

# How is open access publishing going down with early career researchers? An international, multi-disciplinary study

**David Nicholas; Hamid R. Jamali; Eti Herman; Jie Xu; Chérifa Boukacem-Zeghmouri; Anthony Watkinson; Blanca Rodríguez-Bravo; Abdullah Abrizah; Marzena Świgoń; Tatiana Polezhaeva**

How to cite this article:

Nicholas, David; Jamali, Hamid R.; Herman, Eti; Xu, Jie; Boukacem-Zeghmouri, Chérifa; Watkinson, Anthony; Rodríguez-Bravo, Blanca; Abrizah, Abdullah; Świgoń, Marzena; Polezhaeva, Tatiana (2020). "How is open access publishing going down with early career researchers? An international, multi-disciplinary study". *Profesional de la información*, v. 29, n. 6, e290614.  
<https://doi.org/10.3145/epi.2020.nov.14>

Manuscript received on 17<sup>th</sup> September 2020  
Accepted on 16<sup>th</sup> November 2020



**David Nicholas**

<https://orcid.org/0000-0001-8046-2835>

CIBER Research Ltd  
Newbury, Berkshire, RG147RU, UK  
[dave.nicholas@ciber-research.eu](mailto:dave.nicholas@ciber-research.eu)



**Hamid R. Jamali**

<https://orcid.org/0000-0003-1232-6473>

Charles Sturt University  
School of Information Studies  
Locked Bag 588, Wagga Wagga, NSW  
2678, Australia  
[h.jamali@gmail.com](mailto:h.jamali@gmail.com)



**Eti Herman**

<https://orcid.org/0000-0001-8526-9081>

CIBER Research Ltd  
Newbury, Berkshire, RG147RU, UK  
[eherman@univ.haifa.ac.il](mailto:eherman@univ.haifa.ac.il)



**Jie Xu**

<https://orcid.org/0000-0002-9820-8066>

Wuhan University, School of Information  
Management  
Hubei 430072, Wuhan, China  
[xuj@whu.edu.cn](mailto:xuj@whu.edu.cn)



**Chérifa Boukacem-Zeghmouri**

<https://orcid.org/0000-0002-0201-6159>

Université de Lyon, Department of  
Computer Science  
69100 Villeurbanne, France  
[cherifa.boukacem-zeghmouri@univ-lyon1.fr](mailto:cherifa.boukacem-zeghmouri@univ-lyon1.fr)



**Anthony Watkinson**

<https://orcid.org/0000-0002-2317-6557>

CIBER Research Ltd  
Newbury, Berkshire, RG147RU, UK  
[anthony.watkinson@btinternet.com](mailto:anthony.watkinson@btinternet.com)



**Blanca Rodríguez-Bravo** ✉

<https://orcid.org/0000-0002-9476-7602>

Universidad de León  
Facultad de Filosofía y Letras  
Área de Biblioteconomía y Documentación  
24071 León, Spain  
[blanca.rodriguez@unileon.es](mailto:blanca.rodriguez@unileon.es)



**Abdullah Abrizah**

<https://orcid.org/0000-0002-8224-5268>

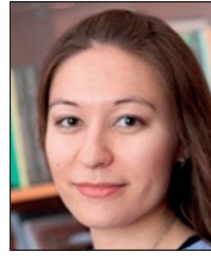
University of Malaya, Faculty of Computer  
Science & Information Technology,  
Department of Library & Information  
Science  
50603 Kuala Lumpur, Malaysia  
[abrizah@um.edu.my](mailto:abrizah@um.edu.my)



**Marzena Świgoń**

<https://orcid.org/0000-0003-3600-8349>

Uniwersytet Warmińsko-Mazurski,  
Wydział Humanistyczny  
10-719 Olsztyn, Poland  
[marzena.swigon@uwm.edu.pl](mailto:marzena.swigon@uwm.edu.pl)



**Tatiana Polezhaeva**

<https://orcid.org/0000-0002-5133-5439>

Tomsk State University, Laboratory for  
Library and Communication Studies  
Tomsk, Russia  
Library for Foreign Literature, Moscow,  
Russia  
[tatka35388@yandex.ru](mailto:tatka35388@yandex.ru)

## Abstract

This study explores early career researchers' (ECRs) appreciation and utilisation of open access (OA) publishing. The evidence reported here results from a questionnaire-based international survey with 1600 participants, which forms the second leg and final year of a four year long, mixed methods, longitudinal study that sought to discover whether ECRs will be the harbingers of change when it comes to scholarly communications. Proceeding from the notion that today's neophyte researchers, believed to hold millennial values of openness to change, transparency and sharing, may be best placed to power the take-up of OA publishing, the study sought to discover: the extent to which ECRs publish OA papers; the main reasons for their doing or not doing so; and what were thought to be the broader advantages and disadvantages of OA publishing. The survey data is presented against a backdrop of the literature-based evidence on the subject, with the interview stage data providing contextualisation and qualitative depth. The findings show that the majority of ECRs published in OA journals and this varied by discipline and country. Most importantly, there were more advantages and fewer disadvantages to OA publishing, which may be indicative of problems to do with cost and availability, rather than reputational factors. Among the many reasons cited for publishing OA the most important one is societal, although OA is seen as especially benefiting ECRs in career progression. Cost is plainly considered the main downside.

## Keywords

Early career researchers; Researchers: ECR; Open access; OA; Open publishing; International study; Views; Practices; Opinions; Behaviours; Attitudes; Advantages and disadvantages; Millennials; Gender; Age; Country differences; Discipline variances.

## 1. Introduction

Researchers have long been exhorted to opt for open access (OA)<sup>1</sup> publishing for the sake of the advancement of the scholarly enterprise itself (Allen; Mehler, 2019) and the host of societal advantages it is said to bring about (Gould, 2015; Suber, 2012). Indeed, with openness and sharing of knowledge and information now seen as fundamental to the full implementation of the plans for an open science ecosystem (Méndez *et al.*, 2020), OA has arguably been assuming even greater importance. Beyond that, the purported individual-level benefits of OA are promoted as powerful incentives for researchers to embrace the open model of publishing (Enago Academy, 2017; McKiernan *et al.*, 2016). Perhaps not very surprisingly then, if in the past it was mostly scepticism, not to say suspicion, that has surrounded OA (Creaser, 2010; Mann *et al.*, 2009; Nicholas *et al.*, 2014; Pinfield, 2015; Schroter *et al.*, 2005; Swan; Brown, 2004; Xia, 2010), now the difficulties associated with OA seem to be diminishing, at least as far as attitudes are concerned (CNRS, 2016; Dalton; Tenopir; Björk, 2020; NPG, 2015; Rowley *et al.*, 2017; Ruiz-Pérez; Delgado-López-Cózar, 2017). So much so, that researchers claim they would be happy to see the traditional subscription-based publication model replaced entirely by an open access one (Blankstein; Wolff-Eisenberg, 2019; Wolff-Eisenberg; Rod; Schonfeld, 2016).

Still, although attitude has been found to be the strongest predictor of the intention to publish OA (Moksness; Olsen, 2017), open access journals are yet to win favour as publishing venues. Plainly, practices lag behind attitudes, as exemplified by the findings in study after study published in the past few years, according to which OA is among the last criteria on researchers' list of priorities when they decide where to publish (Borrego; Anglada, 2016; Nicholas *et al.*, 2017; Nicholas *et al.*, 2019; Niles *et al.*, 2020; NPG, 2015; Sbaffi *et al.*, 2020; Tenopir *et al.*, 2016a). It is telling that, even in the aforementioned study, in which researchers voiced support of the notion of the OA publishing model replacing the traditional one, only 4 in 10 authors rated OA as an important factor when choosing a publishing outlet (Blankstein; Wolff-Eisenberg, 2019).

However, although it is ECRs, representing as they do the future and arguably leading the developments to come, whose views and practices are especially significant when it comes to the adoption of open publishing behaviours, they have rarely been singled out for OA investigations. This is all the more surprising, as ECRs may be best placed to power the take-up of OA publishing. For one, they may have more compelling reasons than their senior counterparts to view OA publishing in a fa-

“ Despite the fact that ECRs, representing as they do the future and leading the developments to come, whose views and practices are especially significant when it comes to the adoption of open publishing behaviours, they have rarely been singled out for open access studies ”

avourable light, as the reputation-building and career-advancing capabilities associated with OA are particularly advantageous to them as neophyte researchers, still seeking to find their way and establish their standing in academe (Eschert, 2015; Farnham *et al.*, 2017; *PhD on Track*, 2017; Pontika, 2015). Indeed, junior researchers have been found to hold much more positive views of OA than their senior counterparts (Dalton; Tenopir; Björk, 2020; Nicholas *et al.*, 2015; Ruiz-Pérez; Delgado-López-Cózar, 2017; Tenopir *et al.*, 2016b; Tenopir *et al.*, 2017). Also, given their millennial values of openness to change, transparency and sharing (Burstein, 2013; Pew Research Center, 2010a; 2010b; 2018; *Wireless World Research Forum*, 2017), they might take greater interest in OA publishing and drive the developments in this area. Add to it that they are the informed people to ask about OA, as they are in the front line of scholarly communications, who do most of the information discovery work and undertake many of the essential authorship and publishing practices (Jamali *et al.*, 2020a; Nicholas *et al.*, 2017; Nicholas *et al.*, 2019), and the importance of learning their OA attitudes and behaviours becomes quite clear.

Seeking to address the knowledge gap thus identified, this study sets out to explore ECRs' appreciation and utilisation of OA. As part and parcel of a wider, longitudinal, mixed methods study of their scholarly communication practices<sup>2</sup>, it therefore looks to establish the extent to which ECRs are the harbingers of the long-heralded, fundamental change in the much-debated traditional approach to scientific publishing that OA is said to embody.

## 2. Aims and objectives

The aim of this study is to explore the perceptions and practices of ECRs in regard to open access publishing. Its specific objectives are:

- Establishing the extent to which ECRs publish OA
- Identifying the principal reasons for ECRs' opting for publishing OA
- Identifying the principal reasons for ECRs' refraining from publishing OA
- Determining the perceived advantages for ECRs of publishing OA
- Determining the perceived disadvantages for ECRs of publishing OA
- Identifying similarities/differences in ECRs' attitudes to OA publishing by gender, country and discipline

## 3. Scope and definitions

The evidence reported here results from a questionnaire-based international survey, which forms the second leg and final year of a four year long, mixed methods, longitudinal study that sought to discover whether ECRs will become the harbingers of change when it comes to scholarly communications. The study explored a comprehensive range of topics, covering discovery, metrics, publishing practices, authorship, peer review, social media, open data and open access. Some of the findings of the survey have been published in other papers (Jamali *et al.* 2020a; 2020b; Nicholas *et al.*, 2020a; 2020b; Rodríguez-Bravo; Nicholas, 2020), while this article focuses only on open access. The survey data pertaining to OA publishing is presented against the backdrop of the literature-based evidence on the subject and with the interview stage data providing contextualisation and qualitative depth.

In view of the lack of a universal definition of the term early career researcher (ECR) and the variations in its use<sup>3</sup>, as well as in keeping with the open approach we had taken to the whole research project (see the *Methods* section), we sought to ensure that both of the defining characteristics of this cohort, their typically younger age and vulnerable status as newcomers to academe, were covered. Diverging therefore from the prevalent tendency to define ECRs solely by their comparative 'newness', usually 10 years since completing a PhD, we, in consultation with the international research team and funders, decided on a definition that reflects a broad interest in the new wave of youngish and untenured researchers joining the academic workforce:

*Researchers who are generally not older than 35, who either have received their doctorate and are currently in a research position or have been in research positions but are currently doing a doctorate. In neither case are they researchers in established or tenured positions.*

Going one step further, in the survey phase of the study, in which we obviously had no direct contact with the respondents, so we could not, as we had done in the interviews phase, clarify what we meant by the term ECR, we allowed researchers to judge for themselves whether they considered themselves to be early career researchers. This way the definition used could accommodate all ECRs, despite the inevitable variations in their country –and/or discipline-specific circumstances. Thus, the opening statement of the questionnaire read as follows:

*"We are most interested in hearing from researchers who are generally not older than 35, who either have received their doctorate and are currently in a research position or have been in research positions but are currently doing a doctorate. In neither case should researchers be in established or tenured position. But if all of that is just too complex if you believe you are an early career researcher that is all that counts!"*

By the same token, our definition of the term 'open access', as it is used in this study, again reflects the open and broad approach we took in our exploration of the topic. Thus, as a deliberate methodological decision, for the purposes of this study the concept of OA publishing, as already noted, is viewed in its most general and widest sense –enabling free and unrestricted access to the outputs of academic research and posing relaxed constraints on its reuse (Severin *et al.*, 2018). Therefore, it is used as standing for all of its different subtypes/variants:

- Gold: publishing in a journal in which all articles are openly accessible;
- Hybrid: publishing in a subscription journal in which articles are free under an open license;
- Green: publishing in a subscription journal whilst in parallel making an article accessible in an institutional or subject repository;
- Platinum: publishing in a non-APC (article processing charge) based, gold OA journal;
- Bronze: publishing in a journal which makes its articles available to read on the publisher page without an open license (Björk, 2017; Brock, 2018).

