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The Chinese Early Warning Journal List: Strengths, weaknesses and solutions in the light of China's global scientific rise

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ABSTRACT

According to Scopus, China is the nation that produces the highest volume of scientific research but is also the nation with the highest number of retractions, suggesting there are issues connected to research and publishing ethics within the Chinese publishing infrastructure. One source of negative reputation may be the selection of journals with questionable reputation, including "predatory" journals. In 2020, the Center of Scientometrics (CoS) in China established a list of "problematic" journals, called the Chinese Early Warning Journal List (EWJL), the only national watchlist in China, to support Chinese academics and the Ministry of Science and Technology of China. EWJL ranks journals as either low, medium or high risk. There are benefits if EWJL is accurate, valid and complete. However, close examination of the CoS website and EWJL functionality revealed several deficiencies. This paper debates those weaknesses within the wider context of publication in low-quality journals, offering suggestions for improvement that would be necessary for EWJL to become more trustworthy, and to better enable the continual reform of Chinese publishing culture. This issue is important to academic librarians because they can use EWJL in the process of collecting library funds and providing library information, and advice, to researchers.

Introduction

Journal quality in academic publishing

Researchers generally seek to publish their work in reputable journals, and when deciding where to publish, may turn to indexes such as Scopus or Web of Science (WoS) (Baas et al., 2020; Nguyen et al., 2020; Nicholas et al., 2017; Pranckutė, 2021), or to journals with ranks (Anderson et al., 2021) and metrics (Gaffney & Townsend, 2022; Xu et al., 2023) to guide their choice for submission. Such selection criteria have their drawbacks and limitations, and not all scientific journals with appropriate editorial standards and scientific merit are represented in these citation databases (Chavarro et al., 2017; Chavarro et al., 2018; Ioannidis & Maniadis, 2024), which are open to abuse (Nicholas et al., 2023). It is difficult – if not impossible – for any journal to claim to be perfect, and despite efforts at screening papers prior to publication, even the primary mechanism of evaluation (i.e., peer review) has its own weaknesses and limitations (Fiala & Diamandis, 2017; Kovanis et al., 2016; Siler et al., 2015). Compounding these issues is dishonesty among some individuals in the academic population, especially those who may seek the shortest and easiest route possible to success, even if that implies cutting corners, or reverting to dishonest or unethical strategies, including the payment of services (i.e., paper mills) to fabricate their data or paying for "ready-made" papers to achieve that success (Christopher, 2021; Rivera & Teixeira da Silva, 2021). To counter this rising trend, journals and their publishers have increased their awareness and application of ethical values, rules and guidelines (Else, 2022). Thus, publishing in not merely a process in which scientific knowledge is screened, shared and debated (Oh, 2021).

Amplified by the open access movement, "predatory" publishing (Beall, 2017) emerged, in which dishonesty is practiced, not by authors, but instead by journals and publishers (Inouye & Mills, 2021; McLeod et al., 2018; Teixeira da Silva et al., 2022). Best publishing practices for authors are often touted as being those that avoid "predatory" publishing venues (Hulsey et al., 2023). Springer Nature, the world's largest publisher in terms of volumes of journals (Nishikawa-Pacher, 2022), goes as far as requesting its authors across thousands of journals not to cite literature from such venues, while providing no clear criteria as to

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what constitutes "predatory" (Teixeira da Silva, 2023a). This misunderstanding of predatory publishing, even at the apparently highest levels of publishing, is symptomatic of a deeper misunderstanding of this crisis in science. With each threat and crisis in academic publishing arises the need for a solution and the will to eliminate that threat and its associated risks: in this case, the integrity of not only the published research (and thus the basis of scientific knowledge), but of the journals and publishers themselves.

Guidelines and road-maps associated with, and established for, "predatory" publishing are riddled with flaws and challenges, not least of which is the lack of sufficient and necessary criteria to determine what constitutes a "predatory" journal or publisher. While substantial efforts have been made in recent years to refine this understanding and definition, two prominent task forces, Grudniewicz et al. (2019) and IAP (2022), including "experts" who provide guidance to global academia, note that the risks and threats of "predatory" publishing have not been resolved, and they are amplified by a superficial understanding of this phenomenon, and the lack of robust solutions. The first reason why there is failure in appreciating what constitutes a valid, scholarly and scientific journal from one that is scientifically invalid, unscholarly, untrustworthy and thus potentially "predatory" (if the intent to deceive is deliberate) is because artificial constructs tend to observe the phenomenon (e.g., scholarly vs unscholarly) and even the solution (e.g., allow submission or ban from submitting to a journal) as over-simplistically binary, even as a wide range of positive and negative qualities populate not only the author base, but also the population of journals and publishers (Dunleavy, 2022; Siler, 2020; Yamada & Teixeira da Silva, 2022). It is also unhelpful not being able to distinctly differentiate predatory from exploitative behavior, or equating the two as equals (Teixeira da Silva et al., 2019), while some more egregious unethical players rebrand opaquely to avoid detection (Siler et al., 2021). Unsuspecting authors, thinking that they might be dealing with a scholarly journal or publisher, would then be fooled by the wolf in sheep's clothing.

