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RESEARCH ARTICLE

An APC Trap? Privilege and the Perception of Reasonableness in Open Access Publishing

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ABSTRACT

Introduction: This article investigates funding sources reported by authors of open access (OA) articles at four R1 (doctoral-granting institutions in the United States with very high research activity) universities, along with these authors' perceptions of Article Processing Charges (APCs). The study suggests a cognitive dissonance among many respondents, in which there appears to be a desire and willingness to participate in OA publishing, which is at odds with a sense of unreasonableness and an uneven distribution of the ability of researchers to participate.
Literature review: Much of the literature on APCs centers on rising prices, how commercial publishers profit from this model, and the resulting inequities in OA publishing. Some information exists about resources for funding APCs, including grant funding, library programs, and fee waivers.
Methods: We surveyed authors who published an OA article in the calendar year 2022. The survey asked whether there was an APC, the funding source for the fee, and the author's perception of the reasonableness of APC prices and their relative ability to pay compared with their peers.
Results: From 321 total respondents, grant funding was the largest source of APC funding, and authors reported fees of over $1,500 in U.S. dollars as unreasonable.
Discussion: This study confirms the hypothesis that external grants are the primary support for authors paying APCs, and beyond that, authors use a variety of sources to support their publishing fees. Respondents characterized APCs in general as unreasonable for less well-resourced colleagues.
Conclusion: Though authors were generally able to find funding or have fees waived, they perceive a threshold of reasonableness for APCs.

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Keywords: Article Processing Charges, APCs, Open Access

IMPLICATIONS FOR PRACTICE

This article invites librarians and researchers to:

1. Continue assessing authors' perceptions of reasonable APC costs using the baseline established in this study. The instruments and data from this study are shared openly and available for reuse.
2. Consider the funding sources for APCs and how library support fits into the overall picture.
3. Invest in opportunities that align with researcher values by advocating for and supporting business models that reduce or eliminate APCs.

INTRODUCTION

Early funding models for open access

In its most distilled form, open access (OA) simply means research literature that is made freely available with few restraints on permission for reuse (Suber, 2019). Early declarations calling for the transition to OA in scholarly publishing lauded the potential to decrease the overall costs of publishing but otherwise remained largely agnostic regarding business models to achieve this transition (Budapest Open Access Initiative, 2002; Open Access Initiative of the Max Planck Society, 2003; Ouvrir la Science, 2003).

The Budapest Open Access Initiative (BOAI) points to "many alternative funding sources" to replace subscription costs, including government and university funding, profits from add-ons, and funding gained from the demise of subscription journals. At the end of this list, the BOAI includes "contributions from researchers themselves," but asserts "[t]here is no need to favor one of these solutions over the others for all disciplines or nations, and no need to stop looking for other, creative alternatives" (BOAI, 2002). Although the BOAI 20th Anniversary update to these recommendations includes calls to "[favor] inclusive publishing and distribution channels that never exclude authors on economic grounds" and to "move away from article processing charges (APCs)," it remains to be seen whether scholars and publishers can effectively move away from currently entrenched models in the next decade (BOAI, 2022).

The Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities has little to say about economic models for furthering the aims of OA, simply acknowledging that "the process of moving to open access changes the dissemination of knowledge with respect to legal and financial aspects. Our organizations aim to find solutions that support further development of the existing legal and financial frameworks in order to facilitate optimal use and access" (Open Access Initiative of the Max Planck Society, 2003). The Bethesda Statement on Open Access Publishing, on the other hand, perhaps goes the furthest of the original three major statements in recognizing the economic impact of OA on authors and publishers. The signatories "agree to help fund the necessary expenses of publication under the open access model of individual papers in peer-reviewed journals (subject to reasonable limits based on market conditions and services provided)," but still provide the hopeful assessment that OA will decrease the overall costs of academic publishing (Ouvrir la Science, 2003).

Current funding models for OA

The two decades since these historical statements reveal more about how far the OA movement has strayed from its original intention than they do about the current state of affairs in scholarly publishing. Meanwhile, the lack of firm assertions or guidance with respect to acceptable business models for building a sustainable, open, and equitable scholarly publishing ecosystem has left the door wide open for commercial publishers to fill the void with their preferred models. Inevitably, many publishers created new revenue streams from OA publishing through the payment of APCs that supplemented or replaced subscription models for many journals. Despite their often being marketed as "transitional," these Hybrid and Gold journals with APCs have continued to proliferate with no end in sight. For a full discussion on different OA business models, see Tasha Mellins-Cohen's classification model (Mellins-Cohen, 2024)

It would be remiss not to mention there exist many models for OA that do adhere to the original principles laid out in the Budapest, Berlin, and Bethesda declarations, in particular, the successful and sustainable Diamond OA models of Latin and South America, including Redalyc, SciELO, and AmeliCA. Juan Pablo Alperin, Associate Director of Research of the Public Knowledge Project, argues that APC-based business models in the United States and much of Europe damage scholar-led initiatives around the world because "APCs beget APCs." In other words, an economic model that creates demand for author publication fee charges will continue to find new channels to pay those fees, which diverts more and more funds away from projects that value sustainable and shared infrastructure (Alperin, 2022). APCs, then, represent a threat not only to researchers, libraries, and funders who actively engage with them but also to initiatives actively seeking to forge infrastructure outside of the APC model.

Thus, despite many aspirational and efficacious Diamond OA models, APCs have nevertheless become the norm for OA scholarly publishing. APCs have also increased in recent years at a rate that puts strain on authors and on the market (Alencar & Barbosa, 2021; Butler et al., 2023; Khoo, 2019; Solomon & Björk, 2016). Many libraries barely have enough budget allocations to account for the inflation of subscription resources from year to year, much less to scrounge together additional budgets for general OA funds, memberships, or transformative agreements. Yet authors must somehow find funding to make these payments if they wish to publish OA in many of their chosen journal venues, since for most authors even the lowest APCs are too expensive to pay out of pocket. As the literature begins to paint a clearer picture of the immense profits generated by APCs, it begs the question of what sources authors are using to make these payments. And for researchers at R1 institutions in the United States—arguably some of the most privileged researchers in the world—is this situation reasonable or sustainable? If even the supposedly most well-resourced authors find the status quo to be unsustainable, then the severe precarity of the entire model must be called into question.

Purpose of this study

Although the sample for this study focuses only on publications by faculty and research associated with four highly research-intensive institutions in a high-income country, and although the sample for this study is not comprehensive or global, the privilege this group of researchers embodies is purposeful in the design of this study as it is valuable to understanding the cognitive dissonance experienced by this set of researchers. This dissonance manifests itself in the simultaneous contradictory positions of a strong willingness and ability to publish OA, even with a fee, but a belief that APC prices are unreasonable and unfeasible for themselves as well as for their less privileged colleagues without grant funding. This study attempts to understand this through questions specifically targeting whether these authors believe that 1) APCs are reasonable or unreasonable for colleagues at non–research-intensive institutions to pay without grant funding, and 2) whether they believe they have an easier time paying these fees than others in their field.

LITERATURE REVIEW

In a 2021 investigation by two authors of this study, Cantrell & Collister found that common messaging around OA contained implicit biases "by presenting payment for OA publication as the default, a linguistic phenomenon known as presupposition." The presumption of cost through author fees for OA publishing is a phenomenon that benefits commercial publishers but is perpetuated by libraries, funders, and even OA advocacy groups (Collister & Cantrell, 2021). Although a large majority (71%) of journals listed in the Directory of Open Access Journals do not charge publication fees to support their business model, most OA articles are in fact published in the smaller subset of journals that do require APCs (Crawford,

2018; Piwowar et al., 2018; Smith et al., 2022). Moreover, while many studies have shown rising APC costs to be often insurmountable by authors in the Global South, even privileged authors with access to funding struggle to pay these fees from research budgets with very little margin for error (Smith et al., 2022). This system, in which APCs are already at or beyond the limits of market conditions, sets up a new paradigm of elitism for scholarly publishing where reading is less of a problem for underprivileged researchers, but those same researchers are now priced out of the benefits of participating in OA authorship. This phenomenon was termed by Klebel & Ross-Hellauer as the "APC effect" (2023).

