The Publication Facts Label: Ascertaining a Publication's Adherence to Scholarly Standards

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Key points

- While research integrity initiatives tend to focus on article shortcomings, attention also needs to be paid to establishing journal adherence to scholarly publishing standards.

- The expansion of open access entails a responsibility for supporting this public access with tools that can guide and instruct the public on what distinguishes research articles.

- Publishing platforms have yet to take advantage of their capacity to present the relevant data for assisting readers in finding their way in an age of misinformation.

- Journals can utilize industry organizations, such as ORCID, to form trust and verification networks that will strengthen the integrity of scholarly communication.

INTRODUCTION

This is a case study of a digital innovation aimed at increasing researchers', professionals', and the general public's ability to approach research publications with a ready method of checking its compliance with the features that set scholarly publishing apart from other sources of information. More specifically, the innovation consists of generating a "publication facts label" (PFL) for articles and journals, which records their adherence to eight elements that reflect scholarly publishing standards. The label conveys data and links for publisher identity, scholarly

editorial oversight, article acceptance rates, journal indexing, expert peer review, competing interests, data availability, and research funding (Fig. 1).

The PFL is modeled on the United States' Nutrition Facts label that, since 1993, has appeared on food products, proving itself an effective science communication strategy, capable of informing and educating the public, with later adoptions around the world in different formats (Christof et al., 2018; Post et al., 2010). The label was a response to a new sense of consumers' "right to be informed" during the 1960s, with both the concept and content emerging out of extensive public surveys and hearings (Frohlich, 2023, p. 56). The label's design was declared "a masterpiece" by Massimo Vignelli, designer of the NYC subway map (1996), while subsequent studies established that people attended to and acted on the label (Frohlich, 2023, p. 152; Kessler et al. 2003, p. 23).

Based on this encouraging precedent, the PFL is being developed as an open source software project by the Public Knowledge Project (PKP) at Simon Fraser University for use with its Open Journal Systems. In this case study, we present the rationale, design, and assessment strategies involved in PFL development and piloting. Although the PFL is still at an early stage, we consider the lessons already learned from this approach worth introducing into the industry's current emphasis on ways to improve research integrity, as reflected, for example, by this special issue of *Learned Publishing* among other initiatives.

Publication Facts

For this journal	Other journals
Publisher: Ubiquity Press	
Editorial team ID	65% ID profiles
Articles accepted: 8%	13% accepted
Indexed: GS M WS S	3.4 indexes
For this article	**Other articles**
Peer reviewers: 2	2.4 average
Competing interests: Yes	11% yes
Data availability: Yes	16% yes
Funders: DAF NIH NSF	32% have funders

To learn more about a fact, click ⓘ

Figure 1. The publication facts label, with standards, hyperlinks, and information modals.

RATIONALE

The PFL is intended (a) to inform readers about the publishing standards adhered to by the article and journal on which it appears and (b) to educate readers about the standards that distinguish research journals from other forms of publication. There is no single authority to designate the standards that determine the research or scholarly integrity of a journal. These standards have evolved over time through scientific breakthroughs and scandals. The standard practice of peer review, for example, has been attributed to the Cold War (Baldwin, 2018). The sharing of data started to gain ground in the 1980s in areas such as astronomy and genomics (Henneken, 2015; Gianai et al., 2020). Competing-interest or conflict-of-interest disclosures garnered attention in the 1990s (Guidelines, 1990). The elements that make up the PFL are not, then, standardized across disciplines or fields, but are intended to represent practices common to research publications writ large. While it might seem, for example, that statements on competing interests and data availability may seem inappropriate for a literary study of Toni Morrison's *Beloved*, knowing of the author's consultations on a film adaptation and use of archival correspondence may be pertinent, while seeing "no" post for each of these elements would take nothing from the study.

