

Media Misrepresentation of Academic Literature and Barriers to Verify Sources for Those Outside of Higher Education: An Example from *Last Week Tonight with John Oliver*

Memo Cordova: Associate Professor, Boise State University (ID)

Amber Sherman: Assistant Professor, Boise State University (ID)

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Abstract

Academic librarians teach students to research using academic databases and peer-reviewed articles. Information literacy skills combat misinformation in a student's academic career and beyond the classroom. However, once students leave campus and cross the border from student life to working life, they may not have access to peer-reviewed literature. Using a popular segment of *Last Week Tonight with John Oliver* about scientific studies, this article presents the importance of, and barriers to, students' continued access to peer-reviewed research. How librarians might mitigate these obstacles are discussed.

Introduction

Academic librarians fill an important instruction role when teaching effective approaches to finding and evaluating information. Evaluation of information sources focuses on key criteria for determining the currency, relevance, authoritativeness, accuracy, and purpose (Meriam Library, 2010). Peer-reviewed sources are often seen as being authoritative, accurate, and written with a purpose to inform, and instructors typically prefer students to cite these academic papers. During one-shot library instruction sessions, librarians teach students to find these resources using research databases. Librarians hope students are well prepared to meet their research or assignments needs, and by extension prepare them to combat a growing and variegated threat of misinformation as they navigate information resources beyond library databases.

However, once students leave a higher education community, peer-reviewed articles are not easily accessed. As students cross the university-to-work border, they often lose the academic affiliation necessary to access proprietary resources. Although their tax dollars go towards the funding of university research, most citizens will lack access to the peer-reviewed literature librarians encouraged them to use as undergraduates. Glyn Moody (2016) addresses this disparity:

If this group wishes to read an academic paper reporting on the work they have helped to fund, they must generally pay the publisher for the privilege of doing so... Not only are public funds used to pay researchers, but they also fund the purchase of subscriptions to research journals by academic libraries (p. 2).

Cost is only one barrier. Joyce Ogburn (2011) sums up the need for continued access and considerations to getting that access:

Lifelong learning requires lifelong access. In other words, creating critical thinkers and expectations of continuous learning requires highly credible resources to be available, easily found,

and recognized for their quality among the abundance of information propagated so freely on the Web (p. 514).

Scientific Studies in the News

A segment from HBO's *Last Week Tonight with John Oliver* illustrates how students may need to apply these information literacy skills after graduation. Aired on May 8, 2016, Oliver discusses how potential breakthroughs in scientific studies are characteristically presented in mass popular media, such as television and online news outlets, and how often these findings are misinterpreted or misrepresented to the general public.



Scientific Studies: Last Week Tonight with John Oliver (HBO)

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Figure 1. Screenshot of *Last Week Tonight with John Oliver* episode referenced in this article (Oliver, 2016).

In one example, Oliver discusses a study published in *American Journal of Obstetrics & Gynecology* titled, “High-flavanol chocolate to improve placental function and to decrease the risk of preeclampsia: a double blind randomized clinical trial.” The study is specific on its findings in that it found no

“significant difference...in the rate of preeclampsia...” through “High-flavanol chocolate”. However, Oliver shows a clip from a television segment where the study’s press release was cited as “Eating moderate amounts of chocolate could benefit mom and baby” by the reporter (“During Pregnancy,” 2016). In another study, published in the journal *Appetite*, titled “The way to her heart? Response to romantic cues is dependent on hunger state and dieting history: An fMRI pilot study.” was presented in Fox News as “Cookin’ Up Love,” where the male host proclaims that women are more susceptible to romance when they are full instead of hungry (“Well-fed Women,” 2015). The study itself used a sample of only 20 participants.

