All science, technology, and medical (STM) assistant professors at the University of North Carolina at Chapel Hill were invited to participate in an online study to determine their scholarly publishing behaviors and attitudes towards open access journals. The survey consisted of 36 questions designed to ascertain how tenure-track STM assistant professors perceived the role of open access journals in their work and how those perceptions translated into publishing practices.

While other studies have focused on the overall attitudes of scholars towards open access journals, none have limited their subjects to STM tenure-track professors in their pre-tenure periods. Three subgroups of respondents emerged: STM assistant professors who were not aware of open access; STM professors who were aware of open access, but who had not submitted articles to any open access journals; and STM assistant professors who had submitted articles to open access journals. Each subgroup had distinct behaviors and attitudes, an understanding of which is critical to overcoming the challenges that open access journals and the open access movement face.

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Open Access Authors
THE SCHOLARLY PUBLISHING HABITS OF STM ASSISTANT PROFESSORS

by
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INTRODUCTION

The serials crisis has existed for over three decades now, although upwards pressure on science, technology, and medical (STM) serials pricing began as early as the 1960’s (Parks, 2002, pp.318-319). Library acquisition budgets have been pushed to the limit to accommodate the disproportionate cost of maintaining STM serials collections (see Delamothe & Smith, 2004). Before the advent of the serials crisis, libraries traditionally allocated their acquisition budget evenly between serial and monograph purchases. Now, even those academic libraries most dedicated to maintaining their monograph collections struggle to maintain an 80/20 split between serial and monograph acquisitions (G. Raschke, personal communication, February 2008).

The long-term budgetary strain caused by the serials crisis has made libraries receptive to the cost efficiencies promised by open access journals (Báscones Domingues, 2006, p.53). During the past decade, many groups have published definitions of what constitutes open access, including these three major statements: The Budapest Open Access Initiative; The Bethesda Statement on Open Access Publishing; and the Scholarly Publishing and Academic Resources Coalition Statement on Open Access. Of these open access approaches, the Bethesda Statement on Open Access Publishing has gained the most influence in the United States, since both PubMed Central, which serves as the public repository for the National Institutes of Health (NIH), and the Public Library of Science (PLoS) have adopted its principles (Park & Qin, 2007, p.58).
The Bethesda Statement on Open Access Publishing posits that:

- All users have a free, irrevocable, worldwide, and perpetual right of access to the published content;
- All users have a license to copy, use, distribute, transmit, and display publicly the published content;
- The author deposits the work shortly after publication;
- The publisher provides for long-term archiving of the published content; and
- The author retains the copyright to the published content (Bethesda Statement on Open Access Publishing, 2003).

The common elements of all three major open access initiatives are that (1) published content is freely available through the internet; (2) there is a peer-review process; (3) the author retains the copyright to published work; and (4) the published content has an academic purpose (Park & Qin, 2007, p.59). Various diverse mechanisms for making materials freely available exist, including gold or immediately available open access content and green or publication by scholars in traditional journals with subsequent self-archiving (see Willinsky, 2006).

As of October 21, 2009, The Directory of Open Access Journals website listed 4,377 open access journals (Directory of Open Access Journals). This number represents a significant increase from the 757 open access journals the Directory listed in February 2004, but it still constitutes a minute percentage of the over 300,000 periodicals Ulrich’s Periodical Directory currently lists (Greco, Wharton, Estalami, & Jones, 2007, p.186; Ulrichs Periodicals Directory)¹ In fact, of the 300,000 periodicals listed by Ulrich’s, only 1,120 grant open access to any extent (e.g., gold open access, characteristic of publication itself, along with other, author-driven re-use and sharing of various versions of published

¹ Ulrichsweb.com provides a comprehensive source for worldwide periodicals, including academic and scholarly journals, peer reviewed titles, and popular magazines, newspapers, and newsletters (Ulrichs Periodicals Directory).
manuscripts) (Mann, Von Walter, Hess, & Wigang, 2009, p.136). Therefore, despite the interest open access has generated and the success it has achieved, open access initiatives remain minor players in the academic publishing world. For all of the debate engendered by the open access movement, it remains uncertain whether the open access movement will provide a meaningful solution to the serials crisis or even survive (Bolman, 2003, p.94; Helander, 2006, p.309).

If open access journals are to survive in a meaningful way, the academic community must support them as a media for distribution of peer-reviewed scholarly work. If scholars do not embrace open access journals in sufficient quantity, both by publishing in and citing to these journals, they will die or survive in only the most marginal of forms (Park & Qin, 2007, p.79). Scholars have much to risk by actively supporting open access through publication in open access journals, particularly when attempting to be awarded tenure at academic institutions in the United States. Publication is a major consideration for promotion in the academic world. When deciding matters of tenure, promotion, and merit pay, deans and provosts look not only at how many articles a professor has published, but also at which journals published those articles (Greco et al., 2007, pp.194-195).

Deans and provosts are concerned about their faculty’s publishing in open access journals, which are newer and often unranked, or if they are ranked, typically have lower ISI impact scores than traditional-subscription journals (Greco et al., 2007, p.195). Therefore, professors, especially non-tenured, tenure-track professors, should be concerned as well. Tenured faculty members with established academic reputations,
however, may feel more secure in their positions, and therefore more inclined to publish in open access journals (e.g., Kennan, 2007, p.146; Nicholas, Huntington, & Rowlands, 2005, p.512). Non-tenured faculty members, however, are not in a comparable position. If traditional self-interest guides their decision making process, non-tenured professors should seek to publish in the most prestigious subscription-based journals willing to accept their articles (see Björk, 2004, Academic Reward System). While some researchers have begun to challenge these notions of self-interest in academic publishing (e.g., Edwards, 2009), the author’s choice of publication venues is clearly conditioned on, if not entirely influenced by, the authors’ perceptions of how their work will be received by their intended audiences.

This research study attempted to ascertain the publishing behaviors and attitudes of STM assistant professors at the University of North Carolina at Chapel Hill, especially those behaviors and attitudes regarding open access journals. While other studies have focused on the overall attitudes of scholars towards open access journals, none have limited their subjects to STM tenure-track professors in their pre-tenure periods. Open access journals are largely a STM phenomenon. To date, the impact of open access journals on social science and humanities journals and other disciplines has been de minimis, largely because there has been no serious serials crisis pricing in these disciplines, and thus no need for an open access alternative as of yet (Guédon, 2001, chap. 11). A perception also exists that assistant professors are younger, more familiar with, and enthusiastic about, new technology and innovations. As a result, they are perceived as being more likely to support open access through their citing and publishing practices. It is, therefore, important to improve our understanding of how tenure-track
STM assistant professors perceive the role of open access journals in their work and how those perceptions translate into publishing practices.

LITERATURE REVIEW

While the open access movement has been and remains a prominent topic of discussion in information and library science--although growing interest in this topic is emerging within disciplinary communities (cf. Murray-Rust, Rzepa, Tyrell, & Zhang, 2004)--most articles in the literature have focused on the economics and technologies of open access as well as its implications for libraries and commercial and scholarly publishers (Nicholas & Rowlands, 2005, p.179). Notwithstanding that fact, researchers have recognized the critical role that publishing scholars will play in the success or failure of the open access movement. Their studies highlight the scholars’ attitudes towards open access and the critical issues that now prevent scholars from embracing the open access movement en masse and publishing their articles in open access venues.

General Awareness of Open Access

The research literature continues to demonstrate that a large proportion of scholars remain either unaware of or uneducated about open access. In 2004, Swan and Brown distributed 3000 surveys to authors who had published in open access journals and 5000 surveys to authors who had published in subscription-based journals. One hundred fifty-four (154) open access authors responded and 157 non-open access authors responded (Swan & Brown, 2004, Authors, p.219). Of the 157 non-open access
respondents, 37% stated that they were completely unaware of “the concept of Open Access Journals” (Swan & Brown, 2004, JISC/OSI, p.20). Furthermore, of the 62% of non-open access respondents who were aware of open access, 56% stated “general inability to identify an open access journal in which to publish” as a reason for not submitting their work to an open access journal (Swan & Brown, 2004, JISC/OSI, p.29).

In 2005, Rowlands and Nicholas, surveyed 76,790 randomly selected authors who had published work in an ISI-indexed journal during the previous year. These authors received an email inviting them to participate in an online questionnaire; 5,513 of the authors solicited elected to participate (Rowlands & Nicholas, 2005, p.482). Rowlands and Nicholas (2005) reported that 19% of responding authors knew ‘nothing at all’ of open access publishing and 50% knew only ‘a little’ (p.490).

In a 2005 qualitative study of the economic viability of open access undertaken for the CERN Library, Báscones Dominguez interviewed nine CERN authors who had published articles in New Journal of Physics (NJP) in 2002. Báscones Dominguez (2006) noted that, “[m]ost authors were unsure exactly what was meant by open access publication” (p.58). This author uncertainty regarding what constitutes open access would ordinarily be understandable given the general confusion surrounding open access. What makes this case curious, however, is that NJP was itself an open access journal (Báscones Dominguez, 2006, p.56.). One would expect contributors to an open access journal to understand the basic concept of an open access journal.
Impact Factors

The literature also demonstrates that impact factors have been and remain a major impediment for open access journals. In 2004, Swedish scholar Bo-Christer Björk wrote about the barriers to open access based on his experiences as an author and a creator of several open access journals. One of the prominent barriers he mentioned was the lack of access to commercial indexing services, such as Science Citation Index (SCI) (Björk, 2004, Indexing Services and Standards). Björk states that inclusion in the indexing services is necessary on multiple levels. First, it acts as a marketing tool to readers, allowing those who are unfamiliar with a new journal to find its articles (Björk, 2004, Indexing Services and Standards). Second, inclusion in the indexing services adds prestige to the journal’s brand, which helps it attract higher quality submissions (Björk, 2004, Indexing Services and Standards). Because SCI only accepts and monitors ‘core’ literature, which requires a top reputation, new journals find it extremely difficult to attract the quality submissions necessary to establish the top reputation necessary for acceptance by SCI (Björk, 2004, Indexing Services and Standards).

Subsequent literature agreed with Björk’s analysis. Swan and Brown (2004) found that their open access respondents demonstrated remarkably little concern for impact factors (JISC/OSI, p.64). Non-open access respondents, however, took impact factors very seriously, with 69% of that subset citing low impact as a reason not to submit work to an open access journal (Swan & Brown, 2004, JISC/OSI, p.29). Rowlands and Nicholas (2005) found that their respondents rated impact factor 4.04 on a 5.0 scale (with 5.0 being most important) as a consideration for deciding where they will publish (p.483).
One respondent stated in a free response question that although he would like to publish in open access journals, “not obeying the laws of journal impact is unfortunately still professional suicide” (Nicholas, Jamali, & Rowlands, 2006, p.199). Impact factor was only beaten in importance only by perceived prestige of the journal and perceived readership (Rowlands & Nicholas, p.483).

Between July and August 2006, Mann, Von Walter, Hess, and Wigang (2009) distributed their survey on the attitudes of publishing scholars towards open access journals via a website to 1433 participants, who elected via self-selection to participate (p.138). To eliminate pro-open access bias, Mann et al. (2009) included only the survey results of 481 publishing scholars from the disciplines of information science, German literature, and medical science (p.138). More than 60% of their respondents viewed the impact metrics of open access journals as “insufficient” and 72% of respondents stated that factor alone justified their decision to forego publishing in open access media (Mann et al., 2009 p.136.).

**Journal Quality**

The published literature demonstrates that closely related to impact factor is the perceived quality of open access journals. Swan and Brown (2004) found that 64% of their non-open access authors reported that open access journals had both lower prestige and lower readership than comparable subscription journals in their fields (p.220). Based on their survey results, Swan and Brown (2004) concluded that, in general, non-open access authors viewed open access journals as a vanity press that would publish any work
for money (JISC/OSI, p.63). Rowlands and Nicholas (2005) found that perceived journal reputation was the single most important factor scholars considered in deciding where to publish their articles, rating this factor 4.5 on a 5.0 scale (p.483). Related to perceived quality was peer review, which 96.2% of the Nicholas and Rowlands respondents stated was either ‘very important’ or ‘quite important’ to scholarly communication (Rowlands & Nicholas, 2005, p.484). Finally, Park and Qin (2007) discovered in their qualitative study of fourteen scholars at Syracuse University that perceived journal reputation was one of the critical factors that influenced scholars’ decisions to publish in, or cite to, open access journals (p.68-71).

**Career Implications**

Björk (2004) warned that the success of open access journals would be hindered by the academic reward system (Academic Reward System). He stated that universities typically have short lists of preferred journals for publication, which are often weighted for purposes of promotion and advancement, and that ‘prestige counts much more than wide and rapid, and easy access’ to information (Björk, 2004, Academic Reward System). Björk (2004) then observed that the academic reward system would place “academics (and in particular the younger ones) in a situation where primary publishing of their best work in relatively unknown open access journals is a very low priority” (Academic Reward System).

Swan and Brown (2004) found that their non-open access authors held significant concerns about their careers if they were to publish in open access journals (p.221).
Forty-two percent of their non-open access authors responded that they would be concerned about future promotions and appointments and 41% responded that they would be concerned about their personal careers (p. 221). Park and Qin (2007) likewise found that career benefit was one of the critical factors considered by scholars in determining whether to publish in, or cite to, open access journals (pp. 68-71). Mann et al. (2009) found that 61% of their respondents feared that publishing in an open access journal would hurt their chances of promotion and tenure, and 63% worried that open access publishing might damage their chances for research funding (p.136).