As dictated by this approach, we left it to the interview and survey participants to define the term open access as they saw fit, rather than shoehorning their thinking and understanding into categories, which, perhaps, are better understood by librarians and publishers.

## 4. Background and context: researchers' uptake of open access publishing

### 4.1. The factors shaping researchers' uptake of open access publishing

As Severin *et al.*'s (2018) summary of the evidence from a host of studies shows, the system of scholarly publishing has experienced a shift from wholly 'closed' access to increasing uptake of OA, with its levels, encompassing the various subtypes of OA, growing steadily across all disciplines. Thus, if in 2008 20.4% of all scholarly outputs were reported as OA, by 2010 their percentage grew to 23% and to more than half of all scholarly outputs in the years later than 2010: 53.7% for publication years 2011 until 2013, 54.6% on average in years 2009 and 2014, 66% for publication years between 2009 and 2017 and 55% in 2014, although lower figures of around a third of the scholarly literature have been found, too. Still, now that researchers hold, as we have seen, so much more positive opinions of OA than before, it begs the question why they do not flock as one to take up the open access publishing opportunities available to them. After all, when half of the researchers opt for making their work available via any of the aforementioned OA routes, this still leaves half of them refraining from doing so. The question becomes all the more intriguing if we take into consideration that even those who do publish OA, still continue to publish much of their work in subscription-based journals, with the relative uptake on Gold OA remaining well below Green OA (Severin *et al.*, 2018). Thus, for example, Rowley *et al.* (2017) found that the participants in their study published an average of 3.1 articles in the 12 months prior to the survey they conducted in 2014, but only about one-third of these were published in gold open access journals.

The root cause of this state of affairs is arguably the individual-level perceptions of the advantages and disadvantages of OA for the scholarly author. As it has long been shown, the extent of researchers' appropriation of novel practices is contingent on their assessments of the added-value functionality and suitability of new initiatives both to their existing work-routines and to the social structure within which they pursue their scholarly goals (Walsh; Bayma, 1996). It is researchers' underlying motivations and needs, as determined by their idiosyncratic circumstances, that drive their willingness to adopt (or not) an innovation, and not how appealing it looks on paper (Kling; McKim, 2000). Certainly, in the scholarly world, with its diversity of disciplinary 'tribes and territories' (Becher; Trowler, 2001) and its country-specific variance, greatly contingent as it is to the core-periphery divide in scientific productivity (Guédon, 1975), one size rarely if ever fits all, and researchers' readiness to opt for open access publishing seems to be no exception.

Indeed, as Severin *et al.* (2018) find in their meta-synthesis of bibliometric studies, open access publishing practices are very much discipline specific, with the shift of scholarly publishing towards OA occurring unevenly across disciplines in two respects. First, scholars in different disciplines differ substantially in how much they embrace the idea of OA, so that there are varying proportions of openly accessible research outputs across disciplines and sub-disciplines. Second, the various disciplines differ considerably regarding the subtypes of OA publishing channels scholars are likely to opt for. Thus, in disciplines, as exemplified by the medical sciences, strong OA mandates, funder-operated repositories, the availability of funding for APCs, the preponderance high quality OA journals and the perception of authors that OA journals allow for a wider circulation of publications, have converged to bring about the embracing of OA publishing, with Gold OA playing a central role, followed by Hybrid, Bronze, and, with some distance, Green OA. In comparison, humanities feature much lower OA uptake levels, for a variety of reasons, among which a dearth of APC funding, the centrality for their research undertakings of monographs, which are less likely to become OA, and authors', publishers' and scholarly societies' enduring opposition to OA, figure highest. Indeed, most OA within the humanities is published as Hybrid OA, followed by Green OA, Bronze OA and Gold OA. Plainly, academic disciplines, featuring as they do the distinctive research cultures long identified as characterising them (Budd, 1989; Meadows, 1974), go about adopting OA publishing practices to different levels and via varying routes in accordance with their specific needs and requirements (Dalton; Tenopir; Björk, 2020; Johnson; Watkinson; Mabe, 2018; Nariani; Fernández, 2012; Rowley *et al.*, 2017; Ruiz-Pérez; Delgado-López-Cózar, 2017; Tenopir *et al.*, 2017).

“The evidence from the literature shows that the system of scholarly publishing has experienced a shift from wholly 'closed' access to increasing uptake of OA, with its levels, encompassing the various subtypes of OA, growing steadily across all disciplines”

By the same token, national-culture driven attitudes, social perceptions, preferences and behavioral responses have been shown to bring about diversity in the scholarly communication practices of scholars from different countries, most notably between developed countries at the centre of world science and developing countries, on the periphery of the global scientific enterprise (**Abrihah; Xu; Nicholas**, 2017; **Didegah; Thelwall; Gazni**, 2012; **Haddow; Hammarfelt**, 2019; **Jamali et al.**, 2014; **Jamali et al.**, 2020b; **Xu et al.**, 2015). In the specific case of open access publishing, as **Guédon** (1975) predicted nearly half a century ago, the opportunities afforded by OA for scientists-as-authors often deepen the schism between rich and poor countries. For researchers hailing from developed countries (as well as for the small elites of scientists from developing nations that manage to publish in ‘core’ journals), publishing in open access journals may indeed provide increased visibility, use and, ultimately impact (see below). However, for many scientists in developing nations, getting an article accepted in an OA journal located in a “central” country is often just as difficult as being accepted in a toll-gated journal, and perhaps even more difficult if they have to locate funds to pay the publishing charge. True, journals often waive or lower APCs for scientists from the developing world, but the potentially difficult or even humiliating step of asking for special financial treatment remains. Of course, as **Guédon** (1975) went on to point out, as establishing an OA journal on the ‘periphery’ is easy enough, local publishing possibilities might have helped to balance out the situation. What he could not have seen coming was the rise of predatory publishing that followed from unscrupulous publishers’ exploitation of these possibilities, and the real challenge to the integrity of science, its credibility and trustworthiness that it poses (**Ojala; Reynolds; Johnson**, 2020).

#### 4.2. Individual-level advantages of researchers’ publishing open access

Having said all this, there undoubtedly are pragmatic, individual-level advantages creditable to OA publishing, even if not all of them appeal in equal measure to all researchers. In point of fact, as **Frass, Cross and Gardner** (2014) found, an overwhelming majority of the authors participating in their study believed that the OA model has fundamental benefits. Such an advantage, perhaps the one most frequently associated with OA publishing, is its ostensible favourable effect on scholarly impact, brought about by the wider reach, visibility and accessibility of OA articles, which, in turn, yield greater rates of downloads, reads, citations and social media mentions (**Adie**, 2014; **Atchison; Bull**, 2015; **Coonin**, 2011; **Coonin; Younce**, 2010; **Creaser**, 2010; **Davis**, 2011; **Watson; Donovan; Osborne**, 2015; **Frisch et al.**, 2014; **McKiernan et al.**, 2016; **NPG**, 2015; **Peekhaus; Proferes**, 2016; **Piwowar et al.**, 2018; **Tennant et al.**, 2016; **Wang et al.**, 2015). True, at least where the citation benefit is concerned, there is contradictory evidence, too, which does not support a causal effect of open access on citations (**Björk; Solomon**, 2012; **Davis**, 2011; **Davis; Walters**, 2011; **Fowler**, 2011; **Gaule; Maystre**, 2011; **Koler-Povh; Južnič; Turk**, 2014; **McCabe; Snyder**, 2014; **McKiernan et al.**, 2016). Plainly, the jury is still out on whether or not the citation effect exists, but, as **Ware and Mabe** (2015) point out, it is one of the more widely claimed benefits of open access, and it appears to influence authors. ECRs, intent upon showcasing their achievements to enhance their reputation and thereby to advance their career as they are, seem to be even more conscious of the gains to be had from OA publishing in this respect: they appreciate greatly the increased impact in terms of downloads, reads and citations said to result from OA publishing (**Nicholas et al.**, 2017; **Nicholas et al.**, 2019), in fact, they think so to a greater degree than other age cohorts (**Segado-Boj; Martín-Quevedo; Prieto-Gutiérrez**, 2018).

Another perceived benefit of OA publishing is the faster article processing that publishing in open access journals is said to afford, and a much appreciated one, too, as speedy publication has often been shown to figure rather high on researchers’ list of priorities when they set out to decide on a publishing outlet for their work (**Blankstein; Wolff-Eisenberg**, 2019; **Mabe; Mulligan**, 2011; **NPG**, 2015; **Tenopir et al.**, 2016a; **Wolff-Eisenberg; Rod; Schonfeld**, 2016). Indeed, the shorter turnaround time believed to be typical of OA journals is seen as an incentive to publish open access (**Creaser**, 2010; **Coonin; Younce**, 2010; **Frass; Cross; Gardner**, 2014; **Nariani; Fernández**, 2012; **Peekhaus; Proferes**, 2016). Getting their work published more quickly is especially important for ECRs, as securing permanent, tenured employment and climbing the academic ladder are nowadays ever-more contingent on fast and significant demonstrable achievement (**Brechelmacher et al.**, 2015; **Müller**, 2014a; **Müller**, 2014b). An additional appeal for ECRs, as millennials, who tend to be very much conscious of societal considerations, is that faster publication, coupled with the early disclosure that it affords to a broader audience both within and without the established research centers worldwide, are seen as conducive to an increased pace of scientific advances made (**De-Silva; Vance**, 2017; **Suber**, 2012).

Yet another benefit associated with OA publishing is its capability to bring about more and better opportunities for collaboration among researchers. Collaborating is of course essential to the advancement of knowledge, especially now that the scientific enterprise has undergone a paradigm shift from a singular undertaking into a social endeavour (**Benavent-Pérez; Gorraiz; Gumpenberger**, 2012; **Bukvova**, 2010; **Freeman; Ganguli; Murciano-Goroff**, 2014; **Hsieh**, 2013; **Larivière et al.**, 2015; **Leahey**, 2016; **Johnson; Watkinson; Mabe**, 2018). However, as **McKiernan et al.** (2016) point out, identifying and connecting with appropriate collaborators is not trivial, which is where the significance of open practices truly comes to the fore, as publishing OA can make it easier for researchers to connect with one another by increasing the discoverability and visibility of their work (**Nariani; Fernández**, 2012). Moreover, open access can improve ongoing research collaboration, too, because researchers from different institutions and countries have access to the same research outputs (*PhD on Track*, 2017). With enhanced scholarly success having been shown to result from collaborative work, in terms of manuscript quality, scientific output, citation numbers, and rates of manuscript acceptance (**Bozeman; Fay; Slade**, 2013; **Hsieh**, 2013; **Van Rijnsouwer; Hessels**, 2011; **Wuchty; Jones; Uzzi**, 2007), it should assume

particular importance for junior scientists. However, as the evidence from the interview stage of this study indicates, the beneficial effect of OA publishing on researchers' collaborative efforts may not be too relevant for ECRs, given their reliance on the help and guidance of their mentors and other members of their research group on the way to becoming fully independent scholars (**Brechelmacher et al.**, 2015; **Friesenhahn; Beaudry**, 2014), which, *inter alia*, means that they are not the ones who are tasked with recruiting collaborators to their projects.

Despite these advantages of OA publishing, some of which are particularly significant for novice faculty members, ECRs have been found to be less likely to publish in OA journals (**Harley et al.**, 2010; **Wiley**, 2013). Interestingly, the younger age brackets in Rodríguez's (2014) investigation did have a higher percentage of respondents with an OA publishing history. However –and the distinction is crucial– her younger respondents with an OA publishing experience tended to also be tenured, so that they could afford to live up to young researchers' millennial-values-associated image of greater openness. The qualitative data collected in the interview stage of this project (**Nicholas et al.**, 2017; **Nicholas et al.**, 2019) lends further support to Rodríguez's (2014) finding. Despite ECRs' staunch belief in the potential value of OA for them, most notably in that it offers more/alternative routes to publication, which, in turn, can be helpful for establishing their reputations more quickly (**Nicholas et al.**, 2015), they do not practice what they believe. This is perhaps less surprising than it may seem at first glance: preoccupied as they are with chasing the high Impact Factors (IFs) that typically are not associated with OA journals, they might see no immediate reputational benefits in making their publications OA.