Much of the literature on APCs and OA business models center on the prices for these fees and how much commercial publishers profit from this model. The main thrust of this research asserts that 1) APCs are contributing additional costs to the scholarly publishing ecosystem, not less, for both publishers and institutions (Aspesi et al., 2019; Budzinski et al., 2020; Simard et al., 2021; Segado-Boj et al., 2022) and 2) APC prices are increasing at a fairly rapid rate, putting strain on what the market can reasonably bear (Alencar & Barbosa, 2021; Butler et al., 2023; Khoo, 2019; Solomon & Björk, 2016). A 2023 study calculated that the average Gold APC was $1,989, whereas the average Hybrid APC was $2,905 (Butler et. al, 2023), with 2024 data from the OpenAPC project revealing an average Gold APC of €1,599.80 (about $1,730 U.S. dollars) and an average Hybrid APC of €2498.40 (about $2,710 U.S. dollars) (Broschinski et al., 2024). Studies also show a sharp increase in the number of OA articles being published. One study found a 15.5% increase from 2020 to 2021 alone, whereas another found Elsevier's hybrid OA output doubling year to year over the period studied (Crawford, 2018). This situation has created what Butler et al. (2023), building on the work of Larivière et al. (2015), describes as an "oligopoly" of OA under for-profit publishers, with five of the largest commercial publishers being paid $1.06 billion in fees for OA publication over the course of four years. Khoo (2019) also posits that the hyperinflation of APC prices is due in part to journals with high APCs being associated with prestigious journals, whereas low APCs may be associated with predatory publishers. Thus, in their desire to publish with the most prestigious journals, authors are treating high-cost APCs as a necessity, which "would explain the negligible sensitivity that authors who can pay show towards APCs, much like how consumers will continue to purchase staple foods in the face of price increases" (Khoo, 2019, p. 11).

Compounding these inflationary trends in OA publishing is the disconnect between the concepts of "cost" and "price" for a scholarly article. Grossman & Brembs (2021) note that this misattribution causes "a potential over-estimation of the actual costs of scholarly publishing due to the inclusion of the business models and pricing strategies of publishers into the calculation," which may conceal the actual market value of scholarly outputs (p. 3). Although the heterogeneity of the publishing industry makes it difficult to determine the true costs of production and maintenance per article, Grossman & Brembs estimate $600 in costs for a

scholarly article with full editorial services, whereas a study by the University of California Libraries (2016) calculated a cost range of $1,103 to $2,566 per article for sustainable journal pricing with a modest 13% surplus beyond costs. Other studies investigate the discrepancy in price and cost in other scholarly outputs, such as Steinhart & Skinner's (2024) review of the costs and prices of public access to research data in the United States. Steinhart & Skinner provide definitions of these two terms used going forward in this paper:

> Cost: The expenses incurred in the course of providing public access to research outputs, or the resources used to produce, deliver, and maintain a research output online.
>
> Price: The charges paid by stakeholders in the market exchange for the service of providing public access to a research output. (Steinhart & Skinner, 2024, p. 7)

Whereas previous studies seek to determine the sustainability of costs in relation to publisher prices, this study seeks to understand the practices and perspectives of academic authors, and the added layer of disconnect between author perception of reasonableness, publishing costs, and estimated sustainable pricing. As it relates to costs and prices in this article, this study uses the definition of "reasonable" offered by the United States Office of Management and Budget: "It does not exceed that which would be incurred by a prudent person under the circumstances prevailing at the time the decision was made to incur the cost" (Electronic Code of Federal Regulations, Section 200.404, 2 CFR 200.404 — Reasonable Costs, 2023).

Although there is much to be explored with regard to price reasonableness and the sheer amount of profit being made by commercial publishers from the additional revenue stream of OA, the primary concern of this study is to discern where this extraordinary amount of additional funding for APCs is coming from. Indeed, it was the discovery by one author's institution that its library's OA fund accounted for only 2.5% of the estimated total APCs being spent for articles with affiliation at the institution that prompted this study (Johnson et al., 2021). Research about the funding sources for APCs is far less represented in the literature, although there are a handful of key studies.

Solomon & Björk (2012) conducted an early study on the sources of APCs, for which they surveyed 429 authors from 69 journals indexed in the DOAJ. However, Solomon & Björk concluded that findings on the sources of APCs were "not notable, just that some didn't actually pay them and some used mixed personal and institutional funding" (p. 102). Cantrell & Swanson (2020) examined the sources of APCs for faculty in the social sciences, arts, and humanities at three institutions in the United States, but the study had a low sample size and findings about the source of APCs were not generalizable; however, the study indicated that faculty in these

disciplines did not rely on personal funds as expected but largely received funding from their department or had sponsored research funding. A study of electrical engineering faculty at the University of Zagreb found that within a sample of 174 Gold OA papers, 30% had no stated source of funding, and nearly 70% "were funded by grants, foundations, institutions, or a combination of these" (Tucakovic et al., 2021, p. 756). A study by Segado-Boj et al. (2022) focused largely on global attitudes towards APCs, which found that young academics and those from lower-income countries were most averse to APCs. The authors also reiterated earlier findings that APC payments, particularly from high-income countries, were most often paid by institutional or research grant funds and rarely paid using personal funds (p. 10).

Although each of these studies significantly adds to the complex landscape of APC sources, they also evince a variety of limitations, from sample size to the scope of the publications included in the study. Additionally, no studies found in this review had a strong focus on both sources of funding and author perceptions of APCs, whereas this study offers a more thorough analysis of both.

METHODOLOGY

The sampling for this study was non-probabilistic and purposive, such that eligible participants were identified based on specific criteria and attributes, and not randomly identified. Four doctoral-granting institutions in the United States with very high research activity as defined by the Carnegie Classification of Institutions of Higher Education (also known as R1) participated in the study, with data on OA articles published in 2022 exported from Digital Science's Dimensions tool (Carnegie Classifications of Institutions of Higher Education, n.d.).

Four institutions from the United States participated in this research: The University of Colorado Boulder (CUB), the University of Massachusetts Amherst (UMass), the University of Pittsburgh (Pitt), and the University of Tennessee Knoxville (UTK). These institutions were selected based on their R1 status. Since not all institutions deployed Dimensions, permission was obtained from Digital Science for CUB to deploy and export 2022 publication data for use by all institutions. Dimensions was selected over other potential data sources for this study because of its inclusion of OA types (Gold, Hybrid, etc.).

Each institution divided its Dimensions data set by Gold and Hybrid, and then further subdivided each of these sets into three separate discipline categories according to the Fields of Research Codes. The three disciplinary categories used for this study are humanities and social sciences (HSS), health and medicine (HM), and natural sciences and engineering (NSE) (For more details on this process see "Instructions for APC Sources Data" in Github at:

https://github.com/parnopaeus/oalanguage/blob/master/APCStudy/Instructions%20for%20APC%20Sources%20Data.pdf). This division created six separate data sets for each institution or 24 data sets in total.

All corresponding authors are listed in the same Dimensions field, so further filtering and cleaning of the data sets was required to identify a single corresponding author from the institutions participating in the study. Only articles where the corresponding author was affiliated with one of the four institutions are included since often non-corresponding authors are not responsible for APC payments. Corresponding authors were then manually searched to confirm their status as well as to record their email addresses. Graduate students, although sometimes listed as the corresponding author, are excluded from the sample since they may no longer be affiliated with the institution and often are not involved in APC payments. Some corresponding authors had multiple OA publications in 2022. In an attempt to be respectful of the authors' time, no more than two publications were retained in the data set for each author, and an attempt was made to retain the most recent publications of separate types (Gold vs. Hybrid), where applicable.

Six separate Qualtrics surveys were created in each of the four institution's Qualtrics instances, corresponding to the six data sets divided by discipline and OA type. There were two template surveys from which each survey was created—one survey for authors of Gold OA articles and another survey for authors of Hybrid OA articles. These surveys are available in Appendix A. The Gold OA survey differentiated from the Hybrid OA in that it asked whether there was a fee to publish the article in question, whereas an APC was presumed in the Hybrid OA survey. The Gold OA survey consisted of eight multiple-choice and two free-response questions, including sub-questions and skip logic. All questions were voluntary, and with skip logic, some participants saw fewer than ten questions, depending on their responses. The Hybrid OA survey consisted of six multiple-choice and two free-response questions, and there was no skip logic used in it, meaning all respondents of this survey saw the same eight questions.

Participants were recruited to participate in the research via email using the Qualtrics email distribution function on October 31, 2023. The survey was open for 3 weeks, with a reminder after 2 weeks, and closed on November 21, 2023. The recruitment email for each participant was personalized to include a citation of the article that they authored and published in an OA journal in 2022. Participants were asked to respond to the survey questions based on their experience with the cited article.

Responses were downloaded from Qualtrics and combined into one spreadsheet to create the full data set for analysis. Responses with less than 50% completion were removed from this data set. The file was uploaded to PowerBI and responses were analyzed using group analysis.

FINDINGS

Overview

Overall, 321 authors responded to the survey, for a total response rate of 22%. Seven incomplete but substantially completed (at least 50%) responses were retained within these total responses, as shown in Table 1.

Institution	Response Rate
University of Colorado Boulder	19%
University of Massachusetts Amherst	19%
University of Pittsburgh	21%
University of Tennessee Knoxville	28%

Table 1. Response rate by institution

Of the total surveys sent out, 83% ($n = 1219$) went to authors of articles in Gold OA journals, whereas 17% ($n = 255$) went to authors of articles in Hybrid OA journals. With 321 total responses, the overall proportion of responses for Gold OA ($n = 266$, 83%) and Hybrid OA ($n = 55$, 17%) were identical to the proportion of each sample population.