The eight standards selected for the PFL were chosen because they formed a comprehensive, if not exhaustive, guide to journal integrity for which publishing platforms could be coded to assemble and present in a relatively compact and comprehensible form for a wide audience. The PFL demonstrates the ways in which the article and journal adhere to scholarly publishing standards. The PFL is not intended, however, to provide readers with a simple answer to the integrity question by providing the journal with an integrity badge, stamp of approval, or rating. Others have developed trustworthiness guides, for example, with "high," "medium," or "low" ratings, along with gauges, checkmarks, and red exclamation points, only to conclude that a summative integrity judgment is not as useful as simply presenting the data that went into it (Løvlie et al., 2023). A further example is found with research evaluation checklists, which, in one instance, includes transparency and integrity elements that have been rigorously developed for preprints, while relying on a knowledgeable close reading of the study (Turoman et al., 2023).

The PFL will compile comparable counts from other journals utilizing the PFL, suggesting the degree to which an article and journal are roughly in line with common practice. As the number of participating journals grows, the comparison could be organized by discipline

to provide a more helpful count, but again, it is the process rather than the results that will speak to integrity.

The PFL, we also note, will provide no guarantees for the integrity of an article's method, data, and conclusions. As the twenty-four researchers that came together to develop "Key Concepts for Informed Choices" insisted, "trust in a source alone is not a sufficient basis for believing a claim" (Aronson, 2019). But trust in a source is a starting point. Still, even the most highly respected journals (if not because they are so well respected) have to retract papers, on occasion, due to their reliance on "paper mills," manipulated data, and/or reviewer scams, as the blog site *Retraction Watch* makes all too clear. These instances of research fraud are currently subject to industry initiatives, such as STM's Integrity Hub, to catch them before they are published. The PFL might be thought of as a necessary but not sufficient initiative in extending and communicating research integrity in scholarly publishing.

The PFL is intended to serve a wide range of readers, with an emphasis on the interested public. It assumes that with growing public access, journals have a responsibility to recognize and address this new potential readership. The public may have access to a third of the literature at this point (Darbier, 2020; Piowar et al., 2018). Yet, in an area such as oncology, we have found more than half the studies from the last year in PubMed are freely available. Whether through news and social media, Wikipedia, or online searches, the public will be able to access more of this work. And the PFL will provide journals with a means of helping this new readership appreciate what sets research publications apart from other information sources, as well as to determine that the study they are reading adheres to those standards. At a time when an overwhelming majority of internet users report being troubled by the rise of misinformation, scholarly publishers have an interest in informing readers about reliable sources (Knuutila et al., 2022). As things stand, to take but one critical example, two-thirds of the public do not believe a scientific consensus exists on the human causes of global warming, while 14 percent do not even think there is evidence of such warming (Funk & Kennedy, 2016; Pasquini et al., 2023). Public exposure to research, with or without inclusion of the PFL, is obviously not going to put an end to the online powers of misinformation.

Yet we are not without hope for improving the public communication of science, with considerable attention focused on educational settings. Here the call is for "building the knowledge and capabilities required for digital media and information literacy, particularly in the sciences," which includes, most germane to the PFL, "the social practices the scientific community uses to vet knowledge claims to produce trustworthy knowledge" (Osborne et al., 2022). Such forms of science media literacy have been found, in turn, to "aid health behavior

adoption by contributing to knowledge gain and expectancies" (Austin et al., 2021). That is, if educators are mobilizing to prepare students in the ways of scholarly publishing, then it would not seem too much for the scholarly publishers to meet those entering an age of open access with new levels of transparency around such knowledge-vetting social practices.

