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# What Motivates Authors of Scholarly Articles? The Importance of Journal Attributes and Potential Audience on Publication Choice

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Academic Editor: Alan Singleton
Received: 25 February 2016; Accepted: 11 July 2016; Published: 18 July 2016

**Abstract:** In this article we examine what motivations influence academic authors in selecting a journal in which to publish. A survey was sent to approximately 15,000 faculty, graduate students, and postdoctoral researchers at four large North American research universities with a response rate of 14.4% ($n$ = 2021). Respondents were asked to rate how eight different journal attributes and five different audiences influence their choice of publication output. Within the sample, the most highly rated attributes are *quality and reputation* of journal and *fit with the scope* of the journal; open access is the least important attribute. Researchers at other research-intensive institutions are considered the most important audience, while the general public is the least important. There are significant differences across subject disciplines and position types. Our findings have implications for understanding the adoption of open access publishing models.

**Keywords:** scholarly communication; publishing; authorship; open access; journals

## 1. Introduction

Authors employed by academic institutions have at least two important reasons for publishing their research in peer-reviewed journals. On one level, publishing research that has been peer-reviewed is the most common method for an author to establish ownership over an idea and helps build his or her reputation. On another, an author's peer-reviewed publishing record is among the only quantifiable means by which to assess research productivity, as well as the value of his or her contribution to scholarship. Decisions about tenure and promotion, future funding, and even the quality of the author's home academic department are largely based on this peer-reviewed publication record [1]. This situation has created what is known as the culture of "publish or perish" in academic institutions. Motivated by a complex set of attributes, authors select from a diverse set of publishing venues that not only carry different weight and authority, but also reach different audiences. Attributes that authors consider when selecting a journal to which to submit their work have become more complicated by the recent proliferation of publishing outlets, including open access outlets [2], making this an important moment to revisit the idea of author publishing motivations.

In the traditional economic model, journals are funded primarily by institutional subscriptions. Authors submit their work for publication, often relinquishing the copyright to the journal publisher, but pay either no fee to publish or variable fees for costs such as page charges or color charges. Readers who are affiliated with subscribing institutions have the right to read articles from the journals to

which their institutions subscribe. Others must rely on interlibrary loan or other means to get access to articles. Open access models may expand an author's audience by allowing digital journal content to be freely available to all readers regardless to institutional affiliation or whether they are affiliated with an institution at all. In the gold open access publishing model, the costs of publishing are typically funded by or on behalf of authors in the form of article processing charges. Increasingly, publishers, including many large publishers (e.g., Sage, Nature Publishing Group, Springer), are launching open access journals funded by article processing charges [3]. With the availability of this option, authors now have additional factors to consider when choosing a journal, namely the article processing fee versus the potentially increased access to readers.

The *gold open access* model raises the question of the importance of accessibility. When weighing subscription-based versus open access publishing options, the importance of broad accessibility must be balanced against an author's ability and willingness to pay the article processing charges. The exploratory research questions addressed in this paper are twofold: First, what attributes do authors care most about when choosing a journal publishing outlet, and how do the importance of these attributes vary by authors' position type and subject discipline? Second, what importance do authors place on accessibility of their research outputs to different audiences, and how does the importance of reaching these different audience groups vary by authors' position type and subject discipline? To address these questions, we conducted campus-wide surveys of faculty, graduate students, and post-doctoral researchers at four North American research-intensive institutions. The surveys are a part of the larger "Pay It Forward" research project, funded by the Andrew W. Mellon Foundation, the purpose of which is to create a financial model for research-intensive universities if *gold open access* were to replace subscription based journals.

### *1.1. Literature Review*

#### 1.1.1. Academic Authors and Publishing Decisions

The question of what matters to authors in journal publishing decisions can be divided into two eras: those that took place before and after the advent of widespread e-journal availability. In the previous era of print-based journal publication, three major aspects attracted authors: scholarly reputation, speed of publication, and physical quality of the processed papers [4]. In the new era of digital publishing, online availability of research not only introduces an increased level of dissemination and access but also introduces new options for scholarly communication behavior [5]. This change has produced insights into what now matters to scholarly authors, leading to the question: What, if anything, has changed in authorship priorities in the digital publishing era?

Results from the annual summaries of the 2002 and 2009 "Elsevier Author Feedback Program" [5] indicate eight key factors authors consider when choosing a journal outlet. In both the 2002 and 2009 summaries, the most important factors were intrinsic characteristics of the journal: refereeing quality and refereeing speed. The journal's perceived reputation and impact factor, both extrinsic factors, followed. Next came the journal's production speed and the author's satisfaction with the editorial team. Physical quality and publisher services were least important.

A study conducted in 2005 [6] found the top factors that authors consider are the journal's reputation, readership, and impact factor. Among the least important factors were permissions related to self-archiving and retaining copyright. Solomon & Björk [3] also surveyed authors to evaluate the importance of different factors when considering a journal. The most important factor was whether the research fit the scope of the journal, followed by the journal's quality/impact, speed of review and time-to-publication, type of readership, open access option, and likelihood of acceptance. Journal reputation and being a "good match" (fit to scope of journal) were also top priorities found by Coonin and Younce [7]. Likewise, Jamali et al.'s 2013 international survey of researchers found that a high impact factor, journal reputation, and relevance of topic were most important for authors' publishing selection [8]. Along with strong peer review, these attributes were key in how authors determined the "trustworthiness" of journals [9].

Ithaka S+R's surveys of faculty in 2006, 2009, 2012, and 2015 provide further insight into how faculty priorities are changing (and not changing) when it comes to academic publishing outlets. The 2006 and 2009 surveys [10,11] show the two most important characteristics of a journal are its breadth of circulation and that it is well read in the author's specific field, while the least important factors were the journal's selectivity and its availability to those in developing nations. The 2012 and 2015 surveys [12,13] included additional criteria that proved to be among the most important for faculty members: that the journal's area of coverage is close to the faculty's immediate area of research and that the journal has a high impact factor. The criteria that the journal is widely circulated and well read by scholars in the field also remained very important. Of lowest concern in the 2012 survey were the accessibility of the journal to those in developing nations and that the journal makes its articles freely available online.

#### 1.1.2. Open Access Perceptions and Motivations

In contrast to authorship decisions, a researcher's choice of reading material and publishing outlets are most influenced by article topic, online accessibility, and "fit to journal's scope" [14]. A faculty member's most valued research output for reading is a well-known article published in a top tier scholarly journal, with online access at no direct cost to the reader. Faculty clearly do not want to pay "out-of-pocket" for access to scholarship [14]. The study also found that online availability was most important to faculty working in professional fields, engineering, and the sciences. Similarly, Schonfeld and Housewright [11] found important discipline differences in attitudes towards online accessibility and open access. In particular, disciplines "where there is a significant amount of open access pre-print activity, such as physics and economics, prioritize peer visibility for their articles well above an interest in making them openly accessible, just the same as other fields" [11] (p. 26).

#### 1.1.3. Who Authors Want to Reach

While "peer visibility" is an important factor for many researchers in choosing how and where they publish [11], public visibility is an important factor for fields such as medicine and agriculture where the potential audience is as likely to be practitioners as fellow researchers [11,15–19]. In such cases, open access journals are an increasingly attractive option. In fact, in fields such as environmental science and conservation, the increasing push to bridge the gap between academics and practitioners has made the potential widespread adoption of open access critical [16,19]. Sunderland, Sunderland-Groves, Shanley, and Campbell [19] also cited the lack of access to scholarly materials amongst practitioners in the developed and developing world as an impediment both to scientific literacy and to implementation of research gains in the field.

Although they advocate the necessity of a cultural shift among academics, Björk, Welling, Laakso, Majlender, Hedlund, and Guðnason [15] make a similar argument for publically-funded research, while other studies suggest that open access articles may be cited more, thus providing a less-altruistic motive for targeting open access as an avenue for publication [20,21]. However, Schonfeld and Housewright's analysis of the 2009 Ithaka survey cautioned that even where faculty prioritized "free availability" in more practitioner-focused fields like sociology and education, this priority ranked below a journal's reputation among researcher peers.

## 2. Materials and Methods

### *2.1. Questionnaire Development*

Two focus groups were held at five research universities between February and May 2015 to get an idea of the depth of academics' understanding regarding open access publishing models and to help develop the questions and wording to be asked on the questionnaire. These included the four universities that subsequently participated in the survey. The focus groups allowed for the development of a focused survey instrument that could provide statistically meaningful responses from a broad group of participants. The results of the survey could then be extrapolated, in a

more meaningful way, to the wider population of academic researchers. In order to do this, topics, terminology, and scenarios that emerged from focus group discussions were incorporated as guiding constructs in survey question development. During the month of May 2015, the research team developed the survey instrument with additional input and approval from the project economic modeling team and principal investigator. Multiple rounds of development and testing resulted in a questionnaire that, depending on skip and display logic routes of participant answers, ranged from 20 to 30 questions. The full questionnaire can be found at the University of Tennessee's institutional repository, TRACE. [22]

### *2.2. Sample*

Our goal was to achieve a representative sample of academics across a broad range of subject disciplines from the four participating research-intensive universities. These universities are believed to be representative of the broader population of interest, which includes large academic research institutions in the United States and Canada. Respondents included faculty, graduate students, and post-doctoral researchers from four such universities. The criterion for inclusion stated that respondents must be either employed as faculty/staff or be enrolled as a graduate student at the university. The survey was distributed to a total of approximately 15,000 academics. With 2121 responses, the overall response rate was approximately 14.1%.

### *2.3. Procedures*

IRB approval was obtained by each participating university's office of research compliance. An informed consent statement was included on the first page of the survey, and consent was obtained by having participants click "next" after reading the statement. Within both the recruitment email and the informed consent statement, participants were informed of the option to be included in a prize drawing for an iPad Mini as an incentive. If they chose to participate in the drawing, they would be redirected at the end of the research survey to a new, separate page where their e-mail addresses would be collected.

The survey instrument was developed and distributed using Qualtrics software. Before launching the survey, pilot test links were sent to a small sub-sample of academic researchers (faculty and graduate students, $n = 30$) at the participating universities. Pilot tests were conducted both in person, with the authors present for questions and feedback, and remotely via the test link and emailed feedback. These pilot testing procedures were used to ensure that language was clear, the sequential ordering of questions was logical, and there were no technical problems with the survey link.

