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Brief communication

Dissecting the peer-review process: A cross-disciplinary study of editor and reviewer roles in academia

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Abstract

Dissecting the peer-review process: A cross-disciplinary study of editor and reviewer roles in academia. In the current debate on academic publishing, the roles of editors and reviewers are under scrutiny. To capture views on these roles, assess discrepancies between their perceived and desired functions, and gauge acceptance of the peer-review process, we conducted a survey, yielding 569 responses from 70 countries. Our findings reveal two key insights: there are significant differences between perceived and actual roles of editors and reviewers across disciplines, suggesting variability in peer-review practices. The main discrepancy was that authors perceived reviewers as solely responsible for acceptance decisions, whereas respondents expressed a preference for joint decision-making by Editors-in-Chief and Associate Editors. Despite a low rating of peer review effectiveness in ensuring publication quality, most respondents believe it should be retained. These results underscore the need for cross-disciplinary dialogue to develop ethical and professional practices that enhance the quality of academic publishing.

Key words: Academic publishing, Cross-discipline assessment, Peer-review practices, Editorial practices

Resumen

Disección del proceso de revisión por pares: Un estudio interdisciplinario de las funciones del editor y el revisor en el mundo académico. En el debate actual sobre las publicaciones académicas, las funciones de los editores y los revisores están bajo escrutinio. Para conocer las opiniones sobre estas funciones, evaluar las discrepancias entre las funciones percibidas y las deseadas y determinar la aceptación del proceso de revisión por pares, hemos realizado una encuesta y hemos recibido 569 respuestas de 70 países. Los resultados revelan dos ideas clave: que existen diferencias destacables entre las funciones percibidas y las reales de los editores y los revisores en las distintas disciplinas, lo que sugiere que las prácticas de revisión por pares son variables. La principal discrepancia fue que los autores percibían a los revisores como los únicos responsables de las decisiones de aceptación, mientras que los encuestados expresaron una preferencia por que la toma de decisiones fuera responsabilidad conjunta de los editores jefe y los editores asociados. A pesar de la baja puntuación que recibió la eficacia de la revisión por pares para garantizar la calidad de la publicación, la mayoría de los encuestados opinó que se debía mantener esta función. Estos resultados ponen de manifiesto la necesidad de entablar un diálogo interdisciplinario para elaborar prácticas éticas y profesionales que permitieran mejorar la calidad de las publicaciones académicas.

Palabras clave: Publicación académica, Evaluación interdisciplinaria, Prácticas de revisión por pares, Prácticas editoriales

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For centuries, peer review has been used in academia as a method to ensure objectivity in the manuscript acceptance process (Spier 2002, Barroga 2020). Despite various approaches –such as single-blind, double-blind, or open peer review– the roles of editors and reviewers have been scrutinized not only in institutional settings but also in academic literature (e.g., Webber et al 2022, Starbuck 2003). Recently, scientific publications have increasingly become a form of 'currency' within academia, with authorship and research impact metrics

Fig. 1. Word clouds summarizing the elements coded based on surveys came in from Web of Science–WoS publication corresponding authors to identify the perceived roles of Editors-in-Chiefs Associate Editors, and Reviewers.

***Fig. 1**. Las nubes de palabras en las que se resumen los elementos codificados a partir de las encuestas proceden de los autores correspondientes de la publicación en Web of Science para identificar las funciones percibidas de los editores jefe, los editores asociados y los revisores*

significantly influencing personal and institutional outcomes (Chapman et al 2019, Savchenko and Rosenfeld 2024). Despite this, there remains a notable lack of understanding regarding how academics perceive and value the peer-review process across different disciplines and whether the roles of editors and reviewers align with expectations.

It might be assumed that the peer-review process is a standardized procedure across disciplines. However, just as the core aspect of peer review –namely, providing personal evaluations of the quality and reliability of papers– varies across fields, so too do the roles of editors and reviewers. These variations often stem from personal perceptions that have evolved over time, including gatekeeping (Kelly et al 2014, Boerckel et al 2021), often delegating responsibilities to individuals who originally had different roles, or simply disregarding such roles (Esarey 2017). We have gathered substantial, non-standardized insight from experts in diverse areas of knowledge (that also apply to our own), highlighting the existence of different guidelines and perceptions regarding the roles of editors and reviewers in the peer-review process.