By discipline, HSS authors had the highest response rate at 32%, followed by HM with a 22% response rate, and NSE with a 19% response rate.

Eighty-four percent of respondents paid an APC for the article indicated in the survey, and 16% of respondents said they did not pay an APC. Of those who did pay an APC, four-fifths (80%) were published in a Gold OA journal whereas the remainder (20%) were published in a Hybrid OA journal. Figure 1 shows the breakdown of Gold and Hybrid publications in the sample by disciplinary affiliation.

At every institution, between 80% to 90% of respondents paid an APC for the publication of the article in question. By discipline, over four-fifths of HM (84%) and NSE (85%) respondents paid an APC, whereas just over three-quarters (76%) of HSS respondents paid an APC.

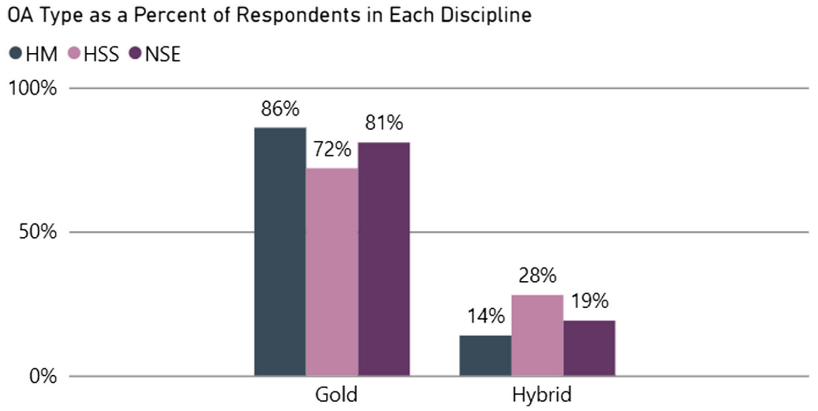

Figure 1. Gold OA and Hybrid OA articles as a percentage of respondents from each discipline.

Pitt represents nearly half (46%) of all responses received, most likely due to its School of Medicine not having a separate campus as is the case for all three other schools. The findings with and without Pitt are largely consistent. One exception is that Pitt represents 70% of all responses from HM.

APC funding sources

Grants were the largest source of APC funding across all institutions, with well over half (56%) of respondents who paid an APC using grant funding to pay for at least part of their APC (Table 2; Figure 2). Eighty-six percent of respondents used grants, departments, and/or other university funding towards their APC. Overall, libraries were not a significant source of funding for paying these fees. In fact, fees were just as likely to be waived than to come from library funding sources (10% of respondents, each), and the library was ranked fifth overall out of eight funding source options.

APC Funding Source	CUB	Pitt (Med School Included)	UMass	UTK
Top Source	Grant	Grant	Grant	Grant
Second Highest Source	Other University Funding	Department	Fee Waived/Other University Funding	Library
Third Highest Source	Fee Waived	Other University Funding	Fee Waived/Other University Funding	Other University Funding
Fourth	Library	Fee Waived	Library	Department
Fifth	Department	Out of Pocket	Department	Other

Table 2. Top funding sources by institution

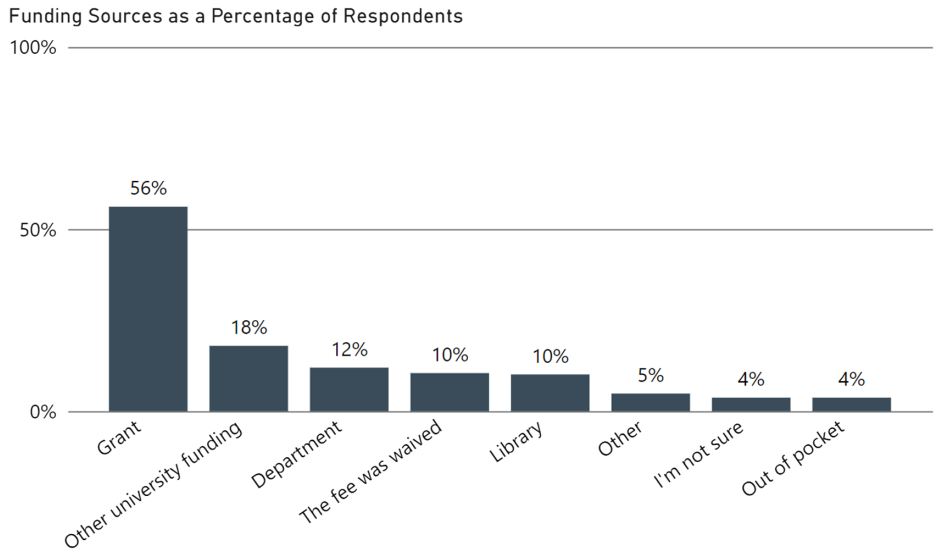

Figure 2. All funding sources from respondents who indicated they paid an APC, where respondents could select multiple funding sources.

Institutional responses.

Respondents from UTK were the highest users of library APC funds, with 22% (n = 15) indicating the libraries as a partial or full funding source. UMass respondents were most likely to have their fee waived, with almost a third of UMass respondents indicating this was the case. As might be expected from the much higher percentage of HM respondents from Pitt relative to the other institutions, Pitt respondents were somewhat more likely to indicate grant funding as a full or partial funding source (62%, with other institutions hovering at around half of respondents) (Figure 3).

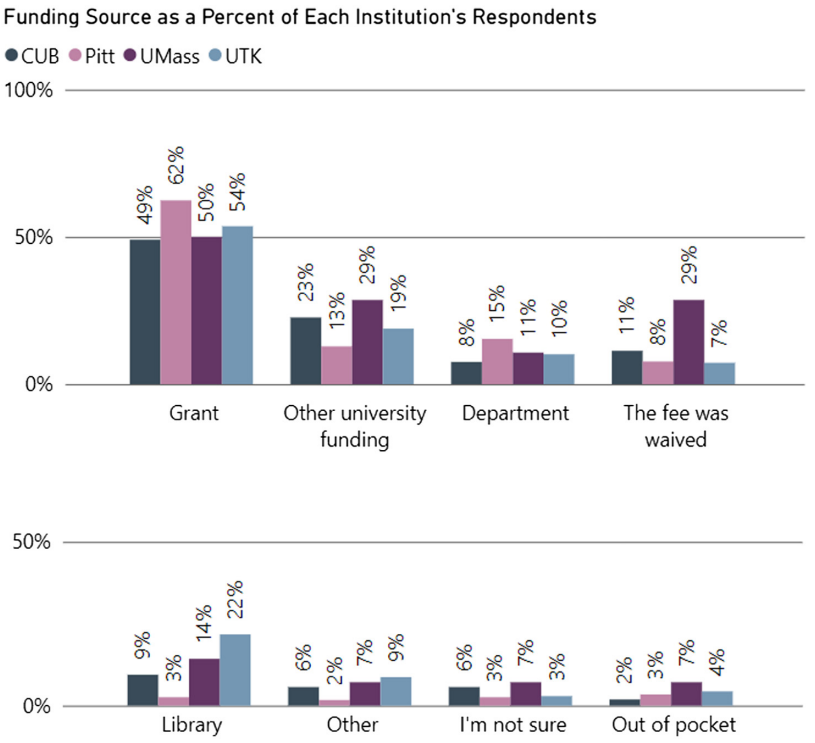

Figure 3. Funding sources shown as a percentage of respondents who paid an APC from each institution, in which respondents could select multiple funding sources.

Disciplinary responses.

Grant funding was also the primary source of APC funding across disciplines (Figure 4). Fifty-nine percent of NSE respondents and 57% of HM authors reported grants as either a complete or partial source of funding for their APCs. Grant funding represented more than half of the APC funding for these disciplines. The situation in HSS was different; grant funding was still the most common source (32%), but not a clear majority, as waived fees and other university funding were close behind as major sources of funding (26% each, respectively). However, it is important to note that HSS represents a much smaller pool of respondents than the other disciplines, with only 25 respondents total, 19 of whom paid a fee.