### 4.3. Individual-level disadvantages of researchers' publishing open access

Moreover, as is only to be expected, ECRs must also be deterred by the disadvantages associated with OA publishing. Arguably the complaint most often levelled against OA publishing is the high cost and the limited availability of funds to pay for article processing charges (APCs), not in the least, as **Dalton, Tenopir and Björk** (2020) point out, because OA publishing funded by APCs may not be then the democratic medium it is intended to be. On a more pragmatic level, as **Dalton, Tenopir and Björk** (2020) go on to say, whether supporters of OA publishing or not, researchers agree that the shift to an all-open access publishing world would be costly for authors who cannot afford to pay APCs. In fact, the need to pay for publishing has even been identified as an off-putting factor for choosing an OA journal for submission (**Ware; Mabe**, 2015). No wonder then that APCs and finding the funding for them have been rated among the top concerns preventing authors from publishing OA (**Coonin; Younce**, 2010; **Johnson; Watkinson; Mabe**, 2018; **Mischo; Schlembach**, 2011; **NPG**, 2015; **Wiley**, 2013). APCs are even more of a concern to junior researchers with no grant support, who are also less likely than their tenured colleagues to be aware of the existence of funding sources (**Creaser**, 2010).

Another inadequacy associated with OA publishing is the allegedly poorer quality of open access journals. For researchers, particularly mindful of the importance of publishing their work in a 'good' journal (**Blankstein; Wolff-Eisenberg**, 2019; **Davis**, 2011; **Jamali et al.**, 2020a; **Johnson; Watkinson; Mabe**, 2018; **Nicholas et al.**, 2017; **NPG**, 2015; **Tenopir et al.**, 2016a; **Watkinson et al.**, 2016; **Wolff-Eisenberg; Rod; Schonfeld**, 2016), this has repeatedly been proven to be a major deterrent to publishing OA (**Coonin**, 2011; **Dallmeier-Tiessen et al.**, 2011; **Frass; Cross; Gardner**, 2014; **Harley et al.**, 2010; **Mischo; Schlembach**, 2011; **Morris; Thorn**, 2009; **Severin et al.**, 2018; **Tenopir et al.**, 2017). Indeed, according to **Xia's** (2010) findings, OA journals were perceived as wanting in all of the traditional indicators of high quality, trustworthy and reputable scholarly publications: the number of citations received, the IF of a journal and the existence of peer reviewing processes prior to publication.

Indeed, it has even been said that publishing in an OA journal is a 'reputational risk' (**Morris; Thorn**, 2009), and in an OA mega-journal, with its unique approach to quality assessment that limits peer review to technical or scientific 'soundness' only, a 'career suicide' (**Spezi et al.**, 2017). Although opposite views are heard just as forcefully, heralding OA publishing as a rightful paradigm for the future of scholarly communication in every aspect (**Guédon**, 1975; **Joseph**, 2013; **Lewis**, 2012; **Schonfeld**, 2015; **Spezi et al.**, 2017; **Suber**, 2012), apprehensions regarding the quality of OA journals seem to reign on (**Dalton; Tenopir; Björk**, 2020; **Tenopir et al.**, 2017). The recent rise of predatory publishers seems to fuel these negative perceptions of the content that appears in OA journals (**Gould**, 2015; **Tenopir et al.**, 2017), although, as **Tennant et al.** (2019) suggest, there is no causative connection between predatory practices and OA; if at all, such a connection is between predatory publishing and the unethical use of one of the many OA business models.

Perhaps not very surprisingly then, although neophyte researchers have been found to express greater faith in the trustworthiness of OA publications than their seasoned counterparts (**Nicholas et al.**, 2015; **Watkinson et al.**, 2016) and to demonstrate greater positivity toward and willingness to embrace OA (**Dalton; Tenopir; Björk**, 2020; **Tenopir et al.**, 2017), the quality of OA publications and its further deterioration as part of the rise of predatory journals remain a concern among ECRs, too (**Nicholas et al.**, 2017; **Nicholas et al.**, 2019). Indeed, novice and non-tenured faculty occupy a particularly difficult position in regard to their publishing choices: on the one hand, they are being pressured by funding agencies and/or economic realities to disseminate their work via OA outlets; on the other hand, they have legitimate fears about the acceptability of these outputs when their work is considered by tenure and promotion committees (**Hurrell; Meijer-Kline**, 2011).

Finally, OA has also been linked to plagiarism, although interestingly, studies variously suggest that it increases plagiarism, whilst also saying that it helps to thwart it. Thus, as **Ocholla and Ocholla** (2016) find in their analysis of several

studies on the topic, OA makes it easier for plagiarism to occur because of the convenient access it enables to scholarly publications, but it also averts or prevents plagiarism, or at least makes the detection of plagiarism much easier, as the free availability of OA documents renders them well-suited for automatic plagiarism search technologies that check for text resemblances. Indeed, as **Suber** (2012, p. 24) explains:

“If making literature digital and online makes plagiarism easier to commit, then OA makes plagiarism easier to detect. Not all plagiarists are smart, but the smart ones will not steal from OA sources indexed in every search engine. In this sense, OA deters plagiarism”.

In any case, ECRs have been shown to be only very marginally concerned about the problem of plagiarism (**Nicholas et al.**, 2017).

## 5. Methods

The evidence reported here with regard to ECRs' appreciation and utilisation of OA publishing is taken from an international questionnaire survey<sup>4</sup>, which, as noted, formed the concluding phase of the longitudinal *Harbingers* study (2016-2019) of the changing scholarly communications attitudes and behaviours of neophyte researchers. Indeed, all of the data presented in this paper (including all tables, figures and the illustrative quotations from the answers to the open-ended questions) is taken from the survey. However, throughout the paper reference is made to what was discovered on the topic in the interview stage of the project, both in order to put the investigation in context and to explain the reasons for asking a particular question and why it is framed in the way it is. However, it is important to keep in mind that the evidence obtained in the interviews and the survey data are in fact two different readings from the target population, which vary in make-up, especially in regard to subject, nationality and how an ECR is defined, and, as such, they do not allow for the making of direct comparisons.

The questionnaire was pilot tested and distributed online via *SurveyMonkey* and made available in June, 2019. In addition to English, the survey was disseminated in Spanish, French, Chinese, Russian and Polish, in order to ensure that responses from the countries, which were the focus of the interviews stage of the study, will be obtained in the survey stage, too.

As there is no single sampling frame for ECRs, because no universal record/register of ECRs exists (indeed, as noted, there is not even a common definition of the term), a largely broad-brush approach to dissemination was adopted to reach as many participants as possible. Thus, the questionnaire was distributed via scholarly publishers (*Emerald*, *Cambridge University Press*, *Clarivate Analytics*, *PLoS*, and *Wiley*), university/institutional/lab email lists in the case-study countries and by the *UCL* library. It was also shared on social media and academic social networks, e.g. *Twitter*, *Facebook*, *Messenger*, *ResearchGate*, *WeChat*, as well as on two ECR-focussed networks – *Eurodoc* and *Sense about Science*. As the questionnaire was thus sent indiscriminately to researchers of all ages, it began with a screening statement to filter out those respondents that were not ECRs, although, as it is explained above, we did allow researchers to decide for themselves whether they were neophyte researchers or not.

In all, 1,600 ECRs completed the questionnaire successfully with 678 (42%) respondents to the English language survey, 253 (16%) to the Chinese, 236 (15%) to the French, 172 (11%) to the Polish, 148 (9%) to the Russian and 113 (7%) to the Spanish. There were slightly more responses from women. As befitting their ECR status, 39% of respondents were thirty years of age or under, 32% were in the 31-35 age cohort and the rest (29%) above 35 (as a quarter of the ECRs interviewed for the project were older than 35, the age spread in the two stages was not too dissimilar). Doctoral students accounted for 28% of respondents, with the cohorts of assistant professors/lecturers and post-doctoral students/researchers each accounting for 16% of respondents. The remaining 40% included academic and non-academic researchers, non-tenure track faculty members and others. Half of respondents (51%) had a Ph.D. The mean and median of years active as researcher was about 5 years, and on average they published 2.7 articles in 2018 (*Mdn* = 2). It seems, therefore, that some of the respondents who self-selected themselves as being an ECR, had as their criterion experience (young/junior/probationary researcher), rather than whether they were untenured. A third of respondents came from social sciences (34%), and the rest belonged to physical sciences and engineering (21%), life sciences (16%), health sciences (10%), and arts and humanities (9%) – the last a discipline not covered at the interview stage of the project; 10% did not give their disciplinary affiliation.

For ethical reasons, respondents were allowed to skip any question and leave the questionnaire at any point if they wished to. Therefore, about 10 percent of respondents skipped some of the demographic questions and have been excluded from all of the demographic analyses. Another limitation was that because of the varying means of distribution, it was not possible to calculate a response rate. Finally, because of the different understandings of the term ECR, the population is more variable (in terms of age and job) than one might have wished.

## 6. Data analysis

The data presented here was obtained via five questions that set out to explore ECRs' beliefs and practices of OA publishing, a mixture of open-ended and closed ones. Given the multi-faceted nature of the topic, most notably that it can be variously defined and judged both from the perspective of an author and a reader, it was thought advisable to complement the closed questions with open ones, so as to provide respondents with the opportunity to give full rein to their opinions and voice them as they saw fit. Moreover, fully aware of the danger that ECRs might have a relatively poor understanding of some aspects of open access publishing and hence furnish a partial and confused picture, the questions on OA came well into the survey, so that by the time ECRs were asked about the topic they had already been alerted to some of the related scholarly issues, such as authorship and publishing policies and practices. This way they should have had something in the way of a scholarly communications tutorial and should have been reasonably well placed to answer the question in the broader context of scholarly communications.

After exploring both parametric and nonparametric methods and similarity of the results, we used parametric statistics where possible (Norman, 2010). The options in the closed, Likert questions were 'To a great extent/ Somewhat/ A little/ Very little/ Not at all'. Mean values for these questions were calculated based on numeric values of the scale item with 'Not at all' being 1 and 'To a great extent' being 5. Diverging stack bars were used to visualise the percentages in Likert questions, with green bars to show mean values. For Likert questions, independent sample t-test for gender differences and ANOVA for subject and age differences with Tukey test for pairwise comparison were used. ANOVA tables below present only items with statistically significant differences ( $p > 0.05$ ) along with F values and mean and standard deviation. In those tables (e.g. Table 6) the darker cells indicate the subject that was different in pair comparisons and the lighter grey cells indicate the subjects that were significantly different from the darker cells. Cells with no shading exhibit no statistically significant differences. Chi-squared test was used for cross-tabulation tables.

The responses to the open-ended questions, obtained both by means of the questions that specifically queried OA publishing attitudes and behaviour and by the 'other, please specify' option of the closed (tick box) questions (Table 1), came to a total of 1,182 (848+334). After coding (see below), the questions furnished 1,543 (1,160+383) individual mentions or suggestions. The coding process began by the construction of a coding frame, developed on the basis of the closed questions about the advantages and disadvantages of OA. In practical terms this meant that the answers to the open-ended questions were read through first and compared with the statements listed in the closed questions. If a statement had the same meaning as the answers listed, it was coded 'into' the answer and counted for one mention. If a response had multiple meanings, it was allocated to different categories or sub-categories (split into different lines/rows in Excel). For responses which could not be covered by the closed questions, a new category was created. For the primary coding, all responses were covered and put into a category. For the secondary coding, similar categories were combined and individual categories receiving less than 5 responses were merged into 'bigger' categories. These open-ended questions were supplemented by open-ended data, obtained as part of the 'other, please specify' option provided for the closed-questions, with 41 responses added this way. All open-ended questions were coded manually, in two stages, by two different researchers, with the cross-check done showing an acceptable level of inter-coder reliability.

The findings of the preceding longitudinal, interview phase of the study were that whilst the underlying principle of OA –equal access to knowledge– is well known, and awareness of its potentials, as well as its drawbacks on the rise, there was some confusion surrounding the practicalities of the concept

Table 1. Open ended data sources

		Reasons in favour /Advantages	Reasons against /Disadvantages
Open ended	number of responses	848	334
	number of mentions	1,131	377
	number of responses that contains more than single mention	266	35
Other (part of tick box questions)	number of responses	36	5
	number of mentions	36	5
	number of responses that contain more than single mention	0	0
Total mentions		1,167	383



## 7. Results and discussion

As noted earlier, although ECRs are arguably best placed to drive and lead the uptake of OA publishing, they have not been the focus of the many studies conducted over the years on open access publishing. Thus, the findings presented here, highlighting specifically, as they do, ECRs' extent of OA publishing, their perceptions of the option and their actual practices, offer new and fresh insights into this extremely important cohort's uptake of the fundamental transformation of scientific publishing that OA is said to represent.