To address this issue, we conducted an online survey to explore the perceived lack of clarity and variablity in the roles of editors and reviewers across disciplines, and also to assess the value of the peer-review process in knowledge publication (see 'Transcript of the survey poll' in supplementary material). We collected email addresses of 50,000 corresponding authors who had published between December 2021 and January 2022 in journals indexed in the Web of Science (Core Collection) across various disciplines (as categorized by Web of Science: Arts and Humanities, Life Sciences and Biomedicine, Physical Sciences, Social Sciences, and Technology). Additionally, we shared the survey on social media platforms, primarily Facebook and Twitter, to broaden our sample of corresponding authors from Web of Science publications.

We received 569 completed surveys from 70 countries, with the USA (19 %), UK (7 %), Brazil (5 %), Mexico (5 %), and Spain (4%) representing the highest proportions. Most responses came from colleagues in Life Sciences and Biomedicine, Physical Sciences, and Social Sciences, accounting for approximately 82 % of the total. The sample size was smaller for Arts and Humanities (62 responses) and Technology (43 responses). Since most surveys were completed by corresponding authors from Web of Science publications, approximately 81% of respondents identified themselves as professors (assistant, associate, or full). In contrast, lecturers, post-doctoral researchers, students (at all levels), and other roles comprised only a small proportion of the sample. Notably, around 95 % of respondents reported having experience as editors (either Editor-in-Chief or Associate Editor) or reviewers. Consequently, our dataset is heavily weighted towards colleagues who are actively involved in the author-reviewer-editor cycle of knowledge publication, which aligns with our study objective.

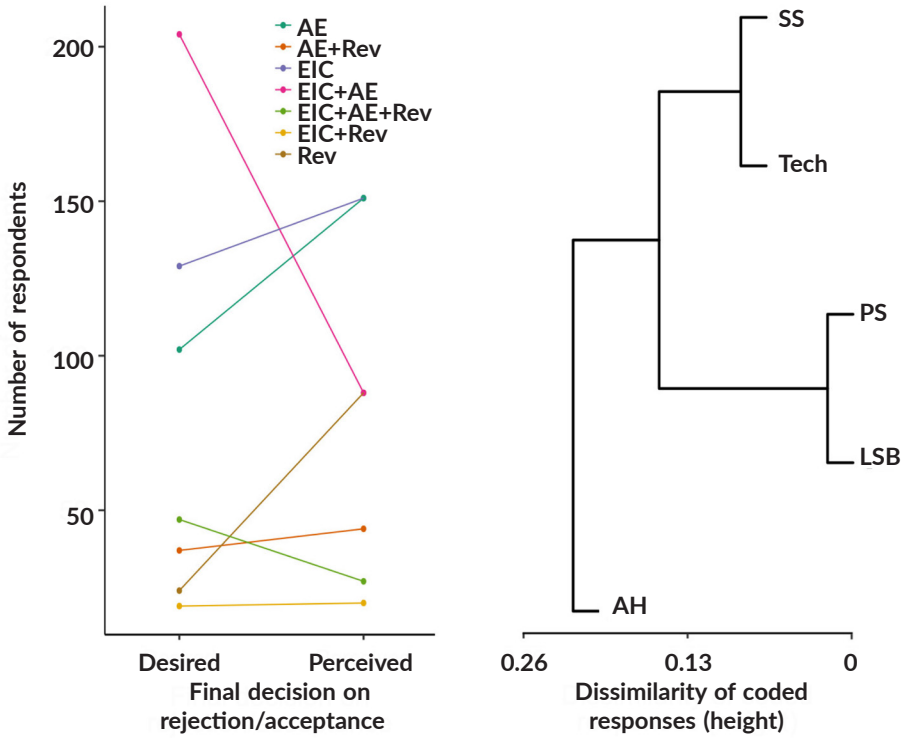

Fig. 2. Left: differences between desired and perceived final decision maker regarding publication acceptance/rejection. Right: dissimilarity in desired coded responses across disciplines (the dendrogram for perceived dissimilarities was practically identical, reason why it is not displayed): EIC, Editor-in-Chief; AE, Associate Editor; Rev, Reviewer; LSB, Life Sciences and Biomedicine; PS, Physical Sciences; SS, Social Sciences; AH, Arts and Humanities; Tech, Technology.