Watchlists as an imperfect attempt to differentiate valid from invalid journals

Academic and publishing communities have taken measures to address these threats to science's integrity. The first, almost natural and instinctive response—again limited by a binary choice—is to create lists of journals that are (or not) trustworthy and safe to publish in, broadly referred to as whitelists or safelists and blacklists or watchlists, respectively (Cukier et al., 2020; Dadkhah et al., 2021; Koerber et al., 2020; Kratochvíl et al., 2020; Pölönen et al., 2021). The most prominent watchlists to date have been those by Jeffrey Beall (which used to be free) and Cabells (a for-profit US-based venture), and to a lesser extent the short-lived Dolos list (Akça & Akbulut, 2021; Freiermuth, 2023; Severin et al., 2021; Sureda-Negre et al., 2022; Teixeira da Silva, 2022a). However, Beall's watchlists and Cabells Predatory Journal Reports, especially the criteria that were used to establish them, have reliability issues, making reliance on such lists risky (Dony et al., 2020; Richtig et al., 2023; Taşkın et al., 2023; Teixeira da Silva & Kendall, 2023a; Teixeira da Silva, Moradzadeh, et al., 2023). The greatest risk is of making the wrong selection of a journal that is supposedly safe to publish in, or avoiding a journal that is suspected of not being safe to publish in, but which in fact is scholarly, i.e., the underlying flaw of watchlists is the possibility of making type I and II classification errors (Saarela & Kärkkäinen, 2020; Teixeira da Silva & Tsigaris, 2018, 2020; Tsigaris & Teixeira da Silva, 2021), impacting selection. The difficulty of journal selection is compounded by the fact that some of the characteristics that make a journal scholarly are intangible (Moradzadeh et al., 2023; Walters, 2022), or have not been measured or quantified for a wide enough sample of journals to appreciate which parameters are acceptable, and which are not.

publishers, even more so when the categorization or classification may be false or wrong, then a risk of insults, discrimination, or worse, may arise as a result of relying on those lists (Teixeira da Silva & Kimotho, 2022). For that reason, it has been suggested that the criteria to describe "predatory" behavior needs to be more fine-scale and detailed, as well as ranked and weighted (Teixeira da Silva, 2013), even matched against established economic models of quality control (such as the credit rating system in the banking sector), in order to get a more granular appreciation of the safe versus unsafe (or scholarly versus unscholarly) nature of a journal or publisher (Teixeira da Silva et al., 2021). For these reasons, it is not helpful to merely make emotive appeals to the community to avoid "predatory" journals or publishers (Sonntag, 2023), or to make over-simplistic suggestions of the need to pivot academia's focus (Eriksson & Helgesson, 2017), especially if the community does not know precisely what threat or which foe they are dealing with. An even more egregious mistake by academics is to ignore the issue of "predatory" publishers, simply because they do not have the ability to appreciate or classify them, opting instead to distract academia's attention by pivoting the focus towards a new threat while ignoring the already existent one (Nicholas et al., 2023). Absent clear knowledge of who and what "predatory" entities are, how can some researchers claim to definitively understand the citation behavior of academics who cite papers from, or publish in, "predatory" journals (Frandsen, 2017, 2019; Mertkan et al., 2021), and are such conclusions misguided or erroneous? There are risks (including legal ones), such as retractions, when academics inaccurately classify journals or publishers based on equally erroneous watchlists (Macháček & Srholec, 2021; Oviedo-García, 2021) because only a single publisher has, to our knowledge and to date, been classified as "predatory" in a US court of law, OMICS (Manley, 2019a, 2019b).

The issue of the reliability of blacklists and watchlists holds significant relevance for academic librarians, given their pivotal role in the development of library collections and the provision of information services to researchers. Librarians shoulder a multitude of responsibilities, including collection development, reference services, instructional support, liaison activities, fostering scholarly citizenship, and engaging in continuous professional development and scholarship (Wilson et al., 2024). By incorporating blacklists or watchlists into their collection development strategies, academic librarians probably can more effectively navigate the intricate landscape of scholarly publishing, ensuring that resources align with ethical standards and contribute to the advancement of research within their institutions. However, as noted by Koerber et al. (2020), the adoption of a "list" approach fails to fully capture the diverse nature of modern scholarly communication. The decision-making process regarding scholarly communication channels transcends a simplistic dichotomy between good and bad options. Hence, further research is vital to understand the complexities inherent in contemporary academic publishing.

Underlying the arguments made above lie human error, bias, subjectivity and thus failure to accurately classify journals (or publishers), especially those that lie in the gray zone between legitimate and illegitimate publishing. To that end, humans have now started to tap artificial intelligence (AI) to assist with refining these classifications, with two prominent solutions being proposed in 2023 (Ateeq & Al-Khalifa, 2023; Chen et al., 2023). In the case of Chen et al. (2023), an academic journal predatory checking (AJPC)¹ system was devised, although careful scrutiny of AJPC and testing it has revealed serious deficiencies in this AI-driven solution, including an incredulously high rate of potential false positives when testing a sample of 17,000+ journals ranked by Scientific Journal Rankings (SJR) (Teixeira da Silva & Kendall, 2023b), a subset of SJR-ranked library and information sciences journals (Teixeira da Silva, 2023b), sports journals (Teixeira da Silva & Scelles, 2024), and even the managerially elite FT50 list

If such watchlists are then used to characterize authors, journals or

¹ http://140.113.207.51:8000/, last accessed 13 May 2024.