The findings of the qualitative phase of the study indicated that whilst the underlying principle of OA –equal access to knowledge– is well known and appreciated, and awareness of its potentials, as well as its drawbacks is on the rise, there, nevertheless, remains a measure of confusion surrounding the practicalities of the concept. Thus, when we set out to draw a more detailed picture of ECRs' OA publishing attitudes and behaviours, we proceeded from the notion that our respondents are bound to be able to readily point out the theoretical advantages and disadvantages of OA publishing, but their reporting on why or why not they actually opted for an OA journal for disseminating their research may reflect considerations that go beyond theoretical ones. Thus, for example, we were aware of the possible existence of misconceptions with regard to open access, along the lines of mistaking OA journals for predatory ones or believing that OA publishing is a violation of copyright laws. We were also cognisant of the very down to earth considerations involved in opting (or not) for publishing OA, such as the preferences of ECRs' more senior collaborators and the availability of APCs. Thus, having established ECRs' extent of OA publishing, we first set out to obtain their undirected and unalloyed responses with regard to the possible reasons for publishing/not publishing OA, and only then we felt able to ask them closed response questions about the actual advantages and disadvantages for them, as neophyte researchers, of OA paper publishing.

ECRs demonstrate a good understanding of what OA publishing constitutes, indeed, talk enthusiastically about its advantages and disadvantages with clear indications that the ambitions of the movement fit very well with their millennial beliefs and values. Not surprisingly then, over two thirds of ECRs had published OA with a quarter saying they had done so frequently

### 7.1. The extent to which ECRs publish open access

As we are about to see in the forthcoming sections, ECRs demonstrate a good understanding of what OA publishing constitutes, indeed, talk enthusiastically about its various advantages and disadvantages with clear indications that the ambitions of the movement fit very well indeed with their millennial beliefs and values. More surprisingly, perhaps, for the evidence pertaining to researchers in general has shown that OA practices tend to lag behind attitudes (**Borrego; Anglada, 2016; Nicholas et al., 2017; Nicholas et al., 2019; Niles et al., 2020; NPG, 2015; Tenopir et al., 2016a**), ECRs' actual publishing practices seem to be very much in keeping with their heightened interest in OA publishing. Over two thirds of ECRs said they had published OA: a quarter (382, 25%) of ECRs said they had done so frequently, with an additional 45% (687) testifying to having done so occasionally and only 460 (30%) saying they had not published OA at all. In fact, the levels are even held back by the fact that OA journals are not common in some fields and/or typically highly ranked (**Severin et al., 2018**).

However, a caveat might be in order here: with all that the theoretical aspects of OA are quite clearly understood, it is not invariably so where the pragmatic aspects of the concept are concerned. Thus, for example, in the interview stage of the study 56% of ECRs said they had published in an OA journal, but an inspection of their CVs showed that in fact only 8.7% of their publications were open access (**Nicholas et al., 2017**). True, the two year time difference between the qualitative and the quantitative phases of the study might have brought about enhanced understandings of OA on the part of ECRs and the greater number of participants in the survey is more promising in terms of generalisability, but nevertheless the adoption data presented here should be treated with some caution.

There were no differences in the volume of ECRs' OA publishing according to gender or age, but, in keeping with previous findings pertaining to the scholarly community at large, which testify to considerable discipline-specific variance in OA publishing practices (**Dalton; Tenopir; Björk, 2020; Johnson et al. 2018; Nariani; Fernández, 2012; Rowley et al. 2017; Ruiz-Pérez et al., 2017; Severin et al., 2018; Tenopir et al., 2017**), there were statistically significant disciplinary differences (Table 2). Health sciences ECRs were most likely to publish OA (85.1% did), which is again very much in line with extant evidence as to scholars (**Johnson et al. 2018; Severin et al., 2018**), although it was social scientists who were the least likely to opt for OA (62.5% did), which is a trait more characteristic of humanities researchers (**Johnson et al., 2018; Severin et al., 2018**).

There are no differences in the volume of ECRs' OA publishing according to gender or age, but, considerable discipline-specific variance in OA publishing practices with health sciences ECRs most likely to publish OA with the vast majority of them doing so

Table 2. Publishing open access by discipline

	Health sciences		Life sciences		Physical sciences & engineering		Social sciences		Arts & humanities	
	N	%	N	%	N	%	N	%	N	%
Yes, frequently	58	37.4	87	33.3	67	20.2	113	20.8	33	23.9
Yes, occasionally	74	47.7	126	48.3	154	46.5	226	41.7	64	46.4
No	23	14.8	48	18.4	110	33.2	203	37.5	41	29.7
Total	155	100	261	100	331	100	542	100	138	100

$\chi^2 = 60.9, df = 8, p < .005$

There were also regional/country differences (Table 3), a finding that lends further support to the well-known diversity in the scholarly communication practices of scholars from different countries (Abrizah; Xu; Nicholas, 2017; Didegah; Thelwall; Gazni, 2012; Haddow; Hammarfelt, 2019; Xu *et al.*, 2015), which, as our research has shown, extend to the junior cohorts among them, too (Jamali *et al.*, 2014; Jamali *et al.*, 2020b). Thus, Russian ECRs were the most likely to publish OA (nearly 87%) and the Chinese the least (about 50%), although we should note that in the case of the latter, the tendency to do so is increasing, if from a very low level. This low OA publishing by Chinese ECRs cannot be accounted for solely by the various factors that have been identified with regard to the attitude of researchers to OA, such as the oft-mentioned lack of trust towards these publishing outlets perceives as low quality (Coonin, 2011; Dallmeier-Tiessen *et al.*, 2011; Frass; Cross; Gardner, 2014; Harley *et al.*, 2010; Mischo; Schlembach, 2011; Morris; Thorn, 2009; Severin *et al.*, 2018; Tenopir *et al.*, 2017; Xia, 2010). An additional compelling reason seems to be the fact that there is no government OA mandate in China. As to the Russian figure, it might be inflated by the fact that in this country many institutional journals were created for ECRs, who needed to publish in journals of government lists for assessment purposes. As these journals are free to download and publish in, ECRs might have mixed OA publishing venues with free ones.

There are regional/country differences, a finding that lends support to the well-known diversity in the scholarly communication practices of scholars from different countries, with Russian ECRs being the most likely to publish OA and the Chinese the least

Table 3. Publishing open access by region/country

	North America		UK		China		Russia		Western Europe	
	N	%	N	%	N	%	N	%	N	%
Yes, frequently	24	24.0	37	45.1	21	8.5	39	32.5	99	30.6
Yes, occasionally	44	44.0	29	35.4	105	42.3	65	54.2	144	44.4
No	32	32.0	16	19.5	122	49.2	16	13.3	81	25.0
Total	100	100	82	100	248	100	120	100	324	100

$\chi^2 = 97.6, df = 8, p = .008$

## 7.2. ECRs' readiness to take up open access: reasons for publishing open access

As already noted, we wanted to avoid suggesting what the reasons for publishing or alternatively refraining from publishing OA might be, seeking, instead, to hear what the survey participant ECRs had to say on the topic in their own words. Thus, depending on their answer to the question of whether they had or had not published OA, the respondents were directed to an open-ended question asking them for the *main reason* for opting for OA or not. The responses, given without pre-framed promptings in the form of a list of choices, and coming, as they did, in the context of a series of questions focusing on scholarly undertaking and therefore leading up gradually to a discussion of OA, clearly indicate a good understanding of the topic, as this quote –one of many expressing this view– demonstrates:

“I would like ALL my publications to be open access, but I don't always have funds to do this. If the option is there and it is free, I will do it. If I can get funds to do so, I will do it. Firstly, because I like to write in a style that non academics could access and use, secondly, I think OA is ethical given that our research is funded by taxpayers of NZ (my time), thirdly, OA is more widely read and cited and finally, OA is accessible to under-resourced countries and universities and institutions, which is where many of my readership would be.”

This familiarity with and appreciation of OA publishing on the part of ECRs comes as no surprise, given the ample evidence of the increasingly more favourable perceptions and attitude to open access in the scholarly community in general (Blankstein; Wolff-Eisenberg, 2019; CNRS, 2016; Dalton; Tenopir; Björk, 2020; NPG, 2015; Rowley *et al.*, 2017; Ruiz-Pérez; Delgado-López-Cózar, 2017; Wolff-Eisenberg; Rod; Schonfeld, 2016).

Given a blank canvass, as we provided in the form of open-ended questions, ECRs came up with 15 main reasons for publishing OA, which is plainly indicative of the complexity of their attitude to the topic. The complexity arises partly because ECRs answered from a number of perspectives –from a societal, author and reader perspective–, which, of course, do overlap. Indeed, some ECRs even cited more than one reason; obviously they could not make their mind up, which is telling in itself. Thus, 848 ECRs provided us with 1,124 reasons as to why publish in OA journals, as Table 4 shows (just those with 1% or more mentions are shown).

“ The three top reasons for publishing OA are it is the democratic/ethical thing to do, the provision of easier access to content and the bigger and wider audience it delivers ”

The three top reasons for publishing OA accounted for nearly half (48%) of all the mentions. The most important reason, with 19% of mentions –it is the democratic/ethical thing to do– shows how strong the moral or public good argument has become with this millennial generation. A much more pragmatic reason, given from the reader perspective –provision of easier access to content– came next, with 16.8% of mentions. There is also clearly a belief that OA benefits early career authors in terms of higher acceptance, more outlets, career advancement and impact. Interestingly, mandates came relatively low in the order (6.9%).

Obviously, the extent of support thus accorded to OA publishing bears out the aforementioned findings in previous studies, according to which junior researchers’ views of OA are very positive indeed, much more positive, in fact, than those of their senior counterparts (Dalton; Tenopir; Björk, 2020; Nicholas *et al.*, 2015; Ruiz-Pérez; Delgado-López-Cózar, 2017; Tenopir *et al.*, 2016b; Tenopir *et al.*, 2017).

Table 4. Main reason(s) for publishing OA

Rank	Reasons	No. of mentions	
		N	%
1	<b>Democratic/ethical thing to do</b> (e.g. Scientific content should open to all; create a level-playing field between developed and developing countries; deep-held beliefs that there should be free access to information).	214	18.9
2	<b>Easier access to content</b> (e.g. No pay walls or subscriptions; direct and immediate access; ubiquitous access)	190	16.8
3	<b>Wider and bigger potential audience</b> (e.g. greater reach, influence; stakeholder, practitioners, policy makers and industry mentioned)	132	11.7
4	<b>Contributing to the faster pace of scientific advances</b> (e.g. Enabling scholarly communication/sharing; promoting specialist research areas; Improving the quality of research (all from Russians) by making it more open criticism and improvement). Take away ECRs	121	10.7
5	<b>Increased impact</b> (e.g. More downloads, reads, citations and social media mentions)	102	9.0
6	<b>Compliance with university or funder mandates</b>	78	6.9
7	<b>Target journals are OA</b> (e.g. the fact the journal is OA is of secondary consequence – relevance, quality, career advancement etc. are the factors and OA have these characteristics)	73	6.5
8	<b>Increased visibility/discoverability</b> (e.g. ensure maximum exposure)	53	4.7
9	<b>Faster publishing/shorter turnaround time</b>	51	4.5
10	<b>Affordability</b> (e.g. Low costs, waivers and easy availability of APCs)	30	2.7
11	<b>Higher acceptance</b> (e.g. Because more inclusive, lower publishing standards and acceptance of money)	24	2.1
12	<b>Transparency</b> (Transparency of review process and results)	12	1.1
13	<b>Decision/influence of co-authors or supervisors</b>	12	1.1
14	<b>Greater connectivity/networking potential</b> (e.g. Greater interaction, more sharing and connections)	11	1.0
16	<b>Others and unclassifiable</b>	28	2.5
Total		1,131	100

### 7.3. ECRs’ readiness to take up open access: reasons for refraining from publishing open access

When it comes to reasons for not publishing OA, it is immediately obvious that ECRs come up with many fewer reasons for not publishing in OA journals, with fewer mentions (380) and categories (9) *against* publishing OA than *for* it (Table 5). Still, there is a large consensus that cost is the main issue, even if they are not the ones paying, accounting for 38% of mentions. No availability or opportunity was the second most mentioned reason (21.3%), not so much a criticism or fault

as a statement of fact, and this was followed by worries about reputation and recognition (12.1%). If we bundle the latter with the fourth reason (poor quality), as they are related, we have then a figure of 22% expounding these views. Obviously, with all the many arguments cited in proof of the beneficial effects of OA publishing from an individual researcher's point of view (*Enago Academy*, 2017; **McKiernan et al.**, 2016), when it comes to career-related considerations, old fears (**Creaser**, 2010; **Mann et al.**, 2009; **Nicholas et al.**, 2014; **Pinfield**, 2015; **Schroter et al.**, 2005; **Swan; Brown**, 2004; **Xia**, 2010) seem to surface, having perhaps become less dominating, but still there.