Oliver showcases six medical studies in this segment and discusses the process by which each finding is transformed from a medically tailored piece of writing addressing a particular health issue, to an out of context, misrepresented, and transformed sound bite by TV personalities. Often the media personality would erroneously claim a benefit or a detriment when none were stated in the finding being showcased in their program. Oliver posits that not all eye-catching findings published in journals are created equal, and that pressures from funding grants, tenure committee requirements, and publishing quotas come into play for what gets funded or supported.

Barriers to Accessing Articles behind the News Stories

If a scientific study is referenced on TV or online and the reader or viewer wants to read the study themselves, chances are there will be barriers to access the study:

Members of the U.S. population have expressed interest in accessing health research, though they remain generally unwilling to pay for it: 82% of adults say they strongly (57%) or somewhat (25%) agree that if tax dollars pay for scientific research people should have free access to the results of the research on the Internet [1]. Still, of the 26% of online health seekers asked to pay for access, only 2% did so [2] (Maggio, Alperin, Moorhead, & Willinsky, 2017).

Much of the scientific literature viewers hear about on TV or read online is published in journals, which often are owned *en masse* by a few publishing houses. According to a comprehensive survey published in 2015 (Larivière, Haustein, & Mongeon, p. 1), based on “45 million documents indexed in the Web of Science over the period 1973-2013.” found that “Reed-Elsevier, Wiley-Blackwell, Springer, and Taylor & Francis are amongst the top five publishers with the highest number of scientific documents in 2013.” (p. 3). Collectively, these publishing houses exert tremendous influence in how articles are published, distributed, and sold. This same survey summarizes this process:

The possibility to increase profits in such an extreme fashion lies in the peculiarity of the economics of scholarly publishing. Unlike usual suppliers, authors provide their goods without financial compensation and consumers (i.e. readers) are isolated from the purchase. Because purchase and use are not directly linked, price fluctuations do not influence demand. Academic libraries, contributing 68% to 75% of journal publishing revenues [31], are atypical buyers because their purchases are mainly controlled by budgets. Regardless of their information needs, they have to manage with less as prices increase. Due to the publisher’s oligopoly, libraries are more or less helpless, for in scholarly publishing each product represents a unique value and cannot be replaced [19,20,33,34]. (p. 11).

Of the six studies Oliver specifically references, only two were openly available:

1. Bujold, E., Babar, A., Lavoie, E., Girard, M., Leblanc, V., Lemieux, S., ... & Dodin, S. (2016). 32: High-flavanol chocolate to improve placental function and to decrease the risk of preeclampsia: a double blind randomized clinical trial. *American Journal of Obstetrics & Gynecology*, 214(1), S23-S24. <https://doi.org/10.1016/j.ajog.2015.10.056>
2. Maughan, R. J., Watson, P., Whale, A., Mears, S. A., & Reyner, L. A. (2015). Mild hypohydration increases the frequency of driver errors during a prolonged, monotonous driving task. *Nutricion hospitalaria*, 32(2), 4-5. <https://doi.org/10.1016/j.physbeh.2015.04.028>

At the time of this writing, the other four articles were available for purchase with prices ranging from \$35.95 to \$59.00:

1. Corona, G., Vauzour, D., Hercelin, J., Williams, C. M., & Spencer, J. P. (2013). Phenolic acid intake, delivered via moderate champagne wine consumption, improves spatial working memory via the modulation of hippocampal and cortical protein expression/activation. *Antioxidants & redox signaling*, 19(14), 1676-1689. <https://doi.org/10.1089/ars.2012.5142> [**available for \$59.00 from Mary Ann Liebert, Inc.**]
2. Ely, A. V., Childress, A. R., Jagannathan, K., & Lowe, M. R. (2015). The way to her heart? Response to romantic cues is dependent on hunger state and dieting history: An fMRI pilot study. *Appetite*, 95, 126-131. <https://doi.org/10.1016/j.appet.2015.06.022> [**available for \$35.95 from Elsevier**]
3. Le Trionnaire, S., Perry, A., Szczesny, B., Szabo, C., Winyard, P. G., Whatmore, J. L., ... & Whiteman, M. (2014). The synthesis and functional evaluation of a mitochondria-targeted hydrogen sulfide donor, (10-oxo-10-(4-(3-thioxo-3 H-1, 2-dithiol-5-yl) phenoxy) decyl) triphenylphosphonium bromide (AP39). *MedChemComm*, 5(6), 728-736. <https://doi.org/10.1039/C3MD00323J> [**available for £42.50 from the Royal Society of Chemistry**]
4. Walum, H., Waldman, I. D., & Young, L. J. (2016). Statistical and methodological considerations for the interpretation of intranasal oxytocin studies. *Biological psychiatry*, 79(3), 251-257. <https://doi.org/10.1016/j.biopsych.2015.06.016> [**available for \$35.95 from Elsevier**]