Other university funding was the second most common source for APC funds for NSE respondents and tied for the second most common funding source for HM and HSS respondents. Other university funding includes mentions of funds such as "research and development funds," "start-up funds," and "general operating funds." Department funding was also similarly prominent in the HM field with the same number of responses as other university

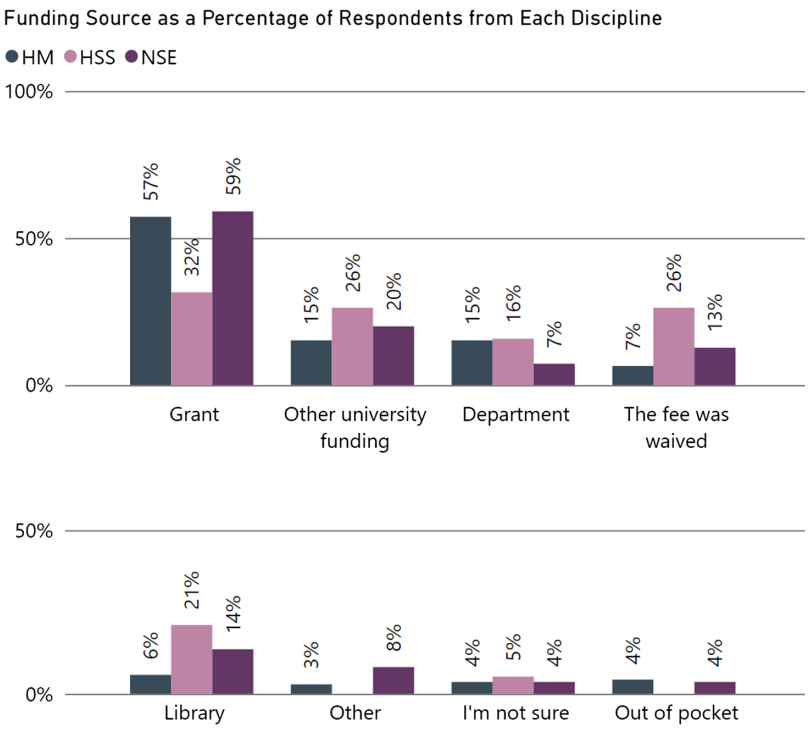

Figure 4. Funding sources shown as a percentage of respondents who paid an APC from each discipline, where respondents could select multiple funding sources.

funding in that discipline. HSS respondents were the highest users of library funding (21%, $n = 4$). A small percentage (≤5%) of respondents in all disciplines were not sure where their funding came from. Ten total authors (all from HM and NSE) reported paying their APCs out of pocket whereas HSS respondents were much more likely than authors of other disciplines to have their fees waived (26%).

Alternative publishing paths.

Authors were asked one of two hypothetical questions. Authors who responded that they did not pay an APC were asked if they would publish their next article OA in a journal that charged a fee if they had grant funding to do so. Of the 50 respondents that answered this question, nearly half (46%, $n = 23$) indicated they would "Maybe" publish in a journal that charged APCs, and almost one-fifth (18%, $n = 9$) indicated they would not publish in an OA journal that charged a fee. A little over a third (36%) indicated "Yes," they would publish their next article OA in a journal that charged a fee, if they had grant funding.

The other hypothetical question asked all respondents who paid an APC whether they would have continued to publish in this journal if they did not have the same funding source (Figure 5). Over one-third of respondents who paid an APC indicated that they would likely have access to alternative funding sources that would support continuing to publish OA in the same journal. However, almost half (49%) of respondents indicated that they would not have published in the same journal if they did not have access to the same funding source. Out of the 55 Hybrid OA authors who were presented with this option, just over half (51%) indicated they would have opted for the subscription publishing model without access to their primary funding source.

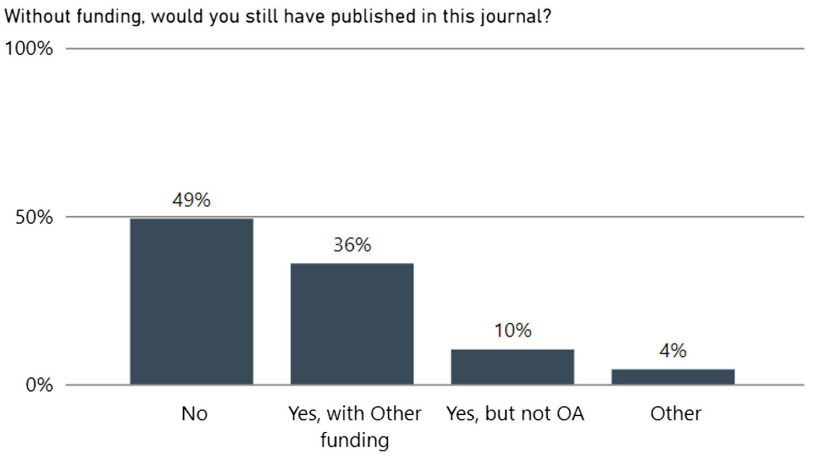

Figure 5. Answers to the question "Without funding, would you still have published in this journal?" as percentage of respondents who paid an APC.

Reasonableness

Distinct from other literature on APCs, our study asked respondents to rate the reasonableness of APCs on different scales. All respondents were asked to indicate what fees (if any) are reasonable to pay in exchange for OA publishing and were provided a scale of price ranges from which to choose. Reasonableness was not defined in the survey, allowing respondents to determine what was reasonable to them. Overall, more than two-thirds of respondents across institutions thought that fees less than or equal to $1.5K were reasonable, with an additional 16% responding that no fees were reasonable (Figure 6).

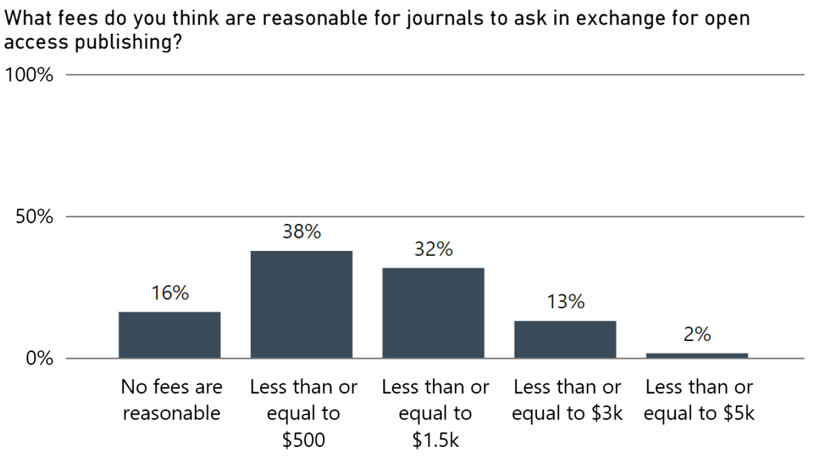

Figure 6. Answers to the question "What fees (if any) do you think are reasonable for journals to ask in exchange for open access publishing?".

Only a quarter (24%) of HSS respondents thought fees over $500 were reasonable, and another quarter (24%) thought no fees were reasonable for OA publishing. More than two-thirds of both HM and NSE authors thought fees less than or equal to $1,000 were reasonable. A negligible number of respondents (n = 5, all from NSE) thought fees between $3,000 and $5,000 were reasonable, and no respondents indicated that fees over $5,000 were reasonable (Figure 7).

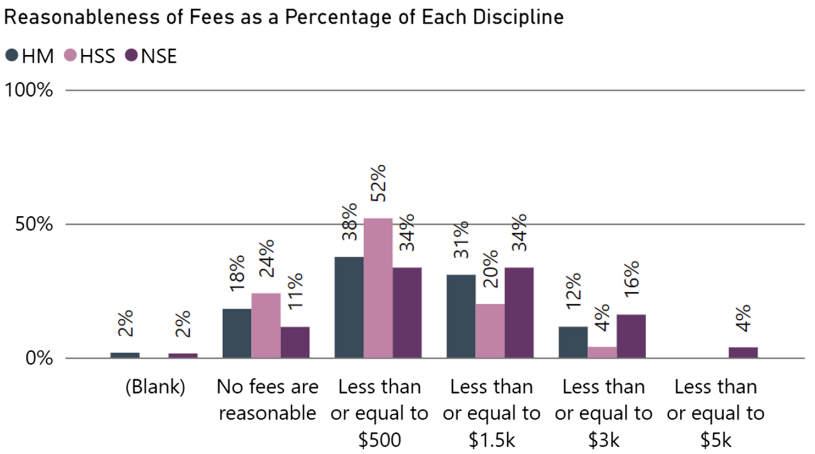

Figure 7. As a percentage by discipline, answers to the question "What fees (if any) do you think are reasonable for journals to ask in exchange for open access publishing?".

These findings demonstrate $1,500 to be an approximate threshold of reasonableness for most authors across institutions and disciplines, with perceptions of reasonableness falling off sharply for fee ranges above that amount.

The impact of funding on perceived reasonable fees was investigated next. The analysis focuses on whether respondents with grant funding express a higher threshold of reasonableness than those with other sources of funding to better understand the sensitivity to APC fees among grant recipients (see Khoo, 2019, for a discussion of funders and APC hyperinflation).

The APC amount threshold for those who reported having grant funding is compared to respondents who reported other types of funding. Note that participants may have multiple sources of funding, so one person who reported a threshold of reasonableness at $1,500 and who also reported both grant and library funding would be counted in both the grant and library categories. Even with some participants being counted in multiple categories, the funding source does not significantly impact the threshold of reasonableness. Most grant recipients agreed with other respondents that APCs of less than $1,500 are reasonable (Figure 8, Table 3).