After ensuring that the survey was working properly, live links were sent to librarian distributors at the four participating universities. From there, the distributors sent the links to targeted email distribution lists with the goal of ensuring roughly equivalent sampling across different disciplines and position types (e.g., faculty, graduate students). The survey was open from 20 May to 10 June 2015 (approximately three weeks). Two weeks after the survey launch, a reminder email was sent by librarian distributors thanking those who had already participated and reminding others of their opportunity to participate. The final number of respondents was 2121. After cleaning the data, the final $n = 2021$. Analysis was conducted using the IBM SPSS Statistics version 22 package.

### *2.4. Variables*

Survey respondents were asked a series of basic demographic questions related to their degrees, their position at the university, and their subject discipline. Within this study, we examined differences in position and subject discipline to determine how these impacted responses related to journal publishing and accessibility. Within "position," respondents were given the options of faculty, graduate student, postdoctoral researcher, or other. Based on that response they were prompted to further specify position type (e.g., assistant professor, research faculty, PhD student, etc.). Within subject discipline, respondents were given the choice of arts and humanities, engineering and computer

sciences, life sciences/medicine, mathematics, physical sciences, social sciences, or other. They were then asked to write in their specific area of study within that subject discipline.

Dependent variables of interest within this study are the importance of *journal attributes* and the importance of different *audiences*. Journal attributes refers to a set of eight possible considerations that academic authors may take into account when choosing a journal outlet in which to publish their work. These eight attributes, which were drawn from both previous research (commonly referred to as "factors") [3,5] and the focus groups conducted among this population prior to the survey include *audience, editor or editorial board, fit with scope of journal, impact factor, likelihood of acceptance, open access, quality and reputation of journal*, and *time from submission to publication*. Respondents were also given the opportunity to list other attributes they consider when choosing a journal outlet for their research.

The audience variable was intended to capture how respondents perceived the importance of accessibility for different readerships/audiences. Audiences included *researchers/faculty at other research-intensive academic institutions, researchers/faculty at different types of research institutions (e.g., teaching focused), policy-makers in government or non-government organizations, practitioners in industry and business*, and *the general public*. These audiences of academic research were drawn from a series of focus groups conducted among this population prior to the survey. Again, respondents were also given the opportunity to list and describe any other audiences they considered important. For both *journal attributes* and *audience* variables, these open-ended responses, though not required, are helpful in explaining respondents' closed-ended scale questions.

### *2.5. Statistical Methods*

From the original dataset, responses that provided answers for at least one independent variable of interest (position type, subject discipline, or publishing frequency) and at least one dependent variable of interest (see survey for remainder of questions) were included in the final cleaned dataset. Those who did not provide this minimum amount of data were removed. Thirty-nine respondents provided no data for the independent variables. An additional 61 answered no questions beyond the independent variables, for a total of 100 unusable responses. This resulted in a final $n = 2021$.

For the independent variables, those who selected "other" were recoded if possible. The small number of respondents who specified "other" for their position type were merged with postdoctoral researchers since most were clinical residents within medical schools. Within subject discipline, those who selected "other" and then wrote in a specific area were recoded into the appropriate subject discipline. From these, 10 participants did not further specify a specific area of study and could not be recoded into one of the primary subject disciplines; therefore, these were counted as missing for the inferential analyses. For the dependent variables, those who responded "not applicable" to an item were counted as missing for the inferential analyses. This is justified because the respondents did not feel that the item pertained to their experience, and therefore provided no information in terms of their level of agreement. Descriptive data about these responses is included in each results section.

Our first goal is to examine aggregate mean importance for each dependent variable. Descriptive data, including means and standard deviations, are reported for each item.

Our second goal is to examine the differences in importance assigned to each journal attribute across position types at the universities. In this case, the independent variable is position type (faculty, postdoc, or graduate student), and the dependent variables are the eight different journal attributes. To reduce the risk of type I error, we first examine differences across position types using a MANOVA that looked at all attributes with one omnibus test. From there, we further examine the individual journal attributes that are statistically significant ($p < 0.05$). Tukey's post hoc analyses reveal which position types differ from one another for each significant journal attribute; mean difference and probability values are included in the corresponding tables. The same approach is used to examine differences in importance of journal attributes across subject disciplines. Finally, we use the same statistical approach to examine differences in importance assigned to each audience across position types and subject disciplines.

### *2.6. Limitations*

The main limitations of this study pertain to sampling and generalizability. Our response rate was just over 14%. Information about how the total population of graduate students and faculty are distributed across subject disciplines at each university is limited; however, we can see that the majority of faculty participants were in tenure-track positions as assistant, associate, and full professors (98%). This does not reflect the actual distribution of all position types at the participating universities (~44% tenure-track faculty); however, it is tenure-track faculty who are most concerned with academic publishing, so they were the focus of this survey. In terms of graduate students, master's-level participation constituted only ~20% of the graduate student participants, whereas doctoral-level students made up about ~80%. In reality, graduate student populations at the participating universities are roughly half master's and half doctoral students. Because doctoral students are likely more concerned about publishing than masters students, it is not surprising that they may have self-selected more heavily into survey participation. Overall, when comparing those who responded to those who did not, self-selection bias is a real possibility. Potentially, those who are familiar with or interested in the topic of open access publishing may have been more likely to opt into the survey. Those who find the topic to be controversial may be more likely to opt in or opt out as well.

Therefore, despite the variety of subject disciplines and experience levels represented, we are limited in our ability to assume that those who opted in to the survey are representative of all researchers at their respective universities.

In addition, due to small subsample sizes within position type and subject discipline, differences for certain groups—particularly postdoctoral researchers within *position type* and those from mathematics within *subject discipline*—must be interpreted carefully when determining significance. Probability values, confidence intervals, and effects sizes are provided to give the fullest possible picture of the data.

## 3. Results

### *3.1. Description of Respondents*

Respondents are split roughly in half between faculty ($n$ = 935) and graduate students ($n$ = 915), with postdoctoral researchers/other constituting the remaining respondents ($n$ = 170) (Table 1). Faculty are largely made up of Assistant ($n$ = 219), Associate ($n$ = 218), and full Professors ($n$ = 480). The large majority of graduate students are pursuing doctoral degrees ($n$ = 730).

**Table 1.** Demographics: positions of respondents.

| Position | Frequency | Percentage |
|---|---|---|
| **Faculty *** | **935** | **46.3%** |
| Adjunct professor/lecturer | (3) | (0.3) |
| Assistant professor | (219) | (23.4%) |
| Associate professor | (218) | (23.3%) |
| Professor | (480) | (51.4%) |
| Research faculty | (4) | (0.4%) |
| Other | (10) | (1.1%) |
| **Students** | **915** | **45.3%** |
| Master's students | (129) | (14.1%) |
| PhD students | (730) | (79.8%) |
| JD students | (27) | (3.0%) |
| MD students | (27) | (3.0%) |
| Other | (2) | (0.2%) |
| **Postdoctoral fellows/other** | **170** | **8.4%** |
| **Total** | **2020** | **100.0%** |

* One faculty respondent did not provide his/her position title.

The largest group of participants falls into the category of life sciences/medicine ($n$ = 623), followed by social sciences (including business, law, and education) ($n$ = 549), arts and humanities ($n$ = 350), engineering and computer science ($n$ = 268), physical sciences ($n$ = 175), and mathematics ($n$ = 45) (Table 2). Ten respondents have chosen "other" with no further information specified.

**Table 2.** Demographics: subject discipline of respondents.

| Subject Discipline | Frequency | Percentage |
|---|---|---|
| Arts & Humanities | 350 | 17.3% |
| Engineering & Computer Science | 268 | 13.3% |
| Life Sciences and Medicine | 623 | 30.8% |
| Mathematics | 45 | 2.2% |
| Physical Sciences | 175 | 8.7% |
| Social Sciences (including Business, Education & Law) | 549 | 27.2% |
| Other | 10 | 0.5% |
| **Total** | **2020** | **100.0**% |

### 3.2. Journal Attributes: Considerations when Choosing a Journal

Respondents were given eight different attributes related to choosing a journal outlet in which to publish their research (see Table 3). They were asked to rate the importance of each when choosing a journal on a scale of 1–5 (1 = Not important–5 = Very important). They were also given the option of "not applicable."

**Table 3.** Importance of journal attributes.

| Journal Attribute | Mean | Std. Deviation |
|---|---|---|
| Quality and reputation of journal | 4.67 | 0.606 |
| Fit with scope of journal | 4.61 | 0.647 |
| Audience | 4.49 | 0.827 |
| Impact factor | 4.07 | 0.986 |
| Likelihood of acceptance | 3.74 | 1.033 |
| Time from submission to publication | 3.58 | 1.040 |
| Editor or editorial board | 3.42 | 1.155 |
| Open access | 2.84 | 1.294 |

Among the survey respondents, *quality and reputation of journal* and *fit with scope of journal* are the two most important attributes authors consider. The next attribute is *audience*, followed by *impact factor*, *likelihood of acceptance*, *time from submission to publication*, and *editor or editorial board*. The least important attribute is *open access* (Table 3).

### 3.3. Journal Attributes by Position at University

Position type (faculty, graduate student, postdoc/other) appears to affect how a respondent perceives different journal attributes when selecting a publishing outlet, as demonstrated by an omnibus MANOVA (see Table 4 footnote). There are significant differences for all attributes except editor or editorial board, although effects sizes are relatively small (see Table 4).

Post hoc analyses using Tukey's HSD show significant pairwise differences as well (Table 5). For the two most important journal attributes, graduate students rate fit with scope of journal as significantly less important than both faculty and postdoctoral researchers/other. However, the magnitude of difference between graduate students and postdoctoral researchers/other is marginal and, due to the small sample size of postdoctoral researchers/other, may not truly be meaningful. Graduate students also rate quality and reputation of journal and audience as significantly less important than faculty do, although the magnitudes of difference are not great and both groups rate

these attributes as very important overall. Faculty also find impact factor and likelihood of acceptance to be significantly less important than both graduate students and postdoctoral researchers/others, rating likelihood of acceptance in particular nearly a half-point lower. Among the least important journal attributes, open access is significantly less important for faculty than it is for both graduate students and postdoctoral researchers/others (Table 6).