(Teixeira da Silva, Tsigaris, & Moussa, 2023). Even within the space of days or weeks, the classification by AJPC as either a "normal" or "suspected predatory" journal can change, without any explanation, rationale or evidence that the quality of the journal can flip so easily - once again using a limited binary approach - from being "normal" to becoming "suspected predatory", or vice versa (Teixeira da Silva & Daly, 2023; Yamada & Teixeira da Silva, 2024). Al-Moghrabi et al. (2024) claimed that another AI, OpenAI's ChatGPT, was able to differentiate "predatory" journals (appearing on Beall's blacklists) from "scholarly" journals (appearing on WoS or the Directory of Open Access Journals), but ignored that ChatGPT's knowledge was likely trained on Beall's lists, with their known shortcomings, as well as on literature that cast the Beall watchlists in a biased manner (positively, or negatively). Another analysis also noted that ChatGPT was no better than human analysis in assessing what a "predatory" publishing entity is (Tsigaris et al., 2023). This is not surprising given that ChatGPT draws on existing knowledge and does not (currently) have the capacity to draw its own independent conclusions.

For about a decade now, the issue of "predatory" publishing, as a distinct academic phenomenon, has not only resulted in a wealth of dedicated literature (Kendall & Linacre, 2022), but has surprisingly not yielded reliable results that can be considered – in our opinion – to be fail-proof or trustworthy, despite all good efforts and intentions by some of the main proponents to date (Kendall, 2021). Ultimately, authors and researchers are still trying to ask one rather seemingly simple question: what qualities make a journal reliable, scientifically valid, and thus safe to publish in (Moradzadeh et al., 2023)?

The goal of this article is to examine the efficacy and reliability of one such journal watchlist, namely the Chinese Early Warning Journal List (EWJL) established by the Center of Scientometrics (CoS) in China. By assessing its accuracy in identifying problematic journals, the study aims to propose enhancements to bolster its credibility and effectiveness in guiding journal selection and promoting research integrity within the scientific community.

The remainder of this paper is structured as follows. In the next section, we examine the strategic position of research from China on the global stage, both in terms of volume and ranking metrics. Following this, we briefly outline the methodology of this study. Subsequently, our focus shifts to a website purportedly established to assist Chinese academia in journal selection for publication. However, a detailed critique reveals significant weaknesses and flaws in the website's content, which we believe provide misleading information to Chinese scholars. As a way to improve that service and do justice to Chinese academia, we propose concrete solutions, using five qualities that were initially suggested for the integrity of a curriculum vitae, namely verifiable, accurate, complete, updated, and public (VACUP) (Teixeira da Silva et al., 2020), that could make that website more VACUPcompliant, while drawing inspiration from the Chinese philosophical tradition of Confucianism related to truthfulness and trustworthiness (Lu, 2022).

The rise of China on the scientific global stage: with prestige come risks

In this section, we examine how China's scientific research has strategically positioned itself on the global stage, both in terms of quantity and various rankings and metrics. In the last 25 years, research activity in China has experienced substantial growth. The National Science Board (2018) reported that by 2016, China had more scientific publications than the rest of the world. As of 2019, China surpassed the United States for relative participation in the top 1 % after previously overtaking the European Union (EU) in 2015 (Wagner et al., 2022). The Chinese scientific boom coincided with a significant growth of the Chinese economy, which has enabled increased investment in scientific research and development (R&D). Presently, China is the second-largest global spender on R&D, with China and the United States (US) accounting for approximately half of global R&D investment (Woolston, 2023). As a result, China has now established itself as a fully-fledged participant in global science and technology. In a brief timespan, China has transformed from an imitator in scientific fields to become one of the leading scientific nations globally (Wagner et al., 2022).

Our comparative analysis of publication activity between countries from 2014 to 2023, conducted using SciVal (10 February 2024), reveals a swift growth in the number of scientific papers from China. In 2020, China overtook the US in the volume of papers published, and by 2023, their number of publications approached those of the EU (including the UK), as shown in Fig. 1.

An important contributing factor to the elevation of Chinese science was not solely the expansion of the Chinese research budget, but also the national strategy of competently integrating national science with the global system, and internationalization of research, which includes international cooperation and scientific mobility (Cheng et al., 2021; Marginson, 2021, 2022a; Marini & Xu, 2023). Chinese scientists who have studied and worked abroad and subsequently returned to China are known to publish a greater number of papers and play a significant role in connecting China with the global research network, as evidenced by Chinese returnees from the EU and the US who publish more influential papers and continue to have a higher international publication rate than their domestic colleagues (Cao et al., 2020).

Scientometrics has also had a significant and contentious impact on the advancement of Chinese science. At first, China's science policy reform in the 1980s relied heavily on quantitative metrics to measure scientific progress. In the 1990s, a system was introduced to evaluate scientific research based on the Science Citation Index (SCI) and Clarivate journal impact factors. Those SCI-based metrics were used by scientific leaders and many Chinese scientists, who considered them a solution to an ambitious plan of integrating China into the field of science. These quantitative metrics were perceived to be more equitable than a biased national review subjected to bureaucratic procedures (Shi & Rao, 2010). Thus, the SCI indicators rapidly established themselves as the benchmark for evaluating scientific research in China. Publications in journals with an impact factor were made compulsory for obtaining a degree. Career progression for researchers and teachers, and applying for funding, were among other requirements (Fire & Guestrin, 2019; Holding et al., 2023).