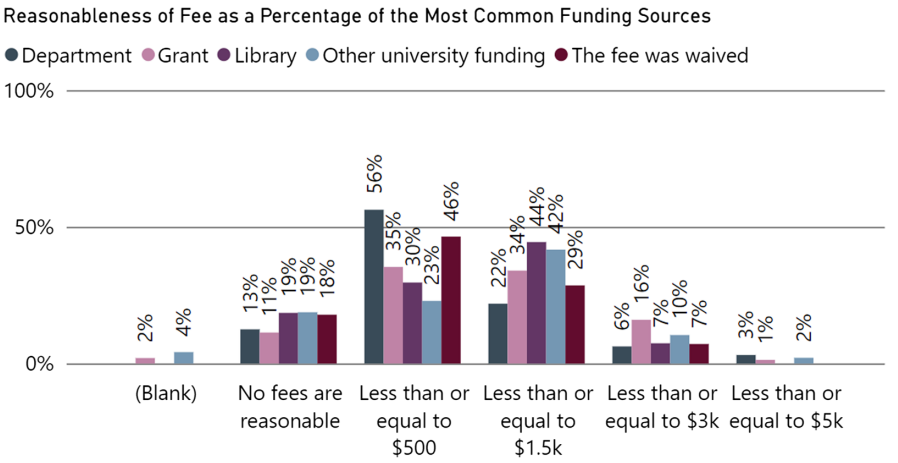

Figure 8. As a percentage of funding sources, responses to the question "What fees (if any) do you think are reasonable for journals to ask in exchange for open access publishing?".

Funding Source	% of responses of ≤ $1,500	% of responses of > $1,500
Department	90.63	9.38
Grant	80.66	17.33
Library	92.59	7.41
Other	83.34	12.5
Waived	92.88	7.14

Table 3. Rows indicate the five most common funding sources. Columns indicate the percentage of responses in those funding source categories for the question, "What fees (if any) do you think are reasonable for journals to ask in exchange for OA publishing?"

Respondents were also asked to speculate about the reasonableness of the fee if paid by a hypothetical colleague: "If you had a colleague at a R3 university with zero grant funding, do you think this fee would be reasonable for them to pay?" The use of the fabricated R3 class of university was intended as a proxy for universities that are not research intensive and likely have fewer resources available for funding than the R1 institutions of this study's respondents.

Responses were similar across the four institutions and the three disciplinary categories. 89% of respondents who paid a fee felt that the fee they paid—whatever it was—was unreasonable for this hypothetical colleague (Figure 9).

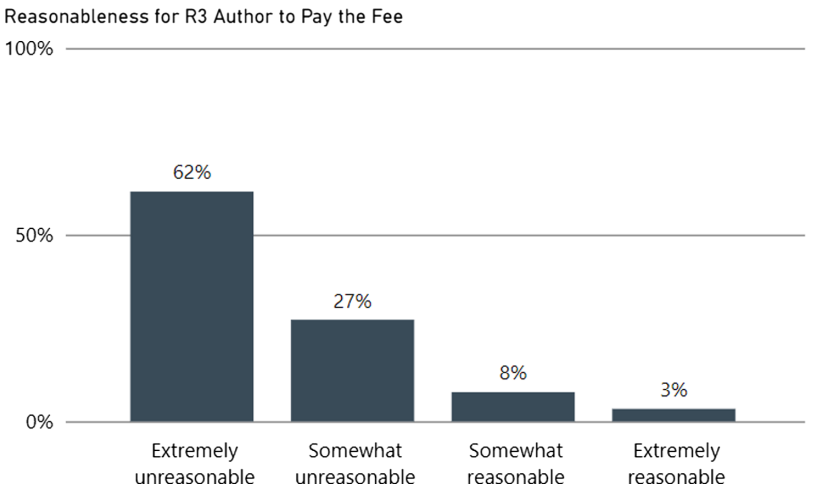

Figure 9. Answers to "If you had a colleague at an R3 university with zero grant funding, do you think this fee would be reasonable for them to pay?" as a percentage of respondents who paid an APC.

Ability

The survey asked all participants to respond to the question "How do you perceive your ability to pay a publishing fee compared to other researchers in your field?" The question was crafted to be somewhat vague to allow respondents to mentally categorize themselves within broad disciplinary categories of their work, so invariably respondents interpreted "other researchers in your field" in their own manner.

A little over four-fifths (84%) of respondents said their ability was either about the same, somewhat easier, or somewhat more difficult than other researchers in their field, meaning that a large majority rated their own ability to pay publishing fees as somewhat on par with other researchers in their field (Figure 10).

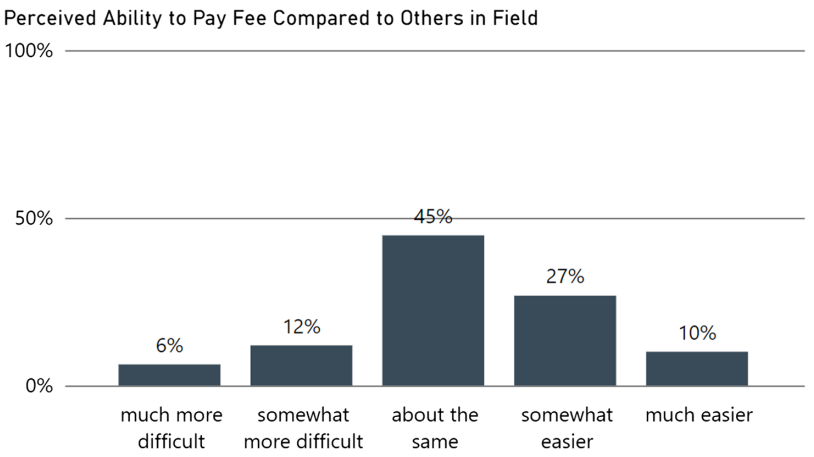

Figure 10. Answers to respondents perceived ability to pay a publishing fee as compared to other researchers in their field.

There are few notable discrepancies in respondents' perceptions of ability to pay by discipline or by institution (Figures 11 and 12). Unsurprisingly, HSS respondents were much more likely to rate their ability to pay as more on par with other researchers in their field, with well over half (60%) indicating their ability as about the same (compared with 45% of HM and 40% of NSE). Little stands out across institutions except that respondents from Pitt were the most likely to say their ability to pay was somewhat easier (32%) and the least likely to say their ability was somewhat (8%) or much (5%) more difficult. This is likely related to the much higher percentage of HM respondents from this university, who may have more readily available sources of funding than other researchers.

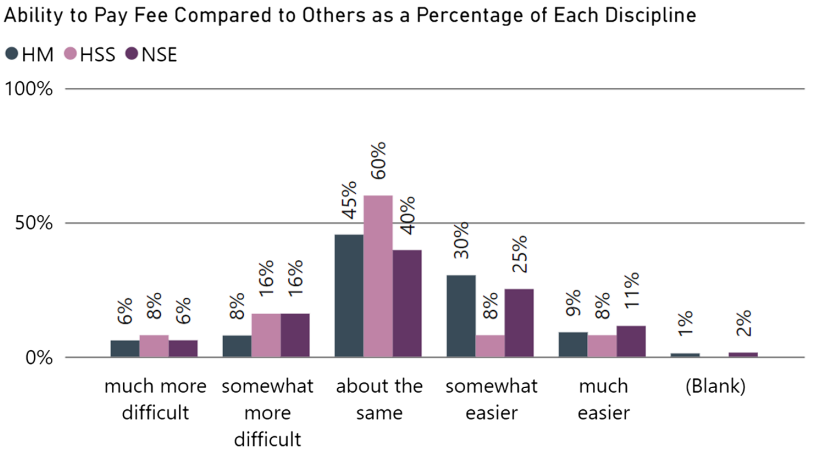

Figure 11. Answers to respondents' perceived ability to pay a publishing fee compared to other researchers in their field, by discipline, with "Blank" being respondents who chose not to answer.

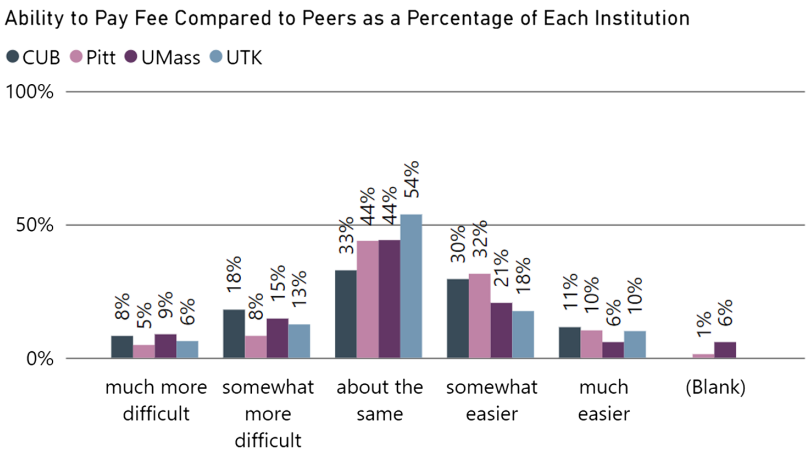

Figure 12. Answers to respondents' perceived ability to pay a publishing fee compared to other researchers in their field, by institution, with "Blank" being respondents who chose not to answer.