**Summary**

The published literature demonstrates that open access journals and open access media remain unknown and unfamiliar to many publishing scholars. Publishing scholars who are aware of open access may, in certain cases, have an overall favorable impression of the media, but even they hesitate to publish in open access journals. Those scholars who have actually published their works in open access journals remain a clear minority. The most commonly-given reasons for not publishing in open access journals are negative perceptions of journal quality and impact factors, and fear of harming future promotion and career advancement opportunities.

**METHODOLOGY**

This exploratory research study consisted of a web-based survey distributed via email to all identified assistant STM assistant professors at the University of North
Carolina at Chapel Hill, a large research university. The only requirement for inclusion in this study was that a participant held, at the time of the study, the position of assistant professor at the University of North Carolina at Chapel Hill in a science, technology, or medical discipline. Any person, however, who held the position of research assistant professor, clinical research assistant, or other variation of the title research assistant was excluded from the study to maximize the likelihood that participants had substantially similar research and publishing requirements.

Email addresses of participants who met the inclusion criteria set forth above were gathered from public departmental web pages, from the UNC Directory, or, in isolated cases, through requests to the department or School’s administrative offices. These email addresses were entered into the Qualtrics survey software (licensed to UNC via the Odum Institute for Research in Social Science), and requests to complete the web-based questionnaire were sent to these participants via an email (see Appendix B) generated by the Qualtrics software. Through this recruitment process, the principle investigator was unable to determine those individuals who completed the survey, allowing the data to be collected anonymously.

The survey was reviewed and approved by the UNC-Chapel Hill Internal Review Board. The principal investigator did not request information on gender, ethnicity, race, or age. It may be assumed that the participant pool consisted of a diverse population and that for purposes of this study, those factors were irrelevant and therefore not collected.

The questionnaire (see Appendix A) consisted of five question blocks: (1) an online consent form; (2) perceptions of the availability of support for the participant’s research projects; (3) awareness, practices, and attitudes related to open access journals in
the participant’s academic specialty; (4) awareness, practices, and attitudes related to subscription-based journals in the participant’s academic specialty; and (5) basic demographic information. The questionnaire employed conditional logic: individuals who did not consent to participate in Block 1 automatically exited the questionnaire; participants who expressed no awareness of open access journals in their academic specialty skipped Block 3 and advanced to Block 4. Following the initial recruitment request, individuals who did not participate within seven and then fourteen days (as tracked by the Qualtrics software) received follow-up emails (via Qualtrics; see Appendix C) that reminded them of the questionnaire and asked them to participate. The survey closed after three weeks.

Given the exploratory nature of this study, descriptive statistics are reported. This study was designed as a census of faculty within the STM disciplines at the University of North Carolina at Chapel Hill; the impact that non-response and self-selection bias might have on the results is considered in the report of the study’s findings.

SURVEY RESULTS

Of the 301 scholars at the University of North Carolina at Chapel Hill identified as meeting the criteria for inclusion in the survey, 76 elected to answer at least some of the questionnaire, for a partial response rate of 25.58%. Sixty-five participants completed the entire questionnaire, for a completion rate of 21.59%. Sixty-one (61) participants elected to disclose their department affiliations in the demographic questioning. Of those 61 respondents, 3% were from technology disciplines, 20% were from science disciplines, and the remaining 77% were from medical disciplines.
**Q1: Informed Consent.** Respondents were informed of the parameters of the survey and any potential harms and benefits. Then they were asked to give their consent to take the survey. Seventy-six (76) respondents answered ‘Yes’ and gave their consent. One (1) respondent refused to give consent, thereby terminating his or her participation in the survey.

**Q2: How has your academic research been affected by the availability of scholarly journals through the University Libraries?** Respondents were offered a seven gradient Likert Scale ranging from ‘greatly benefited’ to ‘greatly suffered’ to answer this question. 88.89% of the 72 respondents to Q2 agreed that the availability of journals through the University Libraries had benefited their academic research, with 73.61% finding their research ‘greatly benefited’ and 13.89% finding their research ‘somewhat benefited,’ and 1.39% finding their research ‘slightly benefited.’ 6.94% of respondents were neutral on this question. 4.17% found that their research had ‘slightly suffered.’

**Q3: In what ways, either positively, or negatively, has your academic research been affected by the availability of scholarly journals through University Libraries?** Here respondents were given the opportunity to provide their own thoughts on the availability of scholarly journals through University Libraries. Several trends emerged from the responses provided. Respondents viewed journal access as a critical component of their research. As one respondent stated, “Journals are pretty much all I read to do my research. Without the journals, my research is effectively isolated from the community
and becomes obsolete.” Also of importance was the availability of electronic access to journals and the ability to access articles through the University Libraries quickly and from any location.

**Q4: If the University Libraries have proposed cancelling subscriptions to any journals in your area of academic specialty, how involved have you been during the decision making process?** Respondents were offered a five gradient Likert Scale ranging from ‘greatly involved’ to ‘not involved at all’ to answer this question. 41.67% of the 72 respondents to Q4 replied that they had been “not involved at all” in any serials cancellations. 37.50% replied that they had been involved, with 1.39% replying that they had been ‘greatly involved,’ 19.44% replying that they had been ‘somewhat involved,’ and 16.67% replying that they had been ‘slightly involved.’ 20.83% replied that the question was inapplicable.

**Q5: If the University Libraries have cancelled or do not subscribe to scholarly journals that you believe would be helpful in your academic research, please briefly list them here.** Here respondents were given the opportunity to provide a list of cancelled journals or journals to which they feel the University Libraries should subscribe. No substantive trends emerged from the respondents’ answers to this question.

**Q6: Are you aware of on-campus or other resources/services available to support your academic writing?** 72.22% of the 72 respondents to Q6 answered ‘No,’ that they were not aware of on-campus or other resources/services available to support their
academic writing. 27.78% of respondents answered ‘Yes,’ that they were aware of such on-campus or other resources/services.

Q7: If ‘Yes’ (to Q6), please briefly list the resources/services of which you are aware to support your academic writing. Here respondents who answered ‘Yes’ to Q6 were given the opportunity to list the on-campus or other resources/services of which they were aware to support their academic writing. The most common resource mentioned was The Writing Center, followed closely by the Office of Research and Development. Other resources mentioned were writing services provided by the School of Public Health, the Lineberger Cancer Center, and the School of Medicine’s Dean’s Office. One respondent listed RefWorks, and another respondent stated that services had been “discontinued because of budget.”

Q8: Are you aware of any open access journals in your field of academic specialty? Forty-six (46) or 63.89% of 72 respondents to Q8 answered ‘Yes’ that they were aware of open access journals in their academic specialty; twenty-six (26) or 36.11% of respondents answered ‘No’ that they were not aware of any open access journals in their academic specialty.

NOTE: Q9-Q25 FORM BLOCK 3, WHICH WAS ONLY ANSWERED BY RESPONDENTS WHO ANSWERED ‘YES’ TO Q8, THUS INDICATING AN AWARENESS OF OPEN ACCESS JOURNALS IN THEIR ACADEMIC SPECIALTY. THOSE RESPONDENTS WHO ANSWERED ‘NO’ SKIPPED DIRECTLY TO BLOCK 4, WHICH BEGINS WITH Q26.

Q9: If you are aware of open access journals in your academic specialty, please list them here. Here, respondents who replied ‘Yes’ to Q8 were given the opportunity to
provide a list of open access journals in their academic specialties. The most common mentioned open access journals were those published by PLoS and BioMed Central (BMC). Respondents either mentioned PLoS and BMC publications in general or cited to specific publications such as PLoS One, PLoS Pathogens, BMC Neuroscience, and BMC Cancer. Other open access journals mentioned included D-Lib Magazine, Journal of Digital Information, and Information Research.

**Q10: How relevant are open access journals as a source for important or noteworthy developments in your academic specialty?** Respondents were offered a seven gradient Likert Scale ranging from ‘extremely relevant’ to ‘extremely irrelevant’ to answer this question. 82.93% of the 41 respondents to Q10 found open access journals relevant for important or noteworthy developments, with 29.27% finding them ‘extremely relevant,’ 24.39% finding them ‘somewhat relevant,’ and 29.27% finding them ‘slightly relevant.’ 9.76% had no opinion regarding this question. 7.32% of respondents found open access journals irrelevant for important or noteworthy developments, with 4.88% finding them ‘slightly irrelevant’ and 2.44% finding them ‘somewhat irrelevant.’

Of the 23 respondents to Q10 who had submitted articles to open access journals, 91.30% found open access journals relevant for important or noteworthy developments, with 43.48% finding them ‘extremely relevant,’ 17.39% finding them ‘somewhat relevant,’ and 30.43% finding them ‘slightly relevant.’ 8.7% of respondents had no opinion regarding this question.
Of the 17 respondents to Q10 who had not submitted articles to open access journals, 75.50% found open access journals relevant for important or noteworthy developments to some degree, with 12.50% finding them ‘extremely relevant,’ 31.25% finding them ‘somewhat relevant,’ and 31.25% finding them ‘slightly relevant.’ 6.25% of respondents had no opinion regarding this question. 18.75% found open access journals irrelevant for important or noteworthy developments, with 12.50% finding them ‘slightly irrelevant’ and 6.25% finding them ‘somewhat irrelevant.’

**Q11: How effective are open access journals as mechanisms for rapid dissemination of new scholarly development in your academic specialty?** Respondents were offered a seven gradient Likert Scale ranging from ‘extremely effective’ to ‘extremely ineffective’ to answer this question. 77.50% of the 40 respondents to Q11 found open access journals effective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty, with 25.00% finding them ‘extremely effective,’ 32.50% finding them ‘somewhat effective,’ and 20.00% finding them ‘slightly effective.’ 15.00% of respondents had no opinion regarding this question. 7.50% of respondents found open access journals ineffective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty, with 2.50% finding them ‘slightly ineffective’ and 5.00% finding them ‘somewhat ineffective.’

Of the 23 respondents to Q11 who had submitted articles to open access journals, 91.3% found open access journals effective as mechanisms for rapid dissemination of new
scholarly developments in their academic specialty, with 39.13% finding them ‘extremely effective,’ 34.78% finding them ‘somewhat effective,’ and 17.39% finding them ‘slightly effective.’ 8.70% of this subgroup of respondents had no opinion regarding this question.

Of the 15 respondents to Q11 who had not submitted articles to open access journals, 60.01% found open access journals effective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty, with 6.67% finding them ‘extremely effective,’ 26.67% finding them ‘somewhat effective,’ and 26.67% finding them ‘slightly effective.’ 20.00% of respondents had no opinion regarding this question. 20.00% of respondents found open access journals ineffective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty, with 6.67% finding them ‘slightly ineffective’ and 13.33% finding them ‘somewhat ineffective.’

**Q12: How effective are open access journals as mechanisms for reaching a defined audience of experts/peers within your academic specialty?** Respondents were offered a seven gradient Likert Scale ranging from ‘extremely effective’ to ‘extremely ineffective’ to answer this question. 64.11% of the 39 respondents to Q12 found open access journals effective as mechanisms for reaching a defined audience of experts/peers within their academic specialty, with 10.26% finding them ‘extremely effective,’ 35.90% finding them ‘somewhat effective,’ and 17.95% finding them ‘slightly effective.’ 25.64% of respondents had no opinion regarding this question. 10.25% of respondents found open access journals ineffective as mechanisms for reaching a defined audience of
experts/peers within their academic specialty, with 7.69% finding them ‘slightly ineffective’ and 2.56% finding them ‘somewhat ineffective.’

Of the 23 respondents to Q12 who had submitted articles to open access journals, 73.91% found open access journals effective as mechanisms for reaching a defined audience of experts/peers within their academic specialty, with 17.39% finding them ‘extremely effective,’ 39.13% finding them ‘somewhat effective,’ and 17.39% finding them ‘slightly effective.’ 21.74% of respondents had no opinion regarding this question. 4.35% of respondents found open access journals ‘slightly ineffective’ as mechanisms for reaching a defined audience of experts/peers within their academic specialty.

Of the 14 respondents to Q12 who had not submitted articles to open access journals, 50.00% found open access journals effective as mechanisms for reaching a defined audience of experts/peers within their academic specialty, with 28.75% finding them ‘somewhat effective’ and 21.43% finding them ‘slightly effective.’ 28.57% of respondents had no opinion regarding this question. 21.43% of respondents found open access journals ineffective as mechanisms for reaching a defined audience of experts/peers within their academic specialty, with 14.29% finding them ‘slightly ineffective’ and 7.14% finding them ‘somewhat ineffective.’

Q13: How effective are open access journals as mechanisms for wide dissemination of new scholarly developments in your academic specialty to scholars working outside your discipline? Respondents were offered a seven gradient Likert Scale
ranging from ‘extremely effective’ to ‘extremely ineffective’ to answer this question.

60.00% of the 40 respondents to Q13 found open access journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines, with 12.50% finding them ‘extremely effective,’ 32.50% finding them ‘somewhat effective,’ and 15.00% finding them ‘slightly effective.’ 22.50% of respondents had no opinion regarding this question. 17.50% of respondents found open access journals ineffective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines, with 12.50% finding them ‘slightly ineffective’ and 5.00% finding them ‘somewhat ineffective.’

Of the 23 respondents to Q13 who had submitted articles to open access journals 69.56% found open access journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines, with 17.39% finding them ‘extremely effective,’ 34.78% finding them ‘somewhat effective,’ and 17.39% finding them ‘slightly effective.’ 26.09% of respondents had no opinion regarding this question. 4.35% of respondents found open access journals ‘slightly ineffective’ as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines.