SCI indicators are also used to assess institutions, with universities having a prominent role in China's publication activity. The Chinese government initiated three national programs (Project 211, Project 985, Double First Class) since the 1990s, which provided substantial financial aid to a select few universities, in order to foster advanced research (Lin & Wang, 2022). One of the essential criteria for being part of a selected group of universities is the number of publications in SCI-represented journals (Shu et al., 2020, 2021), including Chinese journals (Lei et al., 2023). Consequently, university rankings and other quantitative indicators obtained from SCI have become part of Chinese science



Fig. 1. Number of publications from China, USA and EU (with UK and ex UK) in 2014–2023 (Scopus data; sourced: 10 February 2024).

policy, at both individual and institutional levels, and officials, heads of institutions, and researchers use these indicators to inform and plan their research activities.

Quantitative planning and performance evaluation have a longstanding tradition in China. It is important to recognize that university rankings are subject to significant criticism and carry little weight in funding allocations within the scientific systems of many countries (Hamann & Ringel, 2023). By contrast, Chinese university rankings are closely tied to government science policy and serve as a crucial domestic mechanism for promoting the advancement of research infrastructure, education, and the allocation of national resources (Ahlers & Christmann-Budian, 2023; Allen, 2017). With ample experience in undergoing quantitative assessment procedures and competing for government funding, Chinese universities could effortlessly and rapidly enter the race for rankings and achieve notable triumphs in global university assessments. For instance, in the aftermath of 2000, Chinese universities have been progressively ascending in well-known global university rankings like Quacquarelli Symonds (QS), Times Higher Education (THE), Academic Ranking of World Universities (ARWU), and U. S. News & World Report (US NEWS), contending victoriously with universities located across the globe (Ahlers & Christmann-Budian, 2023).

Moreover, while the criteria are not extensively defined, Chinese officials consider a university's ranking in prominent international assessments when selecting higher education institutions to receive additional government funding. Consequently, Chinese universities undergo both global and domestic evaluations (Ahlers & Christmann-Budian, 2023). Chinese university leaders are making conscious efforts to attain the necessary indicators for success in national and international rankings, as it impacts both their political influence and economic prosperity. Nevertheless, statistical analysis of research activities at Chinese universities indicates that the institutionalized hierarchy in China lacks empirical backing. Despite their substantial financial advantages, China's prestigious universities fall behind other highperforming institutions in China, and the stratification of elite institutions appears to be primarily dependent on factors such as bureaucracy, geopolitics, and administrative ranks (Shu et al., 2021).

The swift ascension of Chinese science also carries unfavorable implications. In terms of scientific infrastructure, sophisticated research networks, and social support for innovation, China trails behind numerous other countries (Woolston, 2023). Although the quantitative accomplishments of Chinese scientists, discussed earlier, are commendable, purely numerical criteria are insufficient to depict and elucidate the worldwide scientific landscape. Science comprises various disciplines and interdisciplinary networks, and China's leadership positions, are also specific to certain academic fields. It is noteworthy that China's focus is directed towards science, technology, engineering, and mathematics (STEM) disciplines. However, political limitations in China exert a detrimental effect on the social sciences and humanities (Marginson, 2022b).

The intense pressure from the Chinese government to publish as many papers as possible in SCI journals has led some Chinese researchers and institutions to shift their research goals away from producing and disseminating new knowledge, and towards improving their rankings and quantitative performance, even at the expense of research integrity (Tang, 2019; Tian et al., 2016). Since the early 1990s, Chinese research institutions initiated a "cash-per-publication" policy, under which Chinese scientists can receive money for each publication that meets certain criteria, such as publication in a journal with a Clarivate impact factor. Thus, for most Chinese scholars, publishing articles is not only a way to disseminate knowledge, receive feedback and recognition from other scholars, but also a source of income (Quan et al., 2017; Zhao, Dai, et al., 2021; Zhao, Pan, & Hua, 2021). This is a possible incentive for unethical practices from a research quality perspective in the name of financial gain. journals, instances of academic misconduct among Chinese authors have also escalated, notably with incidents of plagiarism, falsification, and data fabrication becoming more prevalent (Zhao, Dai, et al., 2021; Zhao, Pan, & Hua, 2021). In absolute terms, the volume of retractions and expressions of concern for China currently (10 February 2024) sits at 25,858,² increasing by about 3000 in the past 3 months alone, and accounting for just over half of the total volume (51,346 entries) of that database. In 2023, over 14,000 retraction notices listed authors affiliated with a Chinese affiliation (Mallapaty, 2024).

The visibility of these practices is suggestive of the problem of lowquality research being taken seriously, akin to when diagnosis of a disease increases within a population. However, in 2000–2020, as was reported by Shu et al. (2022), "the share of China's retractions to all retractions across the world has been higher than the share of China's publications to all publications worldwide since 2004." The extent of academic misconduct varies from isolated incidents to the multi-milliondollar enterprise of "paper mills" – outsourcing firms that provide dubious services, including fabricating papers or selling authorships (Else & Van Noorden, 2021; Hvistendahl, 2013).