Fig. 2. Izquierda: diferencias entre el encargado percibido o deseado de tomar la decisión definitiva respecto de la aceptación y el rechazo de una publicación. Derecha: diferencias en las respuestas codificadas deseadas entre las distintas disciplinas (el dendrograma de las diferencias percibidas no se muestra porque fue prácticamente idéntico): EIC, Editor jefe; AE, Editor asociado; Rev, Revisor; LSB, Ciencias de la Vida y Biomedicina; PS, Ciencias Físicas; SS, Ciencias Sociales; AH, Arte y Humanidades; Tech, Tecnología.

Based on the coded concepts of respondent answers (see 'Response coding and word clouds' in supplementary material), Editors-in-Chief were mainly perceived to make final decisions on paper acceptance or rejection, provide desk rejections, manage and guide the journal's direction (e.g., aims, scope, quality, reputation), select and manage Associate Editors and reviewers, supervise day-to-day operations, and handle the business aspects of publishing (e.g., branding, publicity). Associate Editors were generally perceived to select and manage reviewers and the quality of their work, screen submissions, make final decisions and provide desk rejections, supervise day-to-day operations, assist the Editor-in-Chief, and coordinate with authors. Finally, reviewers were perceived to, in general: screen manuscripts (with the aim of improving content, assessing knowledge quality, and pointing out weaknesses), have expertise in a relevant field, advise the editors regarding submission acceptance or rejection, and ensure that their work is thorough and detailed. Interestingly, a pattern of responses described the ideal reviewer as being punctual, whereas both types of editors were more involved in managing deadlines and ensuring the punctuality of others (see fig. 1).

To determine if there were differences between the perceived and desired roles of editors and reviewers across disciplines, we conducted a series of chi-square tests. We then applied the Holm-Bonferroni correction to the *p*-values. This method is less conservative and more reliable than the Bonferroni adjustment as it adjusts *p*-values in a stepwise manner based on their ranks (Holm 1979).

We identified significant differences in the following three contrasts regarding who should make the final decision on accepting or rejecting a contribution. The most notable difference across disciplines was the low perception of reviewers alone deciding on publication acceptance, with perceived responses being 3.7 times higher than desired responses ($\chi^2_1 = 31.73$, adjusted-$P < 0.001$). This result was followed in magnitude by the decisive role of the combination of Editors-in-Chief and Associate Editors, with respondents desiring them to decide on manuscript acceptance 2.3 times more than perceived ($\chi^2_1 = 46.08$, adjusted-$P < 0.001$). Finally, Associate Editors alone were perceived to make manuscript decisions 1.5 times more than desired ($\chi^2_1 = 9.47$, adjusted-$P = 0.01$). Notably, we found a non-significant trend of the combination of Editor-in-Chief, Associate Editor, and Reviewer

in deciding manuscript acceptance being more desired than perceived ($\chi^2_1 = 5.405$, adjusted-$P = 0.08$) (fig. 2).

Subsequently, to explore variation and similarities among disciplines, we conducted a hierarchical cluster analysis using Euclidean distances, focusing on how respondents perceived and desired to make final decisions on paper acceptance or rejection. We clustered the proportion of respondents by discipline, considering any combinations of Editor-in-Chief, Associate Editor, or Reviewer as the perceived or desired decision-maker. As shown in figure 2, there were differences in the proportions of respondents' perceptions and desires regarding decision-making roles across disciplines, although the patterns were highly similar between perceived and desired views. Arts and Humanities exhibited the greatest dissimilarity from other disciplines (average Euclidean dissimilarity: perceived = 0.25; desired = 0.22), with most respondents indicating that Editors-in-Chief should and do make decisions alone. In contrast, Life Sciences and Biomedicine and Physical Sciences showed less dissimilarity and tended to cluster together, suggesting that Associate Editors should decide (average Euclidean dissimilarity: perceived = 0.08; desired = 0.11). This grouping was distinct from Social Sciences and Technology, which also clustered together but with different patterns (average Euclidean dissimilarity: perceived = 0.11; desired = 0.16).