The PFL is also of potential value to members of the research community. We see it as especially helpful when facing an unfamiliar journal when considering whether to cite a study in it or to submit a manuscript to it. One factor contributing to such hesitancy around the unknown is the "predatory journal" phenomenon. With well over 12,000 articles referencing "predatory journals" in Google Scholar, this concept clearly reflects a dominant journal integrity concern. The charges against such journals often revolve around the lack of scholarly editorial oversight and peer review, while our inquiries into the process of identifying such journals suggest that it remains something of a guessing game (Khanna & Willinsky, 2023). Still, the PFL cannot offer an iron-clad guarantee of journal legitimacy; digital innovations of any sort can be hacked. The PFL could, however, raise the technical bar for predatory journals if it were to be widely adopted, and set the standard for reliable journals. It consolidates elements in the prominent "Think. Check. Submit." campaign, largely sponsored by publisher organizations, that can be difficult for authors to ascertain, as they are asked to check how many "reviewers per paper." The PFL can also help reduce the campaign's reliance on such limiting factors as whether "you or your colleagues know the journal." The PFL may also assist those who are relatively new to scholarly publishing, keeping them from inadvertently slipping into what are regarded as predatory practices.

DESIGN

PKP designed the PFL through the sponsorship of a private donor, who in her professional career as a reference librarian in a city library, developed an interest in how the public could be better guided in their pursuit of knowledge through the wider world of scholarly publishing. It became clear that one could ask whether even the most-respected and well-known journals facilitated public awareness of their adherence to scholarly publishing standards. Could the public be counted on to know and trust these august publications without access to this information? Was there no less of a case for greater transparency on these factors so vital to journal integrity in these and, in fact, all journals as they become increasingly open to public use? Such was the basis of her generous support of PKP's efforts with the PFL.

The PFL is designed to be an integral part of the publishing platform. It will pull data from different components, resulting from counts kept of articles accepted and reviews submitted, as

well as from querying authors, indexes, and ORCID. It will generate and update the masthead and display compiled data from other journals using the PFL. The PFL's eight elements are divided between those "for this journal" and "for this article," as well as for "other journals" and "other articles." The PFL makes extensive use of information modals [i] to provide explanations of each standard, with the complete set available here, and an example presented below.

The PFL appears in two places. At the bottom of the journal home page, a Publication Facts link appears that, when clicked on, presents the information for this journal and other journal data. At the bottom of each article's landing page, a Publication Facts link appears, which when clicked presents the PFL (Fig. 2, Fig. 3). The PFL is kept out of sight until clicked as it is imagined that this is something that will only be consulted on occasion, when an article is of particular interest, or in advance of circulating an article, or with a journal encountered for the first time.

Figure 2. Article landing page with Publication Facts Label link appearing at the bottom of the page after the article abstract.

Abstract

Behavioral genetics in dogs has focused on modern breeds, which are isolated subgroups with distinctive physical and, purportedly, behavioral characteristics. We interrogated breed stereotypes by surveying owners of 18,385 purebred and mixed-breed dogs and genotyping 2155 dogs. Most behavioral traits are heritable [heritability (h2) > 25%], and admixture patterns in mixed-breed dogs reveal breed propensities. Breed explains just 9% of behavioral variation in individuals. Genome-wide association analyses identify 11 loci that are significantly associated with behavior, and characteristic breed behaviors exhibit genetic complexity. Behavioral loci are not unusually differentiated in breeds, but breed propensities align, albeit weakly, with ancestral function. We propose that behaviors perceived as characteristic of modern breeds derive from thousands of years of polygenic adaptation that predates breed formation, with modern breeds distinguished primarily by aesthetic traits.

More Citation Formats ▾

Issue

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Section

Articles

Publication Facts

For this journal	ℹ Other journals
ℹ Publisher: Ubiquity Press	
ℹ Editorial team ⓘD	65% ⓘD profiles
ℹ Articles accepted: 8%	13% accepted
ℹ Indexed: GS M WS S	3.4 indexes
For this article	ℹ Other articles
ℹ Peer reviewers: 2	2.4 average
ℹ Competing interests: Yes	11% yes
ℹ Data availability: Yes	16% yes
ℹ Funders: DAF NIH NSF	32% have funders
To learn more about a fact, click ℹ	

Figure 3. Publication Facts Label expanded after clicking at the bottom of the page below the article abstract.