“ The main reasons for refraining from OA publishing are lower in number, but include most notably cost, non-availability of outlets, and concerns about reputation and recognition ”

Table 5. Main reason(s) for not publishing OA

	Reasons	Mentions	
		N	%
1	<b>Costs of OA publishing</b> (e.g. Unaffordable, expensive, no funding)	145	38.2
2	<b>No availability or opportunity</b>	81	21.3
3	<b>Less or not recognized/accepted by evaluation policies, peers, colleagues</b> (e.g. reputational concerns)	46	12.1
4	<b>Perceived poor quality/prestige of OA journals</b> (e.g. worries about predatory journals)	38	10.0
5	<b>Limited knowledge about OA</b>	23	6.1
6	<b>Target journals are not OA</b>	20	5.3
7	<b>OA journals are more easily plagiarized/copied</b>	13	3.4
8	<b>Early days</b>	6	1.6
9	<b>Not a sustainable model</b> (e.g. author payment)	5	1.3
10	Others	3	0.8
Total		380	100

## 8. Advantages and disadvantages of open access publishing

Having explored ECRs' views regarding the advisability of OA publishing, we turned to the more practical implications of the option, asking now all respondents specifically about the advantages and disadvantages it may bring about. Thus, the survey participants were furnished, in 2 separate questions, with 8 advantages and 6 disadvantages, sourced from the interviews, which they were requested to rank on a scale of 'not at all' to 'to a great extent'. Aiming to mitigate the resulting constraints of ECRs' choices, an 'other' option was provided for further suggestions, which enabled us to obtain both qualitative and quantitative data from these questions.

### 8.1. Advantages of open access

Presented with a number of advantages of OA publishing (Figure 1), it was increased visibility (M=4.48) and bigger/wider audiences (M=4.45) that proved to be the strongest draws, which seems to indicate that when it comes to actual practices, ECRs' individual, career-related concerns override even their strongly held beliefs in societal values, such as the perceived capability of OA publishing to contribute to the faster pace of scientific advances made (M=4.03). Interestingly, as we have shown, scholarly authors do indeed look for wide circulation that promotes accessibility to their work and, as a result, has the potential to provide them greater visibility, but do not seem to believe that OA publishing can help with these requirements of theirs (**Blankstein; Wolff-Eisenberg**, 2019; **Borrego; Anglada**, 2016; **Nicholas et al.**, 2017; **Nicholas et al.**, 2019; **Niles et al.**, 2020; *NPG*, 2015; **Sbaffi et al.**, 2020; **Tenopir et al.**, 2016a). It seems then that our findings lend further support to ECRs' greater faith in open access, which has been accorded to them in previous studies (**Dalton; Tenopir; Björk**, 2020; **Nicholas et al.**, 2015; **Ruiz-Pérez; Delgado-López-Cózar**, 2017; **Tenopir et al.**, 2016b; **Tenopir et al.**, 2017), and emerge from the just concluded analysis of the reasons for publishing OA, a state of affairs that looks promising for the future of open access developments. Compliance

“ Increased visibility and bigger/wider audiences prove very strong OA draws, which seems to indicate that when it comes to actual practices, ECRs' individual, career-related concerns override their strongly held beliefs in societal values, such as the perceived capability of OA publishing to contribute to the faster pace of scientific advances ”

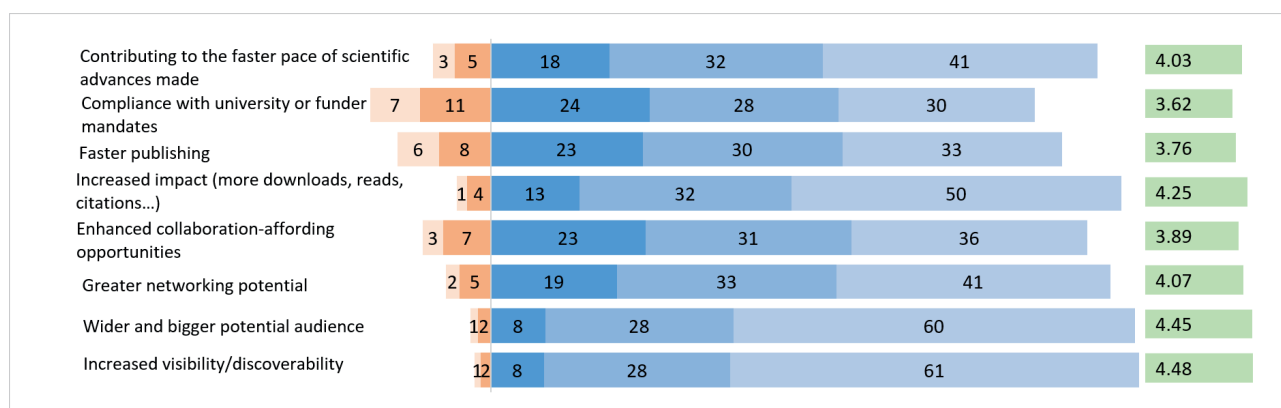


Figure 1. To what extent do you see each of the following as advantage of publishing papers as open access? (N ≈ 1,387)

with funder mandates and/or institutional mandates (M=3.62), and the alleged speed of OA publishing (M=3.76) did not figure so highly among the advantages, which again is in line with the beliefs cited by ECRs regarding the drivers of OA publishing.

A total of 35 ECRs took the opportunity of providing via the ‘other, please specify’ option additional advantages. The majority (15) pointed out the benefits of greater access to content beyond academia for the public and laypeople, that is, for those outside the paywall, which, again, was highlighted as a reason for opting for OA publishing. Twelve ECRs, additionally, mentioned the advantage that figured highest among the drivers of OA publishing, namely, that it is the ethical thing to do.

There are some discipline-specific differences (Table 6) in ECRs’ assessment of the advantages of OA publishing, if rather less so than it might be expected, for, as it has long been established, the perceived scholarly value of OA varies from knowledge area to knowledge area (Dalton; Tenopir; Björk, 2020; Rowley *et al.* 2017; Ruiz-Pérez *et al.*, 2017; Severin *et al.*, 2018; Tenopir *et al.*, 2017). Interestingly, ECRs’ assessment of the potential benefits of OA publishing do not seem to wholly reflect the discipline-specific beliefs that have been found to characterise researchers in general.

As Dalton, Tenopir & Björk (2020) find, it is researchers’ appreciation of the extent to which OA can expand the readership and usage of their research which is at the root of the variance among the views of OA held in the different fields. Severin *et al.* (2018) also conclude from an analysis of a host of studies that in disciplines where the perception of authors is that OA journals allow for a wider circulation of publications than subscription journals, positive views of OA publishing are more prevalent, especially so when coupled with strong OA mandates combined with both funder-operated repositories, available funding for APCs and a richness in high quality OA journals. Thus, physical science, computer science, life sciences, and medicine researchers tend to regard OA publishing as more advantageous than their arts, humanities, and even social science counterparts, who are more likely to doubt the potential for OA to expand their own readership. However, the findings with regard to ECRs, as they emerge from Table 6, show a remarkable similarity among disciplines, although surprisingly, whilst physical sciences and engineering do indeed differ from the other subjects, it is contrary to expectations: for instance, increased visibility is less important for them than it is for health, life and social sciences. Nevertheless, there seems to be an apparent blurring of the demarcation lines between researchers hailing from different fields. Is it an indication ECRs’ aforementioned overall more favourable perception and attitude to open access compared to those manifested in the scholarly community in general?

Table 6. Advantages of open access publishing by discipline

Advantage	Health sciences (N ≈ 148)		Life sciences (N ≈ 249)		Physical sciences & engineering (N ≈ 307)		Social sciences (N ≈ 502)		Arts & humanities (N ≈ 126)		F
	M	SD	M	SD	M	SD	M	SD	M	SD	
Increased visibility/discoverability	4.6	0.6	4.5	0.8	4.3	0.9	4.5	0.8	4.5	0.7	6.3
Wider and bigger potential audience	4.6	0.7	4.5	0.8	4.3	1.0	4.5	0.8	4.4	0.8	6.0
Greater connectivity/networking potential	4.1	1.0	4.0	1.0	3.9	1.0	4.1	1.0	4.1	0.9	2.9
Enhanced collaboration-affording opportunities	4.0	1.0	3.9	1.1	3.7	1.1	3.9	1.1	4.0	1.1	2.7
Increased impact in terms of more downloads, reads, citations, social media mentions	4.4	0.8	4.3	0.9	4.0	1.0	4.3	0.9	4.2	0.9	8.3
Faster publishing/shorter turnaround time of OA journals	3.8	1.1	3.6	1.3	3.7	1.2	3.8	1.1	3.7	1.1	1.5
Contributing to the faster pace of scientific advances made	3.9	1.1	4.2	1.0	3.9	1.1	4.0	1.0	4.0	1.1	4.0

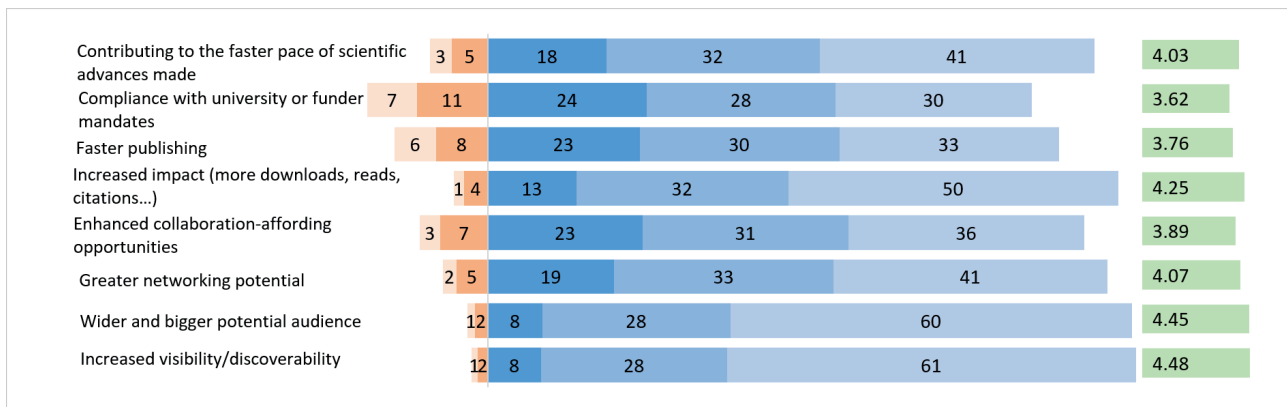


Figure 2. Disadvantages of open access publishing (N ≈ 1,346)

## 8.2. Disadvantages of open access

Perhaps not very surprisingly, given that ECRs' responses to the open-ended questions left little doubt as to the favourable light in which open access publishing was seen, the disadvantages of the practice were not seen to be as significant as the advantages (Figure 2). Nevertheless, a few disadvantages did emerge from the data, most notably the further confirmation that the cost of publishing was indeed ECRs' the overwhelming concern (M=3.97). This might partly be explained by the fact that, as junior and untenured researchers, they are at the end of the queue when APCs are handed out. However, what is interesting is that while ECRs, in general, make a big point about cost, certainly in the case of scientists, they are usually not the one paying, because it is something that the Principal Investigator (PI) arranges. So, it is clearly something ECRs do not like in principle.

Beyond that, the findings indicated that for ECRs OA journals are indeed tarred with the predatory brush, as the data provided by the responses to the open ended questions also suggested: quite a few of the respondents (M=3.69) seemed to believe that there are too many predatory journals among open access ones. Indeed, the 6 ECRs who used the 'other' option to note further disadvantages, also testified to an uneasiness stemming from the possibility that OA journals may turn out to be predatory, as exemplified by the complaint voiced by one of them, that it is hard for newcomers to work out which journals were predatory, given the amount of emails they get from OA journals.

There were statistically significant disciplinary differences for all of the disadvantages, except for 'too many predatory journals' (Table 7). What stands out though, is that cost is seen as the biggest disadvantage by health scientist ECRs, but as the least important one for the arts and humanities ones, possibly because most journals in humanities charge no APCs.

Table 7. Disadvantages of open access publishing by discipline

Disadvantage	Health sciences (N ≈ 145)		Life sciences (N ≈ 242)		Physical sciences & engineering (N ≈ 298)		Social sciences (N ≈ 491)		Arts & humanities (N ≈ 125)		F
	M	SD	M	SD	M	SD	M	SD	M	SD	
Perceived poor quality of OA journals	3.1	1.3	2.9	1.3	3.3	1.2	3.2	1.3	3.1	1.3	4.5
Perceived lower prestige/status of OA journals	3.1	1.3	2.9	1.3	3.3	1.2	3.2	1.3	3.2	1.3	3.5
Costs of OA publishing	4.3	1.1	4.2	1.1	4.1	1.1	3.8	1.3	3.3	1.4	16.9
Risks from a career advancing and reputational point of view	2.7	1.3	2.5	1.3	3.0	1.3	2.9	1.3	2.9	1.2	6.8
Possibility that OA journals are more easily plagiarized	2.8	1.4	2.4	1.3	2.8	1.3	2.9	1.4	3.1	1.4	9.8

## 9. Conclusions

Perhaps the most important finding emerging from this study is that in the case of ECRs publishing practices seem to reflect closely the heightened interest and great faith in open access, which has been accorded to them in previous studies on OA publishing. Indeed, if the extant evidence pertaining to researchers in general has shown that OA practices tend to lag behind attitudes, ECRs seem to have made great strides in closing the gap, which is undoubtedly a very promising development for the future of OA publishing.