Additionally, we assessed the perceived effectiveness of the peer-review process in ensuring publication quality across disciplines, using a scale from 0 to 10 (where 0 represents no effectiveness and 10 represents total effectiveness). Our results indicate that ratings did not vary significantly among disciplines ($\chi^2_4 = 0.18$, $P = 0.99$; rounded values on a 100-point scale were used for the analysis): Arts and Humanities = 6.8, Life Sciences and Biomedicine = 7.1, Physical Sciences = 6.9, Social Sciences = 6.7, and Technology = 7.1. Despite the average rating being moderate (6.95 ± SD 1.80), when asked if peer-review should be discontinued and simply allow for publication without it, most respondents (81%) did not support the idea of publishing all papers and relying on readers to determine which studies are reliable (through preprint platforms such as arXiv, medRxiv, and bioRxiv), with 11% being unsure. Furthermore, only 8% of respondents believed that the peer-review process should be dropped altogether.

Taken together, our results highlight two main issues considering the implicit biases of the respondent population. Firstly, we observed significant differences between the desired and perceived roles of editors and reviewers across disciplines. This discrepancy indicates that the peer-review process and the roles of editors and reviewers are not homogeneous across fields, and that journals and editorial practices follow different guidelines and procedures than those perceived by users of the process. Secondly, although the rating for the peer-review process in ensuring publication quality was moderate, most respondents believe it should not be abolished. Consequently, we find it important to address ethical and practical issues in serious and profound discussions, such as: (i) methods for assessing research quality across disciplines (e.g., Declaration on Research Assessment-DORA; https://sfdora.org), (ii) the prevalence of largely unpaid labor and critical timing in editorial processes (Roh 2002), (iii) the shortage and training of qualified reviewers for journals (Wallbot 2009), and (iv) the increasing presence of predatory journals and publishers (Dadkah and Bianciardi 2016).

It is evident that academics, scholars, and publishers are on the verge of a serious interdisciplinary discussion to propose innovative practices that ethically and professionally enhance the academic publishing evaluation process across disciplines in a transparent manner (Brainard 2022, Kelly et al 2014, Boerckel et al 2021). This dialogue should aim to ensure and elevate the quality of knowledge generated globally, as well as to develop innovative strategies that maximize the effectiveness of publishing procedures (e.g., Barroga 2020). A potential starting point could be for publishers to clearly and openly define the roles of their Editors-in-Chief and Associate Editors, as well as the expected contributions from expert reviewers, using previously suggested profiles and examples (e.g., Hames 2001). Publishers could also monitor, assess, and re-evaluate these roles (including those of authors), and continuously advise all involved parties to adhere to the most current and desired practices in their journals. Additionally, efforts across disciplines should be carefully coordinated to establish an effective and reliable peer-review process that fairly recognizes contributions from all parties. These collaborative insights should be presented to publishers as novel approaches, encouraging openness to innovative practices that advance science (Zoccali and Mallamaci 2023).

References

Barroga E, 2020. Innovative Strategies for Peer Review. *Journal of Korean Medical Sciences* 35(29), e138. DOI: 10.3346/jkms.2020.35.e138

Boerckel JD, Plotkin LI, Sims NA, 2021. Editorial Peer Reviewers as Shepherds, Rather Than Gatekeepers. *Journal of Bone and Mineral Research* 36(7), 1220-1224. DOI: 10.1002/jbmr.4319

Brainard J, 2022. Journal declares an end to accepting or rejecting papers. *Science* 378(6618), 346. DOI: 10.1126/science.adf4964

Chapman CA, Bicca-Marques JC, Calvignac-Spencer S, Fan P, Fashing PJ, Gogarten J, Guo S, Hemingway CA, Leendertz F, Li B, Matsuda I, Hou R, Serio-Silva JC, Stenseth N Chr, 2019. Games academics play and their consequences: how authorship, *h* -index and journal impact factors are shaping the future of academia. *Proceedings of the Royal Society B, Biological Sciences* 286, 20192047. DOI: 10.1098/rspb.2019.2047

Dadkhah M, Bianciardi G, 2016. Ranking predatory journals; Solve the problem instead of removing it! *Advanced Pharmaceutical Bulletin* 6(1), 1-4. DOI: 10.15171/apb.2016.001

Esarey J, 2017. Does Peer Review Identify the Best Papers? A Simulation Study of Editors, Reviewers, and the Scientific Publication Process. *Political Science and Politics* 50(4), 963-969. DOI: 10.1017/S1049096517001081