**Table 4.** Importance of journal attributes by position.

| Journal Attribute | Position Type | | | | | | $F$ | $\eta_p^2$ |
|---|---|---|---|---|---|---|---|---|
| | Faculty | | Postdoc/Other | | Grad Students | | | |
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | | |
| Qual./rep. of jour. | 4.77 | 4.73–4.81 | 4.64 | 4.54–4.74 | 4.55 | 4.51–4.59 | 24.45 * | 0.029 |
| Fit with scope | 4.67 | 4.63–4.72 | 4.68 | 4.57–4.78 | 4.53 | 4.48–4.58 | 9.68 * | 0.012 |
| Audience | 4.62 | 4.57–4.69 | 4.48 | 4.35–4.61 | 4.37 | 4.31–4.43 | 18.88 * | 0.023 |
| Impact factor | 3.98 | 3.91–4.05 | 4.23 | 4.08–4.40 | 4.14 | 4.07–4.22 | 7.66 * | 0.009 |
| Like. accept. | 3.53 | 3.46–3.60 | 4.04 | 3.88–4.21 | 3.92 | 3.85–4.00 | 34.94 * | 0.041 |
| Time to pub. | 3.66 | 3.59–3.76 | 3.68 | 3.51–3.85 | 3.44 | 3.37–3.52 | 9.42 * | 0.011 |
| Ed./Ed. board | 3.40 | 3.32–3.48 | 3.38 | 3.19–3.57 | 3.43 | 3.34–3.51 | 0.16 | 0.000 |
| Open access | 2.61 | 2.52–2.70 | 2.96 | 2.75–3.17 | 3.08 | 2.99–3.18 | 26.74 * | 0.032 |

MANOVA: $F(16, 3266) = 17.19$, $p < 0.001$; Wilks' Lambda = 0.851, partial eta squared = 0.078; * $p < 0.001$.

**Table 5.** Multiple comparisons, journal attribute by position type (Tukey HSD) *.

| Attribute | (I) Position | (J) Position | Mean Difference | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Audience | Faculty | Graduate Student | 0.26 * | 0.042 | 0.000 | 0.16 | 0.35 |
| Fit with scope of journal | Faculty | Graduate Student | 0.14 * | 0.033 | 0.000 | 0.06 | 0.22 |
| | | Postdoc/Other | −0.14 * | 0.059 | 0.041 | −0.28 | 0.00 |
| Impact factor | Faculty | Graduate Student | −0.17 * | 0.051 | 0.003 | −0.28 | −0.05 |
| | | Postdoc/Other | −0.26 * | 0.089 | 0.010 | −0.47 | −0.05 |
| Likelihood of acceptance | Faculty | Graduate Student | −0.39 * | 0.052 | 0.000 | −0.52 | −0.27 |
| | | Postdoc/Other | −0.51 * | 0.092 | 0.000 | −0.73 | −0.30 |
| Open access | Faculty | Graduate Student | −0.47 * | 0.065 | 0.000 | −0.63 | −0.32 |
| | | Postdoc/Other | −0.35 * | 0.115 | 0.007 | −0.62 | −0.08 |
| Quality and reputation of journal | Faculty | Graduate Student | 0.22 * | 0.031 | 0.000 | 0.14 | 0.29 |
| | Graduate Student | Faculty | −0.22 * | 0.054 | 0.000 | −0.35 | −0.10 |
| | | Postdoc/Other | −0.24 * | 0.095 | 0.031 | −0.46 | −.02 |

* Only statistically significant differences shown ($p < 0.05$).

**Table 6.** Journal attribute importance: percentage by position.

| Attribute | | Position | | | Total |
|---|---|---|---|---|---|
| | | Faculty | Postdoc/Other | Grad Student | |
| Audience | 5 | 625 (71.0%) | 99 (63.1%) | 433 (54.9%) | 1157 (63.4%) |
| | 4 | 177 (20.1%) | 31 (19.7%) | 207 (26.3%) | 415 (22.7%) |
| | 3 | 58 (6.6%) | 16 (10.2%) | 85 (10.8%) | 159 (8.7%) |
| | 2 | 6 (0.7%) | 6 (3.8%) | 12 (1.5%) | 24 (1.3%) |
| | 1 | 8 (0.9%) | 1 (0.6%) | 17 (2.2%) | 26 (1.4%) |
| | N/A | 6 (0.7%) | 4 (2.5%) | 34 (4.3%) | 44 (2.4%) |
| Editor/Ed. Board | 5 | 180 (20.6%) | 22 (14.0%) | 135 (17.2%) | 337 (18.6%) |
| | 4 | 243 (27.9%) | 58 (36.9%) | 250 (31.8%) | 551 (30.4)% |
| | 3 | 259 (29.7%) | 40 (25.5%) | 216 (27.5%) | 515 (28.4%) |
| | 2 | 110 (12.6%) | 21 (13.4%) | 90 (11.5%) | 221 (12.2%) |
| | 1 | 70 (8.0%) | 11 (7.0%) | 52 (6.6%) | 133 (7.3%) |
| | N/A | 10 (1.1%) | 5 (3.2%) | 42 (5.4%) | 57 (3.1%) |
| Fit with Scope | 5 | 625 (71.2%) | 111 (71.2%) | 472 (59.8%) | 1208 (66.3%) |
| | 4 | 210 (23.9%) | 34 (21.8%) | 227 (28.8%) | 471 (25.8%) |
| | 3 | 32 (3.6%) | 6 (3.8%) | 47 (6.0%) | 85 (4.7%) |
| | 2 | 2 (0.2%) | 0 (0.0%) | 1 (0.1%) | 3 (0.2%) |
| | 1 | 2 (0.2%) | 1 (0.6%) | 8 (1.0%) | 11 (0.6%) |
| | N/A | 7 (0.8%) | 4 (2.6%) | 34 (4.3%) | 45 (2.5%) |

**Table 6.** *Cont.*

| Attribute | | Position | | | Total |
|---|---|---|---|---|---|
| | | Faculty | Postdoc/Other | Grad Student | |
| Impact Factor | 5 | 321 (36.6%) | 74 (47.1%) | 319 (40.7%) | 714 (39.3%) |
| | 4 | 302 (34.5%) | 50 (31.8%) | 270 (34.5%) | 622 (34.3%) |
| | 3 | 166 (18.9%) | 21 (13.4%) | 119 (15.2%) | 306 (16.9%) |
| | 2 | 51 (5.8%) | 4 (2.5%) | 21 (2.7%) | 76 (4.2%) |
| | 1 | 24 (2.7%) | 2 (1.3%) | 18 (2.3%) | 44 (2.4%) |
| | N/A | 12 (1.4%) | 6 (3.8%) | 36 (4.6%) | 54 (3.0%) |
| Likelihood of Accept. | 5 | 154 (17.5%) | 54 (34.8%) | 229 (29.1%) | 437 (24.0%) |
| | 4 | 336 (38.2%) | 62 (40.0%) | 308 (39.2%) | 706 (38.8%) |
| | 3 | 247 (28.1%) | 27 (17.4%) | 158 (20.1%) | 432 (23.7%) |
| | 2 | 84 (9.6%) | 5 (3.2%) | 35 (4.5%) | 124 (6.8%) |
| | 1 | 47 (5.3%) | 3 (1.9%) | 21 (2.7%) | 71 (3.9%) |
| | N/A | 11 (1.3%) | 4 (2.6%) | 35 (4.5%) | 50 (2.7%) |
| Open Access | 5 | 75 (8.5%) | 21 (13.5%) | 117 (14.9%) | 213 (11.7%) |
| | 4 | 146 (16.6%) | 34 (21.8%) | 152 (19.3%) | 332 (18.2%) |
| | 3 | 240 (27.3%) | 47 (30.1%) | 246 (31.3%) | 533 (29.3%) |
| | 2 | 165 (18.8%) | 19 (12.2%) | 116 (14.8%) | 300 (16.5%) |
| | 1 | 233 (26.5%) | 30 (19.2%) | 111 (14.1%) | 374 (20.5%) |
| | N/A | 20 (2.3%) | 5 (3.2%) | 44 (5.6%) | 69 (3.8%) |
| Quality/Reputation | 5 | 700 (79.4%) | 104 (65.8%) | 483 (60.8%) | 1287 (70.1%) |
| | 4 | 155 (17.6%) | 41 (25.9%) | 232 (29.2%) | 428 (23.3%) |
| | 3 | 18 (2.0%) | 6 (3.8%) | 33 (4.2%) | 57 (3.1%) |
| | 2 | 1 (0.1%) | 0 (0.0%) | 5 (0.6%) | 6 (0.3%) |
| | 1 | 2 (0.2%) | 0 (0.0%) | 7 (0.9%) | 9 (0.5%) |
| | N/A | 6 (0.7%) | 7 (4.4%) | 35 (4.4%) | 48 (2.6%) |
| Time to pub. | 5 | 172 (19.5%) | 38 (24.2%) | 130 (16.5%) | 340 (18.6%) |
| | 4 | 358 (40.5%) | 53 (33.8%) | 262 (33.2%) | 673 (36.8%) |
| | 3 | 253 (28.6%) | 46 (29.3%) | 220 (27.9%) | 519 (28.4%) |
| | 2 | 66 (7.5%) | 11 (7.0%) | 92 (11.7%) | 169 (9.2%) |
| | 1 | 27 (3.1%) | 5 (3.2%) | 47 (6.0%) | 79 (4.3%) |
| | N/A | 8 (0.9%) | 4 (2.5%) | 37 (4.7%) | 49 (2.7%) |

### *3.4. Journal Attributes by Subject Discipline*

Differences in the importance of journal attributes across subject disciplines are also analyzed according to the respondent's subject discipline. A MANOVA shows significant overall variation across subject disciplines with respect to the importance of different journal attributes; however, the importance of the attributes *fit with scope of journal* and *quality and reputation of journal* does not vary significantly across subject disciplines (see Table 7).