Of the 16 respondents to Q13 who had not submitted articles to open access journals 43.75% found open access journals effective as mechanisms for wide dissemination of
new scholarly developments in their academic specialty to scholars working outside their disciplines, with 6.25% finding them ‘extremely effective,’ 25.00% finding them ‘somewhat effective,’ and 12.50% finding them ‘slightly effective.’ 18.75% of respondents had no opinion regarding this question. 37.50% of respondents found open access journals ineffective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines, with 25.00% finding them ‘slightly ineffective’ and 12.50% finding them ‘somewhat ineffective.’

**Q14:** How effective are open access journals as mechanisms for wide dissemination of new scholarly developments in your academic specialty to individuals outside of the academic environment (e.g., the general public, project workers in developing countries)? Respondents were offered a seven gradient Likert Scale ranging from ‘extremely effective’ to ‘extremely ineffective’ to answer this question. 46.34% of the 41 respondents to Q14 found open access journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 14.63% finding them ‘extremely effective,’ 21.95% finding them ‘somewhat effective,’ and 9.76% finding them ‘slightly effective.’ 39.02% of respondents had no opinion regarding this question. 14.64% of respondents found open access journals ineffective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 7.32% finding them ‘slightly ineffective’ and 7.32% finding them ‘somewhat ineffective.’
Of the 23 respondents to Q14 who had submitted articles to open access journals 43.48% found open access journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 21.74% finding them ‘extremely effective,’ 17.39% finding them ‘somewhat effective,’ and 4.35% finding them ‘slightly effective.’ 43.48% of respondents had no opinion regarding this question. 13.05% of respondents found open access journals ineffective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 8.70% finding them ‘slightly ineffective’ and 4.05% finding them ‘somewhat ineffective.’

Of the 16 respondents to Q14 who had not submitted articles to open access journals, 50.00% found open access journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 6.25% finding them ‘extremely effective,’ 25.00% finding them ‘somewhat effective,’ and 18.75% finding them ‘slightly effective.’ 31.25% of respondents had no opinion regarding this question. 18.25% of respondents found open access journals ineffective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 6.25% finding them ‘slightly ineffective’ and 12.5% finding them ‘somewhat ineffective.’
Q15: How relevant are metrics like impact factors for characterizing the quality of open access journals in your academic specialty? Respondents were offered a seven gradient Likert Scale ranging from ‘extremely relevant’ to ‘extremely irrelevant’ to answer this question. 82.50% of the 40 respondents to Q15 found metrics such as impact factors to be relevant in characterizing the quality of open access journals in their academic specialties, with 35.00% finding them ‘extremely relevant,’ 20.00% finding them ‘somewhat relevant,’ and 27.50% finding them ‘slightly relevant.’ 7.50% of respondents had no opinion regarding this question. 10.00% of respondents found metrics such as impact factors to be irrelevant in characterizing the quality of open access journals in their academic specialties, with 5.00% finding them ‘slightly irrelevant,’ 2.50% finding them ‘somewhat irrelevant,’ and 2.50% finding them ‘extremely irrelevant.’

Of the 22 respondents to Q15 who had submitted articles to open access journals, 77.27% found metrics such as impact factors to be relevant in characterizing the quality of open access journals in their academic specialties, with 27.27% finding them ‘extremely relevant,’ 27.27% finding them ‘somewhat relevant,’ and 22.73% finding them ‘slightly relevant.’ 13.64% of respondents had no opinion regarding this question. 9.10% of respondents found metrics such as impact factors to be irrelevant in characterizing the quality of open access journals in their academic specialties, with 4.55% finding them ‘slightly irrelevant’ and 4.55% finding them ‘extremely irrelevant.’
Of the 16 respondents to Q15 who had not submitted articles to open access journals, 87.50% found metrics such as impact factors to be relevant in characterizing the quality of open access journals in their academic specialties, with 37.50% finding them ‘extremely relevant,’ 12.50% finding them ‘somewhat relevant,’ and 37.50% finding them ‘slightly relevant.’ 12.50% of respondents found metrics such as impact factors to be irrelevant in characterizing the quality of open access journals in their academic specialties, with 6.25% finding them ‘slightly irrelevant’ and 6.25% finding them ‘somewhat irrelevant.’

Q16: How competent are the individuals who serve on editorial boards of open access journals in your academic specialty?  Respondents were offered a seven gradient Likert Scale ranging from ‘extremely competent’ to ‘extremely incompetent’ to answer this question. 57.50% of the 40 respondents to Q16 found the individuals who serve on editorial boards of open access journals in their academic specialty to be competent, with 22.50% finding them ‘extremely competent,’ 27.50% finding them ‘somewhat competent,’ and 7.50% finding them ‘slightly competent.’ 35.00% of respondents had no opinion regarding this question. 7.50% of respondents found individuals who serve on editorial boards of open access journals in their academic specialty to be incompetent, with 5.00% finding them ‘slightly incompetent’ and 2.50% finding them ‘somewhat incompetent.’
Of the 23 respondents to Q16 who had submitted articles to open access journals, 73.91% found the individuals who serve on editorial boards of open access journals in their academic specialty to be competent, with 30.43% finding them ‘extremely competent’ and 43.48% finding them ‘somewhat competent.’ 26.09% of respondents had no opinion regarding this question.

Of the 15 respondents to Q16 who had not submitted articles to open access journals, 40.00% found the individuals who serve on editorial boards of open access journals in their academic specialty to be competent, with 13.33% finding them ‘extremely competent,’ 6.67% finding them ‘somewhat competent,’ and 20.00% finding them ‘slightly competent.’ 46.67% of respondents had no opinion regarding this question.

13.34% of respondents found the individuals who serve on editorial boards of open access journals in their academic specialty to be incompetent, with 6.67% finding them ‘slightly incompetent’ and 6.67% finding them ‘somewhat incompetent.’

Q17: How competent are the individuals who serve as manuscript reviewers for open access journals in your academic specialty? Respondents were offered a seven gradient Likert Scale ranging from ‘extremely competent’ to ‘extremely incompetent’ to answer this question. 56.11% of the 41 respondents to Q17 found the individuals who serve as manuscript reviewers for open access journals in their academic specialty to be competent, with 7.32% finding them ‘extremely competent,’ 36.59% finding them ‘somewhat competent,’ and 12.20% finding them ‘slightly competent.’ 39.02% of respondents had no opinion regarding this question. 4.88% of the respondents found the
individuals who serve as manuscript reviewers for open access journals in their academic specialty to be incompetent, with 2.44% finding them ‘slightly incompetent’ and 2.44% finding them ‘somewhat incompetent.’

Of the 23 respondents to Q17 who had submitted articles to open access journals, 73.91% found the individuals who serve as manuscript reviewers for open access journals in their academic specialty to be competent, with 13.04% finding them ‘extremely competent,’ 56.52% finding them ‘somewhat competent,’ and 4.35% finding them ‘slightly competent.’ 26.09% of respondents had no opinion regarding this question.

Of the 16 respondents to Q17 who had not submitted articles to open access journals, 37.50% found the individuals who serve as manuscript reviewers for open access journals in their academic specialty to be competent, with 12.50% finding them ‘somewhat competent’ and 25.00% finding them ‘slightly competent.’ 56.25% of respondents had no opinion regarding this question. 6.25% of respondents found the individuals who serve as manuscript reviewers for open access journals in their academic specialty to be ‘slightly incompetent.’

Q18: When considering your opportunities for tenure and promotion, how advantageous would it be for you to publish in an open access journal in your academic specialty? Respondents were offered a seven gradient Likert Scale ranging from ‘extremely advantageous’ to ‘extremely disadvantageous’ to answer this question. 43.90% of the 41 respondents to Q18 considered that it would be advantageous for tenure
and promotion to publish in an open access journal, with 4.88% finding that it would be ‘extremely advantageous,’ 19.51% finding that it would be ‘somewhat advantageous,’ and 19.51% finding that it would be ‘slightly advantageous.’ 39.02% of respondents had no opinion regarding this question. 17.08% of respondents considered that it would be disadvantageous for tenure and promotion to publish in an open access journal, with 12.20% finding that it would be ‘slightly disadvantageous’ and 4.88% finding that it would be ‘somewhat disadvantageous.’

Of the 23 respondents to Q18 who had submitted articles to open access journals, 56.53% considered that it would be advantageous for tenure and promotion to publish in an open access journal, with 8.70% finding that it would be ‘extremely advantageous,’ 26.09% finding that it would be ‘somewhat advantageous,’ and 21.74% finding that it would be ‘slightly advantageous.’ 30.43% of respondents had no opinion regarding this question. 13.05% of respondents considered that it would be disadvantageous for tenure and promotion to publish in an open access journal, with 8.70% finding that it would be ‘slightly disadvantageous’ and 4.35% finding that it would be ‘somewhat disadvantageous.’

Of the 16 respondents to Q18 who had not submitted articles to open access journals, 31.25% considered that it would be advantageous for tenure and promotion to publish in an open access journal, with 12.50% finding that it would be ‘somewhat advantageous,’ and 18.75% finding that it would be ‘slightly advantageous.’ 43.75% of respondents had no opinion regarding this question. 25.00% of respondents considered that it would be
disadvantageous for tenure and promotion to publish in an open access journal, with
18.75% finding that it would be ‘slightly disadvantageous’ and 6.25% finding that it
would be ‘somewhat disadvantageous.’

**Q19: What percentage of your time each week, on average, do you spend reading
articles from open access journals and traditional subscription journals in your
academic specialty?** Respondents spent an average value of 33.25% (standard deviation
of 33.92%) of each week reading articles from subscription based journals and 10.43%
(standard deviation of 15.33%) reading articles from open access journals.

The 24 respondents to Q19 who had submitted articles to open access journals spent an
average value of 31.75% (standard deviation of 28.65%) of each week reading articles
from subscription based journals and 14.71% (standard deviation of 18.46%) reading
articles from open access journals.

The 16 respondents to Q19 who had not submitted articles to open access journals spent
an average value of 35.50% (standard deviation of 41.52%) of each week reading articles
from subscription based journals and 4.00% (standard deviation of 3.86%) reading
articles from open access journals.

**Q20: Have you ever submitted a manuscript for publication to an open access
journal (whether it was accepted for publication or not)?** Twenty-four (24) or 60% of
the 40 respondents to Q20 answered ‘Yes.’ Sixteen (16) or 40% answered ‘No.’
Q21: Given all of the journal articles you have published as a faculty member during the past three years, what is the distribution of these articles across subscription-based journals and open access journals? Respondents reported an average publication distribution of 77.78% (standard deviation 31.55%) for subscription-based journals and 10.85% (standard deviation 16.74%) for open access journals.

The 24 respondents to Q21 who had submitted articles to open access journals reported an average publication distribution of 71.54% (standard deviation 30.79%) for subscription-based journals and 16.83% (standard deviation 19.27%) for open access journals.

The 16 respondents to Q21 who had not submitted articles to open access journals reported an average publication distribution of 87.13% (standard deviation 31.28%) for subscription-based journals and 1.88% (standard deviation 4.03%) for open access journals.

Q22: Given all of the journal articles you have published as a faculty member during the past three years, what percentage of others’ articles do you cite or reference from subscription-based journals and open access journals? Respondents reported an average citation distribution of 80.45% (standard deviation 26.09%) for subscription-based journals and 9.90% (standard deviation 36.95%) for open access journals.
The 24 respondents to Q22 who had submitted articles to open access journals reported an average citation distribution of 76.46% (standard deviation 26.51%) for subscription-based journals and 12.21% (standard deviation 10.99%) for open access journals.

The 24 respondents to Q22 who had not submitted articles to open access journals reported an average citation distribution of 86.44% (standard deviation 25.06%) for subscription-based journals and 6.44% (standard deviation 10.02%) for open access journals.

Q23: Have you ever been active in an editorial capacity (e.g., as a member of an editorial board; as a section, subject, or associate editor, etc.) for any open access journals? Five (5) or 13.51% of the 37 respondents to Q23 answered ‘Yes.’ Thirty-two (32) or 86.49% answered ‘No.’

Of the 22 respondents to Q23 who had submitted articles to open access journals, three (3) or 13.64% answered ‘Yes,’ 19 or 83.36% answered ‘No.’

Of the 15 respondents to Q23 who had not submitted articles to open access journals, two (2) or 13.33% answered ‘Yes,’ 13 or 86.67% answered ‘No.’

Q24: How would you characterize the attitudes toward open access within your department? Respondents were offered a seven gradient Likert Scale ranging from
‘extremely positive’ to ‘extremely negative’ to answer this question. 59.46% of the 37 respondents to Q24 characterized the attitudes toward open access within their departments as positive, with 8.11% finding them ‘extremely positive,’ 29.73% finding them ‘somewhat positive,’ and 21.62% finding them ‘slightly positive.’ 24.32% of respondents characterized the attitudes towards open access within their departments as a ‘mixed reaction.’ 16.21% of respondents characterized the attitudes toward open access within their departments as negative, with 13.51% finding them ‘slightly negative’ and 2.70% finding that it was ‘somewhat negative.’

Of the 22 respondents to Q24 who had submitted articles to open access journals, 63.64% characterized the attitudes toward open access within their departments as positive, with 4.55% finding that it was ‘extremely positive,’ 36.36% finding them ‘somewhat positive,’ and 22.73% finding them ‘slightly positive.’ 18.18% of respondents characterized the attitudes towards open access within their departments as a ‘mixed reaction.’ 18.19% of respondents characterized the attitudes toward open access within their departments as negative, with 13.64% finding them ‘slightly negative’ and 4.55% finding them ‘somewhat negative.’