Hames I, 2001. Editorial boards: realizing their potential. *Learned Publishing* 14(4), 247-256. DOI: 10.1087/095315101753141347

Holm S, 1979. A simple sequentially rejective multiple test procedure. *Scandinavian Journal of Statistics* 6(2), 65-70. http://www.jstor.org/stable/4615733

Kelly J, Sadegheih T, Adeli K, 2014. Peer review in scientific publications: benefits, critiques, & a survival guide. *The Journal of the International Federation of Clinical Chemistry and Laboratory Medicine* 25(3), 227-243. https://pubmed.ncbi.nlm.nih.gov/27683470/

Roh C, 2022. Owning the peer review process. *Scholarly Communication* 83(3). https://crln.acrl.org/index.php/crlnews/article/view/25362/33246

Savchenko E, Rosenfeld A, 2024. Authorship conflicts in academia:

an international crossdiscipline survey. *Scientometrics* 129, 2101-2121. DOI: 10.1007/s11192-024-04972-x

Starbuck WH, 2003. Turning lemons into lemonade: Where is the value in peer reviews? *Journal of Management Inquiry* 12(4), 344-351. DOI: 10.1177/1056492603258972

Spier R, 2002. The history of the peer-review process. *Trends in Biotechnology* 20(8), 357358. DOI: 10.1016/s0167-7799(02)01985-6

Walbot V, 2009. Are we training pit bulls to review our manuscripts? *Journal of Biology* 8, 24. DOI: 10.1186/jbiol125

Weber E, Katz P, Waeckerle J, Callaham M, 2002. Author Perception of Peer Review: Impact of Review Quality and Acceptance on Satisfaction. *JAMA The Journal of the American Medical Association* 287(21), 2790–2793. DOI: 10.1001/jama.287.21.2790

Zoccali C, Mallamaci F, 2023. Reimagining peer review: the emergence of peer community in registered reports system, *Journal of Nephrology* 36(9), 2407-2411. DOI: 10.1007/s40620-023-01709-6

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Author contributions
Both authors contributed equally.

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Supplementary material

Transcript of the survey poll

Title: Editor and Reviewer roles in Science publishing

Description: The purpose of this study is to describe the perceived (and desired) roles of editors and reviewers in the peer-review process of science publishing, aiming to advance our understanding of such an important process in our society.

Data protection statement

Personal information

- Which is your current country of residence
  [List of all countries to select]

- Please indicate your age range
  [> 65, 56-64, 46-55, 36-45, 26-35, < 25, I don't wish to answer]

- Which area of study do you most identify with?
  [Arts & Humanities, Life Sciences & Biomedicine, Physical Sciences, Social Sciences, Technology]

- Which is your current academic position?
  [Professor (or equivalent), Associate Professor (or equivalent), Assistant Professor (or equivalent), Lecturer (or equivalent), Post-doctoral researcher (or equivalent), Student (all academic levels), Unemployed, Other]

- If you have been part of the editorial process or team of one or more journals, please specify in which position (mark all that apply), below:
  [Editor-in-Chief, Associate Editor/Subject Managing Editor/Assigned Topic Editor (or equivalent), Reviewer, None of the above]

Academic Editor Roles' survey

- From your personal perspective, how would you describe (in 2-3 lines; 250 characters max) the main ideal roles and responsibilities of an Editor-in-Chief in an ideal journal
  [text box]

- From your personal perspective, how would you describe (in 2-3 lines; 250 characters max) the main ideal roles and responsibilities of an Associate Editor/Subject Managing Editor/Assigned Topic Editor (or equivalent) in an ideal journal
  [text box]

- From your personal perspective, how would you describe (in 2-3 lines; 250 characters max) the main ideal roles and responsibilities of peer-reviewers in an ideal journal
  [text box]

- In an ideal journal, who should make the final decision of accepting/rejecting a contribution? (you can choose more than one answer)
  [Editor-in-Chief, Associate Editor/Subject Managing Editor/Assigned Topic Editor (or equivalent), Reviewer, None of the above]

- In reality, and based on your professional experience, who do you consider as having made the final decision of accepting/rejecting your contributions
  [Editor-in-Chief, Associate Editor/Subject Managing Editor/Assigned Topic Editor (or equivalent), Reviewer]