Post hoc analyses using Tukey's HSD indicate significant pairwise differences between specific subject disciplines (Table 8), although a closer look at mean differences and effects sizes for the majority of these attributes show that there is not a great deal of substantive difference to report. Respondents from life sciences/medicine and engineering/computer science place the greatest weight on a journal's *impact factor*, with a mean difference of 0.65 between life sciences and math. *Likelihood of acceptance* is more important to those from life sciences/medicine than to those from both arts/humanities and engineering/computer science, although the margin is small. There is again a significant but small difference between those from arts/humanities and those from life sciences/medicine, physical sciences, or social sciences when it comes to the identity of a journal's *editor or editorial board*. Finally, respondents from social sciences care the least among subject disciplines about *open access*, rating it as significantly (but marginally) less important than their peers in the arts/humanities and life sciences/medicine; all groups, however, rate *open access* as not being very important to them (Table 9).

**Table 7.** Importance of journal attributes by subject discipline.

| Attribute | Subject Discipline | | | | | | | | | | | | $F$ | $\eta_p^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Arts/Hum | | Engin./CS | | Life Sci./Med. | | Math | | Phys. Sci. | | Social Sci. | | | |
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | | |
| Quality & reputation of journal | 4.68 | 4.61–4.76 | 4.63 | 4.55–4.71 | 4.66 | 4.60–4.71 | 4.82 | 4.62–5.01 | 4.70 | 4.60–4.79 | 4.63 | 4.60–4.71 | 0.80 | 0.002 |
| Fit with scope | 4.57 | 4.49–4.64 | 4.57 | 4.48–4.65 | 4.67 | 4.61–4.72 | 4.61 | 4.40–4.81 | 4.63 | 4.53–4.73 | 4.61 | 4.55–4.67 | 1.19 | 0.004 |
| Audience | 4.59 | 4.50–4.69 | 4.39 | 4.29–4.50 | 4.54 | 4.47–4.61 | 4.55 | 4.29–4.81 | 4.57 | 4.44–4.70 | 4.43 | 4.35–4.50 | 2.76 | 0.008 |
| Impact factor | 3.95 | 3.83–4.06 | 4.17 | 4.05–4.30 | 4.15 | 4.07–4.24 | 3.50 | 3.19–3.81 | 3.99 | 3.84–4.15 | 4.08 | 3.99–4.17 | 4.96 | 0.015 |
| Likelihood of acceptance | 3.62 | 3.49–3.74 | 3.57 | 3.43–3.71 | 3.86 | 3.77–3.95 | 3.61 | 3.28–3.93 | 3.74 | 3.57–3.90 | 3.76 | 3.67–3.86 | 3.54 | 0.011 |
| Time to publication | 3.58 | 3.54–3.70 | 3.56 | 3.42–3.70 | 3.67 | 3.58–3.76 | 3.21 | 2.88–3.54 | 3.63 | 3.47–3.80 | 3.47 | 3.38–3.57 | 2.74 | 0.008 |
| Editor or editorial board | 3.63 | 3.49–3.76 | 3.40 | 3.25–3.55 | 3.32 | 3.22–3.42 | 4.00 | 3.64–4.36 | 3.24 | 3.06–3.43 | 3.37 | 3.26–3.48 | 5.32 | 0.016 |
| Open access | 3.01 | 2.86–3.16 | 2.72 | 2.55–2.89 | 2.96 | 2.85–3.08 | 3.03 | 2.62–3.43 | 2.91 | 2.71–3.11 | 2.60 | 2.49–2.72 | 5.67 | 0.017 |

MANOVA: $F(40, 7086) = 3.68$, $p < 0.001$; Wilks' Lambda = 0.914, partial eta squared = 0.018.

**Table 8.** Multiple comparisons, subject discipline and journal attributes (Tukey HSD).

| Attribute | (I) Area of Study | (J) Area of Study | Mean Difference (I–J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Editor or Editorial Board | Arts & Hum. | Life Sci./Medicine | 0.30 * | 0.086 | 0.006 | 0.06 | 0.55 |
| | | Physical Sciences | 0.38 * | 0.115 | 0.012 | 0.05 | 0.71 |
| | | Social Sciences | 0.26 * | 0.088 | 0.040 | 0.01 | 0.51 |
| | Mathematics | Engineering/CS | 0.60 * | 0.201 | 0.035 | 0.03 | 1.17 |
| | | Life Sci./Medicine | 0.68 * | 0.192 | 0.006 | 0.13 | 1.22 |
| | | Physical Sciences | 0.76 * | 0.207 | 0.004 | 0.17 | 1.35 |
| | | Social Sciences | 0.63 * | 0.193 | 0.014 | 0.08 | 1.18 |
| Impact Factor | Arts & Hum. | Life Sci./Medicine | −0.21 * | 0.073 | 0.049 | −0.42 | 0.00 |
| | Mathematics | Engineering/CS | −0.67 * | 0.171 | 0.001 | −1.16 | −0.19 |
| | | Life Sci./Medicine | −0.65 * | 0.164 | 0.001 | −1.12 | −0.19 |
| | | Social Sciences | −0.58 * | 0.164 | 0.006 | −1.05 | −0.11 |
| Likelihood of Acceptance | Life Sci./Medicine | Arts & Hum. | 0.25 * | 0.077 | 0.019 | 0.03 | 0.47 |
| | | Engineering/CS | 0.29 * | 0.083 | 0.007 | 0.05 | 0.53 |
| Open Access | Social Sciences | Arts & Hum. | −0.41 * | 0.097 | 0.000 | −0.68 | −0.13 |
| | | Life Sci./Medicine | −0.36 * | 0.083 | 0.000 | −0.60 | −0.13 |
| Time from Sub. to Pub. | Life Sci./Medicine | Social Sciences | 0.20 * | 0.067 | 0.041 | 0.00 | 0.39 |

* Only statistically significant differences shown ($p < 0.05$).

**Table 9.** Journal attribute importance: percentage by subject discipline.

| Attribute | | Subject Discipline | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **Arts/Humanities** | **Engineer./CS** | **Life Sci./Med.** | **Math** | **Physical Sci.** | **Social Sci.** | **Total** |
| Audience | 5 | 213 (66.6%) | 151 (63.2%) | 361 (64.1%) | 28 (68.3%) | 110 (67.9%) | 292 (59.3%) | 1157 (63.4%) |
| | 4 | 69 (21.6%) | 45 (18.8%) | 132 (23.4%) | 5 (12.2%) | 37 (22.8%) | 122 (24.8%) | 415 (22.7%) |
| | 3 | 21 (6.6%) | 31 (13.0%) | 46 (8.2%) | 7 (17.1%) | 8 (4.9%) | 46 (9.3%) | 159 (8.7%) |
| | 2 | 2 (0.6%) | 4 (1.7%) | 10 (1.8%) | 0 (0.0%) | 3 (1.9%) | 5 (1.0%) | 24 (1.3%) |
| | 1 | 4 (1.3%) | 6 (2.5%) | 4 (0.7%) | 0 (0.0%) | 1 (0.6%) | 11 (2.2%) | 26 (1.4%) |
| | N/A | 11 (3.4%) | 2 (0.8%) | 10 (1.8%) | 1 (2.4%) | 3 (1.9%) | 16 (3.3%) | 44 (2.4%) |
| Editor/Ed. Board | 5 | 78 (24.8%) | 44 (18.5%) | 82 (14.7%) | 15 (34.9%) | 31 (19.3%) | 85 (17.3%) | 336 (18.5%) |
| | 4 | 104 (33.1%) | 75 (31.5%) | 173 (31.0%) | 16 (37.2)% | 35 (21.7%) | 144 (29.3%) | 551 (30.4%) |
| | 3 | 74 (23.6%) | 69 (29.0%) | 174 (31.2%) | 5 (11.6%) | 45 (28.0%) | 149 (30.3%) | 516 (28.4%) |
| | 2 | 24 (7.6%) | 29 (12.2%) | 72 (12.9%) | 5 (11.6%) | 30 (18.6%) | 61 (12.4%) | 221 (12.2%) |
| | 1 | 21 (6.7%) | 18 (7.6%) | 44 (7.9%) | 0 (0.0%) | 16 (9.9%) | 33 (6.7%) | 133 (7.3%) |
| | N/A | 13 (4.1%) | 3 (1.3%) | 13 (2.3%) | 2 (4.7%) | 4 (2.5%) | 20 (4.1%) | 57 (3.1%) |
| Fit with Scope | 5 | 200 (62.5%) | 151 (63.4%) | 392 (69.9%) | 27 (62.8%) | 106 (65.8%) | 330 (66.9%) | 1209 (66.3%) |
| | 4 | 87 (27.2%) | 70 (29.4%) | 136 (24.2%) | 14 (32.6%) | 47 (29.2%) | 114 (23.1%) | 470 (25.8) |
| | 3 | 17 (5.3%) | 12 (5.0%) | 23 (4.1%) | 1 (2.3%) | 4 (2.5%) | 28 (5.7%) | 85 (4.7%) |
| | 2 | 2 (0.6%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 1 (0.6%) | 0 (0.0%) | 3 (0.2%) |
| | 1 | 2 (0.6%) | 2 (0.8%) | 1 (0.2%) | 0 (0.0%) | 0 (0.0%) | 5 (1.0%) | 11 (0.6%) |
| | N/A | 12 (3.8%) | 3 (1.3%) | 9 (1.6%) | 1 (2.3%) | 3 (1.9%) | 16 (3.2%) | 45 (2.5%) |
| Impact Factor | 5 | 106 (34.0%) | 106 (44.7%) | 232 (41.1%) | 10 (23.3%) | 63 (39.1%) | 192 (39.3%) | 713 (39.3%) |
| | 4 | 109 (34.9%) | 78 (32.9%) | 207 (36.6%) | 10 (23.3%) | 53 (32.9%) | 162 (33.1%) | 622 (34.3%) |
| | 3 | 51 (16.3%) | 33 (13.9%) | 94 (16.6%) | 13 (30.2%) | 28 (17.4%) | 88 (18.0%) | 307 (16.9%) |
| | 2 | 17 (5.4%) | 7 (3.0%) | 18 (3.2%) | 4 (9.3%) | 9 (5.6%) | 21 (4.3%) | 76 (4.2%) |
| | 1 | 13 (4.2%) | 8 (3.4%) | 5 (0.9%) | 4 (9.3%) | 5 (3.1%) | 8 (1.6%) | 44 (2.4% |
| | N/A | 16 (5.1%) | 5 (2.1%) | 9 (1.6%) | 2 (4.7%) | 3 (1.9%) | 18 (3.7%) | 54 (3.0%) |
| Likelihood of Accept. | 5 | 69 (21.6%) | 48 (20.2%) | 143 (25.5%) | 6 (14.0%) | 41 (25.6%) | 124 (25.3%) | 437 (24.0%) |
| | 4 | 101 (31.7%) | 94 (39.5%) | 238 (42.4%) | 18 (41.9%) | 59 (36.9%) | 194 (39.5%) | 705 (38.7%) |
| | 3 | 91 (28.5%) | 54 (22.7%) | 136 (24.2%) | 13 (30.2%) | 37 (23.1%) | 102 (20.8%) | 433 (23.8%) |
| | 2 | 28 (8.8%) | 23 (9.7%) | 24 (4.3%) | 2 (4.7%) | 14 (8.8%) | 33 (6.7%) | 124 (6.8%) |
| | 1 | 16 (5.0%) | 16 (6.7%) | 11 (2.0%) | 3 (7.0%) | 6 (3.8%) | 19 (3.9%) | 71 (3.9%) |
| | N/A | 14 (4.4%) | 3 (1.3%) | 9 (1.6%) | 1 (2.3%) | 3 (1.9%) | 19 (3.9%) | 50 (2.7%) |
| Open Access | 5 | 37 (11.7%) | 21 (8.8%) | 70 (12.5%) | 4 (9.3%) | 25 (15.4%) | 54 (11.0%) | 213 (11.7%) |
| | 4 | 70 (22.1%) | 38 (16.0%) | 110 (19.6%) | 11 (25.6%) | 28 (17.3%) | 73 (14.8%) | 332 (18.2%) |
| | 3 | 86 (27.1%) | 84 (35.3%) | 191 (34.0%) | 13 (30.2%) | 42 (25.9%) | 117 (23.8%) | 533 (29.3%) |
| | 2 | 56 (17.7%) | 39 (16.4%) | 82 (14.6%) | 7 (16.3%) | 29 (17.9%) | 86 (17.5%) | 300 (16.5%) |
| | 1 | 49 (15.5%) | 51 (21.4%) | 93 (16.6%) | 7 (16.3%) | 34 (21.0%) | 139 (23.8%) | 374 (20.5%) |
| | N/A | 19 (6.0%) | 5 (2.1%) | 15 (2.7%) | 1 (2.3%) | 4 (2.5%) | 23 (4.7%) | 69 (3.8%) |
| Quality/Reputation | 5 | 273 (73.6%) | 173 (72.1%) | 387 (68.5%) | 34 (79.1%) | 119 (73.5%) | 333 (67.3%) | 1287 (70.1%) |
| | 4 | 58 (18.0%) | 51 (21.3%) | 149 (26.4%) | 6 (14.0%) | 34 (21.0%) | 128 (25.9%) | 428 (23.3%) |
| | 3 | 12 (3.7%) | 9 (3.8%) | 20 (3.5%) | 1 (2.3%) | 5 (3.1%) | 9 (1.8%) | 57 (3.1% |
| | 2 | 1 (0.3%) | 2 (0.8%) | 0 (0.0%) | 0 (0.0%) | 1 (0.6%) | 2 (0.4%) | 6 (0.3%) |
| | 1 | 3 (0.9%) | 2 (0.8%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 4 (0.8%) | 9 (0.5%) |
| | N/A | 11 (3.4%) | 3 (1.3%) | 9 (1.6%) | 2 (4.7%) | 3 (1.9%) | 19 (3.8%) | 48 (2.6%) |
| Time to Pub. | 5 | 67 (20.9%) | 47 (19.7%) | 111 (19.6%) | 4 (9.3%) | 28 (17.4%) | 81 (16.4%) | 340 (18.6%) |
| | 4 | 106 (33.1%) | 88 (37.0%) | 223 (39.4%) | 15 (34.9%) | 66 (41.0%) | 172 (34.9%) | 673 (36.8%) |
| | 3 | 84 (26.3%) | 66 (27.7%) | 163 (28.8%) | 14 (32.6%) | 44 (27.3%) | 147 (29.8%) | 519 (28.4%) |
| | 2 | 35 (10.9%) | 23 (9.7%) | 39 (6.9%) | 4 (9.3%) | 14 (8.7%) | 54 (11.0%) | 169 (9.2%) |
| | 1 | 15 (4.7%) | 11 (4.6%) | 20 (3.5%) | 5 (11.6%) | 5 (3.1%) | 22 (4.5%) | 79 (4.3%) |
| | N/A | 13 (4.1%) | 3 (1.3%) | 10 (1.8%) | 1 (2.3%) | 4 (2.5%) | 17 (3.4%) | 49 (2.7%) |