Teixeira da Silva (2017) suggested that China should have reviewed its policy on factors impacting academic rewards earlier. However, it appears that the Chinese government only began to feel the adverse effects of its insufficiently robust science policy during the years encompassing the COVID-19 pandemic. The practice of evaluating scientific performance based on SCI data encourages Chinese researchers to publish their studies in international English-language journals rather than Chinese ones. When selecting a publication for their research findings, Chinese scientists primarily prioritize whether the journal is indexed in WoS and the journal's impact factor, rather than the availability of subscriptions to content within the country, the publication's language, open access, or readership (Xu et al., 2018; Shu et al., 2022). Our analysis of Chinese publications from 2013 to 2022 indicates that Chinese scientists tended to publish their research results in highly esteemed journals belonging to Q1-Q2, as per the SJR indicator, with almost 74 % of publications falling in this category. Moreover, the proportion of Chinese papers in Q1-Q2 increased steadily in the said period and reached almost 81 % in 2022, as illustrated in Fig. 2.

Quan et al. (2017) provide some details of the cash-per-publication reward policy in China. Chinese university professors' average annual salary is about \$US 8600, starting at around \$US 3100. A single paper published in the right journal could be equivalent to a year's salary for a new professor, and a publication in *Nature* or *Science* could result in a payment of 20 times the annual salary of a professor. This policy encouraged publication in WoS journals, particularly those in Q1 and Q2, the majority of which are Western based.

An important event in updating China's evaluation policy occurred in 2020, when the Chinese government banned institutions from paying researchers bonuses for publications (Mallapaty, 2020). China's new research evaluation policy favors qualitative over quantitative indicators, and the number of publications and journals' impact factors should no longer directly influence the evaluation and funding of researchers, while publication in high-quality Chinese journals is encouraged (Zhang & Sivertsen, 2023). To discourage publishing articles primarily in overseas journals, the Chinese Ministry of Education revealed that future assessments for researchers would depend on a restricted collection of "representative" articles. Among these, no less than a third must be published in Chinese academic publications (Woolston, 2023).

Nevertheless, Chinese researchers are still influenced by Clarivate's Journal Citation Reports and the Chinese Academy of Sciences (CAS) Journal Ranking system, which is based on WoS journal lists (Tong et al., 2023). They also prefer to publish in journals with a high reputation and high speed of publication (Liao & Zhang, 2022). As Li (2021) notes,

With the expansion of Chinese publications in prominent scientific

² http://retractiondatabase.org/RetractionSearch.aspx.



Fig. 2. Share of publications from China per journal quartile by SJR in 2013-2022 (Scopus data: 28 September 2023).

contemporary Chinese scholars strive to achieve a delicate balance between academic internationalism and nationalism. To attain the goals of science development, the Chinese national strategy has prioritized an increment in research investment and the promotion of research internationalization. Marginson (2018) highlights that China's universities have effectively leveraged the globalization of knowledge, adapting to it. Thus, it appears improbable that the Chinese government will willingly relinquish the current route that resulted in the nation attaining global prominence. Consequently, scholars have reservations regarding the efficacy of the directives issued by the Chinese Ministry of Education to transform the current practices dominating the Chinese scientific communication framework (Shu et al., 2022). Despite the pursuit of excellence and significant progress, China still faces many challenges in the quality, integrity and evaluation of research (Hyland, 2023).

Method

This research employs a combination of qualitative methods to comprehensively assess the Chinese EWJL and propose enhancements. The study began with a qualitative analysis of the EWJL website and its functionalities to identify potential weaknesses and flaws. To complete this task, a pre-arranged list of evaluative questions was employed that all four authors used when evaluating the EWJL and its website (Appendix 1). To ensure the accuracy and reliability of results, a rigorous review of the EWJL website was conducted by all authors of the paper to ensure consensus (i.e., 100 % agreement) on identified weaknesses.³ Our findings were triangulated with existing literature related to EWJL. To achieve the latter, a selective analysis of the literature was used, focusing on indexed publications published in the last ten years. A search strategy was implemented in Google Scholar using a combination of keywords and Boolean operators such as EWJL OR "predatory publishing" AND China. Finally, recommendations for enhancing the EWJL were formulated based on a synthesis of our findings, aiming to address identified deficiencies and improve its utility for academia.

The Chinese Early Warning Journal List: strengths, weaknesses and suggestions for improvement

Overview

In 2020, possibly in response to the rise in academic fraud associated with research emanating from China, and to also address the issue of "predatory" publishing and the involvement of Chinese researchers in paper mills (Brainard, 2023), a China-specific blacklist was introduced, the Early Warning Journal List⁴ (EWJL), supplementing a limited number of publishing lists in China (Wang et al., 2023). Drawing on the English version of the Introduction page of that website, as well as from a December 2023 interview with the manager of the EWJL, Prof. Liying Yang,⁵ we learnt the following about EWJL:

- it was created by the CAS National Science Library (CAS library) as a support structure for Chinese academics, and to serve the Ministry of Science and Technology of China (MOST);
- it serves as a complement to the CAS Journal Ranking system, which ranks journals into four tiers, but only includes journals that are exclusively indexed in WoS;
- 3) it serves as an early warning system, i.e., a blacklist or watchlist (although these latter terms are not specifically used), with two key objectives: "to penalize untrustworthy and predatory journals" and "to remind researchers to choose their publishing venues carefully and to prompt publishers to strengthen their quality control for manuscripts";
- 4) it was created by applying "multiple criteria for scientometric method, including paper mill, citation impact, article processing charge (APC), rejection rate, growth rate of productivity and self-citation rate, etc."