When comparing respondents' perceptions of their own ability to pay APCs compared to the perceived reasonableness of these fees for R3 researchers, a more interesting trend arises. Figure 13 illustrates the confluence of these two survey questions.

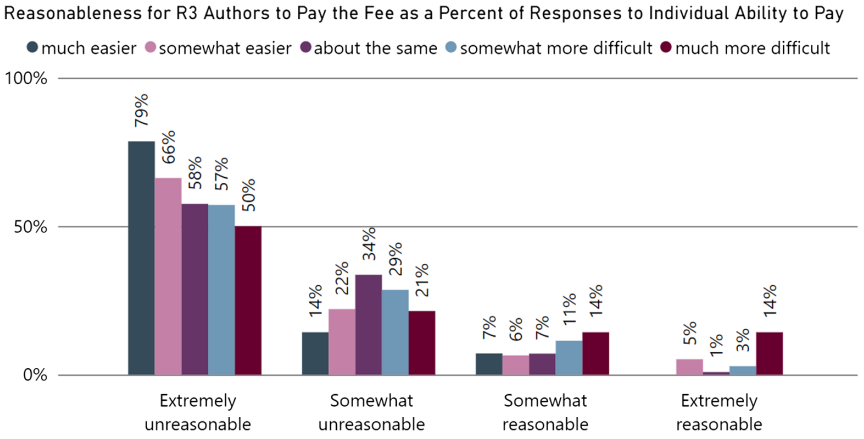

Figure 13. Answers to "If you had a colleague at an R3 university with zero grant funding, do you think this fee would be reasonable for them to pay?" shown as a percentage of respondents' perceived ability to pay a fee compared to other researchers in their field.

Respondents who said it was much easier or somewhat easier for them to pay APCs were the most likely to say the fee they paid would be extremely unreasonable for an R3 colleague without grant funding (79% and 66%, respectively). Alternatively, respondents who said their own ability to pay was somewhat or much more difficult were the most likely to say the fee was

somewhat reasonable for R3 authors (11% and 14%, respectively), and the people who rated their own ability as much more difficult were by far the most likely (14%) to say the fee would be extremely reasonable for R3 colleagues.

DISCUSSION

This study began in an effort to better understand how authors at several R1 institutions were funding APCs. However, in seeking to learn more about authors' perceptions of these fees, this study ultimately illuminated far more about the perceived reasonableness of APCs than originally anticipated.

Funding sources

The results regarding sources of funding largely tracked with expectations for R1 researchers. Funders (and likely their requirements) have a major influence. Grants were by far the primary funding source, and half of respondents who paid a fee (49%) would not have published in the same journal without those funds, and another 10% (constituting 58% of hybrid respondents) would have chosen the closed/subscription option. This reveals the precariousness of the APC model for OA as it currently exists, such that many of the most well-resourced researchers in the world expressed that they would alter their publishing behaviors if their funding conditions altered slightly; however, the actions of these researchers display remarkable price insensitivity despite simultaneously expressing limitations on the reasonableness of APCs.

Library impact

Respondents were asked about OA articles they published in 2022. At that time, all four institutions in this study provided support for OA publishing through multiple avenues, including Subscribe to Open (S2O) or read and publish agreements and a library fund at each institution supporting author coverage of APCs in Gold OA journals. Whereas libraries often tout their OA funds as being an important source for authors to offset funding imbalances and shortfalls within an institution, this study did not find library institutional APC funds to be a significant source for OA fees. According to respondents, more authors had their fees waived than used library funds to pay APCs. Notably, one of the institutions in this study, Pitt, has ended its support for funding APCs directly since the start of this study in favor of other investments. Discontinuing these funds may be a trend among universities that currently offer them as alternative kinds of support proliferate, such as transformative agreements, S2O, membership models, etc. Being clear about libraries' multi-pronged involvement in funding OA publishing will be

imperative as these library OA funds for authors may be redirected to support more equitable OA models.

Reasonableness

Regarding the reasonableness of APCs, the $1,500 threshold of reasonableness holds across disciplines, institutions, and situations, including different funding sources for APCs. 84% of respondents reported that amounts less than or equal to $1,500 were reasonable. This adds a dimension to Khoo's (2019) discussion of price sensitivity for authors who are paying APCs. Khoo observed that authors may "assess APCs on a binary basis, assessing whether they can pay an APC but not weighing the magnitude of the APC," and connected the paying of APCs to paying for necessities like pantry staples and essential toiletries. Khoo (2019) writes, "If publications are necessities, this would explain the negligible sensitivity that authors who can pay show towards APCs, much like how consumers will continue to purchase staple foods in the face of price increases" (p. 11). However, the average APCs of $1,730 for Gold OA and $2,710 for Hybrid OA (Broschinski et al., 2024) have already surpassed this threshold of reasonableness. The present study shows that while these authors may continue to pay the prices asked, they do not view prices higher than $1,500 as reasonable. This illustrates a bind, in which R1 authors simultaneously display price insensitivity and price outrage. This observation conflicts with the finding that authors claim they would alter their decision to publish OA without grant funding, demonstrating cognitive dissonance.

Interestingly, when asked about their ability to pay compared to other researchers in their field, respondents who most recognize their privilege and stronger ability to pay are the most likely to see these fees as unreasonable for others, particularly those at less research-intensive institutions. These responses indicate a particular mindset acknowledging access to elite resources and funding and the awareness that others would not be able to publish in the same way. Conversely, researchers who perceive themselves as more on par or even disadvantaged compared to other researchers in their field regarding their ability to pay APCs are more likely to rate the fees as reasonable. These responses suggest a somewhat different mindset, in which some researchers' belief that they have less access to privileged resources and funding, whether they struggled to pay an APC or found their way to a waiver, means others should be able to find a way, too.

Limitations

This study also has some limitations which lend to future improvements and explorations. Most obviously, this study only covered the perspectives of researchers at four R1 universities in the United States. Although limiting the sample in this way was purposive in

order to reveal trends within some of the most privileged contexts in the United States, authors from non–research-intensive institutions have valuable input for these conversations. Surveys and data from this study are available via GitHub at https://github.com/parnopaeus/oalanguage/tree/master/APCStudy. Others should conduct future studies in different contexts, including non-R1 universities. This study also only offers a snapshot of authors' perceptions from a single publication in 2022. The OA landscape is changing rapidly, and a more comprehensive study might track changes in funding sources and author perspectives over time to gauge whether reasonableness and perceived ability are more fixed or fluid states. An additional significant gap in this study is that the survey did not ask researchers how much they paid for their APC. Several studies aim to take account of researcher spending and publisher profits within the APC model, but this was not the specific aim of this study; however, having this information would provide more context to the responses about reasonableness. Finally, the survey tool asked respondents about their perceived limits of reasonable OA fees, offering choices that included "less than or equal to $1,500" and "less than or equal to $3,000." Most respondents selected the former; however, there is a large difference between these two price points. Greater granularity in the fee scale may be worth investigating to better specify the authors' average threshold of reasonableness.

CONCLUSION

The respondents in this study sample managed to cull together funds for OA publishing through a variety of sources, with grant funding being the clear leading payment source identified in this study. Without significant additional inputs into the system, the funding situation for APCs is uncertain at best, even for this small group of R1 authors. Some of the free-text comments, which will be analyzed more fully in a subsequent article, further reinforce our observation that researchers in this study generally recognize they are in a privileged position regarding funding but simultaneously experience cognitive dissonance in engaging with OA publishing. One respondent shared that "[t]he whole system is a cash cow, and we pay and pay and pay. And worse, it's literally a requirement for our academic success. And that is before you investigate equity concerns…" (UMass, Gold, NSE).

Although this article could not do justice to both the quantitative and qualitative results of the survey within a single analysis, a forthcoming publication will investigate how the free response text of the survey tracks with the findings presented here. What do these R1 researchers tell us about their ability to pay APCs, and do they, as the quote above suggests, find themselves trapped by the APC model in order to advance as scholars?