### *3.5. Importance of Accessibility for Different Audiences*

Respondents rated the importance of research output accessibility for five different audiences. The audiences are described based on information gleaned from the focus groups and the scale of importance used is 1–5 (1 = Not important–5 = Very important), and "not applicable."

Among survey respondents, research audiences, from most to least important, are: (1) researchers/faculty at other research-intensive academic institutions; (2) researchers/faculty at different types of academic institutions (e.g., teaching-focused); (3) policy-makers in government or non-government organizations; (4) practitioners in industry and business; and (5) the general public (see Table 10).

**Table 10.** The importance of accessibility for different audiences.

| Audience | Mean | Std. Error |
|---|---|---|
| Rsrchrs at rsch-intensive acad. institutions | 4.80 | 0.643 |
| Rsrchrs at other types acad. institutions | 4.38 | 0.938 |
| Policy-makers in gov't or NGOs | 3.74 | 1.343 |
| Business/industry practitioners | 3.70 | 1.363 |
| General public | 3.49 | 1.260 |

### *3.6. Importance of Accessibility for Different Audiences by Respondent's Position Type*

A MANOVA was run to examine differences across position types for each audience (see Table 10 footnote). The importance of accessibility varies according to the respondent's position as a faculty member, graduate student, or postdoctoral researcher/other. There are significant differences for each audience except *researchers/faculty at different types of academic institutions (e.g., teaching-focused)*. Effect sizes, however, are consistently small (See Table 11).

**Table 11.** Importance of accessibility for different audiences by position.

| Audience | Position Type | | | | | | $F$ | $\eta_p^2$ |
|---|---|---|---|---|---|---|---|---|
| | Faculty | | Postdoc/Other | | Grad Students | | | |
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | | |
| Rsrchrs at rsch-intensive acad. institutions | 4.88 | 4.83–4.92 | 4.92 | 4.82–5.02 | 4.69 | 4.64–4.73 | 20.18 * | 0.023 |
| Rsrchrs at other types acad. institutions | 4.41 | 4.34–4.47 | 4.42 | 4.26–4.57 | 4.33 | 4.26–4.40 | 1.35 | 0.002 |
| Policy-makers in gov't or NGOs | 3.59 | 3.50–3.68 | 3.78 | 3.56–3.99 | 3.90 | 3.80–4.00 | 10.31 * | 0.012 |
| Business/industry practitioners | 3.50 | 3.41–3.59 | 3.77 | 3.55–3.98 | 3.90 | 3.80–4.00 | 16.77 * | 0.019 |
| General public | 3.33 | 3.25–3.42 | 3.65 | 3.56–3.75 | 3.65 | 3.56–3.75 | 12.60 * | 0.015 |

$F(10, 3376) = 11.65$, $p < 0.001$; Wilks' Lambda = 0.934, partial eta squared = 0.033; * $p < 0.001$.

*Post hoc* analyses using Tukey's HSD were used to examine pairwise differences between each of the position types (See Tables 12 and 13). There is a significant but small difference between graduate students and the other respondent groups for *researchers/faculty at other research-intensive academic institutions*, with graduate students rating them slightly less (although still very) important. However, graduate students rate the importance of reaching *policy-makers in government or non-government organizations, practitioners in industry and business* and *the general public* significantly higher than faculty, although actual mean differences are small (0.31, 0.40, and 0.32, respectively).

**Table 12.** Multiple comparisons, position type and audience (Tukey HSD).

| Audience | (I) Position Type | (J) Position Type | Mean Difference (I–J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Researchers/faculty at other research-intensive academic institutions | Graduate Student | Faculty | −0.19 * | 0.032 | 0.000 | −0.27 | −0.11 |
| | | Postdoc/Other | −0.23 * | 0.057 | 0.000 | −0.37 | −0.10 |
| Policy-makers in government or non-government organizations | Graduate Student | Faculty | 0.31 * | 0.068 | 0.000 | 0.15 | 0.47 |
| Practitioners in industry and business | Graduate Student | Faculty | 0.40 * | 0.069 | 0.000 | 0.23 | 0.56 |
| The general public | Graduate Student | Faculty | 0.32 * | 0.064 | 0.000 | 0.17 | 0.47 |

* Only statistically significant differences shown ($p < 0.05$).