The key findings certainly give ample indications that lend support to this hopeful view. Most importantly, the majority of ECRs have actually published in OA journals and saw more advantages to the practice than disadvantages. Indeed, the problems cited had to do more with cost (plainly considered the main downside) and availability than other, less easily

solved ones, such as the reputation-building capabilities of OA publishing (or lack thereof). In fact, ECRs may still consider societal benefits as the most important reason for publishing OA, but they do believe that it is especially benefiting them in career progression, too. Unfortunately, this positivity seems to have been partly offset by increased concerns about predatory journals, which are muddying the waters. However, their staunch beliefs in the overall advantageous effects of OA publishing may very well indicate that where this cohort is concerned, perhaps there is not much need for mandates, now widely in existence, which, indeed, appear to have had only a limited impact on ECRs.

“The most important findings of the study is that ECRs’ publishing practices reflect closely the heightened interest and great faith in open access and that practices are now catching-up with attitudes”

Thus, we probably can no longer say that ECRs’ OA publishing practices wholly flounder on the rocks of a scholarly reputational model that is based on publishing in high Impact Factor (IF) journals. A corner might have been turned. Still, it is important to keep in mind that this might be due to the fact that there are more hybrid journals and/or OA journals with higher impact factors available.

In conclusion, we should be reminded of the fact that ECRs’ practices regarding OA are not wholly theirs, as they are influenced by the behaviour and decisions of their co-authors and principal investigators, indeed, they are often trapped in the hamster wheel of bad practices and habits endorsed by supervisors and colleagues. Nevertheless, the answer to whether the gap that has consistently been found between theory and practice in regard to OA publishing is being bridged, and whether the new wave of researchers is instrumental in this, the answer looks like being yes. However, continued research and monitoring is required on the topic to see how things continue to unfold.

## 10. Authorship contribution

All authors contributed to the study conception, design and data collection. Statistical analysis was performed by HRJ, open-questions content analysis was performed by JX. The first draft of the manuscript was written by DN, JX, HRJ and EH and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

## 11. Notes

1. This article follows **Severin et al.’s** (2018) definition of OA, according to which

“OA takes different forms but generally offers free and unrestricted access to the outputs of academic research with relaxed constraints on reuse, as opposed to publications being ‘locked away’ behind subscription paywalls.”

2. <http://ciber-research.eu/harbingers.html>

3. **CIBER** (2016). Harbingers Working Report 1. Appendix 1: Early Career Researchers Definitions. <http://ciber-research.eu/harbingers.html>

4. See full questionnaire here:

<http://ciber-research.eu/download/ECR-questionnaire-for-website-20191129.pdf>

## 12. References

**Abrizah, Abdullah; Xu, Jie; Nicholas, David** (2017). “Scholarly communication and matters of trust and authority: A comparative analysis of Malaysian and Chinese researchers”. *Malaysian Journal of Library & Information Science*, v. 22, n. 3, pp. 69-91.

<https://doi.org/10.22452/mjlis.vol22no3.5>

**Adie, Euan** (2014). *Attention! A study of open access vs non-open access articles*.

<https://doi.org/10.6084/m9.figshare.1213690.v1>

**Allen, Christopher; Mehler, David M. A.** (2019). “Open science challenges, benefits and tips in early career and beyond”. *Plos biology*, v. 17, n. 5, e3000246.

<https://doi.org/10.1371/journal.pbio.3000246>

**Atchison, Amy; Bull, Jonathan** (2015). “Will open access get me cited? An analysis of the efficacy of open access publishing in political science”. *PS: Political science & politics*, v. 48, n. 1, pp. 129-137.

<https://doi.org/10.1017/S1049096514001668>

**Becher, Tony; Trowler, Paul R.** (2001). *Academic tribes and territories: intellectual enquiry and the culture of disciplines*, 2<sup>nd</sup> ed. Buckingham, UK: The Society for Research into Higher Education; Open University Press. ISBN: 978 0 335206278

**Benavent-Pérez, María; Gorraiz, Juan; Gumpenberger, Christian** (2012). «The different flavors of research collaboration: A case study of their influence on university excellence in four world regions”. *Scientometrics*, v. 93, n. 1, pp. 41-58.

<https://doi.org/10.1007/s11192-012-0638-4>

**Björk, Bo-Christer** (2017). “Gold, green, and black open access”. *Learned publishing*, v. 30, n. 2, pp. 173-175.

<https://doi.org/10.1002/leap.1096>

- Björk, Bo-Christer; Solomon, David** (2012). Open access versus subscription journals: A comparison of scientific impact. *BMC medicine*, v. 10, n. 1, pp. 73.  
<https://doi.org/10.1186/1741-7015-10-73>
- Blankstein, Melissa; Wolff-Eisenberg, Christine** (2019). *Ithaka S+R US faculty survey 2018*. Ithaka S+R.  
<https://sr.ithaka.org/wp-content/uploads/2019/03/SR-Report-US-Faculty-Survey-2018-04122019.pdf>
- Borrego, Ángel; Anglada, Lluís** (2016). "Faculty information behavior in the electronic environment: Attitudes towards searching, publishing and libraries". *New library world*, v. 117, n. 3/4, pp. 173-185.  
<https://doi.org/10.1108/NLW-11-2015-0089>
- Bozeman, Barry; Fay, Daniel; Slade, Catherine P.** (2013). "Research collaboration in universities and academic entrepreneurship: the-state-of-the-art". *The journal of technology transfer*, v. 38, n. 1, pp. 1-67.  
<https://doi.org/10.1007/s10961-012-9281-8>
- Brechelmacher, Angelika; Park, Elke; Ates, Gülay; Campbell, David F. J.** (2015). "The rocky road to tenure – career paths in academia". In: Fumasoli, T.; Goastellec, G.; Kehm, B. M. (eds.). *Academic work and careers in Europe: Trends, challenges, perspectives*. Cham: Springer, pp. 13-40. ISBN: 978 3 319 10720 2
- Brook, Jon** (2018). 'Bronze' open access supersedes green and gold.  
<https://www.natureindex.com/news-blog/bronze-open-access-supersedes-green-and-gold>
- Budd, John M.** (1989). "Research in the two cultures: the nature of scholarship in science and the humanities". *Collection management*, v. 11, n. 3-4, pp. 1-21.  
[https://doi.org/10.1300/J105v11n03\\_01](https://doi.org/10.1300/J105v11n03_01)
- Bukvova, Helena** (2010). *Studying research collaboration: A literature review*. Sprouts: Working papers on information systems, v. 10, n. 3.  
<https://bit.ly/32Zsz7W>
- Burstein, David D.** (2013). *Fast future: How the millennial generation is shaping our world*. Boston: Beacon Press, 240 pp. ISBN: 978 0 807044704
- CNRS (2016). *Open science in a digital republic*. Paris, France: CNRS. ISBN: 978 2 821868700  
<https://doi.org/10.4000/books.oep.1635>
- Coonin, Bryna** (2011). "Open access publishing in business research: The authors' perspective". *Journal of business & finance librarianship*, v. 16, n. 3, pp. 193-212.  
<https://doi.org/10.1080/08963568.2011.581606>
- Coonin, Bryna; Younce, Leigh M.** (2010). "Publishing in open access education journals: The authors' perspectives". *Behavioral & social sciences librarian*, v. 29, n. 2, pp. 118-132.  
<https://doi.org/10.1080/01639261003742181>
- Creaser, Claire** (2010). "Open access to research outputs - institutional policies and researchers' views: results from two complementary surveys". *New review of academic librarianship*, v. 16, n. 1, pp. 4-25.  
<https://doi.org/10.1080/13614530903162854>
- Dallmeier-Tiessen, Suenje; Darby, Robert; Goerner, Bettina; Hypoelae, Jenni; Igo-Kemenes, Peter; Kahn, Deborah; Lambert, Simon; Lengenfelder, Anja; Leonard, Chris; Mele, Salvatore; Nowicka, Malgorzata; Polydoratou, Panayiota; Ross, David; Ruiz-Pérez, Sergio; Schimmer, Ralf; Swaisland, Mark; Van-der-Stelt, Wim** (2011). "Open access journals – what publishers offer, what researchers want". *Information services & use*, v. 31, n. 1-2, pp. 85-91.  
<https://doi.org/10.3233/ISU-2011-0624>
- Dalton, Elizabeth D.; Tenopir, Carol; Björk, Bo-Christer** (2020). "Attitudes of North American academics toward open access scholarly journals". *Portal: Libraries and the academy*, v. 20, n. 1, pp. 73-100.  
<https://preprint.press.jhu.edu/portal/sites/ajm/files/20.1dalton.pdf>
- Davis, Philip M.** (2011). "Open access, readership, citations: A randomized controlled trial of scientific journal publishing". *The FASEB journal*, v. 25, n. 7, pp. 2129-2134.  
<https://doi.org/10.1096/fj.11-183988>
- Davis, Philip M.; Walters, William H.** (2011). "The impact of free access to the scientific literature: A review of recent research". *Journal of the medical library association*, v. 99, n. 3, pp. 208-217.  
<https://doi.org/10.3163/1536-5050.99.3.008>
- De-Silva, Pali U. K.; Vance, Candace K.** (2017). "On the road to unrestricted access to scientific information: The open access movement". In: *Scientific scholarly communication: The changing landscape*. Cham, Switzerland: Springer International Publishing, pp. 25-40. ISBN: 978 3 319 50626 5  
[https://doi.org-443.webvpn.fjmu.edu.cn/10.1007/978-3-319-50627-2\\_3](https://doi.org-443.webvpn.fjmu.edu.cn/10.1007/978-3-319-50627-2_3)



- Didegah, Fereshteh; Thelwall, Mike; Gazni, Ali** (2012). "An international comparison of journal publishing and citing behaviours". *Journal of informetrics*, v. 6, n. 4, pp. 516-531.  
<https://doi.org/10.1016/j.joi.2012.04.003>
- Enago Academy* (2017). *An introduction to open access publishing*.  
<https://www.enago.com/academy/an-introduction-to-open-access-publishing>
- Eschert, Jens** (2015). "Young researchers demand open access. Interview with Ralf Schimmer and Ulrich Pöschl on new developments". *MaxPlanckResearch: The science magazine of the Max Planck Society*, n. 4, pp. 81-82.  
<https://www.mpg.de/9789059/s005-max-planck-community-080-082.pdf>
- Farnham, Andrea; Kurz, Christoph; Öztürk, Mehmet-Ali; Solbiati, Monica; Myllyntaus, Oona; Meekes, Jordy; Pham, Tra-My; Paz, Clara; Langiewicz, Magda; Andrews, Sophie; Kanninen, Liisa et al.** (2017). "Early career researchers want open science". *Genome biology*, v. 18, article n. 221.  
<https://doi.org/10.1186/s13059-017-1351-7>
- Fowler, Kristine K.** (2011). *Mathematicians' views on current publishing issues: A survey of researchers*. University of Minnesota Digital Conservancy.  
[http://conservancy.umn.edu/bitstream/handle/11299/109309/Fowler\\_mathscholcomm\\_survey\\_article.pdf](http://conservancy.umn.edu/bitstream/handle/11299/109309/Fowler_mathscholcomm_survey_article.pdf)
- Frass, Will; Cross, Jo; Gardner, Victoria** (2014). *Open access survey: Exploring the views of Taylor & Francis and Routledge authors. On behalf of Taylor & Francis Group*.  
<http://www.tandf.co.uk/journals/explore/open-access-survey-june2014.pdf>
- Freeman, Richard B., Ganguli, Ina; Murciano-Goroff, Raviv** (2014). *Why and wherefore of increased scientific collaboration* (Working paper n. w19819). National Bureau of Economic Research.  
<http://www.nber.org/papers/w19819.pdf>
- Friesenhahn, Irene; Beaudry, Catherine** (2014). *The global state of young scientists. Project report and recommendations*. Berlin: Akademie Verlag.  
<http://www.interacademies.org/24897/The-Global-State-of-Young-Scientists-Project-Report-and-Recommendations->
- Frisch, Nora K.; Nathan, Romil; Ahmed, Yasin K.; Shidham, Vinod B.** (2014). "Authors attain comparable or slightly higher rates of citation publishing in an open access journal (CytoJournal) compared to traditional cytopathology journals - A five year (2007-2011) experience". *CytoJournal*, v. 11, n. 1.  
<https://doi.org/10.4103/1742-6413.131739>
- Gaulé, Patrick; Maystre, Nicolas** (2011). "Getting cited: Does open access help?". *Research policy*, v. 40, n. 10, pp. 1332-1338.  
<https://doi.org/10.1016/j.respol.2011.05.025>
- Glover, Natasha M.; Antoniadis, Ioanna; George, Gavin M.; Götzenberger, Lars; Gutzat, Ruben; Koorem, Kadri; Liancourt, Pierre; Rutowicz, Kinga; Saharan, Krishna; You, Wanhui; Mayer, Philipp** (2016). "A pragmatic approach to getting published: 35 tips for early career researchers". *Frontiers in plant science*, v. 7, 610.  
<https://doi.org/10.3389/fpls.2016.00610>
- Gould, Julie** (2015). *Six myths about open access were addressed in an open research workshop at the 2015 Naturejobs career expo in London*. [Web log post]. *Naturejobs blog*, 20 October.  
<http://blogs.nature.com/naturejobs/2015/10/20/open-research-open-up-to-open-access>
- Graham, Helen; Hill, Katie; Matthews, Peter; O'Brien, Dave; Taylor, Mark** (2014). *Connecting epistemologies: Methods and early career researchers in the connected communities programme*, October.  
<https://earlycareerresearchers.files.wordpress.com/2014/10/connecting-epistemologies-report.pdf>
- Haddow, Gaby; Hammarfelt, Björn** (2019). "Quality, impact, and quantification: Indicators and metrics use by social scientists". *Journal of the Association for Information Science and Technology*, v. 70, n. 1, pp. 16-26.  
<https://doi.org/10.1002/asi.24097>
- Harley, Diane; Acord, Sophia-Krzys; Earl-Novell, Sarah; Lawrence, Shannon; King, C. Judson** (2010). *Assessing the future landscape of scholarly communication: An exploration of faculty values and needs in seven disciplines*. Center for Studies in Higher Education.  
<https://escholarship.org/uc/item/15x7385g>
- Hsieh, David** (2013). *Organization and role of international collaboration in research production*. Doctoral dissertation, The University of Arizona.  
<http://arizona.openrepository.com/arizona/bitstream/10150/281178/1/Hsieh,+David.pdf>
- Hurrell, Christie; Meijer-Kline, Karen** (2011). "Open access up for review: academic attitudes towards open access publishing in relation to tenure and promotion". *Open excess, The journal of scholarly communicators*, v. 1, n. 2.  
<https://tsc.library.ubc.ca/index.php/journal4/article/view/104>