Of the 15 respondents to Q24 who had not submitted articles to open access journals, 53.33% characterized the attitudes toward open access within their departments as positive, with 13.33% finding them ‘extremely positive,’ 20.00% finding them ‘somewhat positive,’ and 20.00% finding them ‘slightly positive.’ 33.33% of respondents characterized the attitudes towards open access within their departments as a
‘mixed reaction.’ 13.33% of respondents characterized the attitudes toward open access within their departments as ‘slightly negative.’

Q25: How would you characterize the attitudes toward open access across the campus? Respondents were offered a seven gradient Likert Scale ranging from ‘extremely positive’ to ‘extremely negative’ to answer this question. 50.00% of the 34 respondents to Q25 characterized the attitudes toward open access across the campus as positive, with 8.82% finding them ‘extremely positive,’ 23.53% finding them ‘somewhat positive,’ and 17.65% finding them ‘slightly positive.’ 41.18% of respondents characterized the attitudes towards open access within their departments as a ‘mixed reaction.’ 8.82% of respondents characterized the attitudes toward open access within their departments as negative, with 5.88% finding them ‘slightly negative’ and 2.94% finding them ‘extremely negative.’

Of the 21 respondents to Q25 who had submitted articles to open access journals, 52.38% characterized the attitudes toward open access across the campus as positive, with 9.52% finding them ‘extremely positive,’ 28.57% finding them ‘somewhat positive,’ and 14.29% finding them ‘slightly positive.’ 38.10% of respondents characterized the attitudes towards open access within their departments as a ‘mixed reaction.’ 9.57% of respondents characterized the attitudes toward open access within their departments as negative, with 4.76% finding them ‘slightly negative’ and 4.76% finding them ‘extremely negative.’
Of the 13 respondents to Q25 who had not submitted articles to open access journals, 46.15% characterized the attitudes toward open access across the campus as positive, with 7.69% finding them ‘extremely positive,’ 15.38% finding them ‘somewhat positive,’ and 23.08% finding them ‘slightly positive.’ 46.15% of respondents characterized the attitudes towards open access within their departments as a ‘mixed reaction.’ 7.69% of respondents characterized the attitudes toward open access within their departments as ‘slightly negative.’

NOTE: Q26-Q36 FORM BLOCK 4, WHICH ADDRESSES ATTITUDES TOWARDS SUBSCRIPTION-BASED JOURNALS AND WAS COMPLETED BY ALL RESPONDENTS.

Q26: How relevant are subscription-based journals as a source for reporting new scholarly developments in your academic specialty? Respondents were offered a seven gradient Likert Scale ranging from ‘extremely relevant’ to ‘extremely irrelevant’ to answer this question. 98.38% of the 62 respondents to Q26 found subscription-based journals relevant for reporting new scholarly developments in their academic specialties, with 85.48% finding them ‘extremely relevant’ and 12.90% finding them ‘somewhat relevant.’ 1.61% of respondents expressed no opinion regarding this question.

Of those 26 respondents to Q26 who answered only Block 4, 96.16% found subscription-based journals relevant for reporting new scholarly developments in their academic specialties, with 92.31% finding them ‘extremely relevant’ and 3.85% finding them ‘somewhat relevant.’ 3.85% of respondents had no opinion regarding this question.
Of the 36 respondents to Q26 who answered both Blocks 3 and 4, 100% found subscription-based journals relevant for reporting new scholarly developments in their academic specialties, 80.56% finding them ‘extremely relevant’ and 19.44% finding them ‘somewhat relevant.’

Of the 22 respondents to Q26 who had submitted articles to open access journals, 100% found subscription-based journals relevant reporting new scholarly developments in their academic specialties, with 81.82% finding them ‘extremely relevant’ and 18.18% finding them ‘somewhat relevant.’

Of the 14 respondents to Q26 who were aware of open access journals in their academic specialty but had not submitted articles to open access journals, 100% found subscription-based journals relevant reporting new scholarly developments in their academic specialties, with 78.57% finding them ‘extremely relevant’ and 21.43% finding them ‘somewhat relevant.’

Q27: How effective are subscription-based journals as mechanisms for rapid dissemination of new scholarly development in your academic specialty?

Respondents were offered a seven gradient Likert Scale ranging from ‘extremely effective’ to ‘extremely ineffective’ to answer this question. 93.55% of the 62 respondents to Q27 found subscription-based journals effective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty, with 43.55%
finding them ‘extremely effective,’ 45.16% finding them ‘somewhat effective,’ and 4.84% finding them ‘slightly effective.’ 6.45% of respondents found them ineffective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty, with 3.23% finding them ‘slightly ineffective,’ 1.61% finding them ‘somewhat ineffective,’ and 1.61% finding them ‘extremely ineffective.’

Of those 26 respondents to Q27 who answered only Block 4, 96.15% found subscription-based journals effective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty, with 57.69% finding them ‘extremely effective’ and 38.46% finding them ‘somewhat effective.’ 3.85% found them somewhat ineffective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty.

Of the 36 respondents to Q27 who answered both Blocks 3 and 4, 91.66% found subscription-based journals extremely effective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty, with 33.33% finding them ‘extremely effective,’ 50.00% finding them ‘somewhat effective,’ and 8.33% finding them ‘slightly effective.’ 8.34% found them ineffective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty, with 5.56% finding them ‘slightly effective’ and 2.78% finding them ‘extremely ineffective.’

Of the 22 respondents to Q27 who had submitted articles to open access journals, 90.91% found subscription-based journals effective as mechanisms for rapid dissemination of
new scholarly developments in their academic specialty, with 30.82% finding them ‘extremely effective,’ 50.00% finding them ‘somewhat effective,’ and 9.09% finding them ‘slightly effective.’ 9.09% of respondents found them ineffective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty, with 4.55% finding them ‘slightly ineffective’ and 4.55% finding them ‘extremely ineffective.’

Of the 14 respondents to Q27 who were aware of open access journals in their academic specialty but had not submitted articles to open access journals, 92.85% found subscription-based journals effective as mechanisms for rapid dissemination of new scholarly developments in their academic specialty, with 35.71% finding them ‘extremely effective,’ 50.00% finding them ‘somewhat effective,’ and 7.14% finding them ‘slightly effective.’ 7.14% of respondents found them ‘slightly ineffective’ as mechanisms for rapid dissemination of new scholarly developments in their academic specialty.

**Q28: How effective are subscription-based journals as mechanisms for reaching a defined audience of experts/peers within your academic specialty?** Respondents were offered a seven gradient Likert Scale ranging from ‘extremely effective’ to ‘extremely ineffective’ to answer this question. 100% of the 62 respondents to Q28 found subscription-based journals effective as mechanisms for reaching a defined audience of experts/peers within their academic specialty, with 67.74% finding them ‘extremely effective,’ 24.19% finding them ‘somewhat effective,’ and 8.06% finding them ‘slightly effective.’
Of those 26 respondents to Q28 who answered only Block 4, 100% found subscription-based journals effective as mechanisms for reaching a defined audience of experts/peers within their academic specialty with 76.92% finding them ‘extremely effective,’ 19.23% found them ‘somewhat effective,’ and 3.85% finding them ‘slightly effective.’

Of the 36 respondents to Q28 who answered both Blocks 3 and 4, 100% found subscription-based journals effective as mechanisms for reaching a defined audience of experts/peers within their academic specialty, with 61.11% finding them ‘extremely effective,’ 27.78% finding them ‘somewhat effective,’ and 11.11% finding them ‘slightly effective.’

Of the 22 respondents to Q28 who had submitted articles to open access journals, 100% found subscription-based journals effective as mechanisms for reaching a defined audience of experts/peers within their academic specialty, with 63.64% finding them ‘extremely effective,’ 22.73% finding them ‘somewhat effective,’ and 13.64% finding them ‘slightly effective.’

Of the 14 respondents to Q28 who were aware of open access journals in their academic specialty but had not submitted articles to open access journals, 100% found subscription-based journals effective as mechanisms for reaching a defined audience of experts/peers within their academic specialty, with 57.14% finding them ‘extremely effective,’ 19.29% finding them ‘somewhat effective,’ and 22.71% finding them ‘slightly effective.’
Q29: How effective are subscription-based journals as mechanisms for wide
dissemination of new scholarly developments in your academic specialty to scholars
working outside your discipline? Respondents were offered a seven gradient Likert
Scale ranging from ‘extremely effective’ to ‘extremely ineffective’ to answer this
question. 76.66% of the 60 respondents to Q29 found subscription-based journals
effective as mechanisms for wide dissemination of new scholarly developments in their
academic specialty to scholars working outside their disciplines, with 33.33% finding
them ‘extremely effective,’ 28.33% finding them ‘somewhat effective,’ and 15.00%
finding them ‘slightly effective.’ 11.67% of all respondents had no opinion regarding
this question. 11.67% of the respondents found subscription-based journals ineffective as
mechanisms for wide dissemination of new scholarly developments in their academic
specialty to scholars working outside their disciplines, with 10.00% finding them
‘slightly ineffective’ and 1.67% finding them ‘somewhat ineffective.’

Of the 25 respondents to Q29 who answered only Block 4, 79.17% found subscription-
based journals effective as mechanisms for wide dissemination of new scholarly
developments in their academic specialty to scholars working outside their disciplines,
with 37.50% finding them ‘extremely effective,’ 25.00% finding them ‘somewhat
effective,’ and 16.67% finding them ‘slightly effective.’ 4.17% of these respondents
expressed no opinion regarding effectiveness. 16.67% of these respondents found
subscription-based journals ‘slightly ineffective’ as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines.

Of the 36 respondents to Q29 who answered both Blocks 3 and 4, 75.01% found subscription-based journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines, with 30.56% finding them ‘extremely effective,’ 30.56% finding them ‘somewhat effective,’ and 13.89% finding them ‘slightly effective.’ 16.67% of these respondents expressed no opinion regarding effectiveness. 8.34% of these respondents found subscription-based journals ineffective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines, with 5.56% finding them ‘slightly ineffective’ and 2.78% finding them ‘somewhat ineffective.’

Of the 22 respondents to Q29 who had submitted articles to open access journals, 77.27% found subscription-based journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines, with 27.27% finding them ‘extremely effective,’ 36.36% finding them ‘somewhat effective,’ and 13.64% finding them ‘slightly effective.’ 18.18% of these respondents expressed no opinion regarding this question. 4.55% of these respondents found subscription-based journals ‘somewhat ineffective’ as mechanisms for wide
dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines.

Of the 14 respondents to Q29 who were aware of open access journals in their academic specialty but had not submitted articles to open access journals, 71.43% found subscription-based journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines, with 35.71% finding them ‘extremely effective,’ 21.43% finding them ‘somewhat effective,’ and 14.29% finding them ‘slightly effective.’ 14.29% of these respondents expressed no opinion regarding this question. 14.29% of these respondents found subscription-based journals ‘slightly ineffective’ as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars working outside their disciplines.

**Q30: How effective are subscription-based journals as mechanisms for wide dissemination of new scholarly developments in your academic specialty to individuals outside of the academic environment (e.g., the general public, project workers in developing countries)?** Respondents were offered a seven gradient Likert Scale ranging from ‘extremely effective’ to ‘extremely ineffective’ to answer this question. 48.39% of the 62 respondents to Q30 found subscription-based journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 14.52% finding them ‘extremely effective,’ 16.13% finding them ‘somewhat effective,’ and
17.74% finding them ‘slightly effective.’ 19.35% of respondents had no opinion regarding this question. 32.26% of respondents found subscription-based journals ineffective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 9.68% finding them ‘slightly ineffective,’ 8.06% finding them ‘somewhat ineffective,’ and 14.52% finding them ‘extremely ineffective.’

Of the 26 respondents to Q30 who answered only Block 4, 46.15% found subscription-based journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 15.38% finding them ‘extremely effective,’ 7.69% finding them ‘somewhat effective,’ and 23.08% finding them ‘slightly effective.’ 19.23% of these respondents expressed no opinion regarding this question. 34.61% of these respondents found subscription-based journals ineffective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 11.54% finding them ‘slightly ineffective,’ 7.69% finding them ‘somewhat ineffective,’ and 15.38% finding them ‘extremely ineffective.’

Of the 36 respondents to Q30 who answered both Blocks 3 and 4, 50.00% found subscription-based journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to scholars individuals outside of the academic environment, with 13.89% finding them ‘extremely effective,’ 22.22% finding them ‘somewhat effective,’ and 13.89% finding them ‘slightly effective.’ 19.44% of
these respondents expressed no opinion regarding effectiveness. 30.55% of these respondents found subscription-based journals ineffective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 8.33% finding them ‘slightly ineffective,’ 8.33% finding them ‘somewhat ineffective,’ and 13.89% finding them ‘extremely ineffective.’

Of the 22 respondents to Q30 who had submitted articles to open access journals, 50.00% found subscription-based journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 9.09% finding them ‘extremely effective,’ 22.73% finding them ‘somewhat effective,’ and 18.18% finding them ‘slightly effective.’ 22.73% of these respondents expressed no opinion regarding effectiveness. 27.28% of these respondents found subscription-based journals ineffective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 13.64% finding them ‘somewhat ineffective’ and 13.64% finding them ‘extremely ineffective.’

