greatly from an expansion of the research sample so that findings
can be more generalizable across population groups. If comprehensive faculty reporting systems
(such as Elements, used for this study) become more common, this kind of research will become easier
to execute on a larger scale. With expanded faculty reporting systems, studies similar to this one could
be conducted by incorporating faculty from a variety of institutions, including differing sizes, types,
and geographic regions. Conversely, this study can also be used to model a localized study of open
access funding and awareness that may help to guide policy and support at the institutional level.

Additionally, since this study’s attempt to glean insight into social sciences, arts, and humanities
faculty awareness of existing subvention funds administered by campus libraries is inconclusive,
future research is needed to answer this question. A qualitative study using methods such as in-depth
interviews may better support research questions related to faculty awareness. The findings from
this study raise additional questions related to disciplinary affiliation and support of and publication
in open access journals. What factors lead faculty to publish open access, particularly in the social
sciences and humanities? To what degree are decisions to publish open access made deliberately
across disciplines? Does the prevalence of no-fee or waived APCs in certain disciplines influence the
perception and support of open access? Future research would also benefit from additional studies looking specifically at low-to-no-APC publications and publishers in order to understand how they contribute to the advancement and sustainability of open access across disciplines.

4.2. Limitations

One limitation of this study is the sample size and the set of schools which are represented. The authors gathered publication data from only three institutions, all located in the United States. This small sample of institutions is due to the restrictive criteria for this study, selecting faculty from participating institutions based on (1) the institution must have an active open access subvention fund through the university library, (2) the institution must use Symplectic’s Elements for comprehensive faculty publication reporting, and (3) the institutions should have the same Carnegie classification. The authors contacted several other institutions that fit these three criteria, but the other institutions were either not confident in the reliability of their Elements dataset or the university had not yet implemented Elements fully to all faculty departments.

Findings are also limited due to biases in the sample of faculty selected for the study. All individuals selected for the study may have inherent biases regarding open access publishing given that each has already published open access previously and all have access to subvention funds from their institution. Faculty who have published in open access journals, but are employed at other types of institutions or in different countries and geographic regions may see different trends in funding sources for APCs. Faculty who have not published in an open access journal may have different attitudes towards open access publishing.

5. Conclusions

This study was prompted by the authors’ concern that at their own institution’s arts, humanities, and social sciences faculties needs for APC funding were not being met, or that these faculties were not aware of the existence of funding from the university library. The findings at the current level of analysis suggests that these faculties, and especially those in the humanities, may not be as in need of funding assistance as they are less likely to have to pay an APC to publish an open access article. However, funding may still serve as an overall obstacle to the continued uptake of open access in these disciplines, and a broader analysis of the need for sustainable alternatives to the APC model of funding outside of the sciences is needed to more fully assess the best means of supporting open access publishing for researchers across disciplines. Faculty members in the social sciences may have the opportunity to publish in no-fee or waived-APC publications, but may also require funding to pay for an APC. Furthermore, there may be faculty within departments traditionally found in the social sciences, arts, or humanities who self-identify in the sciences and publish in science journals, which can be more likely to exact fees.

Funding strategies need to be re-visited and diversified as more researchers across disciplines engage with open access. What this research suggests is that the availability of multiple funding sources enables faculties, including those from the social sciences, arts, and humanities, to pay for APCs at the time of need. A library or institutional fund specifically designated for APCs can continue to play an important role in supporting faculties in publishing in open access journals, allowing them to have options on how an APC might be paid for, particularly if grant funding is not available. Outreach about open access funding and opportunities to faculty in all disciplines is crucial, because many of these researchers are already engaged in open access publishing, with some participating in inter- and cross-disciplinary research that may involve payment for publication but without the departmental or grant funding that other departments might enjoy. This outreach should also aim to identify other methods of funding and open access models not currently being supported by the university. This research will aid libraries and universities with methods for assessing faculty needs for APC funding, evaluating perceptions and projected future practices with regards to APCs, and determining the availability of various funding sources. As open access becomes more widespread,
it will become increasingly important to evaluate and understand how various funding models sustain and support open access publishing across all research disciplines and types of research output.

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**Conflicts of Interest:** The authors declare no conflict of interest

**Appendix A**

Funding sources for open access article fees in the humanities, arts, and social sciences survey.

1. Was there an article processing charge required by the publisher for the publication indicated in the email you received?

   **An article processing charge (APC), also known as a publication fee, is a fee which is sometimes charged to authors to make a work available open access in either an open access journal or hybrid journal.**

   - [ ] Yes
   - [ ] No
   - [ ] I don’t know

   *Skip Logic: If yes, display 1a and 1b*

1a. What was the approximate amount of the charge?

   - [ ] $1–$500
   - [ ] $501–$2000
   - [ ] $2001–$3000
   - [ ] $3001–$5000
   - [ ] More than $5000

1b. How was the article processing charge paid for? (Select all that apply)

   - [ ] Sponsored Research Funding
   - [ ] Department, College, or School
   - [ ] University Library
   - [ ] Co-author’s university
   - [ ] Co-author’s library
   - [ ] Co-author “out-of-pocket”
   - [ ] Own “out-of-pocket”
   - [ ] Other ________________________________

2. When choosing which journal to submit papers to, how important is open access publishing to your decision?

   - [ ] Extremely important
   - [ ] Very important
3. At the time of this article’s acceptance, were you aware of your university library’s program to support the cost of article processing fees that may include payment of fees?

- Yes, I was aware of my university library’s program to support article processing fees, and I DID APPLY for funding.
- Yes, I was aware of my university library’s program to support article processing fees, but I DID NOT APPLY for funding.
- Yes, I was aware of my university library’s program to support article processing fees, but NO FUNDING WAS AVAILABLE at the time.
- No, I was NOT AWARE of funding.
- Other – [free response]

4. Since the acceptance of this article, have you submitted one or more articles for review and publication?

- Yes
- No
- Other ________________________________________________

4a. What type(s) of publications have you submitted the article(s) to? (Select all that apply)

- Open Access journal with APC
- Open Access journal with no APC
- Subscription journal with no APC
- Other ________________________________________________

5. If your university offered funding for the following which would you be likely to take advantage of in the future? (Select all that apply)

- APC for article published in an OA journal
- Publishing grant for an OA monograph
- Book publication charge for an OA book chapter

6. Please select your institution

- Duke University
- University of Colorado Boulder
- Texas A&M University

7. What discipline(s) do you consider yourself a scholar in?

- Arts
- Humanities
- Sciences
- Social Sciences
- Other ________________________________________________
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