- Jamali, Hamid R.; Nicholas, David; Watkinson, Anthony; Abrizah, Abdullah; Rodríguez-Bravo, Blanca; Boukacem-Zeghmouri, Chérifa; Xu, Jie; Polezhaeva, Tatiana; Herman, Eti; Swingon, Marzana** (2020a). "Early career researchers and their authorship and peer review beliefs and practices: An international study". *Learned publishing*, v. 33, n. 2, pp. 142-152.  
<https://doi.org/10.1002/leap.1286>
- Jamali, Hamid R.; Nicholas, David, Herman, Eti; Boukacem-Zeghmouri, Chérifa; Abrizah, Abdullah; Rodríguez-Bravo, Blanca; Xu, Jie; Świgoń, Marzena; Polezhaeva, Tatiana; Watkinson, Anthony** (2020b). "National comparisons of early career researchers' scholarly communication attitudes and behaviours". *Learned publishing*, v. 33, n. 4, pp. 370-384.  
<https://doi.org/10.1002/LEAP.1313>
- Jamali, Hamid R.; Nicholas, David, Watkinson, Anthony; Herman, Eti; Tenopir, Carol; Levine, Kenneth; Allard, Suzie; Christian, Lisa; Volentine, Rachel; Boehm, Reid; Nichols, Frances** (2014). "How scholars implement trust in their reading, citing and publishing activities: Geographical differences". *Library and information science research*, v. 36, n. 3-4, pp. 192-202.  
<https://doi.org/10.1016/j.lisr.2014.08.002>
- Johnson, Rob; Watkinson, Anthony; Mabe, Michael** (2018). *The STM report: An overview of scientific and scholarly publishing*, 5<sup>th</sup> ed. Hague, Netherlands: International Association of Scientific, Technical and Medical Publishers.  
[https://www.stm-assoc.org/2018\\_10\\_04\\_STM\\_Report\\_2018.pdf](https://www.stm-assoc.org/2018_10_04_STM_Report_2018.pdf)
- Joseph, Heather** (2013). "The open access movement grows up: taking stock of the revolution". *Plos biology*, v. 11, n. 10, e1001686.  
<https://doi.org/10.1371/journal.pbio.1001686>
- Kling, Rob; McKim, Geoffrey** (2000). "Not just a matter of time: Field differences and the shaping of electronic media in supporting scientific communication". *Journal of the American society for information science*, v. 51, n. 14, pp. 1306-1320.  
[https://doi.org/10.1002/1097-4571\(2000\)9999:9999::AID-ASI1047>3.0.CO;2-T](https://doi.org/10.1002/1097-4571(2000)9999:9999::AID-ASI1047>3.0.CO;2-T)
- Koler-Povh, Teja; Južnič, Primož; Turk, Goran** (2014). "Impact of open access on citation of scholarly publications in the field of civil engineering". *Scientometrics*, v. 98, n. 2, pp. 1033-1045.  
<https://doi.org/10.1007/s11192-013-1101-x>
- Larivière, Vincent; Gingras, Yves; Sugimoto, Cassidy R.; Tsou, Andrew** (2015). "Team size matters: Collaboration and scientific impact since 1900". *Journal of the Association for Information Science and Technology*, v. 66, n. 7, pp. 1323-1332.  
<https://asistdl.onlinelibrary.wiley.com/doi/abs/10.1002/asi.23266>
- Leahey, Erin** (2016). "From sole investigator to team scientist: Trends in the practice and study of research collaboration". *Annual review of sociology*, v. 42, pp. 81-100.  
<https://doi.org/10.1146/annurev-soc-081715-074219>
- Lewis, David W.** (2012). "The inevitability of open access". *College & research libraries*, v. 73, n. 5, pp. 493-506.  
<https://doi.org/10.5860/crl-299>
- Mabe, Michael; Mulligan, Adrian** (2011). "What journal authors want: Ten years of results from Elsevier's author feedback programme". *New review of information networking*, v. 16, n. 1, pp. 71-89.  
<https://doi.org/10.1080/13614576.2011.574495>
- Mann, Florian; Von-Walter, Benedikt; Hess, Thomas; Wigand, Rolf-Theobald** (2009). "Open access publishing in science". *Communications of the ACM*, v. 52, n. 3, pp. 135-139.  
<https://doi.org/10.1145/1467247.1467279>
- McCabe, Mark J.; Snyder, Christopher M.** (2014). "Identifying the effect of open access on citations using a panel of science journals". *Economic inquiry*, v. 52, n. 4, pp. 1284-1300.  
<https://doi.org/10.1111/ecin.12064>
- McKiernan, Erin C.; Bourne, Philip E.; Brown, C. Titus; Buck, Stuart; Kenall, Amye; Lin, Jennifer; McDougall, Damon; Nosek, Brian A.; Ram, Karthik; Soderberg, Courtney K.; Spies, Jeffrey R.; Thaney, Kaitlin; Updegrove, Andrew; Woo, Kara H.; Yarkoni, Tal** (2016). "How open science helps researchers succeed". *Elife*, 5, e16800.  
<https://doi.org/10.7554/eLife.16800>
- Meadows, Arthur-Jack** (1974). *Communication in science*. London: Butterworths. ISBN: 978 0 408705721
- Méndez, Eva; Lawrence, Rebecca; MacCallum, Catriona J.; Moar, Eva et al.** (2020). *Progress on open science: towards a shared research knowledge system*. Final report of the Open Science Policy Platform. Brussels, Belgium: European Commission.  
<https://www.theseus.fi/handle/10024/341519>  
<https://doi.org/10.2777/00139>

- Mischo, William H.; Schlembach, Mary C.** (2011). "Open access issues and engineering faculty attitudes and practices". *Journal of library administration*, v. 51, n. 5-6, pp. 432-454.  
<https://doi.org/10.1080/01930826.2011.589349>
- Moksness, Lars; Olsen, Svein-Ottar** (2017). "Understanding researchers' intention to publish in open access journals". *Journal of documentation*, v. 73, n. 6, pp. 1149-1166.  
<https://doi.org/10.1108/JD-02-2017-0019>
- Morris, Sally; Thorn, Sue** (2009). "Learned society members and open access". *Learned publishing*, v. 22, n. 3, pp. 221-239.  
<https://doi.org/10.1087/2009308>
- Müller, Ruth** (2014a). "Racing for what? Anticipation and acceleration in the work and career practices of academic life science postdocs". *Forum: Qualitative social research. Sozialforschung*, September 15.  
<https://doi.org/10.17169/fqs-15.3.2245>
- Müller, Ruth** (2014b). "Postdoctoral life scientists and supervision work in the contemporary university: A case study of changes in the cultural norms of science". *Minerva*, v. 52, n. 3, pp. 329-349.  
<https://doi.org/10.1007/s11024-014-9257-y>
- Mulligan, Adrian; Mabe, Michael** (2011). "The effect of the internet on research motivations, behavior and attitudes". *Journal of documentation*, v. 67, n. 2, pp. 290-311.  
<https://doi.org/10.1108/00220411111109485>
- Nariani, Rajiv; Fernández, Leila** (2012). "Open access publishing: What authors want". *College & research libraries*, v. 73, n. 2, pp. 182-195.  
<https://doi.org/10.5860/crl-203>
- Nicholas, David, Herman, Eti; Jamali, Hamid R.; Abrizah, Abdullah; Boukacem-Zeghmouri, Chérifa; Xu, Jie, Rodríguez-Bravo, Blanca; Watkinson, Anthony; Polezhaeva, Tatiana; Świgoń, Marzena** (2020a). "Millennial researchers in a metric-driven scholarly world: An international study". *Research evaluation*, v. 29, n. 3, pp. 263-274.  
<https://doi.org/10.1093/reseval/rvaa004>
- Nicholas, David; Jamali, Hamid R.; Herman, Eti; Watkinson, Anthony; Abrizah, Abdullah; Rodríguez-Bravo, Blanca; Boukacem-Zeghmouri, Chérifa; Xu, Jie; Świgoń, Marzena; Polezhaeva, Tatiana** (2020b). "A global questionnaire survey of the scholarly communication attitudes and behaviours of early career researchers". *Learned publishing*, v. 33, n. 3, pp. 198-211.  
<https://doi.org/10.1002/leap.1286>
- Nicholas, David; Jamali, Hamid R.; Watkinson, Anthony; Herman, Eti; Tenopir, Carol; Volentine, Rachel; Allard, Suzie; Levine, Kenneth** (2015). "Do younger researchers assess trustworthiness differently when deciding what to read and cite and where to publish". *International journal of knowledge content development and technology*, v. 5, n. 2, pp. 46-53.  
<https://doi.org/10.5865/IJKT.2015.5.2.045>
- Nicholas, David; Rodríguez-Bravo, Blanca; Watkinson, Anthony; Boukacem-Zeghmouri, Chérifa; Herman, Eti; Xu, Jie; Abrizah, Abdullah; Świgoń, Marzena** (2017). "Early career researchers and their publishing and authorship practices". *Learned publishing*, v. 30, n. 3, pp. 205-217.  
<https://doi.org/10.1002/leap.1102>
- Nicholas, David; Watkinson, Anthony; Boukacem-Zeghmouri, Chérifa; Rodríguez-Bravo, Blanca; Xu, Jie; Abrizah, Abdullah; Świgoń, Marzena; Clark, David; Herman, Eti** (2019). "So, are early career researchers the harbingers of change?". *Learned publishing*, v. 32, n. 3, pp. 237-247.  
<https://doi.org/10.1002/leap.1232>
- Nicholas, David, Watkinson, Anthony; Volentine, Rachel; Allard, Suzie; Levine, Kenneth; Tenopir, Carol; Herman, Eti** (2014). "Trust and authority in scholarly communications in the light of the digital transition: Setting the scene for a major study". *Learned publishing*, v. 27, n. 2, pp. 121-134.  
<https://doi.org/10.1087/20140206>
- Niles, Meredith T.; Schimanski, Lesley A.; McKiernan, Erin C.; Alperin, Juan-Pablo** (2020). "Why we publish where we do: Faculty publishing values and their relationship to review, promotion and tenure expectations". *Plos one*, v. 15, n. 3.  
<https://doi.org/10.1371/journal.pone.0228914>
- Norman, Geoff** (2010). "Likert scales, levels of measurement and the 'laws' of statistics". *Advances in health sciences education*, v. 15, n. 5, pp. 625-632.  
<https://doi.org/10.1007/s10459-010-9222-y>
- NPG - Nature Publishing Group** (2015). *Author insights - Initial findings*.  
[https://figshare.com/articles/Author\\_Insights\\_2015\\_survey/1425362](https://figshare.com/articles/Author_Insights_2015_survey/1425362)