Of the 14 respondents to Q30 who were aware of open access journals in their academic specialty but had not submitted articles to open access journals, 50.00% found subscription-based journals effective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 21.43% finding them ‘extremely effective,’ 21.43% finding them
‘somewhat effective,’ and 7.14% finding them ‘slightly effective.’ 14.29% of these respondents expressed no opinion regarding this question. 35.72% of these respondents found subscription-based journals ineffective as mechanisms for wide dissemination of new scholarly developments in their academic specialty to individuals outside of the academic environment, with 21.43% finding them ‘slightly ineffective’ and 14.29% finding them ‘extremely ineffective.’

Q31: How relevant are metrics like impact factors for characterizing the quality of subscription-based journals in your academic specialty? Respondents were offered a seven gradient Likert Scale ranging from ‘extremely relevant’ to ‘extremely irrelevant’ to answer this question. 75.80% of the 62 respondents to Q31 found metrics such as impact factors to be relevant in characterizing the quality of subscription-based journals in their academic specialties, with 29.03% finding them ‘extremely relevant,’ 33.87% finding them ‘somewhat relevant,’ and 12.90% finding them ‘slightly relevant.’ 16.13% of respondents had no opinion regarding this question. 8.06% of respondents found metrics such as impact factors to be irrelevant in characterizing the quality of subscription-based journals in their academic specialties, with 1.61% finding them ‘slightly irrelevant,’ 4.84% finding them ‘somewhat irrelevant,’ and 1.61% finding them ‘extremely irrelevant.’

Of the 26 respondents to Q31 who answered only Block 4, 57.69% found metrics such as impact factors to be relevant in characterizing the quality of subscription-based journals in their academic specialties, with 19.23% finding them ‘extremely relevant,’ 26.92%
finding them ‘somewhat relevant,’ and 11.54% finding them ‘slightly relevant.’ 30.77% of respondents had no opinion regarding this question. 11.54% of respondents found metrics such as impact factors to be ‘slightly irrelevant’ in characterizing the quality of subscription-based journals in their academic specialties.

Of the 36 respondents to Q31 who answered both Blocks 3 and 4, 88.89% found metrics such as impact factors to be relevant in characterizing the quality of subscription-based journals in their academic specialties, with 36.11% finding them ‘extremely relevant,’ 38.89% finding them ‘somewhat relevant,’ and 13.89% finding them ‘slightly relevant.’ 5.56% of respondents had no opinion regarding relevancy. 5.56% of respondents found metrics such as impact factors to be irrelevant in characterizing the quality of subscription-based journals in their academic specialties, with 2.78% finding them ‘slightly irrelevant’ and 2.78% finding them ‘extremely irrelevant.’

Of the 22 respondents to Q31 who had submitted articles to open access journals, 86.36% found metrics such as impact factors to be relevant in characterizing the quality of subscription-based journals in their academic specialties, with 27.27% finding them ‘extremely relevant,’ 40.91% finding them ‘somewhat relevant,’ and 18.18% finding them ‘slightly relevant.’ 4.55% of respondents expressed no opinion regarding this question. 9.10% of respondents found metrics such as impact factors to be irrelevant in characterizing the quality of subscription-based journals in their academic specialties, with 4.55% finding them ‘slightly irrelevant’ and 4.55% finding them ‘extremely irrelevant.’
Of the 14 respondents to Q31 who were aware of open access journals in their academic specialty but had not submitted articles to open access journals, 92.85% found metrics such as impact factors to be relevant in characterizing the quality of subscription-based journals in their academic specialties, with 50.00% finding them ‘extremely relevant,’ 35.71% finding them ‘somewhat relevant,’ and 7.14% finding them ‘slightly relevant.’ 7.14% of respondents expressed no opinion regarding this question.

**Q32: How competent are the individuals who serve on editorial boards of subscription-based journals in your academic specialty?** Respondents were offered a seven gradient Likert Scale ranging from ‘extremely competent’ to ‘extremely incompetent’ to answer this question. 80.65% of the 62 respondents to Q32 found the individuals who serve on editorial boards of subscription-based journals in their academic specialty to be competent, with 37.10% finding them ‘extremely competent,’ 40.32% finding them ‘somewhat competent,’ and 3.23% finding them ‘slightly competent.’ 19.35% of respondents had no opinion regarding this question.

Of the 26 respondents to Q32 who answered only Block 4, 73.08% found the individuals who serve on editorial boards of subscription-based journals in their academic specialty to be competent, with 38.46% finding them ‘extremely competent,’ 30.77% finding them ‘somewhat competent,’ and 3.85% finding them ‘slightly competent.’ 26.92% of respondents had no opinion regarding this question.
Of the 36 respondents to Q32 who answered both Blocks 3 and 4, 86.11% found the individuals who serve on editorial boards of subscription-based journals in their academic specialty to be competent, with 36.11% finding them ‘extremely competent,’ 47.22% finding them ‘somewhat competent,’ and 2.78% finding them ‘slightly competent.’ 13.89% of respondents had no opinion regarding this question.

Of the 22 respondents to Q32 who had submitted articles to open access journals, 86.36% found the individuals who serve on editorial boards of subscription-based journals in their academic specialty to be competent, with 27.27% finding them ‘extremely competent’ and 59.09% finding them ‘somewhat competent.’ 13.64% of respondents had no opinion regarding this question.

Of the 14 respondents to Q32 who were aware of open access journals in their academic specialty but had not submitted articles to open access journals, 85.71% found the individuals who serve on editorial boards of subscription-based journals in their academic specialty to be competent, with 50.00% finding them ‘extremely competent,’ 28.57% finding them ‘somewhat competent,’ and 7.14 finding them ‘slightly competent.’ 14.29% of respondents had no opinion regarding this question.

Q33: How competent are the individuals who serve as manuscript reviewers for subscription-based journals in your academic specialty? Respondents were offered a seven gradient Likert Scale ranging from ‘extremely competent’ to ‘extremely incompetent’ to answer this question. 79.04% of the 62 respondents to Q33 found the
individuals who serve as manuscript reviewers for subscription-based journals in their academic specialty to be competent, with 20.97% finding them ‘extremely competent,’ 53.23% finding them ‘somewhat competent,’ and 4.84% finding them ‘slightly competent.’ 17.74% of respondents had no opinion regarding this question. 3.23% of all respondents found individuals who serve as manuscript reviewers for subscription-based journals in their academic specialty to be ‘slightly incompetent.’

Of the 26 respondents to Q33 who only answered Block 4, 73.08% found the individuals who serve as manuscript reviewers for subscription-based journals in their academic specialty to be competent, with 30.77% finding them ‘extremely competent’ and 42.31% finding them ‘somewhat competent.’ 23.08% of respondents had no opinion regarding this question. 3.85% of these respondents found individuals who serve as manuscript reviewers for subscription-based journals in their academic specialty to be ‘slightly incompetent.’

Of the 36 respondents to Q33 who answered both Blocks 3 and 4, 83.33% found the individuals who serve as manuscript reviewers for subscription-based journals in their academic specialty to be competent, with 13.33% finding them ‘extremely competent,’ 61.11% finding them ‘somewhat competent,’ and 8.33% finding them ‘slightly incompetent.’ 13.89% of these respondents had no opinion regarding this question. 2.78% of these respondents found individuals who serve as manuscript reviewers for subscription-based journals in their academic specialty to be ‘slightly incompetent.’
Of the 22 respondents to Q33 who had submitted articles to open access journals, 86.37% found the individuals who serve as manuscript reviewers for subscription-based journals in their academic specialty to be competent, with 9.09% finding them ‘extremely competent,’ 72.73% finding them ‘somewhat competent,’ and 4.55% finding them ‘slightly incompetent.’ 13.64% of these respondents had no opinion regarding this question.

Of the 14 respondents to Q33 who were aware of open access journals in their academic specialty but had not submitted articles to open access journals, 78.58% found the individuals who serve as manuscript reviewers for subscription-based journals in their academic specialty to be competent, with 21.43% finding them ‘extremely competent,’ 42.86% finding them ‘somewhat competent,’ and 14.29% finding them ‘slightly incompetent.’ 14.29% of these respondents had no opinion regarding this question. 7.14% of respondents found the individuals who serve as manuscript reviewers for subscription-based journals in their academic specialty to be ‘slightly incompetent.’

**Q34:** *When considering your opportunities for tenure and promotion, how advantageous would it be for you to publish an article in a subscription-based journal in your academic specialty?* Respondents were offered a seven gradient Likert Scale ranging from ‘extremely advantageous’ to ‘extremely disadvantageous’ to answer this question. 90.16% of the 61 respondents to Q34 considered that it would be advantageous for tenure and promotion to publish in a subscription-based journal, with 70.49% finding that it would be ‘extremely advantageous’ and 19.67% finding that it
would be ‘somewhat advantageous.’ 9.84% of respondents had no opinion regarding this question.

Of the 26 respondents to Q34 who only answered Block 4, 96.15% considered that it would be advantageous for tenure and promotion to publish in a subscription-based journal, with 80.77% finding that it would be ‘extremely advantageous’ and 15.38% finding that it would be ‘somewhat advantageous.’ 3.85% of respondents had no opinion regarding this question.

Of the 35 respondents to Q34 who answered Blocks 3 and 4, 85.72% considered that it would be advantageous for tenure and promotion to publish in a subscription-based journal, with 62.86% finding that it would be ‘extremely advantageous’ and 22.86% finding that it would be ‘somewhat advantageous.’ 14.29% of respondents had no opinion regarding this question.

Of the 22 respondents to Q34 who had submitted articles to open access journals, 86.36% considered that it would be advantageous for tenure and promotion to publish in a subscription-based journal, with 59.09% finding that it would be ‘extremely advantageous’ and 27.27% finding that it would be ‘somewhat advantageous.’ 13.64% of respondents had no opinion regarding this question.

Of the 14 respondents to Q34 who were aware of open access journals in their academic specialty but had not submitted articles to open access journals, 84.61% considered that it
would be advantageous for tenure and promotion to publish in a subscription-based journal, with 69.23% finding that it would be ‘extremely advantageous’ and 15.38% finding that it would be ‘somewhat advantageous.’ 15.38% of respondents had no opinion regarding this question.

**Q35:** How many hours per week, on average, do you spend reading articles from subscription-based journals in your field of academic study? Respondents were given an open text box in which to reply to this question. Many respondents simply gave a range of ‘less than 10’ or ‘5 to 10 hours.’ One respondent reported ‘3 to 5%’ with no further explanation. Another reported, ‘Quite variable, depends on state of writing.’ Upon reflection, a text box was not the best design choice for this question as it allowed the respondents to have too much flexibility in their responses.

**Q36:** Have you ever been active in an editorial capacity (e.g., as a member of an editorial board; as a section, subject, or associate editor, etc.) for any subscription-based journals)? Of the 62 respondents to Q36, 13 or 20.97% answered ‘Yes’ and 49 or 79.03% answered ‘No.’

Of the 26 respondents to Q36 who answered only Block 4, 5 or 19.23% answered ‘Yes’ and 21 or 80.77% answered ‘No.’

Of the 36 respondents to Q36 who answered Blocks 3 and 4, 8 or 22.22% answered ‘Yes’ and 28 or 77.78% answered ‘No.’
Of the 22 respondents to Q36 who had submitted articles to open access journals, 5 or 22.73% answered ‘Yes’ and 17 or 77.27% answered ‘No.’

Of the 14 respondents to Q36 who were aware of open access journals in their academic specialty but had not submitted articles to open access journals, 3 or 21.43% answered ‘Yes’ and 11 or 78.57% answered ‘No.’

DISCUSSION

The results from the survey of University of North Carolina at Chapel Hill STM Assistant Professors demonstrate that STM assistant professors at the University have embraced open access journals as a media for research and publication to a certain extent. Traditional barriers for widespread acceptance of open access journals identified by prior researchers, however, remain an issue for this subset of professors.

The discussion of the survey results that follows analyzes and presents the survey data in four components: (1) all respondents; (2) those respondents who had submitted articles to open access journals (Open Access Submitters or OAS); (3) those respondents who were aware of open access journals in their academic specialties but who had not submitted articles to an open access journal (Open Access Respondents or OAR); and (4) those respondents who were unaware of open access journals in their academic specialties (Subscription Journal Respondents or SJR). It addresses the extent to which STM assistant professors at the University of North Carolina at Chapel Hill have
accepted open access journals as a part of their research and publication practices and the extent to which they still view traditional subscription journals as the superior media. Finally, the discussion addresses an unrelated, but important issue raised by the Survey: Whether or not respondents are aware of campus resources available to assist with their research and writing.

Although the discussion speaks in terms of general applicability to STM assistant professors, 77% of the 61 respondents who elected to disclose their department affiliations were from medical disciplines. Although the principle investigator of the Survey did not specifically intend to research the scholarly publishing habits of medical assistant professors, the Survey may be particularly applicable to that group of professors due to their proportionately high response rate.

Given the exploratory nature of this investigation, only descriptive statistics are provided in the following discussion. Applying notions of statistical significance to any apparent differences—and attempts to generalize the results for this relatively limited population to scholars more broadly—might be premature and, perhaps, viewed as misleading if reported.

**General Awareness**

The Survey results demonstrate that awareness of open access remains an issue for STM assistant professors at the University of North Carolina at Chapel Hill. Swan and Brown (2004) found that 37% of their non-open access authors were completely unaware of the concept of open access journals (JISC/OSI, p.20). Likewise, Rowlands and Nicholas (2005) found that 19% of their respondents had no knowledge of open
access and 50% only had de minimis knowledge of the concept (p.490). While the Survey demonstrated that 63.89% of respondents were aware of open access journals in their academic specialty, 36.11% remained unaware of such journals.