REFERENCES

Alencar, B. N. & Barbosa, M. C. (2021). Open access publications with article processing charge (APC) payment: A Brazilian Scenario Analysis. *Anais Da Academia Brasileira de Ciências*, *93*(4). https://doi.org/10.1590/0001-3765202120201984

Alperin, J. P. (2022). Article processing charges weaken open access. *Nature*, *610*. https://www.nature.com/articles/d41586-022-03201-w.pdf

Aspesi, C., Allen, N. S., Crow, R., Daugherty, S., Joseph, H., McArthur, J. T. W., & Shockey, N. (2019). SPARC landscape analysis: The changing academic publishing industry – implications for academic institutions. *SPARC*. https://doi.org/10.31229/osf.io/58yhb

Broschinski, C., jbartlewski, Jahn, N., Sikora, A., Porquet, T., Peil, V., Tullney, M., Fröberg, J., Moch, M., Andrae, M., Lindelöw, C. H., Clemens, Hahn, U., Becker, H-G., VuK - Open Access Brandenburg, Daniel, Medizinische Bibliothek der Charité, Humboldt-Universität zu Berlin, Universitätsbibliothek, Gutknecht, C., Voigt, M. Labastida, I., villehoo, D4rkdr1v3r, KRieck, Frick, C., Zumstein, P., pblume, Teamaccount Stabsabteilung OA, University Library Bochum & Strömert, P. (2024). OpenAPC/Openapc-de: Vaasa APC Data 2023. https://doi.org/10.5281/zenodo.11236176

Budapest Open Access Initiative. (2002). *Background*. Retrieved April 4, 2024, from https://www.budapestopenaccessinitiative.org/

Budapest Open Access Initiative (2022). *The Budapest Open Access Initiative: 20th anniversary recommendations*. Retrieved April 4, 2024, from https://www.budapestopenaccessinitiative.org/boai20/

Budzinski, O., Grebel, T., Wolling, J., & Zhang, X. (2020). Drivers of article processing charges in open access. *Scientometrics*, *124*, 2185–2206. https://doi.org/10.1007/s11192-020-03578-3

Butler, L.-A., Matthias, L., Simard, M.-A., Mongeon, P., & Haustein, S. (2023). The oligopoly's shift to open access: How the big five academic publishers profit from article processing charges. *Quantitative Science Studies*, *4*(4): 778–799. https://doi.org/10.1162/qss_a_00272

Cantrell, M. H., & Swanson, J. A. (2020). Funding sources for open access article processing charges in the social sciences, arts, and humanities in the United States. *Publications 8*, no. 1: 12. https://doi.org/10.3390/publications8010012

Carnegie Classifications of Institutions of Higher Education. (n.d.). Basic Classification. Retrieved April 4, 2024 from http://carnegieclassifications.iu.edu/classification_descriptions/basic.php

Collister, L. B. & Cantrell, M. H., (2021). From "patchy endorsements" to intentional advocacy: Deconstructing bias in the language of open access. *Journal of Librarianship and Scholarly Communication*, *9*(1), eP2395. https://doi.org/10.7710/2162-3309.2395

Crawford, W. (2018). *GOAJ3: Gold open access journals 2012–2017*. Cites & Insights Books.

Electronic Code of Federal Regulations. (2023) *2 CFR 200.404—Reasonable costs.* Retrieved April 4, 2024 from https://www.ecfr.gov/current/title-2/part-200/section-200.404

Grossman, A. & Brembs, B. (2021). Current market rates for scholarly publishing services. [version 2; peer review: 2 approved] *F1000Research*, *2021*, 10:20 https://doi.org/10.12688/f1000research.27468.2

Johnson, A., Wrigley, J., & Cantrell, M. (2021). State of open at the University of Colorado Boulder: Special report on open access article processing charges based on data from 2020. *University of Colorado Boulder.* https://doi.org/10.25810/3tmp-k869

Khoo, S. Y.-S. (2019). Article processing charge hyperinflation and price insensitivity: An open access sequel to the serials crisis. *LIBER Quarterly: The Journal of the Association of European Research Libraries*, *29*(1), 1–18. https://doi.org/10.18352/lq.10280

Klebel, T., & Ross-Hellauer, T. (2023). The APC-barrier and its effect on stratification in open access publishing. *Quantitative Science Studies*, *4*(1): 22–43. https://doi.org/10.1162/qss_a_00245

Larivière V., Haustein S., & Mongeon P. (2015). The oligopoly of academic publishers in the digital era. *PLOS ONE*, *10*(6): e0127502. https://doi.org/10.1371/journal.pone.0127502

Mellins-Cohen, T. (2024). Classifying open access business models. *Insights: The UKSG Journal*, *37*(1), 15. https://doi.org/10.1629/uksg.667.

Open Access Initiative of the Max Planck Society. (2003). *Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities.* Retrieved April 4, 2024 from https://openaccess.mpg.de/Berlin-Declaration

Ouvrir la Science. (2003). *Bethesda Statement on Open Access Publishing*. Retrieved April 4, 2024 from https://www.ouvrirlascience.fr/bethesda-statement-on-open-access-publishing/

Piwowar H., Priem J., Larivière V., Alperin J. P., Matthias L., Norlander B., Farley A., West J., & Haustein, S. (2018). The state of OA: a large-scale analysis of the prevalence and impact of open access articles. *PeerJ*, *6*, e4375 https://doi.org/10.7717/peerj.4375

Segado-Boj, F., Prieto-Gutiérrez, J.-J., & Martín-Quevedo, J. (2022). Attitudes, willingness, and resources to cover article publishing charges (APC): The influence of age, position, income level country, discipline and open access habits. *Learned Publishing*, *35*(4), 489–498. https://doi.org/10.1002/leap.1455.

Simard, M.-A., Asubiaro, T., & Mongeon, P. (2021). The burden of article processing charges on Canadian universities. *Proceedings of the Annual Conference of CAIS/Actes Du congrès Annuel De l'ACSI*. https://doi.org/10.29173/cais1224

Smith, A. C., Merz, L., Borden, J. B., Gulick, C. K., Kshirsagar, A. R., Bruna, E. M. (2022). Assessing the effect of article processing charges on the geographic diversity of authors using Elsevier's "Mirror Journal" system. *Quantitative Science Studies*, *2*(4), 1123–1143. https://doi.org/10.1162/qss_a_00157

Solomon, D. J., & Björk, B.-C. (2012). Publication Fees in Open Access Publishing: Sources of Funding and Factors Influencing Choice of Journal. *Journal of the American Society for Information Science and Technology (Print)*, *63*(1), 98–107. https://doi.org/10.1002/asi.21660

Solomon D, J., & Björk B.-C.(2016). Article processing charges for open access publication—the situation for research intensive universities in the USA and Canada. *PeerJ*, *4*, e2264. https://doi.org/10.7717/peerj.2264

Suber, P. (2019). 1. What is open access? In *Open Access*, 1st ed. (pp. 1–28). MIT Press.

Steinhart, G., & Skinner, K. (2024). The cost and price of public access to research data: A synthesis. *Invest in Open Infrastructure*. https://doi.org/10.5281/zenodo.10729575

Tucakovic, M., Marijanovic, B., & Petrak, J. (2021). The cost of open-access publishing in an engineering academic community: a study of zagreb faculty of electrical engineering and computing. 2021 44th International Convention on Information, Communication and Electronic Technology (MIPRO), Information, Communication and Electronic Technology (MIPRO), 2021 44th International Convention On, 754–758. https://doi.org/10.23919/MIPRO52101.2021.9597072

University of California Libraries. (2016). *Pay it forward: Investigating a sustainable model of open access article processing charges for large North American research institutions.* Mellon Foundation. Retrieved April 4, 2024, from https://escholarship.org/uc/item/8326n305

APPENDIX A: TEMPLATE SURVEY FOR GOLD OPEN ACCESS ARTICLES

Informed Consent

Title of research study: Sources and Author Perceptions of Article Processing Charges Across Four R1 Institutions IRB

Protocol Number: 23-0216

Investigator: Melissa Cantrell

Key Information

This study is being conducted by Melissa Cantrell from the University of Colorado Boulder, Matthew Estill from the University of Pittsburgh, Jennifer Mezick from the University of Tennessee Knoxville, Rachel Caldwell from the University of Massachusetts Amherst, and Lauren Collister from Invest in Open Infrastructure.

You were selected to participate in this study because of your affiliation with one of the above institutions and your authorship of an article published in a hybrid or gold open access journal in 2022.

The enrollment for this survey will not exceed 2,000 participants. Completion of the survey should take no longer than 10 minutes.

The purpose of this study is to better understand the sources of funding for articles processing charges (APCs) for Open Access (OA) articles, as well as author's perceptions of their own and other peer researchers' ability to pay APCs.

Background research has revealed many studies seeking to quantify the amount of money researchers spend on APCs and/or the profit of publishers and journals from this new revenue stream. However, very few studies have sought to determine the origin or source of these payments, and the studies which have pursued this inquiry are either very small studies or restricted to a specific discipline.

This study seeks to make broader determinations about researcher behavior with regard to APC-based open access publishing across R1 institutions, and to evaluate author perceptions of the viability of the APC model for all researchers at scale. The study can be used to make

better determinations about how to allocate resources for open access funding and to advocate for sustainable open access funding models.