**Table 13.** Importance of accessibility for different audiences: percentage by position.

| Audience | | Position | | | Total |
|---|---|---|---|---|---|
| | | Faculty | Postdoc/Other | Grad Student | |
| Rschrs at Rsch-Intensive Academic Inst. | 5 | 820 (91.3%) | 147 (91.9%) | 609 (75.3%) | 1576 (84.4%) |
| | 4 | 43 (4.8%) | 6 (3.8%) | 85 (10.5%) | 134 (7.2%) |
| | 3 | 18 (2.0%) | 1 (0.6%) | 33 (4.1%) | 52 (2.8%) |
| | 2 | 4 (0.4%) | 0 (0.0%) | 6 (0.7%) | 10 (0.5%) |
| | 1 | 6 (0.7%) | 1 (0.6%) | 17 (2.1%) | 24 (1.3%) |
| | N/A | 7 (0.8%) | 5 (3.1%) | 59 (7.3%) | 71 (3.8%) |
| Rschrs at Other Types Academic Inst. | 5 | 556 (62.0%) | 96 (60.4%) | 443 (54.8%) | 726 (39.1%) |
| | 4 | 209 (23.3%) | 37 (23.3%) | 172 (21.3%) | 351 (18.9%) |
| | 3 | 91 (10.1%) | 13 (8.2%) | 85 (10.5%) | 339 (18.2%) |
| | 2 | 21 (2.3%) | 5 (3.1%) | 25 (3.1%) | 160 (8.6%) |
| | 1 | 15 (1.7%) | 3 (1.9%) | 21 (2.6%) | 175 (9.4%) |
| | N/A | 5 (0.6%) | 5 (3.1%) | 63 (7.8%) | 107 (5.8%) |
| Policy-Makers, Gov't or NGOs | 5 | 313 (35.1%) | 65 (41.1%) | 348 (43.0%) | 175 (9.4%) |
| | 4 | 177 (19.9%) | 28 (17.7%) | 146 (18.0%) | 160 (8.6%) |
| | 3 | 185 (20.8%) | 31 (19.6%) | 123 (15.2%) | 339 (18.2%) |
| | 2 | 88 (9.9%) | 14 (8.9%) | 58 (7.2%) | 351 (18.9%) |
| | 1 | 100 (11.2%) | 13 (8.2%) | 62 (7.7%) | 726 (39.1%) |
| | N/A | 28 (3.1%) | 7 (4.4%) | 72 (8.9%) | 107 (5.8%) |
| Pract. in Business and Industry | 5 | 295 (33.1%) | 56 (35.2%) | 332 (41.1%) | 683 (36.8%) |
| | 4 | 189 (21.2%) | 36 (22.6%) | 162 (20.1%) | 387 (20.8%) |
| | 3 | 157 (17.6%) | 40 (25.2%) | 131 (16.2%) | 328 (17.7%) |
| | 2 | 83 (9.3% | 12 (7.5%) | 43 (5.3%) | 138 (7.4%) |
| | 1 | 129 (14.5%) | 9 (5.7%) | 65 (8.1%) | 203 (10.9%) |
| | N/A | 38 (4.3%) | 6 (3.8%) | 74 (9.2%) | 118 (6.4%) |
| General Public | 5 | 209 (23.3%) | 47 (29.6%) | 257 (32.0%) | 513 (27.6%) |
| | 4 | 181 (20.2%) | 24 (15.1%) | 175 (21.8%) | 380 (20.4%) |
| | 3 | 282 (31.4%) | 57 (35.8%) | 168 (20.9%) | 507 (27.3%) |
| | 2 | 130 (14.5%) | 15 (9.4%) | 88 (10.9%) | 233 (12.5%) |
| | 1 | 81 (9.0%) | 10 (6.3%) | 57 (7.1%) | 148 (8.0%) |
| | N/A | 14 (1.6%) | 6 (3.8%) | 59 (7.3%) | 79 (4.2%) |

### *3.7. Importance of Accessibility for Different Audiences by Subject Discipline*

A MANOVA was run to examine differences across subject disciplines for each audience (see Table 14 footnote). Results show the importance of accessibility varies significantly according to respondents' subject disciplines. Additionally, there is significant variation across subject disciplines for each audience. Effect sizes for the different audiences vary from small to medium (see Table 14), and actual mean differences between groups will be discussed.

**Table 14.** Importance of accessibility for different audiences by subject discipline.

| Audience | Subject Discipline | | | | | | | | | | | | $F$ | $\eta_p^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Arts/Hum | | Engin./CS | | Life Sci./Med. | | Math | | Phys. Sci. | | Social Sci. | | | |
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | | |
| Rsrchrs at rsch-intensive acad. institutions | 4.70 | 4.62–4.77 | 4.76 | 4.68–4.84 | 4.85 | 4.80–4.90 | 4.90 | 4.69–5.10 | 4.92 | 4.82–5.02 | 4.79 | 4.73–4.85 | 3.55 * | 0.010 |
| Rsrchrs at other types acad. institutions | 4.49 | 4.38–4.60 | 4.05 | 3.39–4.17 | 4.44 | 4.36–4.52 | 4.12 | 3.81–4.40 | 4.24 | 4.09–4.39 | 4.48 | 4.40–4.57 | 9.37 ** | 0.027 |
| Policy-makers in gov't or NGOs | 2.78 | 2.63–2.93 | 3.59 | 3.43–3.75 | 3.95 | 3.85–4.06 | 3.42 | 3.02–3.82 | 3.75 | 3.55–3.95 | 4.16 | 4.04–4.23 | 45.65 ** | 0.120 |
| Business/industry practitioners | 2.52 | 2.38–2.68 | 4.24 | 4.08–4.40 | 4.02 | 3.91–4.12 | 3.66 | 3.26–4.06 | 3.81 | 3.61–4.01 | 3.69 | 3.58–3.81 | 63.37 ** | 0.159 |
| General public | 3.59 | 3.44–3.73 | 3.13 | 2.97–3.29 | 3.54 | 3.43–3.64 | 2.95 | 2.55–3.35 | 3.36 | 3.16–3.56 | 3.65 | 3.53–3.76 | 7.58 ** | 0.022 |

$F(25, 6231.28) = 27.97$, $p < 0.001$; Wilks' Lambda = 0.674, partial eta squared = 0.076. * $p < 5.005$; ** $p < 0.001$.

*Post hoc* analyses using Tukey's HSD examined pairwise differences between each subject discipline (see Tables 15 and 16). For respondents in engineering/computer science, although mean importance rating was still high, accessibility for *researchers/faculty at different types of academic institutions (e.g., teaching-focused)* is rated as slightly less important than by those in arts/humanities, life sciences/medicine, and social sciences.

There are significant pairwise differences within the three audiences considered least important overall as well. Arts/humanities respondents rate accessibility for *policy-makers in government and non-government organizations* as significantly less important than every other subject discipline, particularly life sciences/medicine (mean difference = −1.17) and social sciences (mean difference = −1.82). Those in life sciences/medicine and the social sciences also care more about reaching *policy-makers* than other subject disciplines (engineering/computer science, mathematics, and physical sciences), although the difference is less substantial. Similarly, arts/humanities respondents rate *practitioners in industry and business* as significantly less important than all other subject disciplines with substantial mean differences between 1.14 (math) and 1.71 (engineering/computer science). However, arts/humanities respondents care slightly more about reaching *the general public* than both engineering/computer science and mathematics. Respondents from engineering/computer science also care somewhat less about *the general public* than those in the life sciences/medicine and the social sciences.

**Table 15.** Multiple comparisons, accessibility for different audiences by subject discipline (Tukey HSD).

| Audience | (I) Area of Study | (J) Area of Study | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Researchers/faculty at other research-intensive academic institutions | Arts & Hum. | Life Sci./Medicine | −0.15 * | 0.047 | 0.014 | −0.29 | −0.02 |
| | | Physical Sciences | −0.22 * | 0.064 | 0.007 | −0.40 | −0.04 |
| Researchers/faculty at different types of academic institutions | Engineering/CS | Arts/Hum. | −0.44 * | 0.083 | 0.000 | −0.67 | −0.20 |
| | | Life Sci./Medicine | −0.39 * | 0.073 | 0.000 | −0.59 | −0.18 |
| | | Social Sciences | −0.43 * | 0.075 | 0.000 | −0.64 | −0.21 |
| Policy-makers in government or non-government organizations | Arts & Hum. | Engineering/CS | −0.81 * | 0.113 | 0.000 | −1.13 | −0.49 |
| | | Life Sci./Medicine | −1.18 * | 0.094 | 0.000 | −1.45 | −0.91 |
| | | Mathematics | −0.65 * | 0.219 | 0.038 | −1.27 | −0.02 |
| | | Physical Sciences | −0.97 * | 0.128 | 0.000 | −1.33 | −0.61 |
| | | Social Sciences | −1.38 * | 0.097 | 0.000 | −1.66 | −1.10 |
| | Engineering/CS | Life Sci./Medicine | −0.37 * | 0.099 | 0.003 | −0.65 | −0.08 |
| | Social Sciences | Engineering/CS | 0.57 * | 0.102 | 0.000 | 0.28 | 0.86 |
| | | Mathematics | 0.74 * | 0.214 | 0.008 | 0.13 | 1.34 |
| | | Physical Sciences | 0.41 * | 0.118 | 0.007 | 0.07 | 0.75 |
| Practitioners in industry and business | Arts & Hum. | Engineering/CS | −1.71 * | 0.112 | 0.000 | −2.03 | −1.40 |
| | | Life Sci./Medicine | −1.49 * | 0.093 | 0.000 | −1.76 | −1.22 |
| | | Mathematics | −1.13 * | 0.217 | 0.000 | −1.75 | −0.51 |
| | | Physical Sciences | −1.29 * | 0.126 | 0.000 | −1.65 | −0.93 |
| | | Social Sciences | −1.17 * | 0.096 | 0.000 | −1.44 | −0.89 |
| | Engineering/CS | Physical Sciences | 0.43 * | 0.130 | 0.013 | 0.06 | 0.80 |
| | | Social Sciences | 0.55 * | 0.101 | 0.000 | 0.26 | 0.84 |
| | Social Sciences | Life Sci./Medicine | −0.32 * | 0.080 | 0.001 | −0.55 | −0.10 |
| The General Public | Arts & Hum. | Engineering/CS | 0.46 * | 0.111 | 0.001 | 0.14 | 0.77 |
| | | Mathematics | 0.64 * | 0.216 | 0.038 | 0.02 | 1.25 |
| | Engineering/CS | Life Sci./Medicine | −0.41 * | 0.098 | 0.000 | −0.69 | −0.13 |
| | | Social Sciences | −0.52 * | 0.101 | 0.000 | −0.81 | −0.23 |
| | Mathematics | Social Science | −0.70 * | 0.211 | 0.012 | −1.30 | −0.10 |

* Only statistically significant differences shown ($p < 0.05$).