These percentages are simultaneously reassuring and troublesome. Almost two-thirds of the Survey’s respondents were cognizant of the concept of open access and open access journals in their academic field. This result demonstrates much greater cognizance of open access than that found by Rowlands and Nicholas in their study, where 50% of their respondents had only de minimis knowledge of open access.

Given the particular composition of this survey group, however, one might expect a higher percentage of respondents to know of open access journals in their academic specialties. The respondents self-reported in the demographic section of the Survey that they were comprised of 20% from science disciplines and 77% from medical disciplines. Research in all of these disciplines is subject to receiving NIH grant funding. This is significant, because on April 7, 2008, the NIH began requiring all articles funded by NIH grants to be deposited with PubMed Central, the NIH open access repository, within twelve months of publication, for free dissemination to the public (Varmus, 2008). To the extent these respondents were engaged in NIH funded research, this NIH directive to archive in PubMed Central should have increased awareness of the concept of open access, and perhaps given some respondents motivation or interest to seek out the open access journals in their fields. PubMed Central makes such inquiries relatively simple by listing all of its participating journals on its website, including their level of participation and embargo period, if any (PubMed Central: Journals).
Regarding the 36% of Survey respondents who were not aware of open access journals in their academic specialties, perhaps they were aware of open access as a concept or were aware of other open access journals that were not in their academic specialties. The survey did not ask those questions, so it is impossible to know the precise knowledge level of this respondent group regarding open access. This is a matter for further exploration in future studies.

**Journal Quality**

Swan and Brown (2004) found that open access journals had lower prestige among publishing scholars than comparable traditional subscription journals in same field (p.220). Likewise, Rowlands and Nicholas (2004) found that journal reputation (i.e., perceived quality among members of the academe) was the single most important factor for publishing scholars when determining where to publish (p.483). The Survey confirmed that these trends still exist, at least among STM assistant professors at the University of North Carolina at Chapel Hill.

Except for the limited exceptions noted below, respondents rated subscription journals higher than open access journals in quality-related attributes. Tables 1a and 1b collate the Survey results for identical quality-related questions asked with respect to open access and subscription journals.
Table 1a² Comparison of Quality Related Responses For Open Access and Subscription Based Journals

<table>
<thead>
<tr>
<th></th>
<th>Q10</th>
<th>Q26</th>
<th>Q11</th>
<th>Q27</th>
<th>Q12</th>
<th>Q28</th>
<th>Q13</th>
<th>Q29</th>
</tr>
</thead>
<tbody>
<tr>
<td>OAS</td>
<td>91.30%</td>
<td>100%</td>
<td>91.30%</td>
<td>90.91%</td>
<td>73.91%</td>
<td>100%</td>
<td>69.56%</td>
<td>77.27%</td>
</tr>
<tr>
<td>OAR</td>
<td>75.50%</td>
<td>100%</td>
<td>60.10%</td>
<td>92.85%</td>
<td>50.00%</td>
<td>100%</td>
<td>43.75%</td>
<td>71.43%</td>
</tr>
<tr>
<td>SJR</td>
<td>N/A</td>
<td>96.15%</td>
<td>N/A</td>
<td>96.15%</td>
<td>N/A</td>
<td>100%</td>
<td>N/A</td>
<td>79.17%</td>
</tr>
</tbody>
</table>

Table 1b³ Comparison of Quality Related Responses For Open Access and Subscription Based Journals

<table>
<thead>
<tr>
<th></th>
<th>Q14</th>
<th>Q30</th>
<th>Q16</th>
<th>Q32</th>
<th>Q17</th>
<th>Q33</th>
</tr>
</thead>
<tbody>
<tr>
<td>OAS</td>
<td>43.48%</td>
<td>50.00%</td>
<td>73.27%</td>
<td>83.36%</td>
<td>73.91%</td>
<td>86.37%</td>
</tr>
<tr>
<td>OAR</td>
<td>50.00%</td>
<td>50.00%</td>
<td>40.00%</td>
<td>85.71%</td>
<td>37.50%</td>
<td>78.58%</td>
</tr>
<tr>
<td>SJR</td>
<td>N/A</td>
<td>46.15%</td>
<td>N/A</td>
<td>73.08%</td>
<td>N/A</td>
<td>73.08%</td>
</tr>
</tbody>
</table>

A comparison of the results outlined in Tables 1a and 1b demonstrates that more respondents evaluated subscription journals as being relevant sources for new scholarly developments than open access journals. More respondents also evaluated subscription journals as being efficient for the dissemination of scholarly developments and as having

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² Q10 and Q26 ask respondents to rate open access and subscription journals on relevancy as sources for important developments in their academic specialties. Q11 and Q27 ask respondents to rate open access and subscription journals as mechanisms for rapid dissemination of new scholarly development in their academic specialties. Q12 and Q28 ask respondents to rate open access and subscription journals as mechanisms for reaching a defined audience of experts/peers within their academic specialties. Q13 and Q29 ask respondents to rate open access and subscription journals as mechanisms for wide dissemination of new scholarly developments in their academic specialties to scholars working outside their disciplines.

³ Q14 and Q30 ask respondents to rate open access and subscription journals as mechanisms for wide dissemination of new scholarly developments to individuals outside of the academic environment. Q16 and Q32 ask respondents to rate the competence of the individuals who serve on editorial boards of open access and subscription-based journals in their academic specialties. Q17 and Q33 ask respondents to rate the competence of the individuals who serve as manuscript reviewers for open access and subscription-based journals in their academic specialties.
competent editorial and manuscript reviewing staffs. In short, when one looks at the overall responses given by all respondent groups, respondents’ reports suggest that subscription journals better performed two of the principal roles of a scholarly journal: quality control of article publication and dissemination of scholarly development throughout the academe.

Open access journals did score well on some quality attributes. 91.30% of Open Access Submitters found them relevant as a source for new developments and efficient as a mechanism for rapid dissemination of new scholarly development in their academic specialties. In fact, when compared to subscription journals, a slightly higher percentage of Open Access Submitters found open access journals to be efficient as mechanisms for rapid dissemination of new scholarly development in their academic specialties (91.30% v. 90.91%).

Examining respondents’ perceptions of quality-related attributes of open access journals without comparison to subscription journals, one sees a division between the perceptions of those respondents who have submitted articles to open access journals and those who have not. Table 2 collates the survey results for quality-related questions for open access journals.
As outlined in Table 2, Open Access Submitters held an overall favorable view of the quality of open access journals. Over 90% found that open access journals were effective as a source for new developments and as a mechanism for rapid dissemination of new scholarly developments in their academic specialties. With respect to the remaining quality-related questions, Open Access Submitters responded positively, with 73.91% finding efficiency for reaching a defined audience of experts/peers in their field, 69.56% finding efficiency for dissemination of scholarly developments to scholars working outside their fields, and 73.27% finding competency for editorial staff and 73.91% finding competency for manuscript reviewers.

The one exception was Q14, which elicited that only 43.58% of Open Access Submitters reported open access journals were effective as mechanisms for wide dissemination of new scholarly developments in their academic specialties to individuals outside of the academic environment. This result, however, was not an outlier in context.

<table>
<thead>
<tr>
<th>Question</th>
<th>OA Quality</th>
<th>OA Submitters (%)</th>
<th>OAR Quality</th>
<th>OA Submitters (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q10</td>
<td>91.30%</td>
<td>91.30%</td>
<td>75.50%</td>
<td>60.10%</td>
</tr>
<tr>
<td>Q11</td>
<td>91.30%</td>
<td>73.91%</td>
<td>60.10%</td>
<td>50.00%</td>
</tr>
<tr>
<td>Q12</td>
<td></td>
<td>69.56%</td>
<td>50.00%</td>
<td>43.75%</td>
</tr>
<tr>
<td>Q13</td>
<td></td>
<td>43.48%</td>
<td>43.75%</td>
<td>50.00%</td>
</tr>
<tr>
<td>Q14</td>
<td></td>
<td>73.27%</td>
<td>50.00%</td>
<td>40.00%</td>
</tr>
<tr>
<td>Q16</td>
<td>73.91%</td>
<td>73.91%</td>
<td>37.50%</td>
<td>43.58%</td>
</tr>
<tr>
<td>Q17</td>
<td>73.91%</td>
<td>73.91%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 Q10 asks respondents to rate open access journals on relevancy as sources for important developments in their academic specialties. Q11 asks respondents to rate open access journals as mechanisms for rapid dissemination of new scholarly development in their academic specialties. Q12 asks respondents to rate open access journals as mechanisms for reaching a defined audience of experts/peers within their academic specialties. Q13 asks respondents to rate open access journals as mechanisms for wide dissemination of new scholarly developments in their academic specialties to scholars working outside their disciplines. Q14 asks respondents to rate open access journals as mechanisms for wide dissemination of new scholarly developments in their academic specialties to individuals outside of the academic environment. Q16 asks respondents to rate the competence of the individuals who serve on editorial boards of open access and subscription-based journals in their academic specialties. Q17 asks respondents to rate the competence of the individuals who serve as manuscript reviewers for open access journals in their academic specialties.
of the answers of all respondents to this question. Neither Open Access Respondents nor Subscription Journal Responders’ reports suggested that open access or subscription journals are very effective as mechanisms for wide dissemination of new scholarly developments in their academic specialties to individuals outside of the academic environment. All respondents reported that neither media was particularly effective for this purpose.

The views expressed by Open Access Respondents regarding the quality of open access journals stood in stark contrast to those expressed by Open Access Submitters. In comparison to Open Access Submitters, 91.30% of whom found relevancy and efficiency for both categories, only 75.50% of Open Access Respondents found open access journals relevant as sources of new developments, and only 60.10% found them efficient as mechanisms for rapid dissemination of new scholarly developments in their academic specialties. For the remaining quality-related questions, 50% of Open Access Respondents found open access journals efficient for reaching a defined audience of experts/peers in their field, 43.75% found them efficient for dissemination of scholarly developments to scholars working outside their fields, and 50.00% found them efficient for dissemination of scholarly developments to individuals outside of the academic environment. Additionally, only 40.00% of Open Access Respondents found the editorial staff of open access journals to be competent and only 37.50% found their manuscript reviewers to be competent.

In all cases, except in response to Q14, Open Access Respondents are apparently less positive than Open Access Submitters with their impressions of open access journals as relevant sources of new scholarly developments, as mechanisms for efficient
dissemination of scholarly developments, and with the competency of their editorial staff and manuscript reviewers. Table 3 outlines the percentage differential between the Open Access Submitters and Open Access Respondents for their positive responses to each question.

Table 3. Differential in Positive Responses Between Respondent Groups in Perceptions of Open Access Journal Quality

<table>
<thead>
<tr>
<th></th>
<th>Q10</th>
<th>Q11</th>
<th>Q12</th>
<th>Q13</th>
<th>Q14</th>
<th>Q16</th>
<th>Q17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diff.</td>
<td>-15.8%</td>
<td>-31.2%</td>
<td>-23.91%</td>
<td>-25.81</td>
<td>+6.52%</td>
<td>-33.27%</td>
<td>-36.41%</td>
</tr>
</tbody>
</table>

In general, one would expect those respondents who had submitted articles to open access journals to have a higher perception of the media’s quality than those who had not. The data outlined in Table 3 are suggestive of this gulf in perception of quality. Perhaps scholars eliminate this gulf as they become more familiar with and use open access journals in their studies and research.

Certainly, the survey also suggests that Open Access Submitters and Open Access Respondents may have different open access journal usage patterns. Data outlined in Tables 4 and 5 below highlight that Open Access Submitters, on average, spent, approximately 300% more time than Open Access Respondents each week reviewing

---

5 Q10 asks respondents to rate open access journals on relevancy as sources for important developments in their academic specialties. Q11 asks respondents to rate open access journals as mechanisms for rapid dissemination of new scholarly development in their academic specialties. Q12 asks respondents to rate open access journals as mechanisms for reaching a defined audience of experts/peers within their academic specialties. Q13 asks respondents to rate open access journals as mechanisms for wide dissemination of new scholarly developments in their academic specialties to scholars working outside their disciplines. Q14 asks respondents to rate open access journals as mechanisms for wide dissemination of new scholarly developments in their academic specialties to individuals outside of the academic environment. Q16 asks respondents to rate the competence of the individuals who serve on editorial boards of open access and subscription-based journals in their academic specialties. Q17 asks respondents to rate the competence of the individuals who serve as manuscript reviewers for open access journals in their academic specialties.
open access journals. Additionally, in the past three years, Open Access Submitters cited approximately 300% more open access articles in their research articles than did Open Access Respondents. The Survey data illustrates the disparate views on quality and usage of open access journals between the two respondent groups, but it did not explain the underlying reasons behind the different patterns. Further research on these topics is necessary to understand what prompts someone who is merely aware of open access journals in their academic specialty to transition to an active reader and citer of the media in their research.