The "Contacts" page reveals that the Center of Scientometrics (CoS) is responsible for the creation and management of EWJL. Apart from

³ We recognize that this was a purely qualitative assessment that may have involved a measure of subjective opinion and/or bias. However, we attempted to temper that possible bias by triangulating the findings of the four authors, until consensus was reached, regarding the results/findings of Table 1, and the assessments drawn in Table 2. Moreover, many of the findings we report, as noted above, are drawn from the peer-reviewed literature.

⁴ https://earlywarning.fenqubiao.com/#/en/README, last accessed 13 May 2024.

⁵ https://scholarlykitchen.sspnet.org/2023/12/13/guest-post-an-inte

rview-with-prof-dr-liying-yang-of-the-chinese-academy-of-sciences/, last accessed 13 May 2024.

those two pages, the website is simple and easy to navigate, and has three pages for the 2020, 2021 and 2023 journal blacklists.⁶ There is also a dedicated page in Chinese.

The EWJL: benefits, issues and criticisms

The EWJL stands out from similar initiatives and tools due to its proactive approach. For example, in authoritative citation databases such as Web of Science, the decision to stop indexing new issues of a questionable journal is slow and potentially increases the number of researchers who may suffer from such a delay. Instead, EWJL is trying to correct this omission and provide researchers with up-to-date information about journals. However, we do have a few criticisms of EWJL.

Any website that claims to offer an over-simplistic solution to a complex phenomenon like "predatory" publishing should give us immediate pause about its adequacy. Although we cannot state a priori with absolute certainty that this concern is valid, we critically evaluated the content and statements, at least those in English, to offer a better appreciation of this website and tool, although we recognize that the interview with Prof. Yang at The Scholarly Kitchen sheds a bit more insight. While doing so, we draw to the reader's attention that this website is a national warning system for the entire body of potentially tens or hundreds of thousands of Chinese researchers,⁷ i.e., a national evaluation system. We also ask readers, while reflecting on this website and its watchlists, to note that there are tens of thousands of journals⁸ that are published internationally (Nishikawa-Pacher, 2022).

The main issues we identified are outlined in Table 1.

Discussion

Beyond blacklists: a broader discussion is needed

Most (if not all) blacklists fail in some way. Beall's lists, arguably the most well-known list of claimed predatory publishers and journals, have been criticized for not being transparent in their methodology, for relying on only one person to make decisions, and for being seemingly overly critical of some countries. Kimotho (2019) presented 30 papers that were critical of Beall's strategy, while Kendall (2021) provided further references to papers that were critical of Beall's lists. Cabell's database, launched in 2017 soon after Beall's lists were taken offline, is based on a subscription model, so it is not available to all. It has also been criticized for the criteria it uses to identify suspect journals (Dony et al., 2020; Teixeira da Silva, Moradzadeh, et al., 2023). Despite predatory publishing being part of the research landscape for over ten years, there is still no one "go-to" website that is freely accessible and generally regarded, at least by the vast majority of academics, as being authoritative and trustworthy, that enables researchers to determine if a journal is predatory, even in China (Wang et al., 2023). AI has also not yet been able to offer a reliable solution either, as was noted above.

EWJL does not fill this void. We note the above issues that make this list VACUP-incompliant, thereby reducing its usefulness to readers and to the main end-user, Chinese researchers. For example, some claims on the EWJL website that have the potential of influencing research policy

⁶ https://earlywarning.fenqubiao.com/#/en/early-warning-journal -list-2020; https://earlywarning.fenqubiao.com/#/en/early-warning-journal -list-2021; https://earlywarning.fenqubiao.com/#/en/early-warning-journallist-2023.

Table 1

Criticisms	of	the	Chinese	Early	Warning	Journal	List	(a	set	of	2020-202	3
blacklists o	or w	vatch	ılists).									

(category)	statement of the problem	users
Ghost authorship	No specific authors are listed as the creators of this website or the three blacklists.	This dilutes both individual and collective accountabilit since the public is not awar of who the responsible authors for the content are
Ghost funding	CoS claims to have received funding from MOST, but it is unclear if the creation and management of EWJL is funded, or by whom.	Provides the user with poor contextual information to situate the relevance of the list, and obscures potential conflicts of interest.
Linguistic mismatches	There is a mismatch in content between the Chinese and English websites. For instance, the Chinese pages include the following URLs not found on the English version: https://earlywarning.fe nqubiao.com/#/zh-cn/relate d-reports https://earlywarning.fenqubia o.com/#/zh-cn/organizations	Suggests different levels of rigor and curation between different languages and giv an incomplete user experience.
Incomplete listing	There is a list for the years 2020, 2021, and 2023, and yet nothing for 2022.	That suggests either that curation has not been done fully (most likely), given th absence of any comment or 2022, or that the list's curat (s) consider that of all journ published internationally in 2022 represent zero risk to academics, which is both statistically unlikely and al: contradicts the list's raison d'être.
Opacity of blacklisting	There is no detail of the qualitative or quantitative criteria that were used to select journals for blacklisting in 2020, 2021 and 2023. Furthermore, there is no indication of the following important information for each of the journals blacklisted in 2020 ³ , 2021 and 2023 (65, 35 and 28, respectively): name of the publisher; DOI; website URL; list of infractions.	Suggests a lack of rigor in curation and subjectivity us in the criteria to determine which journals deserve certain scores, despite the list's claim to be "determin by objectivity."
No delineation criteria	There is no clear explanation as to what precisely "low, medium and high" actually mean or represent, how to distinguish between them, nor where the limits between them lie. ^b	Creates the following situation: for example, if a journal is labelled as being "low", and assuming that tl implies a low risk of publication in that journal, then what exactly is the problem publishing in such journal?
No definition of ethical principles	Though the list claims to be "determined by the principles of objectivity, prudence, and openness" ^c , no definitions or illustrations are offered of their practical implementation.	Without definitions or illustrations, such principle can fall into at least two tra Firstly, a concept like "objectivity" may be, rhetorically speaking, an "irrefutable assertion" or "undeniable truth" that is difficult to disagree with ar can be used in subsequent syllogisms whose first prem may well be valid (e.g. 'objectivity is important in t evaluation of research') bu whose conclusions may be questionable (e.g. 'this evaluative list is objective')