Three of these four had pre-prints or accepted versions available on researcher profile pages or through an online repository:

1. Corona, G., Vauzour, D., Hercelin, J., Williams, C. M., & Spencer, J. P. (2013). Phenolic acid intake, delivered via moderate champagne wine consumption, improves spatial working memory via the modulation of hippocampal and cortical protein expression/activation. *Antioxidants & redox signaling*, 19(14), 1676-1689. <https://doi.org/10.1089/ars.2012.5142> [**available on ResearchGate**]
2. Le Trionnaire, S., Perry, A., Szczesny, B., Szabo, C., Winyard, P. G., Whatmore, J. L., ... & Whiteman, M. (2014). The synthesis and functional evaluation of a mitochondria-targeted hydrogen sulfide donor, (10-oxo-10-(4-(3-thioxo-3 H-1, 2-dithiol-5-yl) phenoxy) decyl) triphenylphosphonium bromide (AP39). *MedChemComm*, 5(6), 728-736. <https://doi.org/10.1039/C3MD00323J> [**available on ResearchGate**]
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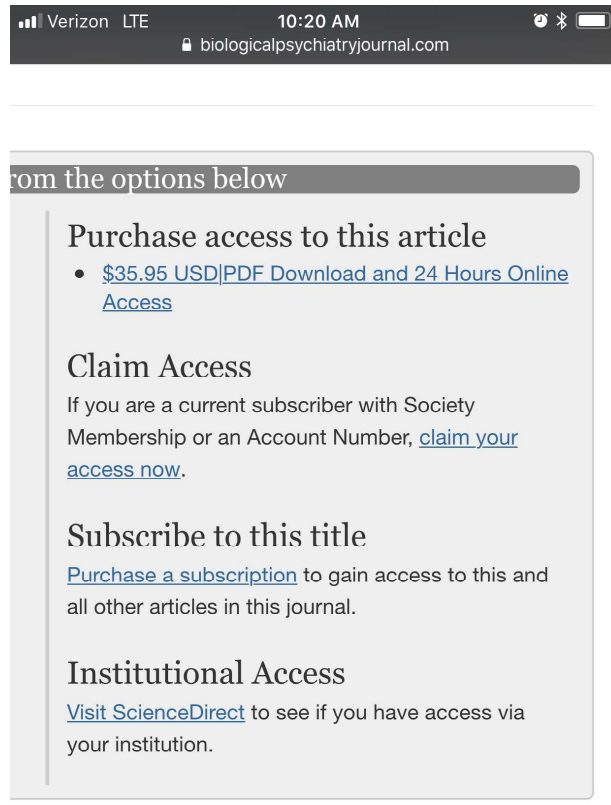


Figure 2. Screenshot of access options for *Biological Psychiatry Journal* (Walum, 2016).