The Eight PFL Elements

1. "Publisher," which is one thing that journals typically make easy to ascertain, is accompanied by a link to the publishers' homepage.

2. "Editorial team" involves third-party verification of identities and relevant expertise. On accepting an invitation from a journal manager to serve as editor or editorial board member, which is issued through the publishing platform, the user is directed to the ORCID website to verify their identity which also transfers the user's ORCID ID to the journal. The ID, along with the users' name, role, and institutional affiliation is then listed on the journal masthead. The masthead is linked to the PFL's "editor (ID) profiles" to enable readers to view editors' and board members' ORCID profiles as evidence for readers of their general expertise in overseeing the publishing process. As ORCID is an emerging identity standard, the PFL seeks to encourage greater participation by displaying the proportion with ORCIDs among the "other journals." There is an information modal explaining this standard, as with the other elements (Fig 4).
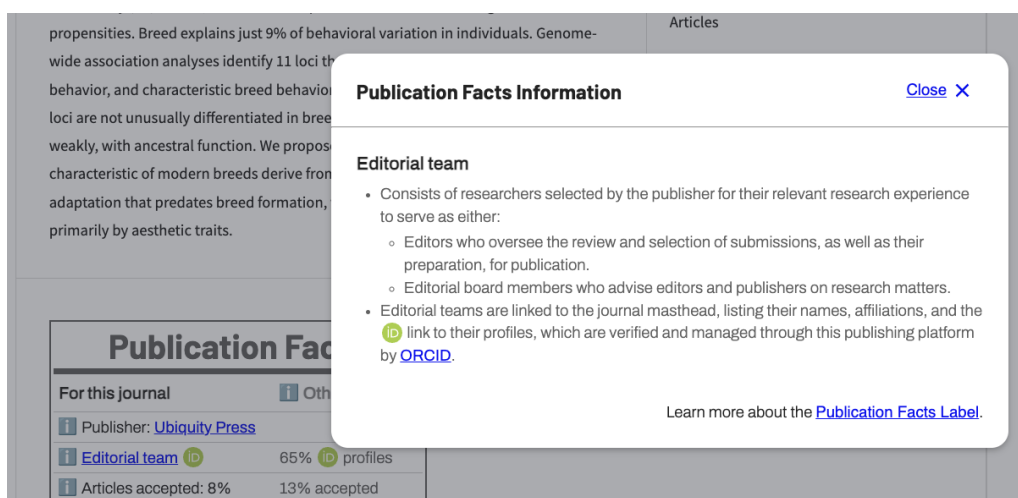

Figure 4. The Publication Facts Label information modal for "editorial team."

3. "Articles accepted" presents the results of the scholarly oversight and review process that distinguishes research publications from other information sources, while likely being of interest to potential authors and citers of the journal.

4. "Indexed" indicates which of five major open and subscription indexes list the journal, including Directory of Open Access Journals, Google Scholar, Medline, Scopus, and

Web of Science.

5. "Peer reviewers" includes the number of reviewers who submitted reviews to the platform for the article, while the link leads to the masthead which includes the complete set of reviewers, with names, affiliations, and ORCID IDs, for the previous volume to protect review anonymity.

6. "Competing interests" links, if "yes," lead to the authors' statement on their competing interests, for which they are queried in the submission process.

7. "Data availability" links, if "yes," lead to the author's data availability statement, for which they are queried in the submission process.

8. "Funders" include abbreviations and links for those agencies identified by authors during the submission process as underwriting research costs, using Crossref's funder registry to standardize funder identities.