- From 1 to 10 (being 10 total agreement), how much would you agree that the peer-review process is currently ensuring scientific publication quality?
  [1,2,3,4,5,6,7,8,9,10]

- Do you believe that all papers should be published and readers should be allowed to decide what is a reliable study and what is not?
  [Yes, No, Unsure]

- If you wish to be acknowledged in publications that result from this survey (or if you wish to be updated on its results), please provide your name with last name in upper case: Ada A. BYRON. If you wish to remain anonymous, ignore this step.
  [text box]

I grant Ian MacGregor-Fors (University of Helsinki) and Wesley Dáttilo (INECOL) the use of the responses below in any academic products that they consider appropriate.
[tick box]

Response coding and word clouds

Of the 569 responses received, 37 were excluded given that 20 respondents declined to reply (e.g., "x", "-"), 8 were identical duplicates, and 9 lacked enough information for further processing. For those replies provided in a foreign language, responses were translated into English via DEEPL. All responses were then imported to ATLAS.ti (version 9.1.3) for qualitative content analysis. All coding was performed by one coder to avoid multiple-observer interpretation biases. The coder was blind to respondent demographics and responses to the multiple-choice questions. The coding process was primarily inductive, using descriptive coding (1) over several iterative cycles of refinement to categorize the main ideas across responses. After the entire set of responses was coded, minor refinements were made to the list of codes in order to faithfully represent the responses in the context of this contribution. For each role (EIC, AE, and Reviewer), codes with over 40 applications and their relative frequencies are displayed in word clouds (fig. 1). These codes reflect the major tasks, responsibilities, and attributes that respondents associated with each role in an academic journal.

Table 1s. Description performed by the coder of each code used to summarize the retrieved responses.

Tabla 1s. *Descripción realizada por el codificador de cada código utilizado para resumir las respuestas recuperadas.*

Code	Description
Article quality	Evaluating overall quality of submissions
Assign Rev	Selecting reviewers and assigning submissions to reviewers
Assist EIC	Supporting the Editor-in-Chief
Business	Responsible for journal's business strategy, funding, publicity, etc.
Content	Deciding direction, scope, and/or aim of the journal, including topics for special issues
Contribution	Evaluating submissions based on their potential importance and contribution to the field
Criticism	Pointing out weaknesses and mistakes in a submitted manuscript
Decision	Responsibility for all final decisions on manuscript acceptance/rejection
Desk reject	Deciding whether to send papers for peer review or reject them without peer review
Expertise	Knowledgeable or experienced in the subject area. Includes expertise on the board subject matter of the journal, the narrow topic of the submitted article, etc.
Fairness	Being fair
Feedback	Providing useful feedback to the authors, with the intention of improving the specific manuscript and/or helping the author improve
Leadership	General leadership for the journal as a whole, general decision-making, etc.
Manage AE	Directly supervising editors
Manage authors	Communicating with authors. Includes coordinating submissions, providing guidance, and delivering decision and feedback
Manage Rev	Directly supervising reviewers
Manage SI	Managing a specific sub-unit (field of research, subtopic, etc.) of journal staff and/or content
Operations	Operations management, oversight of day to day operations, and/or ensuring adherence to deadlines
Policy	Deciding journal policies. Includes plagiarism policies, editorial policies, open vs closed access, etc.
Presentation	Evaluating presentation and/or writing quality of submissions
Prestige	Responsible for the reputation, status, and quality of journal. Includes representing the journal, raising its profile, and setting minimum standards for manuscript acceptance
Punctuality	Adhering to deadlines, or completing work in an otherwise reasonable amount of time
Recommendation	Delivering recommendation to the editor/s that the submitted manuscript be accepted or rejected
Research quality	Evaluating submissions based on quality of scientific content, including methodological validity, logic of argumentation, etc.
Review quality	Responsible for quality of reviews. Includes guaranteeing independence of review process, and providing a quality check by critically evaluating reviews before making acceptance/rejection decisions
Scope	Assessing submissions for relevance to journal scope
Screening	Reading and evaluating submitted manuscripts, e.g. to assess quality, proofread, etc.
Select AE	Selecting editors and assigning submissions to editors
Thoroughness	Work is in-depth, attention to detail

References

Saldana J, 2016. *The Coding manual for Qualitative Researchers*. Sage Publications Inc, London.