Table 4. Percent of Weekly Time Reviewing Journals

<table>
<thead>
<tr>
<th></th>
<th>Open Access Respondents</th>
<th>Open Access Submitters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average Value</td>
<td>Average Value</td>
</tr>
<tr>
<td><strong>Open Access Journals</strong></td>
<td>4.00%</td>
<td>14.71%</td>
</tr>
<tr>
<td><strong>Subscription Journals</strong></td>
<td>35.50%</td>
<td>31.75%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>39.50%</td>
<td>46.46%</td>
</tr>
</tbody>
</table>

Table 5. Percent of Citations over Past Three Years

<table>
<thead>
<tr>
<th></th>
<th>Open Access Respondents</th>
<th>Open Access Submitters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average Value</td>
<td>Average Value</td>
</tr>
<tr>
<td><strong>Open Access Journals</strong></td>
<td>6.44%</td>
<td>16.83%</td>
</tr>
<tr>
<td><strong>Subscription Journals</strong></td>
<td>86.44%</td>
<td>71.54%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>92.88%</td>
<td>88.38%</td>
</tr>
</tbody>
</table>
Impact Factors

The literature demonstrates that impact factors have been a historic barrier for general acceptance of open access journals. As Swan and Brown (2004) observed, impact factors “may be an erroneous measure of quality, but [it is] one taken seriously by authors” (JISC/OSI, p.64). Mann et al. (2009) found 60% of their respondents viewed the impact metrics of open access journals as “insufficient” and 72% of respondents stated that factor alone justified their decision to forego publishing in open access media (p.136.)

The survey asked respondents to rate the relevancy of impact factors for characterizing the quality of open access journals and subscription journals in their academic specialties. Table 6 below outlines the results for respondents who found impact factors to be a relevant metric of quality.

Table 6. Relevancy of Impact Factors as Metric of Quality

<table>
<thead>
<tr>
<th></th>
<th>Q15</th>
<th>Q31</th>
</tr>
</thead>
<tbody>
<tr>
<td>OAS</td>
<td>77.20%</td>
<td>86.36%</td>
</tr>
<tr>
<td>OAR</td>
<td>87.50%</td>
<td>92.85%</td>
</tr>
<tr>
<td>SJR</td>
<td>N/A</td>
<td>57.69%</td>
</tr>
</tbody>
</table>

77.20% of Open Access Submitters and 87.50% of Open Access Respondents found impact factors to be a relevant metric of quality for open access journals. In comparison, only 57.69% of Subscription Journal Respondents found impact factors to be a relevant metric of quality.

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6 Q15 asks respondents about the relevancy of metrics like impact factors for characterizing the quality of open access journals in their academic specialty. Q31 asks respondents about the relevancy of metrics like impact factors for characterizing the quality of subscription journals in their academic specialty.
a relevant measure of the quality of subscription journals. These results are not a surprise
given the pressures of promotion and tenure that STM assistant professors face (see
factor is the gold standard of prestige and quality within the acade me (Academic Reward
System). Open access journals are relative newcomers to world of scholarly
communications. Their place in the hierarchy of the academic reward system remains
tenuous and uncertain. Therefore, it is plausible that STM assistant professors would rely
more heavily on impact factors as indicators of open access journals’ quality. Impact
factors may be an ‘erroneous measure of quality’ (Swan & Brown, 2004, JISC/OSI,
p.64), but they are tangible measurements that have an accepted meaning and weight
within the academic community.

Open access journals are typically new journals, although a few established
subscription journals with high impact factors, such as Nucleic Acid Research, have
transitioned to the open access model (see Nicholas, Huntington, & Jamali, 2007). As
Björk (2004) observed, new journals often find it difficult to attract the quality
submissions necessary to become core journals and therefore indexed by SCI (Indexing
Services and Standards). SCI, however, has recently begun indexing an increasing
number of open access journals. Some – notably those published by PloS – have
obtained high impact and core literature status (Borgman, 2007, pp.186-187). Scholars
may continue to judge the quality of open access journals, and base their publication
decisions, on their impact factors, or lack thereof. If, however, SCI continues to index an
increasing number of open access journals, this propensity of scholars to publish in
journals with impact factors may become a diminishing impediment to the ongoing acceptance and success of open access journals.

Tenure

A discussion of tenure and its relation to publication in open access journals is difficult to separate from the discussion of the impact factors of open access journals, which are integral to the academic reward system that allocates promotion and tenure. Universities have created their academic reward systems to encourage publication in SCI indexed journals (see Björk, 2004 Academic Reward System; Nicholas, Jamali, & Rowlands, 2006, p.199). To reiterate, as one scholar stated in an open response to Rowlands and Nicholas, to publish in a non-ISI rated journal is ‘professional suicide’ (Nicholas, Jamali, & Rowlands, 2006, p.199). As discussed in the previous section, open access journals are relatively new, and, therefore, usually are not ISI-rated. Thus, it is not surprising that Mann et al. (2009) found 61% of their survey respondents reported that publishing in an open access journal would harm their prospects for future promotion or tenure (p.136).

Table 7 suggests that survey respondents possessed a more positive view of the effect that publishing in open access journals would have on their chances for tenure and promotion. A slight majority of Open Access Submitters (56.53%) actually found that submitting an article to an open access journal actually would be advantageous for their careers. Only 13.05% of Open Access Submitters and 25% of Open Access Respondents found that publishing in an open access journal would be disadvantageous for their tenure
and promotion. 30.43% of Open Access Submitters and 43.75% of Open Access Respondents held no opinion regarding this question.

Table 7. Implications of Publishing in Open Access Journals on Promotion and Tenure

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<thead>
<tr>
<th></th>
<th>Advantageous</th>
<th>No Opinion</th>
<th>Disadvantageous</th>
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</thead>
<tbody>
<tr>
<td>OAS</td>
<td>56.53%</td>
<td>30.43%</td>
<td>13.05%</td>
</tr>
<tr>
<td>OAR</td>
<td>31.25%</td>
<td>43.75%</td>
<td>25.00%</td>
</tr>
</tbody>
</table>

Although the respondents’ replies to this question demonstrated a shift of opinion in favor of open access journals regarding tenure and promotion, open access journals still suffer a distinct disadvantage compared to subscription journals in this area. While 56.53% of Open Access Submitters and 31.25% of Open Access Respondents reported publishing in open access journals would be advantageous for their careers, 86.36% and 84.61% of the same respondent groups reported it would be advantageous to publish in subscription journals in their academic specialties. The data suggest that respondents prefer publication in subscription journals for purposes of tenure and promotion.

When one looks at how many of each respondent group answered that it would be extremely, somewhat, or slightly advantageous for tenure and promotion to publish in open access or subscription journals, the preference for subscription journals becomes clearer. Tables 8 and 9 collate this data. Only 8.70% of the Open Access Submitters answered that it would be ‘extremely advantageous’ for tenure and promotion to publish in open access journals. No members of any other respondent group thought it would be
‘extremely advantageous’ for tenure or promotion to publish in open access groups. At best they thought it would be ‘somewhat advantageous’ or ‘slightly advantageous.’ Comparatively, 59.09% of Open Access Submitters and 69.15% of Open Access Respondents thought that publication in a subscription journal would be ‘extremely advantageous.’ Therefore, despite a more positive view taken by respondents of publishing in open access journals for career advancement, the Survey demonstrates that STM assistant professors still prefer subscription journals for tenure and promotion considerations.

Table 8. Respondents Who Believed It Was Advantageous For Tenure and Promotion to Publish in Open Access Journals

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<tbody>
<tr>
<td>OAS</td>
<td>8.70%</td>
<td>26.09%</td>
<td>21.74%</td>
</tr>
<tr>
<td>OAR</td>
<td>__</td>
<td>12.50%</td>
<td>18.75%</td>
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</tbody>
</table>

Table 9. Respondents Who Believed It Was Advantageous For Tenure and Promotion to Publish in Subscription Journals

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<tbody>
<tr>
<td>OAS</td>
<td>59.09%</td>
<td>27.27%</td>
<td>__</td>
</tr>
<tr>
<td>OAR</td>
<td>69.15%</td>
<td>15.38%</td>
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</table>
Perceptions of the availability of support for research projects

Block 2 of the Survey (Q2-Q7) attempted to gauge the respondents’ perceptions of available support for their research projects at the University of North Carolina at Chapel Hill. In summary, they found the resources provided by University Libraries benefited their research. They stated that electronic access to journal articles was a critical component of their research practices.

The only point of note from the data was that when asked if they were aware of any on-campus or other resources/services available to support their academic writing, 72.22% of respondents answered, ‘No.’ The 27.78% of respondents who answered ‘Yes’ were, apparently and unfortunately, not well versed in the writing resources and services that the University of North Carolina at Chapel Hill offers its faculty. When asked in a follow-up question to list the resources of which they were aware, most respondents listed The Writing Center, which is principally a student-oriented resource. One respondent listed the ‘library’; another listed ‘RefWorks,’ an online citation builder and management tool. No one mentioned the Center for Faculty Excellence, whose core mission is to assist faculty with teaching, research, and leadership.7

The University of North Carolina at Chapel Hill has multiple resources available to assist faculty members with their research and writing. The Health Sciences Library webpage for faculty and researchers has a link to the Research at Carolina webpage, which lists most of these resources (UNC Health Sciences Library: Research & Writing; Research at Carolina). There are other resources available as well, such as the UNC-Chapel Hill Author’s Open Access Fund, which subsidizes the publishing fees for open

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7 One respondent did list a “Center for Teaching and Advice”, which may, in fact, have been a reference to the Center for Faculty Excellence since no such Center exists.
access articles authored by UNC faculty (see UNC Health Sciences Library: Open Access Author’s Fund).

The fact that 72.22% of respondents were unaware of these resources and the remainder had de minimis knowledge of them proves that, at best, current efforts to make faculty aware of campus research and writing resources are insufficient. Campus officials need to either increase their efforts or change their strategies to ensure faculty members become aware of the resources that the University provides.

**Conclusion**

The Survey revealed that 36% of respondents were unaware of open access journals in their academic specialty. While this level of awareness demonstrates an improvement from that shown in earlier studies, a significant proportion of the Survey population still professed de minimis knowledge of open access journals. Even if these STM assistant professors were aware of the open access movement in general, their unfamiliarity with specific open access journals in their academic specialties is problematic for the future of the media. STM assistant professors must be aware of the open access journals in their academic specialties before they can make rational decisions regarding the quality of these journals and whether to use and/or publish in them.

The Survey results revealed other trends among the respondent STM assistant professors. Sixty percent of the respondents who were aware of open access journals in their academic specialties had actually submitted at least one article to an open access journal. Therefore, almost two-thirds of respondents who were aware of open access journals in their academic specialties actively supported the open access movement.
through publication. (Whether their articles had actually been accepted for publication was irrelevant for purposes of this survey.) The survey data also disclosed that Open Access Submitters were perhaps more likely than Open Access Respondents to find open access journals a relevant source for new scholarly developments and an efficient mechanism for dissemination of scholarly developments. They may also be more likely to find that open access journals have a competent editorial and manuscript reviewing staff. In addition, survey data suggest that Open Access Submitters use open access journals three times more than Open Access Respondents in their weekly journal readings and research citations.

Perhaps the most significant trend revealed by the Survey is that STM assistant professors possessed a relatively positive view of the effect that publishing in open access journals would have on their prospects for tenure and promotion. As noted, a slight majority of Open Access Submitters actually found that submitting an article to an open access journal would be advantageous for their careers. Scholars publish their articles with at least one eye attuned to the prospects of promotion and tenure. The fact that this group of respondents viewed publication in open access journals as a positive factor bodes well for the increasing acceptance and use of open access journals.

The issue, however, is that a greater proportion of STM assistant professors continued to report an overall perception that subscription journals – versus open access journals – in their academic specialty were of relevance, efficiency, and quality and that publishing in said journals would be better for their careers. There is not a competition between open access journals and subscription journals, and there can be room for each in the world of scholarly communication. Scholars, however, must believe that open
access journals fulfill two of the basic requirements of scholarly communication: quality control of article publication and dissemination of scholarly development throughout the academe. They must also believe that the academic promotion and tenure system will reward them, or at least not punish them, for publishing in open access journals. Without those beliefs, the acceptance and survival of open access journals and the open access movement will remain difficult and suspect.

The survey data show that Open Access Submitters have already made a substantial commitment to open access journals. Their commitment is multilayered: they believe in the quality and efficiency of these journals; they review and cite to these journals in their own research; finally, they take the ultimate commitment and submit articles to these journals. What the survey data do not reveal is the underlying process of how these STM assistant professors transitioned from being Open Access Respondents, which have a specific set of attitudes and behaviors, to being Open Access Submitters, which may have a very different set. Research on this question might help open access advocates modify their outreach to be more effective with STM assistant professors and other scholars.
WORKS CITED


Edwards, P. M. (2009, October/November). Opportunity knocks: Authors’ writing and publishing decisions when manuscripts are solicited. Presentation at annual meeting of the Society for Social Studies of Science (4S), Washington, DC.


Appendix A. Survey

Consent form

University of North Carolina-Chapel Hill
Consent to Participate in a Research Study
Adult Participants
Social Behavioral Form
IRB Study #09-1853
Consent Form Version Date: September 24, 2009

Title of Study: Publishing Behaviors and Attitudes of UNC-CH STM Assistant Professors
Principal Investigator: Shawn Wollons
UNC-Chapel Hill Department: School of Information and Library Science
UNC-Chapel Hill Phone number: 919-538-6342
Email Address: wollons@email.unc.edu
Faculty Advisor: Philip M. Edwards
Faculty Advisor UNC-Chapel Hill Phone number: 919-962-8068
Faculty Advisor Email Address: philip.m.edwards@unc.edu
Study Contact telephone number: 919-538-8342
Study Contact email: wollons@email.unc.edu

What are some general things you should know about research studies
You are being asked to take part in a research study. To join the study is voluntary. You may refuse to join,
or you may withdraw your consent to be in the study, for any reason, without penalty.

Research studies are designed to obtain new knowledge. This new information may help people in the
future. You may not receive any direct benefit from being in the research study. There also may be risks to
being in research studies.