- Ocholla, Dennis N.; Ocholla, Lyudimila** (2016). "Does open access prevent plagiarism in higher education?". *African journal of library, archives and information science*, v. 26, n. 2, pp. 189-202.  
<https://www.ajol.info/index.php/ajlais/article/view/167416>
- Ojala, Marydee; Reynolds, Regina; Johnson, Kay G.** (2020). "Predatory journal challenges and responses". *The serials librarian*, v. 78, n. 1-4, pp. 98-103.  
<https://doi.org/10.1080/0361526X.2020.1722894>
- Peekhaus, Wilhelm; Proferes, Nicholas** (2016). "An examination of North American Library and Information Studies faculty perceptions of and experience with open-access scholarly publishing". *Library & information science research*, v. 38, n. 1, pp. 18-29.  
<https://doi.org/10.1016/j.lisr.2016.01.003>
- Pew Research Center (2010a). *Millennials: A portrait of generation next*.  
<https://www.pewsocialtrends.org/2010/02/24/millennials-confident-connected-open-to-change>
- Pew Research Center (2010b). *Millennials will make online sharing in networks a lifelong habit*.  
<https://www.pewinternet.org/2010/07/09/millennials-will-make-online-sharing-in-networks-a-lifelong-habit>
- Pew Research Center (2018). *Social media use continues to rise in developing countries, but plateaus across developed ones*.  
<https://www.pewresearch.org/global/2018/06/19/social-media-use-continues-to-rise-in-developing-countries-but-plateaus-across-developed-ones>
- PhD on Track (2017). *Open access*.  
<https://www.phdontrack.net/open-science/open-access-publishing>
- Pinfield, Stephen** (2015). "Making open access work: the 'state-of-the-art' in providing open access to scholarly literature". *Online information review*, v. 39, n. 5, pp. 604-636.  
<https://doi.org/10.1108/OIR-05-2015-0167>
- Piowar, Heather; Priem, Jason; Larivière, Vincent; Alperin, Juan-Pablo; Matthias, Lisa; Norlander, Bree; Farley, Ashley; West, Jevin; Haustein, Stefanie** (2018). "The state of OA: a large-scale analysis of the prevalence and impact of open access articles". *PeerJ*, v. 6, e4375.  
<https://doi.org/10.7717/peerj.4375>
- Pontika, Nancy** (2015). "Open access: what's in it for me as an early career researcher?". *Journal of science communication*, v. 14, n. 4, article C04.  
<https://doi.org/10.22323/2.14040304>
- Rodríguez, Julia E.** (2014). "Awareness and attitudes about open access publishing: A glance at generational differences". *The journal of academic librarianship*, v. 40, n. 6, pp. 604-610.  
<https://doi.org/10.1016/j.acalib.2014.07.013>
- Rodríguez-Bravo, Blanca; Nicholas, David** (2020). "Descubrir, leer, publicar, compartir y monitorizar el progreso: comportamiento de los investigadores junior españoles". *Profesional de la información*, v. 29, n. 5, e290503.  
<https://doi.org/10.3145/epi.2020.sep.03>
- Rowlands, Ian; Nicholas, David; Huntington, Paul** (2004). "Scholarly communication in the digital environment: What do authors want?". *Learned publishing*, v. 17, n. 4, pp. 261-273.  
<https://doi.org/10.1087/0953151042321680>
- Rowley, Jennifer; Johnson, Frances; Saffi, Laura; Frass, Will; Devine, Elaine** (2017). "Academics' behaviors and attitudes towards open access publishing in scholarly journals". *Journal of the Association for Information Science and Technology*, v. 68, n. 5, pp. 1201-1211.  
<https://doi.org/10.1002/asi.23710>
- Rowley, Jennifer; Saffi, Laura; Sugden, Martin; Gilbert, Anna** (2020). "Factors influencing researchers' journal selection decisions". *Journal of information science* (online first).  
<https://doi.org/10.1177/0165551520958591>
- Ruiz-Pérez, Sergio; Delgado-López-Cózar, Emilio** (2017). "Spanish researchers' opinions, attitudes, and practices towards open access publishing". *El profesional de la información*, v. 26, n. 4, pp. 722-734.  
<https://doi.org/10.3145/epi.2017.jul.16>
- Schonfeld, Roger C.** (2015). "Scholarly societies and scholarly communication: A look ahead". *College & research libraries*, v. 76, n. 3, pp. 406-410.  
<https://doi.org/10.5860/crl.76.3.406>

- Schroter, Sara; Tite, Leanne; Smith, Richard** (2005). "Perceptions of open access publishing: interviews with journal authors". *British medical journal (BMJ)*, v. 330, 756.  
<https://doi.org/10.1136/bmj.38359.695220.82>
- Segado-Boj, Francisco; Martín-Quevedo, Juan; Prieto-Gutiérrez, Juan-José** (2018). "Attitudes toward open access, open peer review, and altmetrics among contributors to Spanish scholarly journals". *Journal of scholarly publishing*, v. 50, n. 1, pp. 48-70.  
<https://doi.org/10.3138/jsp.50.1.08>
- Severin, Anna; Egger, Matthias; Eve, Martin-Paul; Hürlimann, Daniel** (2018). "Discipline-specific open access publishing practices and barriers to change: an evidence-based review". *F1000Research*, 7, 1925.  
<https://doi.org/10.12688/f1000research.17328.1>
- Spezi, Valerie; Wakeling, Simon; Pinfield, Stephen; Creaser, Claire; Fry, Jenny; Willett, Peter** (2017). "Open-access mega-journals: The future of scholarly communication or academic dumping ground? A review". *Journal of documentation*, v. 73, n. 2, pp. 263-283.  
<https://doi.org/10.1108/JD-06-2016-0082>
- Suber, Peter** (2012). *Open access*. Cambridge, Massachusetts: MIT Press.  
[http://mitpress.mit.edu/sites/default/files/9780262517638\\_Open\\_Access\\_PDF\\_Version.pdf](http://mitpress.mit.edu/sites/default/files/9780262517638_Open_Access_PDF_Version.pdf)
- Swan, Alma; Brown, Sheridan** (2004). "Authors and open access publishing". *Learned publishing*, v. 17, n. 3, pp. 219-224.  
<https://doi.org/10.1087/095315104323159649>
- Tennant, Jonathan P.; Crane, Harry; Crick, Tom; Davila, Jacinto; Enkhbayar, Asura; Havemann, Johanna; Kramer, Bianca; Martin, Ryan; Masuzzo, Paola; Nobes, Andy; Rice, Kurt; Rivera-López, Bárbara et al.** (2019). "Ten hot topics around scholarly publishing". *Publications*, v. 7, n. 2, pp. 34.  
<https://doi.org/10.3390/publications7020034>
- Tennant, Jonathan P.; Waldner, François; Jacques, Damien C.; Masuzzo, Paola; Collister, Lauren B.; Hartgerink, Chris H.** (2016). "The academic, economic and societal impacts of Open Access: an evidence-based review". *F1000Research*, 5.  
<https://doi.org/10.12688/f1000research.8460.3>
- Tenopir, Carol; Dalton, Elizabeth; Christian, Lisa; Jones, Misty; McCabe, Mark; Smith, MacKenzie; Fish, Allison** (2017). "Imagining a gold open access future: attitudes, behaviors, and funding scenarios among authors of academic scholarship". *College & research libraries*, v. 78, n. 6.  
<https://doi.org/10.5860/crl.78.6.824>
- Tenopir, Carol; Dalton, Elizabeth; Fish, Allison; Christian, Lisa; Jones, Misty; Smith, MacKenzie** (2016a). "What motivates authors of scholarly articles? The importance of journal attributes and potential audience on publication choice". *Publications*, v. 4, n. 3, pp. 1-22.  
<https://doi.org/10.3390/publications4030022>
- Tenopir, Carol; Levine, Kenneth; Allard, Suzie; Christian, Lisa; Volentine, Rachel; Boehm, Reid; Nichols, Frances; Nicholas, David; Jamali, Hamid R.; Herman, Eti; Watkinson, Anthony** (2016b). "Trustworthiness and authority of scholarly information in a digital age: Results of an international questionnaire". *Journal of the Association for Information Science and Technology*, v. 67, n. 10, pp. 2344-2361.  
<https://doi.org/10.1002/asi.23598>
- Van-Rijnsoever, Frank J.; Hessels, Laurens K.** (2011). "Factors associated with disciplinary and interdisciplinary research collaboration". *Research policy*, v. 40, n. 3, pp. 463-472.  
<https://doi.org/10.1016/j.respol.2010.11.001>
- Walsh, John P.; Bayma, Todd** (1996). "Computer networks and scientific work". *Social studies of science*, v. 26, n. 3, pp. 661-703.  
<https://doi.org/10.1177/030631296026003006>
- Wang, Xianwen; Liu, Chen; Mao, Wenli; Fang, Zhichao** (2015). "The open access advantage considering citation, article usage and social media attention". *Scientometrics*, v. 103, n. 2, pp. 555-564.  
<https://doi.org/10.1007/s11192-015-1547-0>
- Ware, Mark; Mabe, Michael** (2015). *The STM report: An overview of scientific and scholarly journal publishing*.  
<http://digitalcommons.unl.edu/scholcom/9>
- Ware, Mark** (2015). *What do author insights tell us?* [Web log post]. *Nature.com blogs*, 12 August.  
<http://blogs.nature.com/ofschemesandmemes/2015/08/13/what-do-author-insights-tell-us>

**Watkinson, Anthony; Nicholas, David; Thornley, Clare; Herman, Eti; Jamali, Hamid R.; Volentine, Rachel; Allard, Suzie; Levine, Kenneth; Tenopir, Carol** (2016). "Changes in the digital scholarly environment and issues of trust: An exploratory, qualitative analysis". *Information processing & management*, v. 52, n. 3, pp. 446-458.  
<https://doi.org/10.1016/j.ipm.2015.10.002>

**Watson, Carol A.; Donovan, James M.; Osborne, Caroline** (2015). "The open access advantage for American law reviews". *3A Edison L. & Tech.* 1.  
[https://digitalcommons.law.uga.edu/fac\\_artchop/989](https://digitalcommons.law.uga.edu/fac_artchop/989)

Wiley (2013). *What authors want from open access publishing: Wiley author survey, 2012*.  
<https://www.slideshare.net/WileyScienceNewsroom/wiley-14895586>

*Wireless World Research Forum* (2017). *Millennial users in a 5g context*. White paper. Sørensen, L. T.; Williams, I.; Khajuria, S.; Skouby, K. E. (eds.).  
<http://www.wurf.ch/files/wurf/content/files/publications/outlook/Outlook18.pdf>

**Wolff-Eisenberg, Christine; Rod, Alisa B.; Schonfeld, Roger C.** (2016). *UK Survey of academics 2015: Ithaka S+R | Jisc | RLUK*.  
<http://www.sr.ithaka.org/publications/uk-survey-of-academics-2015>

**Wuchty, Stefan; Jones, Benjamin F.; Uzzi, Brian** (2007). "The increasing dominance of teams in production of knowledge". *Science*, v. 316, n. 5827, pp. 1036-1039.  
<https://doi.org/10.1126/science.1136099>

**Xia, Jingfeng** (2010). "A longitudinal study of scholars' attitudes and behaviors toward open-access journal publishing". *Journal of the American Society for Information Science and Technology*, v. 61, n. 3, pp. 615-624.  
<https://doi.org/10.1002/asi.21283>

**Xia, Jingfeng; Harmon, Jennifer L.; Connolly, Kevin G.; Donnelly, Ryan M.; Anderson, Mary R.; Howard, Heather A.** (2015). "Who publishes in "predatory" journals?". *Journal of the Association for Information Science and Technology*, v. 66, n. 7, pp. 1406-1417.  
<https://doi.org/10.1002/asi.23265>

**Xu, Jie; Yang, Tao; Cong, Ting; Zeng, Yuanxiang** (2015). "Use of social networking sites among Chinese and American researchers: a comparative study". *Journal of scholarly publishing*, v. 47, n. 1, pp. 60-76.  
<https://doi.org/10.3138/jsp.47.1.03>

# EPI

## Profesional de la información

<http://www.elprofesionaldelainformacion.com/authors.html>

### SCHEDULED THEMES

Number	Month-year	Theme	Deadline to send texts
30, 1	January 2021	Multidisciplinary (by invitation)	--
30, 2	March 2021	Images	10th September 2020
30, 3	May 2021	Hi-tech Journalism	10th November 2020
30, 4	July 2021	Interaction and visualization	10th January 2021
30, 5	September 2021	Sex, gender, sexuality, & communication	10th March 2021
30, 6	November 2021	Democracy and communication	10th May 2021