For the casual reader wanting to gain knowledge from these studies, barriers include the financial aspect of the article itself or having to create an account with the publisher. Account creation may include a request for an email address, name, occupation, area of study and region just to find out the price of the article in question. These barriers are not unknown to academic researchers either. According to a recent *Guardian* article:

Most research journeys begin with a literature review, consulting hundreds of journal articles, analysing the data within, and formulating a hypothesis to test in the lab. The reality for many researchers is that finding and accessing articles can be extremely tedious. My research suggests it takes 15 clicks on average, multiple logins into different repositories, dead links, and waiting on endless redirects. (Kaube, 2018)

Addressing the strain of post-graduate access

The ACRL Framework on Information Literacy addresses access to, and value of, information:

The novice learner may struggle to understand the diverse values of information in an environment where “free” information and related services are plentiful and the concept of intellectual property is first encountered through rules of citation or warnings about plagiarism and copyright law.

Librarians can promote lifelong learning and help students access information after they graduate in several ways. Librarians can educate students about sites to access academic information, other than

library databases, including institutional repositories and public resources. For example, the Idaho Commission for Libraries provides access to several scholarly databases, such as *Academic Search Premier* through lili.org. In Oregon, users can access proprietary databases through the Libraries of Oregon portal: http://www.galepages.com/oregon_sl/databases. Academic librarians can work with their public library counterparts to make students aware of what is available after they graduate. Public universities likely have a way for non-students to access resources if they are physically in the library building. Librarians have written about their discussions of *Sci-Hub* with faculty and students. *Sci-Hub* is a “global science and technology publisher and provides free access to research articles and latest research information without any barrier to scientific community” (<https://scihub.org/>). For example, Sarah Crissinger led a discussion at Davidson College, telling faculty, “if we did not like or want to accept Sci-Hub as an answer to the disparity in information access, we should construct our own answer and take action” (2017, p. 87).

Librarians can also discuss the costs associated with the academic literature students access through their higher education institution and engage possible future scholars in understanding the publishing ecosystem. Future scholarly authors could be taught to retain their authorship rights, or to negotiate with the publisher for greater control of their scholarly output. Instilling a sense of ethical scholarship should also be encouraged whenever possible, and one that favors sharing openly as a societal benefit: “We, as scholars, face new responsibilities for thinking about how widely our work circulates, which does not preclude publishing in the prestigious journals, but which does call for a more ethical approach to the sharing of our work.” (Willinsky & Alperin, 2011, p. 4)

Discussion

Librarians routinely teach information literacy skills to students, focusing on finding and evaluating information. Academic databases, accessed through the university library, are often the focus of how to find credible information because librarians understand the value of curated, scholarly literature. The strategies taught to evaluate information are effective for a student’s academic paper and should also be applied to information consumed outside of the academic environment. The recent focus on misinformation in the news and the examples from *Last Week Tonight with John Oliver* episode on scientific studies highlight the importance of information literacy beyond the borders of higher education institutions.

There are often barriers, including cost and the tedious process to create logins to access the full-text of academic articles for those not enrolled in a college or university. Lack of access to credible knowledge due to expensive articles incurs a costly gap in information seeking: people who cannot afford to access credible knowledge may search for freely available knowledge that could be biased, misleading, or deceptive, which can give rise to higher levels of misinformation. Similarly, if only relying on the press releases provided by popular television and online news sources, and not looking at the original study, people could make decisions based on misinterpreted or misleading claims.

Librarians can address these barriers while teaching information literacy skills by showing students how to access articles through institutional repositories, pointing out resources available through public or state agencies, and by engaging future scholars in discussions about the publishing industry and open access options. Librarians are in a unique position to continue a commitment to ensure access to

research to everyone as stated in the American Library Association's Professional Ethics (2018) page: We significantly influence or control the selection, organization, preservation, and dissemination of information. In a political system grounded in an informed citizenry, we are members of a profession explicitly committed to intellectual freedom and the freedom of access to information. We have a special obligation to ensure the free flow of information and ideas to present and future generations.

As academic librarians this responsibility does not end when an undergrad migrates to non-student life, but it does present opportunities to expand their information skills and to raise their awareness of more open and reliable sources of information.

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