**Table 16.** Importance of accessibility: percentage by subject discipline.

| Audience | | Subject Discipline | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **Arts/Humanities** | **Engineer./CS** | **Life Sci./Med.** | **Math** | **Physical Sci.** | **Social Sci.** | **Total** |
| Rschrs at Rsch-Intensive Academic Inst. | 5 | 255 (78.7%) | 205 (83.7%) | 513 (88.3%) | 36 (83.7%) | 149 (92.0%) | 415 (82.3%) | 1576 (84.4%) |
| | 4 | 27 (8.3%) | 23 (9.4%) | 35 (6.0%) | 2 (4.7%) | 11 (6.8%) | 33 (6.5%) | 134 (7.2%) |
| | 3 | 17 (5.2%) | 7 (2.9%) | 10 (1.7%) | 1 (2.3%) | 1 (0.6%) | 15 (3.0%) | 52 (2.8%) |
| | 2 | 1 (0.3%) | 1 (0.4%) | 5 (0.9%) | 0 (0.0%) | 0 (0.0%) | 3 (0.6%) | 10 (0.5%) |
| | 1 | 6 (1.9%) | 5 (2.0%) | 4 (0.7%) | 1 (2.3%) | 0 (0.0%) | 7 (1.4%) | 24 (1.3%) |
| | N/A | 18 (5.6%) | 4 (1.6%) | 14 (2.4%) | 3 (7.0%) | 1 (0.6%) | 31 (6.2%) | 71 (3.8%) |
| Rschrs at Different Types Academic Inst. | 5 | 220 (67.9%) | 110 (44.9%) | 355 (61.3%) | 17 (39.5%) | 84 (51.9%) | 307 (60.9%) | 1095 (58.7%) |
| | 4 | 49 (15.1%) | 65 (26.5%) | 131 (22.6%) | 13 (30.2%) | 44 (27.2%) | 112 (22.2%) | 418 (22.4%) |
| | 3 | 23 (7.15) | 39 (15.9%) | 55 (9.5%) | 6 (14.0%) | 25 (15.4%) | 41 (8.1%) | 189 (10.1%) |
| | 2 | 5 (1.5%) | 14 (5.7%) | 16 (2.8%) | 4 (9.3%) | 6 (3.7%) | 5 (1.0%) | 51 (2.7%) |
| | 1 | 9 (2.8%) | 11 (4.5%) | 7 (1.2%) | 0 (0.0%) | 2 (1.2%) | 9 (1.8%) | 39 (2.1%) |
| | N/A | 18 (5.6%) | 6 (2.4%) | 15 (2.6%) | 3 (7.0%) | 1 (0.6%) | 30 (6.0%) | 73 (3.9%) |
| Policy-Makers, Gov't or NGOs | 5 | 62 (19.3%) | 74 (30.2%) | 261 (45.3%) | 12 (27.9%) | 60 (37.3%) | 253 (50.2%) | 725 (39.0%) |
| | 4 | 31 (9.7%) | 62 (25.3%) | 109 (18.9%) | 10 (23.3%) | 34 (21.1%) | 105 (20.8%) | 352 (18.9%) |
| | 3 | 61 (19.0%) | 51 (20.8%) | 117 (20.3%) | 6 (14.0%) | 38 (23.6%) | 63 (12.5%) | 339 (18.2%) |
| | 2 | 47 (14.6%) | 27 (11.0%) | 38 (6.6%) | 5 (11.6%) | 14 (8.7%) | 29 (5.8%) | 160 (8.65) |
| | 1 | 81 (25.2%) | 23 (9.4%) | 32 (5.6%) | 6 (14.0%) | 12 (7.5%) | 20 (4.0%) | 175 (9.4%) |
| | N/A | 39 (12.1%) | 8 (3.3%) | 19 (3.3%) | 4 (9.3%) | 3 (1.9%) | 34 (6.7%) | 107 (5.8%) |
| Pract. in Business and Industry | 5 | 58 (18.0%) | 121 (49.8%) | 244 (42.1%) | 15 (34.9%) | 62 (38.3%) | 179 (35.8%) | 682 (36.7%) |
| | 4 | 26 (8.1%) | 74 (30.5%) | 145 (25.0%) | 11 (25.6%) | 40 (24.7%) | 91 (18.2%) | 388 (20.9%) |
| | 3 | 45 (14.0%) | 28 (11.5%) | 113 (19.5%) | 6 (14.0%) | 36 (22.2%) | 97 (19.4%) | 328 (17.7%) |
| | 2 | 45 (14.0%) | 6 (2.5%) | 32 (5.5%) | 3 (7.0%) | 7 (4.3%) | 45 (9.0%) | 138 (7.4%) |
| | 1 | 111 (34.5%) | 9 (3.7%) | 20 (3.5%) | 5 (11.6%) | 13 (8.0%) | 44 (8.8%) | 203 (10.9%) |
| | N/A | 37 (11.5%) | 5 (2.1%) | 25 (4.3%) | 3 (3.0%) | 4 (2.5%) | 44 (8.8%) | 118 (6.4%) |
| General Public | 5 | 99 (30.7%) | 46 (18.9%) | 173 (29.9%) | 7 (16.3%) | 2 (1.2%) | 150 29.8%) | 513 (27.6%) |
| | 4 | 72 (22.4%) | 48 (19.7%) | 101 (17.5%) | 10 (23.3%) | 34 (21.1%) | 113 (22.4%) | 380 (20.4%) |
| | 3 | 75 (23.3%) | 69 (28.3%) | 176 (30.4%) | 6 (14.0%) | 54 (33.5%) | 126 (25.0%) | 507 (27.3%) |
| | 2 | 33 (10.2%) | 46 (18.9%) | 70 (12.1%) | 6 (14.0%) | 21 (13.0%) | 56 (11.1%) | 233 (12.5%) |
| | 1 | 24 (7.5%) | 30 (12.3%) | 41 (7.1%) | 10 (23.3%) | 14 (8.7%) | 27 (5.4%) | 148 (8.0%) |
| | N/A | 19 (5.9%) | 5 (2.0%) | 17 (2.9%) | 4 (9.3%) | 2 (1.2%) | 32 (6.3%) | 79 (4.2%) |

## 4. Discussion

After examining the importance of different journal attributes and research audiences a nuanced picture of academic author publishing motivations emerges. We are limited in our ability to generalize our results to the entire population of researchers due to low response rate and the possibility of self-selection bias, but some interesting results emerge nonetheless. There is a significant amount of variation across different types of researchers; however, there is also consensus on these matters throughout the academy. In an era of proliferating open access publishing options [23], questioning the importance of different journal attributes and audiences has been revealing. Examining how broadly an author wants to spread his or her research outputs helps explain author motivations, giving greater insight into academic publishing decisions.

### *4.1. Journal Attributes*

With regards to journal attributes, these survey respondents echo the findings of previous literature. In short, a journal's *reputation* and *fit* with the author's work are the two most highly-rated attributes that respondents take into consideration, followed by the journal's *audience* (i.e., "readership" [24]). Even though *impact factor* is considered to be important in the current study, it takes a back seat to ensuring that the author's work is situated alongside other reputable research and is being read by the intended, or "right" audience. Taken together, it is evident that reputation building within a specific field is at the heart of what matters most to our respondents. Mabe [25] points out that for authors deciding where to publish, " . . . *the reputation of the journal becomes associated with both the article and by extension the author*" [25] (p. 141). A journal and all of its attributes is essentially a brand, with authors seeking to align themselves with top brands.

It is perhaps not surprising that graduate student researchers have the same top journal-related priorities as faculty and postdoctoral researchers. However, they tend to rate the attributes of *quality/reputation*, *fit*, and *audience* slightly lower in importance relative to faculty and postdoctoral researchers. In particular, 61% of graduate students rate *quality/reputation* as "5" (very important), while nearly 80% of faculty chose 5. One explanation could be that many graduate students—particularly master's students—do not plan to enter academia as a profession and, therefore, do not see publishing as necessary for their professional development. These individuals may care less about associating themselves with the right publication "brand" or about publishing at all. As one social science graduate student explained in open-ended comments, "I do not like my major, so I am busy with my own aspiration(s) and I do not have any publication(s)." Additionally, a number of graduate student respondents expressed in open-ended comments that the choice of where to submit was not theirs. Similarly, respondents from life sciences/medicine, physical sciences, social sciences, and engineering/computer sciences all stated that their advisors' or PIs' recommendations were an additional consideration in choosing an outlet. Some may have rated these top journal attributes lower because the choice of publication is not theirs and they may be interested in simply getting something published. For example, one respondent from life sciences/medicine said, "Honestly, all of my papers thus far have been submitted by people above me and so I haven't been able to choose much."

There is a striking lack of variation across subject disciplines in the high level of importance given to reputation, fit, and audience. This consensus points to the universal importance of being part of a high-quality conversation among peers.

When we examine mid-range attributes, including *impact factor*, *likelihood of acceptance*, *time from submission to publication*, and *editor/editorial board*, these are still considered somewhat important across all position types and subject disciplines. Compared to the other positions, faculty rated *impact factor* and *likelihood of acceptance* as slightly less important. Faculty, particularly in certain fields, may feel that *impact factor* does not necessarily equate to quality or visibility within a specific field, and it is not necessarily an indicator of fit for an author's work. As one life sciences/medicine faculty member said, "instead of Impact Attribute, I generally look more at what is the total number of citations for the journal as this seems to be to be a better indicator of visibility of my work." As more experienced

researchers, they may also feel more confident about the likelihood of getting their work accepted by the right outlets. Graduate students, on the other hand, are often inexperienced and may just want their work to be accepted somewhere. According to one engineering/computer science graduate student, "I don't have many publications, so I just care if it gets accepted right now."

In this sense, faculty may view themselves as repeat-players in an academic conversation among peers. They may also have greater confidence in both their personal judgment about the fit of publication outlets and in predicting the audience's reception of their message. In contrast, graduate students and postdoctoral scholars may be more focused on entering into scholarly dialogue and may be more conservative when selecting a research outlet, using quantifiable metrics or advisor directives in selecting appropriate publication outlets.

There is also some variation across subject disciplines in terms of the importance of these mid-range journal attributes. Those in life sciences/medicine, for instance, place higher importance on *impact factor*, *likelihood of acceptance*, and *time from submission to publication* than other subject disciplines; however, differences are small, especially when examining the breakdown of response ratings by percentage (see Table 9). However, taken together, these three attributes may indicate a slightly more calculated, quantitative way of accounting for research productivity in the life sciences field. It could also represent an interest in rapidly circulating the scholarly findings. Those from mathematics also have distinct thoughts on the importance of journal attributes, although, due to their small sub-sample size ($n$ = 45), the findings are often non-significant. For instance, mathematicians rate *likelihood of acceptance* and *editor/editorial board* higher than anyone else, while caring the least among subject disciplines about *impact factor* and *time from submission to publication*. This finding may be reflective of a close-knit field with relatively few journal outlets in which to publish.