Details about this study are discussed below. It is important that you understand this information so that
you can make an informed choice about being in this research study. Please print and retain a copy of this
consent form. You should feel free to contact the researchers named above any questions you have about
this study at any time.

I am conducting a research study focused on the scholarly communication habits of assistant professors in
the science, technology, and medical (STM) disciplines. As a STM assistant professor employed by the
University of North Carolina at Chapel Hill, you were selected as a possible participant in this study. Your
participation in this study is completely voluntary. To participate in the study, please complete the survey
that follows.

Completion of the survey should take no longer than 15 to 20 minutes. Selecting "I voluntarily agree to
participate in this research study" below indicates that you have given your consent to be a participant in
this study. This survey is composed of questions addressing your awareness of the availability of
University support for your research projects, your awareness of open-access and subscription-based
journals in your area of academic specialty, and some demographic questions. You are free to answer or
not answer any particular question and have no obligation to complete answering the questions once you begin.

Your responses to this questionnaire will remain anonymous. You are asked not to provide any identifying information on the study, and data will be reported in the aggregate in such a way as to prevent deducible disclosure from indirect identifiers. Participants will not be identified in any report or publication about this study. Although every effort will be made to keep research records private, there may be times when federal or state law requires the disclosure of such records, including personal information. This is very unlikely, but if disclosure is ever required, UNC-Chapel Hill will make steps allowable by law to protect the privacy of personal information. In some cases, your information in this research study could be reviewed by representatives of the University, research sponsors, or government agencies for purposes such as quality control or safety.

There are no known risks associated with your participating in this study, and there is no cost to you or financial benefit for your participation. Taking part in this research is not a part of your University duties, and refusing will not affect your job. You will not be offered or receive any special job-related consideration if you take part in this research.

All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject, or if you would like to obtain information or offer input, you may contact the Institutional Review Board at 819-666-3113 or by email to IRB_subjects@unc.edu. If you wish to contact the IRB, please reference study #09-1853.

Sincerely,
Shawn Welfons
University of North Carolina at Chapel Hill
School of Information and Library Science

**Participant's agreement:**
I have read the information provided above. I have asked all the questions I have at this time.

- [ ] I voluntarily agree to participate in this research study.
- [ ] I do not wish to participate in this research study.

**Availability of support for your research projects**

How has your academic research been affected by the availability of scholarly journals through the University Libraries?

<table>
<thead>
<tr>
<th>Greatly Benefited</th>
<th>Somewhat Benefited</th>
<th>Slightly Benefited</th>
<th>Neutral</th>
<th>Slightly Suffered</th>
<th>Somewhat Suffered</th>
<th>Greatly Suffered</th>
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</table>

In what ways, either positively or negatively, has your academic research been affected by the availability of scholarly journals through the University Libraries?
If the University Libraries have proposed canceling subscriptions to any journals in your area of academic specialty, how involved have you been during the decision-making process?

- Greatly involved
- Somewhat involved
- Slightly involved
- Not involved at all
- Not applicable

If the University Libraries have canceled or do not subscribe to scholarly journals that you believe would be helpful in your academic research, please briefly list them here.

Are you aware of on-campus or other resources/services available to help support your academic writing?

- Yes
- No

If "Yes", please briefly list the resources/services of which you are aware to help support your academic writing.
Open access journals in your academic specialty

In the questions that follow, the phrase 'open access journals' refers to periodical publications that provide readers with free, public access to peer-reviewed journal articles, either immediately or after an embargo period (e.g., 6- to 12-months after initial publication).

Many journals in your field may rely upon individuals’ and libraries’ subscription payments in order for readers to have access to peer-reviewed journal articles.

In contrast to this subscription-based model, publishers of 'open access journals' are generally supported financially through fees assessed to the articles’ authors prior to publication, ongoing subsidies from scholarly societies, or other pre-publication sources of funding. Just because an article may be available electronically via the University Libraries’ catalog and website does not necessarily mean that it is an 'open access journal'.

Are you aware of any open access journals in your field of academic specialty?

☐ Yes
☐ No

If you are aware of open access journals in your academic specialty, please list them here.

How relevant are open access journals as a source for important or noteworthy scholarly developments in your academic specialty?
<table>
<thead>
<tr>
<th>Extremely relevant</th>
<th>Somewhat relevant</th>
<th>Slightly relevant</th>
<th>No opinion regarding relevance</th>
<th>Slightly irrelevant</th>
<th>Somewhat irrelevant</th>
<th>Extremely irrelevant</th>
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</table>

**How effective are open access journals as mechanisms for **rapid dissemination** of new scholarly developments in your academic specialty?**

<table>
<thead>
<tr>
<th>Extremely effective</th>
<th>Somewhat effective</th>
<th>Slightly effective</th>
<th>No opinion regarding effectiveness</th>
<th>Slightly ineffective</th>
<th>Somewhat ineffective</th>
<th>Extremely ineffective</th>
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</table>

**How effective are open access journals as mechanisms for **reaching a defined audience** of experts/peers within your academic specialty?**

<table>
<thead>
<tr>
<th>Extremely effective</th>
<th>Somewhat effective</th>
<th>Slightly effective</th>
<th>No opinion regarding effectiveness</th>
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<th>Somewhat ineffective</th>
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**How effective are open access journals as mechanisms for **wide dissemination** of new scholarly developments in your academic specialty to scholars working outside of your discipline?**

<table>
<thead>
<tr>
<th>Extremely effective</th>
<th>Somewhat effective</th>
<th>Slightly effective</th>
<th>No opinion regarding effectiveness</th>
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**How effective are open access journals as mechanisms for **wide dissemination** of new scholarly developments in your academic specialty to individuals outside of the academic environment (e.g., the general public, project workers in developing countries)?**

<table>
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<tr>
<th>Extremely effective</th>
<th>Somewhat effective</th>
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<th>No opinion regarding effectiveness</th>
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**How relevant are metrics like **impact factors** for characterizing the quality of open access journals in your academic specialty?**

<table>
<thead>
<tr>
<th>Extremely relevant</th>
<th>Somewhat relevant</th>
<th>Slightly relevant</th>
<th>No opinion regarding relevance</th>
<th>Slightly irrelevant</th>
<th>Somewhat irrelevant</th>
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</table>
How *competent* are the individuals who serve on *editorial boards* of open access journals in your academic specialty?

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<th>Extremely Competent</th>
<th>Somewhat Competent</th>
<th>Slightly Competent</th>
<th>No opinion regarding competence</th>
<th>Slightly In competent</th>
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How *competent* are the individuals who serve as *manuscript reviewers* for open access journals in your academic specialty?

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<th>Extremely Competent</th>
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When considering your opportunities for tenure and promotion, how advantageous would it be for you to publish an article in an open access journal in your academic specialty?

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<tr>
<th>Extremely advantageous</th>
<th>Somewhat advantageous</th>
<th>Slightly advantageous</th>
<th>No opinion regarding any advantage conveyed</th>
<th>Slightly disadvantageous</th>
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<th>Extremely disadvantageous</th>
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</table>

What percentage of your time each week, on average, do you spend reading articles from open access journals and traditional subscription journals in your academic specialty?

<table>
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<tr>
<th>Percentage of time reading articles from each type of journal</th>
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<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
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<th>70</th>
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<th>90</th>
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<td>Subscription-based journals</td>
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<td>Open access journals</td>
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Have you ever submitted a manuscript for publication to an open access journal (whether it was accepted for publication or not)?

- Yes
- No

Given all of the journal articles you have published as a faculty member during the past three years, what is the distribution of these articles across subscription-based journals and open
access journals?

<table>
<thead>
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<th>Percentage of articles appearing in each type of journal</th>
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<tbody>
<tr>
<td>Subscription-based journals</td>
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<td>Open access journals</td>
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Given all of the journal articles you have published as a faculty member during the past three years, what percentages of others' articles do you cite or reference from subscription-based journals and open access journals?

<table>
<thead>
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<th>Percentage of articles cited from each type of journal</th>
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<tr>
<td>Cited articles from subscription-based journals</td>
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<tr>
<td>Cited articles from open access journals</td>
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</table>

Have you ever been active in an editorial capacity (e.g., as a member of an editorial board; as a section, subject, or associate editor, etc.) for any open access journals?

- Yes
- No

How would you characterize the general attitudes toward open access journals **within your department**?

- Extremely positive
- Somewhat positive
- Slightly positive
- Mixed reaction
- Slightly negative
- Somewhat negative
- Extremely negative

How would you characterize the general attitudes toward open access journals **across the campus**?

- Extremely positive
- Somewhat positive
- Slightly positive
- Mixed reaction
- Slightly negative
- Somewhat negative
- Extremely negative
Subscription-based journals in your academic specialty

**How relevant** are subscription-based journals as a source for reporting new scholarly developments in your academic specialty?

<table>
<thead>
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<th>Extremely relevant</th>
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<th>No opinion regarding relevance</th>
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**How effective** are subscription-based journals as mechanisms for rapid dissemination of new scholarly developments in your academic specialty?

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<th>Extremely effective</th>
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**How effective** are subscription-based journals as mechanisms for reaching an defined audience of experts/peers within your academic specialty?

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**How effective** are subscription-based journals as mechanisms for wide dissemination of new scholarly developments in your academic specialty to scholars working outside of your discipline?

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How relevant are metrics like impact factors for characterizing the quality of subscription-based journals in...
your academic specialty?

<table>
<thead>
<tr>
<th>Extremely relevant</th>
<th>Slightly relevant</th>
<th>No opinion regarding relevance</th>
<th>Slightly irrelevant</th>
<th>Somewhat irrelevant</th>
<th>Extremely irrelevant</th>
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How competent are the individuals who serve on editorial boards of subscription-based journals in your academic specialty?

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<th>Extremely competent</th>
<th>Somewhat competent</th>
<th>Slightly competent</th>
<th>No opinion regarding competence</th>
<th>Slightly incompetent</th>
<th>Somewhat incompetent</th>
<th>Extremely incompetent</th>
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How competent are the individuals who serve as manuscript reviewers for subscription-based journals in your academic specialty?

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<th>Extremely competent</th>
<th>Somewhat competent</th>
<th>Slightly competent</th>
<th>No opinion regarding competence</th>
<th>Slightly incompetent</th>
<th>Somewhat incompetent</th>
<th>Extremely incompetent</th>
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When considering your opportunities for tenure and promotion, how advantageous would it be for you to publish an article in an subscription-based journal in your academic specialty?

<table>
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<th>Extremely advantageous</th>
<th>Somewhat advantageous</th>
<th>Slightly advantageous</th>
<th>No opinion regarding any advantage conveyed</th>
<th>Slightly disadvantageous</th>
<th>Somewhat disadvantageous</th>
<th>Extremely disadvantageous</th>
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How many hours per week, on average, do you spend reading articles from subscription-based journals in your field of academic study?


Have you ever been active in an editorial capacity (e.g., as a member of an editorial board; as a section, subject, or associate editor, etc.) for any subscription-based journals?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
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Demographic information

With which School or Department are you primarily affiliated at UNC?

In what year were you awarded your Ph.D. or Doctorate in your current academic specialty?
Appendix B. Initial Recruitment Email

Dear Professor:

For my master’s research at the School of Information and Library Science at the University of North Carolina at Chapel Hill, I am conducting a Web-based questionnaire to investigate the scholarly publishing practices of assistant professors at UNC in the sciences, technology, and medical fields. You are receiving this email because you have been identified as a faculty member who meets these criteria. With respect to publishing and scholarly productivity, junior faculty are often subject to different concerns and priorities than their senior colleagues, and the purpose of this study is to better understand the ways in which you perceive the writing and research that you perform.

As part of this study, you would be expected to complete a Web-based questionnaire about your practices and attitudes related to academic publishing, and this process should take approximately 15-20 minutes to complete. I ask that you please complete the survey by November 3, 2009, at which time the survey will close. Your participation is, of course, completely voluntary and your responses will remain anonymous. Additional information about this study, including potential risks and benefits as well as the contact information for study personnel, is provided on the first page of the questionnaire. Your participation would be greatly appreciated.

[URL to the questionnaire, generated by the Qualtrics software]

Sincerely,
Shawn Wellons
wellons@email.unc.edu
University of North Carolina at Chapel Hill
School of Information and Library Science

Faculty Advisor: Phillip M. Edwards <phillip.m.edwards@unc.edu>
Appendix C. Recruitment Reminder Email

Dear Professor:

For my master’s research at the School of Information and Library Science at the University of North Carolina at Chapel Hill, I am conducting a Web-based questionnaire to investigate the scholarly publishing practices of assistant professors at UNC in the sciences, technology, and medical fields. **You are receiving this email as a reminder that you have been identified as a faculty member who meets these criteria.** With respect to publishing and scholarly productivity, junior faculty are often subject to different concerns and priorities than their senior colleagues, and the purpose of this study is to better understand the ways in which you perceive the writing and research that you perform.

As part of this study, you would be expected to complete a Web-based questionnaire about your practices and attitudes related to academic publishing, and this process should take approximately 15-20 minutes to complete. **I ask that you please complete the survey by Tuesday, November 3rd, at which time the survey will close.** Your participation is, of course, completely voluntary and your responses will remain anonymous. Additional information about this study, including potential risks and benefits as well as the contact information for study personnel, is provided on the first page of the questionnaire. Your participation would be greatly appreciated.

[URL to the questionnaire, generated by the Qualtrics software]

Sincerely,
Shawn Wellons
wellons@email.unc.edu
University of North Carolina at Chapel Hill
School of Information and Library Science

Faculty Advisor: Phillip M. Edwards <phillip.m.edwards@unc.edu>