 $^{^7}$ Although we were unable to identify any accurate source to indicate the volume of scientists or researchers in China, in 2021, the full-time equivalent (FTE) of R&D personnel (10,000 men/years) = 571.6 (National Bureau of Statistics of China, 2022).

⁸ The question of how many scientific journals there are is always difficult to answer. In March 2023, Scopus indexed 26,591 active peer-reviewed journals. Johnson et al. (2018) indicated 70,000 academic journals globally.

Table 1 (continued)

Criticism (category)	Statement of the problem	Consequences for the list and users
		Conversely, a term like "openness" is so vague as to have no meaning at all, creating a rhetorical situation of "jargon" or "buzzwords" that add no substantive contribution.

Abbreviations: CoS, Center of Scientometrics; EJWL, Early Warning Journal List; MOST, Ministry of Science and Technology of China.

^a The 2020 list featured open access journals published by Wolters Kluwer, John Wiley & Sons, Springer Nature, MDPI, Hindawi and IEEE: https://scholar lykitchen.sspnet.org/2021/04/14/guest-post-an-early-look-at-the-impact-of-th e-chinese-academy-of-sciences-journals-warning-list/ (14 April 2021; last accessed: 13 May 2024); https://www.asianscientist.com/2021/01/academia /chinese-academy-of-sciences-risky-journals/ (5 January 2021; last accessed: 13May 2024).

^b In February 2024, the term "Warning Level" was abandoned, and was replaced by the term "Warning Reason": https://ewl.fenqubiao.com/#/en/ea rly-warning-journal-list-2024.

^c https://earlywarning.fenqubiao.com/#/en/early-warning-article-2023.

throughout China are made, without any evidence to support these claims, for example "Over the past year, CAS library noticed most publishers, whose journals included in the early warning journal list, had taken efficient measures. Shortly before this manuscript, CAS library launched 2021's warning list. Compared to the 2020 list, the 2021 list has two changes. Firstly, lots of journals are removed from the 2020 list. Secondly, the number of warning journals decreased significantly. Those changes indicate that self-purification and adjustment of publishers are effective."

The managers of EWJL, presumably the CAS library, have a responsibility not only towards Chinese researchers and their national academe, but also to the international community, who they also claim to serve, saying "CoS has issued a series of scientific research evaluation criteria with wide influence at home and abroad, such as the "CAS Journal Ranking" and "Early Warning Journal List". In addition, it will soon release the "Retraction and Paper Mills Integrated Retrieval System (AMEND) to help build a better research environment in China."" Similar views were published in Tong et al. (2022).

In our opinion, the CAS library is not meeting its own objectives in trying to serve their own national research community. We have already warned of the risks posed, not only to librarians, but also academics more broadly, when misguided or ill-informed librarians attempt to offer guidance regarding "predatory" publishing, with the biggest risks being providing incorrect, false, or misleading guidance, i.e., misinformation (Teixeira da Silva, 2022b; Teixeira da Silva & Nazarovets, 2023). In our opinion, we observe this risk in EWJL unless reforms to make it VACUP-compliant are put in place.

We also believe that Chinese scholars should draw on local ideas about being a virtuous member of the global academic community, where their gradual centralized integration is leading to rising tensions (Wen et al., 2022). To do so, we mention the concept of xin from Confucianist philosophy related to truthfulness and trustworthiness (Lu, 2022; Marginson, 2022a; Marginson, 2022b), limiting our discussion to "The character of trustworthiness. One trusts others, partly because of her own finitude; one cannot understand and master everything" (p. 365) (Lu, 2022). In other words, curators of the EWJL should be conscious of the fact that they are part of a community that is relying on them to be trustworthy, and they should therefore practice virtuous journal list curation. Implementing VACUP compliance and practicing such Confucian virtue would involve the measures we propose in Table 2. Confucian virtue has been studied in the context of the virtuous practice of Chinese business and could equally be applied to virtue within academia so as to promote "culture, moral conduct, doing one's best, and being trustworthy in what one says" (p. 415) (Koehn, 2001).

Table 2

Concrete measures, based on proposed principles, to improve the VACUPcompliance of the Chinese Early Warning Journal List.

Proposed principle	Justification	Concrete measures
Transparency	A "pro-ethical condition for enabling or impairing other ethical practices or principles" (Turilli & Floridi, 2009)	 Offer explicit criteria for journal inclusion and delineation. No ghost authorship on the CAS list. No ghost funding on the CAS website.
Rigorousness	A painstaking attempt to uncover the reality of publishing malpractice so as to best inform researchers	 Offer more fine-grained criteria for establishing scores for journals. Discuss limitations of the methodology used. Curation: Keep the website up-to-date with yearly (or more frequent) curation of the list, publisher information for included journals, and make the site fully bilingual.
Truthfulness	Provide an accurate representation of reality (Daly, 2023).	 Compile a retrospective list for 2022. Offer rigorous definitions of the ethical principles used to inspire the list. Mention the need to avoid over-reliance on one list to determine publishing practices.