Finally, *open access* is rated the lowest in importance across all position types and subject disciplines. Within both independent variables, however, there are differences in the level of importance assigned to this attribute. Faculty members rate open access as slightly less important than either graduate students or postdoctoral researchers. It is possible that faculty are both more informed and more opinionated about the open access model (or at least more comfortable in expressing their opinions); the strength of their opinions shows in that a full 26.5% of faculty rate the importance of open access as a 1 (See Table 5). This sense of certainty is reflected in the comment of one physical sciences researcher, who says "I do not publish in open access journals. Publication costs for open-access journals are typically very expensive, and the quality of the publications is below par." Graduate students' more moderate rating of the importance of open access may stem from uncertainty about the model. As one arts/humanities graduate student put it, "Taking this survey makes me realize how little I know about open access publishing." Another from life sciences more generally admitted, "I still only have very limited experience in the world of scholarly research publication."

However, this difference may also indicate a generational shift in attitudes toward the open access model. Graduate students from across multiple disciplines (including arts/humanities, engineering/computer science, life sciences/medicine, and social sciences) comment that everyone should have access to all research. This finding may indicate an emerging attitude in a new generation of researchers who have stronger beliefs about open access than their predecessors, or it may merely be expressing a utopian rather than a pragmatic opinion at an early stage in their career. As one graduate student from life sciences/medicine expressed, "[e]veryone should have access to all scientific knowledge." However, it should be noted that journal articles are written for peer researchers and academics rather than the general public, so that wider access may only realistically target practitioner audiences who have the educational and/or professional background to read research. A longitudinal study that tracks attitudes throughout an academic career might shed light on this issue.

In terms of subject discipline, feelings about *open access* are consistent for the most part. Any differences, though small, in the perceived importance of *open access* may be attributable to familiarity with or availability of quality open access journals in a given field. For instance, the lowest rating comes from those in social sciences (including business, education, and law), where open access journals may

not carry the same prestige as traditional gated-access journals. Indeed, previous research has found that, at least from among those in the field of business, open access journals are seen as lacking prestige, and there is a perception that publishing in them would be damaging to a scholar's career [26]. As one social science postdoctoral researcher in the current study wrote, "I'd like to support open access and publish in open access journals exclusively, but I'm on the job market and I feel a lot of pressure to publish in prestigious, high-impact factor journals." Those from engineering/computer science give open access the second lowest rating from among subject disciplines, which is consistent with previous research that recorded similar hesitation [27]. In addition to the availability of these types of journals, the relatively low importance of *open access* may also be a reflection of the perceived value of wide accessibility to published research. Examining the rated importance of different stakeholder groups' access to research outputs may shed light on the reasons behind this.

### *4.2. Audiences*

We asked about accessibility for different audiences in an attempt to capture the importance of potential stakeholders of respondents' research. Respondents from across all position types and subject disciplines express that it is of the highest importance for *researchers at other research-intensive institutions* to have access to their research output. Though there is some variation in the level of importance assigned, it is evident that respondents care a great deal about reaching other academic researchers who work in similar types of environments. Perhaps having one's work not only accessible to this group, but disseminated, read, and, perhaps most importantly, cited among them is an important part of building a scholarly reputation. This question is somewhat distinct from what was asked in the 2012 Ithaka S+R US Faculty Survey [12], which found reaching scholars within one's own field to be of particularly high importance; however, it does not differentiate between scholars at different types of academic research institutions. Within the current study, *researchers at different types of academic institutions (e.g., teaching schools)* are seen as a less important audience. Respondents may assume that this latter group of academic researchers tends to produce less in terms of published research, and will therefore be less likely to read and cite respondents' work.

Although reaching those outside of academia may be somewhat important, it does not compare to being an active participant in the conversation among academic peers. Among survey respondents, *business and industry practitioners* and *policy-makers in government and NGOs* appear to be a less important audience than academic researchers. Graduate students rate *business and industry researchers*, *policy-makers*, and the *general public* as being slightly more important than faculty do, with roughly 10% more graduate students selecting "5" for each of these groups than faculty. This may again be an indication of differing goals or concerns about future professional pathways: graduate students may care more about non-academic audiences as these groups may contain potential employers should they pursue non-academic appointments. They may also be more concerned with ideals of connecting with the public. It seems that researchers at all levels are most concerned with connecting to audiences who do the type of work that they do, or aim to do in the future. They want their work to be appreciated among those whom they see as peers.

Across subject disciplines, the picture is more complex. Only those from engineering/computer science rate the importance of reaching those in *business and industry* as highly as reaching those doing research in academic institutions. They are also slightly less concerned about reaching those at *different types of academic institutions* than other subject disciplines. There may be an underlying assumption that smaller institutions, such as liberal arts colleges, are less likely to have engineering and computer science departments that would seek out and benefit from their work or it may represent a more fundamental difference in the nature of these disciplines.

In addition to those in engineering/computer science, researchers from life sciences/medicine and physical sciences also rate *business and industry* practitioners as more important than their counterparts in other subject disciplines. The practical applicability of their research, as opposed to authors from a field such as arts/humanities, is likely what makes those working in industry a relatively important

stakeholder group for those in "hard" sciences. This supposition fits with previous research; for instance, those who conduct research in agriculture, food and nutrition, forestry, and environmental sciences fit into "hard" science categories. Researchers from these fields have been found to place farmers and producers among the most important stakeholders for their research [13].

For similar reasons of applicability, *policy-makers in government and NGOs* are seen as more important by those from social sciences than by other subject disciplines. This finding may relate to the strong connections between the work of many social scientists and current policy issues [18]. Also, similar to the 2012 and 2016 Ithaka S+R US Faculty Survey [12,13], the *general public* is rated as more important by those from social sciences and arts/humanities, with those in arts/humanities rating the public as more important than either *government or NGO policy-makers* or *business/industry* practitioners. Those in the sciences, particularly engineering/computer science and math, care the least about reaching the public with their research. Respondents from the sciences may not feel their research would be of value to the general public without some kind of mediated interpretation—that is, they may not believe that the research is easily understandable outside of their narrow fields.

In sum, it seems that across subject disciplines, authors are concerned first with reputation building among peers, followed by getting their research in front of practitioners who can and will use it for practical purposes. For example, works produced by those in the fine arts may be enjoyed by the general public, but will likely be of little use to those in other industries. For engineers, on the other hand, the reverse is true: those working in the engineering industry stand to greatly benefit from their research, while the general public likely has little use for it. Academics and researchers in health or human social behavioral research produce outputs that will ideally drive policy decisions, and therefore care about reaching policy-makers, perhaps more so than researchers from other disciplines.

Finally, it is important to point out a pattern from the open-ended comments about other possible stakeholder groups for whom access to participants' research is important. Across all subject disciplines and position types, respondents express that students are an important stakeholder group that had not been addressed in the survey. Descriptions include graduate, undergraduate, and even high school students as potential beneficiaries of respondents' research.

## 5. Conclusions

*Implications for Understanding Author Motivations*

The overall picture emerging from this study is that academic researchers are choosing publishing outlets based not only on who will read their work, but what those readers are likely to do with that research based on where and how they are employed. The quality of a journal matters because of the type of audience it attracts and the fit matters because of the specificity of that audience.

For researchers in general, it is not surprising that open access is a low priority compared to other journal attributes. From a readership perspective, the open access model helps those affiliated with academic institutions to more easily and quickly access published research. However, the true beneficiaries of the open access model—those audiences outside of academia who would otherwise have to either pay or forego access to this research—are rated in the current study as less important. Therefore, the lower priority given to these primary beneficiaries of open access may be one explanation for the lower importance of open access. However, when we break the data apart, this finding only partially explains the lack of importance ascribed to open access as a journal attribute.

Researchers from social sciences and engineering/computer science provide an interesting paradox. On the one hand, these two groups of respondents care the least of all subject disciplines about open access. On the other hand, respondents from these same subject disciplines, relative to others, place greater emphasis on reaching the *general public*, *policy-makers* (social sciences), and *business/industry practitioners* (engineering/computer science). Therefore, an argument could be made that it is those from among these two groups, social sciences and engineering/computer science, who should care the most about open access. The social sciences have been relatively slow to adopt open

access publishing as an established practice [7], which may have affected the availability of reputable OA journals in this area. Perhaps the speed with which new publishing models are adopted is related to the speed—or sluggishness—of the publishing process within different fields. For social sciences, it is also evident that scholars at all levels of experience are "profoundly conservative" [25] (p. 136) when it comes to scholarly communication. The habits of mentors and more experienced scholars are passed on to younger generations of scholars and change is slow [25]. It may take a cultural shift to bridge the gaps between knowledge production, knowledge dissemination, and the audiences scholars want to reach.

Overall, there appears to be tension between the politics of publishing, the pragmatics of publishing, and an idealistic vision of the role of publishing in scholarly communication. The balance among these may shift depending on where a person is in his or her career, and tends to differ according to a person's field of study. As authors, scholars are making choices that affect both their careers and their potential audiences. This has broader implications for knowledge dissemination and the advancement of research; therefore, trends and changes in publishing habits should continue to be closely monitored, as should the wider impact of scholars' authorship decisions.

**Acknowledgments:** The authors would like to express their gratitude to all the participants in this study as well as all those who assisted in facilitating the easement of focus groups and survey distribution. We would like to especially acknowledge the efforts of: Danielle Dionne Adams (Harvard), Bo-Christer Bjork (Hanken), Jeremy Buhler (UBC), Laine Farley (UCOP), Cynthia A. Johnson (UCI), Ivy Anderson (UCOP), Dracine Hodges (OSU), Mark McCabe (BU), Dana Peterman (UCI), Elke Piontek (Harvard), Jo Anne Newyear Ramirez (UBC), John P. Renaud (UCI), David Solomon (MSU), Peter Suber (Harvard), Lea Starr (UBC), Karla Strieb (OSU), Lauren Syer (Harvard), Greg Tananbaum (Scholar Next), Lorelei A. Tanji (UCI), Azadeh Vosoughian (UCI), Scott Wicks (Harvard), and Mathew Wilmott (UCOP). This work was supported by the Andrew W. Mellon Foundation through a grant from the University of California Davis, in collaboration with the California Digital Library.

**Author Contributions:** All authors contributed to the writing and editing of this research article. MacKenzie Smith and Carol Tenopir, as PI and co-PI contributed to the project's aims and objectives and directed activities. Carol Tenopir and Elizabeth Dalton collected and analyzed focus group and survey data.

**Conflicts of Interest:** The author(s) declare there are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. The founding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in the decision to publish the results.

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