ASSESSMENT STRATEGIES

The PFL has been developed to meet the needs and interests of a number of communities. It arose out of the global expansion of research activity, as well as concerns with misinformation and predatory journals. It was a natural initiative for the PKP to take on, as it has been developing open source infrastructure for scholarly publishing for twenty-five years with some success, judging by 25,000 journals worldwide using its OJS in 2020 to publish research in 60 languages, with over 80 percent of the journals located in the Global South, and less than 1.5 percent of the total appearing on predatory journal lists (Khanna et al., 2022). This global community of journals using OJS represents a considerable expansion of research activity around the world, although we recognise that this is not always a welcome development (Altbach & de Wit, 2018). We understand where such sentiments are coming from, our approach is to improve, through such strategies as PFL, the basis on which the global scale of research can continue its contribution to knowledge and humankind.

As part of the development process, meetings were held with ORCID, Crossref, and DOAJ as publishing industry organizations that contribute to journal integrity in ways that the PFL would draw upon. These organizations might, as well, have a potential role to play, if the

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PFL were to be found effective enough to attract a wider roll out beyond the community using OJS.

A prototype of the PFL was first introduced publicly by Daniel Pimentel to a senior high school science class in California. The students, having previously learned a general approach to assessing research for "currency, relevance, authority, accuracy, and purpose" (CRAAP Test), welcomed the convenience of the PFL and how it provides data specific to articles. They noted that, with the help of the PFL, finding evidence for the trustworthiness of an article was easier and took less time. The students also suggested further refinements to the PFL's wording and structure. After some of those changes were incorporated, the design was also shared with a publisher advisory committee for the project, where the PFL was favorably received, at least in principle, by those who responded.

As a next step, we will be conducting, along with colleagues noted in the acknowledgement, a systematic review of the PFL with representatives of a variety of relevant communities. The review, to be undertaken during the 2023-24 academic year, involve a series of English- and Spanish-language articles in two test journals employing PKP's OJS. The focus of these assessment studies will be on the design, clarity, and value of the PFL. Those who will be involved include (a) journalism students and science journalists, in light of the role that journal articles have played and will increasingly play in their work, with concerns expressed about journalists need for "bespoke digital support" (Maiden et al., 2020; Fleerackers et al., 2021); (b) English- and Spanish-language journal editors and researchers will have an opportunity to consider what the PFL might bring to the publications in which they are involved' and (c) high school students, who through an action research model, will explore the PFL's design, clarity, and value with members of their communities (Goodnough, 2003). It is worth adding, in this regard, that with the Nutrition Facts label, the Food and Drug Administration mounted educational campaigns to increase its effectiveness in informing and guiding the public (Frohlich, 2023, p. 145).

If these studies establish that there is support for the use of the PFL with journal articles, the plan is to release an open source software plugin for optional use of the PFL with the OJS publishing platform. This piloting would involve a wider assessment of readers' responses to it, assessing whether it is capable of realizing its underlying assumptions along the following lines:

1. Research publications may be able to serve the public as a check on misinformation.

2. Journals are able to inform readers about their adherence to scholarly standards.

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3. The public has an interest in knowing the reasons why a journal is to be trusted.

4. On encountering an unfamiliar journal, there are ways to ascertain its quality.

The expectation would be that if the PFL is "working" as intended, then participants would increase their agreement with one or more of the four statements as a result of their use of this digital innovation.

CONCLUSION

In concluding this case study, we would point to three lessons that can be drawn from the rationale, design, and assessment strategies employed in developing a publication facts label intended to contribute to, as well as increase public awareness of, journal integrity:

1. The publishing platforms that are now common to journal publishing (if in different forms) offer a number of affordances that make it relatively easy to automate the assembly of key information related to journal's adherence to scholarly publishing standards (which is not standard practice today).

2. Digital-era scholarly publishing industry organizations, particularly ORCID, but also other publicly accessible resources, such as DOAJ and Google Scholar, offer a means of organizing and managing trust networks that entail verification processes related to standards adherence in scholarly publishing, and thus can contribute journal integrity.

3. Information bearing on an article and journal's adherence to scholarly publishing standards can be presented, supported, and linked in a digital publishing environment in ways that warrant testing and further refinements for comprehensibility and instructiveness with a wide variety of potential journal readers, from high school students to journal authors.

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