Abbreviations: CAS, Chinese Academy of Science; VACUP, verifiable, accurate, complete, updated, and public.

Discussion on literature related to EWJL and "predatory" publishing in China

Tang and Jia (2024) reported the problem in China of master's students becoming the target for Chinese language predatory journals, which emerged due to the publish or perish pressures on students who felt the need to publish, either due to university or scholarships requirements and/or to be seen as outstanding students. Interviews with 30 students found that the main reasons why students published in these journals was due to "research discrimination, research context, selfawareness, and individual demand".

The same authors (Tang & Jia, 2023) noted that some Chinese universities had created their own list of blacklisted journals, following an announcement by the Chinese government (Cyranoski, 2018) that it was creating a list of journals that would no longer count towards promotion, jobs or grant funding. The criteria that universities used for their choices was not always clear. A further proposal was that whitelists should be produced, possibly by national societies, but this is also seems problematic due to the gray area between blacklists and whitelists. The Tang and Jia (2023) paper focused on studying the journals blacklisted by the East China University of Political Science and Law, and those that were not blacklisted. They found that there were significant statistical differences between article review times, processing charges and impact factors, but no statistical differences in the number of editors.

Tang and Peng (2024) criticized EWJL, claiming that it "may have employed inconsistent criteria when assigning warning levels" (p. 1), even going so far as to note that a "lack of detailed explanation from the creators is evident" (p. 1). Given that this paper is very recent, we would argue that this supports our view that EWJL is currently VACUP-incompliant. We also noticed that "Warning Levels", which had been used until 2023, were replaced by "Warning Reason" in 2024.⁹ For the 24 journals listed

⁹ https://ewl.fenqubiao.com/#/en/early-warning-journal-list-2024, last accessed 13 May 2024.

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in 2024, no evidence is provided to support any of the three reasons for being blacklisted (citation manipulation, over-presentation authors in a specific country, or the use of paper mills), thereby reinforcing our concerns and criticisms.

Mo et al. (2023) noted that "all 26 early warning medical journals in the EWL are characterized by a high proportion of articles from China, as well as a high rate of retraction" (p. 1), they recommended that it be regularly updated, while "peer review could be introduced to boost credibility" (p. 1), suggestions we agree with and that complement our call for greater VACUP-compliance. Mo et al. also noted that "… that most burn specialty scholars believe that the establishment of such a list is beneficial to enhancing research integrity and improving journal quality management as well as for selecting journals for publication" (p. 7).

Conclusion and limitations

We welcome the introduction of any list which has the objective of providing information to scholars, enabling them to avoid predatory journals. Any funds spent on unethical practitioners represent funds which are (usually) being stolen from tax-payers and which could be utilized for other research activities, or even for other government priorities such as education, healthcare or social support for those in society who need that support.

However, as has been evidenced, the production of blacklists (or even whitelists) is challenging and no one body has managed to succeed. Beall was a pioneer in this area and, although adopting, in hindsight, a flawed methodology, he should be congratulated for raising this issue to a much wider audience than would otherwise have been possible, at least as quickly as he did.

There have been many other efforts to produce an effective warning list, but all have failed in some way, but that should not stop academics from trying. Perhaps the way forward is not to keep producing list after list, but to firstly agree on what are the requirements of such lists. This is the reason why any list must agree with a set of key criteria that are verifiable, accurate, complete, updated, and public (which we term VACUP). That is:

- 1) Can the data about a given journal/publisher, and used to place it on a blacklist, be verified?
- 2) Does that data use accurate and (refer to 1) need to be verified?
- 3) Is the information complete, or is there further information available that would affect the decision that has been made?
- 4) When was the data last updated, and this is timely enough that the decision made is still valid?
- 5) Is the list publicly available so that it is freely available to all scholars?

If the scientific community can agree that any list of predatory journals/publishers should be VACUP-compliant, that would make any list, we would argue, more robust than those currently available.

Research involving human participants and/or animals

Not applicable.

Informed consent

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Jaime A. Teixeira da Silva: Writing - review & editing, Writing -

original draft, Visualization, Validation, Supervision, Investigation, Formal analysis, Conceptualization. **Serhii Nazarovets:** Writing – review & editing, Validation, Software, Methodology, Investigation, Formal analysis, Data curation. **Timothy Daly:** Writing – original draft, Validation, Investigation, Formal analysis. **Graham Kendall:** Writing – review & editing, Validation, Supervision, Investigation, Formal analysis.

Declaration of competing interest

The authors declare no conflicts of interest.

Data availability

No data was used for the research described in the article.

Appendix 1. Draft list of questions the four authors asked when individually assessing the EWJL

- 1. Who is credited with creating the content on this website?
- 2. Is there clear disclosure of sponsors or financial backers potentially influencing the content?
- 3. Are the languages used on the website consistent throughout the different website languages version?
- 4. Are any expected sections, topics, or other important information missing from the website?
- 5. Is there a clear policy on the list moderation?
- 6. Are there clear criteria for how different journal assessments are delineated?
- 7. Does the website state its ethical standards and principles?

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