Explanation of Procedures

To complete this survey, you must be 18 years or older. Inclusion criteria for the study are faculty and research affiliates from the following universities– University of Colorado Boulder, University of Pittsburgh, University of Tennessee Knoxville, and University of Massachusetts Amherst who have published an open access article - either via a Gold or Hybrid OA journal - in 2022.

The survey consists of no more than 10 questions, with the number of questions per participant dependent on specific answers and will take approximately 10 minutes to complete.

Voluntary Participation and Withdrawal

Participation is voluntary and participants may choose to withdraw or end the survey at any time. There are no direct benefits to participants. There is no compensation to participate. Investigators reserve the right to discard survey responses that are not answered in "good faith."

Confidentiality

Information obtained about you for this study will be kept confidential to the extent allowed by law. Research information that identifies you may be shared with the University of Colorado Boulder Institutional Review Board (IRB) and others who are responsible for ensuring compliance with laws and regulations related to research, including people on behalf of the Office for Human Research Protections. The information from this research may be published for scientific purposes; however, your identity will not be given out.

Surveys will be collected through the survey tool Qualtrics. Confidentiality cannot be guaranteed in the online research environment. To protect the confidentiality of survey participants the collection of IP addresses will be disabled in the survey results.

Questions

If you have any further questions or concerns about this research or your participation, please feel free to contact the co-investigators using the contact information below.

By clicking "I agree" below you are indicating that you are at least 18 years old, have read and understood this consent form and voluntarily agree to participate in this research study. Please save or print a copy of this page for your records.

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This research has been reviewed and approved by an IRB. You may talk to them at (303) 735-3702 or irbadmin@colorado.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get information or provide input about this research.

I agree to participate in this study

- ○ I agree
- ○ I do not agree

Skip To: End of Survey If I agree to participate in this study = I do not agree

Was there a fee (article processing charge) for the publication indicated in our email to you?

- ○ Yes
- ○ No

End of Block: Block 5

Start of Block: Block 3

Display This Question:

If Was there a fee (article processing charge) for the publication indicated in our email to you? = No

If you had grant funding to publish your next article open access in a journal that charged a fee, would you be willing to pay it?

- ○ Yes
- ○ No
- ○ Maybe _____

Display This Question:

If Was there a fee (article processing charge) for the publication indicated in our email to you? = Yes

Where did funding come from for payment of the fee? (whether you paid for the fee or a co-author paid for it; select all that apply if multiple funding sources apply)

- ☐ Grant
- ☐ Department
- ☐ Library
- ☐ Out of pocket
- ☐ Other university funding
- ☐ The fee was waived
- ☐ I'm not sure where the funding came from
- ☐ Other _____

Display This Question:

If Was there a fee (article processing charge) for the publication indicated in our email to you? = Yes

If you didn't have access to this funding, would you still have published in this journal?

- ○ Yes, I would have found another source of funding
- ○ No
- ○ Other _____

Display This Question:

If Was there a fee (article processing charge) for the publication indicated in our email to you? = Yes

If you had a colleague at an R3 university with zero grant funding, do you think this fee would be reasonable for them to pay?

- Extremely unreasonable
- Somewhat unreasonable
- Somewhat reasonable
- Extremely reasonable

What fees (if any) do you think are reasonable for journals to ask in exchange for open access publishing? (Please select the highest range you would deem reasonable)

- No fees are reasonable
- Less than or equal to $500
- Less than or equal to $1.5k
- Less than or equal to $3k
- Less than or equal to $5k
- Less than or equal to $10k
- $10k+

How do you perceive your ability to pay a publishing fee compared to other researchers in your field?

- It is much easier for me to pay publishing fees than other researchers in my field
- It is somewhat easier for me to pay publishing fees than other researchers in my field
- It is about the same difficulty for me to pay publishing fees than other researchers in my field
- It is somewhat more difficult for me to pay publishing fees than other researchers in my field
- It is much more difficult for me to pay publishing fees than other researchers in my field

Do you have any additional comments regarding authors' ability to pay publishing fees for open access?

_____

Do you have any additional comments about the topics in this survey?

_____

APPENDIX B: TEMPLATE SURVEY FOR HYBRID OPEN ACCESS ARTICLES

Informed Consent

Title of research study: Sources and Author Perceptions of Article Processing Charges Across Four R1 Institutions IRB Protocol Number: 23-0216 Investigator: Melissa Cantrell

Key Information

This study is being conducted by Melissa Cantrell from the University of Colorado Boulder, Matthew Estill from the University of Pittsburgh, Jennifer Mezick from the University of Tennessee Knoxville, Rachel Caldwell from the University of Massachusetts Amherst, and Lauren Collister from Invest in Open Infrastructure.

You were selected to participate in this study because of your affiliation with one of the above institutions and your authorship of an article published in a hybrid or gold open access journal in 2022.

The enrollment for this survey will not exceed 2,000 participants. Completion of the survey should take no longer than 10 minutes.

The purpose of this study is to better understand the sources of funding for articles processing charges (APCs) for Open Access (OA) articles, as well as author's perceptions of their own and other peer researchers' ability to pay APCs.

Background research has revealed many studies seeking to quantify the amount of money researchers spend on APCs and/or the profit of publishers and journals from this new revenue stream. However, very few studies have sought to determine the origin or source of these payments, and the studies which have pursued this inquiry are either very small studies or restricted to a specific discipline.

This study seeks to make broader determinations about researcher behavior with regard to APC-based open access publishing across R1 institutions, and to evaluate author perceptions of the viability of the APC model for all researchers at scale. The study can be used to make better determinations about how to allocate resources for open access funding and to advocate for sustainable open access funding models.

Explanation of Procedures

To complete this survey, you must be 18 years or older. Inclusion criteria for the study are faculty and research affiliates from the following universities– University of Colorado Boulder, University of Pittsburgh, University of Tennessee Knoxville, and University of Massachusetts Amherst who have published an open access article - either via a Gold or Hybrid OA journal - in 2022.

The survey consists of no more than 10 questions, with the number of questions per participant dependent on specific answers and will take approximately 10 minutes to complete.

Voluntary Participation and Withdrawal

Participation is voluntary and participants may choose to withdraw or end the survey at any time.

There are no direct benefits to participants. There is no compensation to participate.

Investigators reserve the right to discard survey responses that are not answered in "good faith."

Confidentiality

Information obtained about you for this study will be kept confidential to the extent allowed by law. Research information that identifies you may be shared with the University of Colorado Boulder Institutional Review Board (IRB) and others who are responsible for ensuring compliance with laws and regulations related to research, including people on behalf of the Office for Human Research Protections. The information from this research may be published for scientific purposes; however, your identity will not be given out.

Surveys will be collected through the survey tool Qualtrics. Confidentiality cannot be guaranteed in the online research environment. To protect the confidentiality of survey participants the collection of IP addresses will be disabled in the survey results.

Questions

If you have any further questions or concerns about this research or your participation, please feel free to contact the co-investigators using the contact information below. By clicking "I agree" below you are indicating that you are at least 18 years old, have read and understood

this consent form and voluntarily agree to participate in this research study. Please save or print a copy of this page for your records.

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This research has been reviewed and approved by an IRB. You may talk to them at (303) 735-3702 or irbadmin@colorado.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get information or provide input about this research.

I agree to participate in this study

- ○ I agree
- ○ I do not agree

Skip To: End of Survey If I agree to participate in this study = I do not agree

Where did funding come from for payment of the article processing fee for this article? (whether you paid for the fee or a co-author paid for it; select all that apply if multiple funding sources apply)

- ☐ Grant
- ☐ Department
- ☐ Library
- ☐ Out of pocket
- ☐ Other university funding
- ☐ The fee was waived
- ☐ I'm not sure where the funding came from
- ☐ Other _____

If you didn't have access to this funding, would you still have published in this journal?

- ○ Yes, I would have found another source of funding
- ○ Yes, but I would have chose the subscription publishing option (not open access)

- No
- Other _____

If you had a colleague at an R3 university with zero grant funding, do you think this fee would be reasonable for them to pay?

- Extremely unreasonable
- Somewhat unreasonable
- Somewhat reasonable
- Extremely reasonable

What fees (if any) do you think are reasonable for journals to ask in exchange for open access publishing? (Please select the highest range you would deem reasonable)

- No fees are reasonable
- Less than or equal to $500
- Less than or equal to $1.5k
- Less than or equal to $3k
- Less than or equal to $5k
- Less than or equal to $10k
- $10k+

How do you perceive your ability to pay a publishing fee compared to other researchers in your field?

- It is much easier for me to pay publishing fees than other researchers in my field
- It is somewhat easier for me to pay publishing fees than other researchers in my field
- It is about the same difficulty for me to pay publishing fees than other researchers in my field
- It is somewhat more difficult for me to pay publishing fees than other researchers in my field
- It is much more difficult for me to pay publishing fees than other researchers in my field

Do you have any additional comments regarding authors' ability to pay publishing fees for open access?

_____

Do you have any additional comments about the topics in this survey?

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