Tackling Bias in Peer Review
Guidance for Peer Reviewers

If you have any questions about your role or the information contained in this guide, or if you would like this guide in a different format, then please contact equalitymrc@ukri.org.

Introduction

Reviewers must ensure that they maintain objectivity and fairness in their assessment of funding applications.[1] This briefing includes background on the topic of bias, examples of biases to be conscious of, along with some steps you can take to mitigate them.[2]

Reducing and challenging bias in peer review is critically important to ensure the integrity of the process and to help advance equity, diversity, and inclusion in our scientific communities. Part of your role as an individual is to be aware of potential biases and the impact these may have on peer review.

Bias overview

1. Types of bias

There are two main types of bias identified in the literature, both of which shape the judgments and decisions we make.[3]

Type of bias	Details
Explicit/ Conscious	• Person is very clear about their feelings, attitudes and preferences and can identify and communicate these to others. • Related behaviours are conducted with intent.
Implicit/ Unconscious	• Preference for or against other people or groups of people; operates outside of a person's awareness and can be in direct contradiction to their espoused beliefs and values. • These biases can affect our ability to be objective when making decisions without us ever knowing that they are having an impact.

2. Where bias is introduced

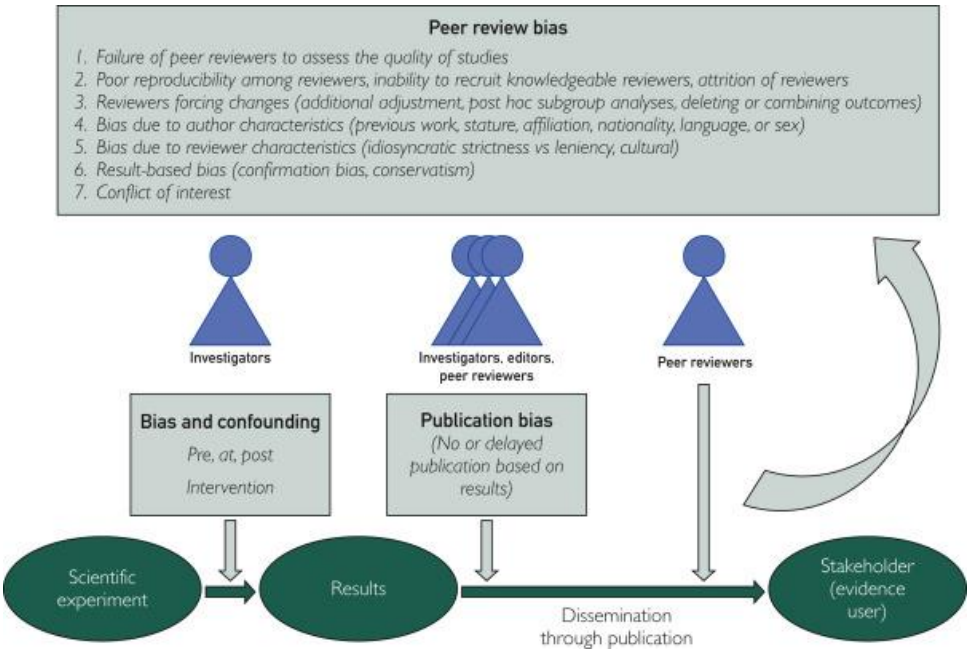
Bias could occur in many different stages of the peer review process, highlighted in Figure 1 on the next page.

[1] Bias (both explicit and implicit) in peer review has attracted increased attention in recent years: Bornmann, L. et.al. (2007); Smith, R. (2006); Haffar, S. et.al. (2019). Peters, D.P. and Ceci, S. (1982); Wenneras, C. and Wold, A. (2008); Politzer-Ahles, S. et.al. (2020); Day, T.E. (2015).

[2] This briefing has been adapted from "An EPSRC Panel Members' Guide to Managing Unconscious Bias in Peer Review" developed by © Pearn Kandola (2017), a firm of business psychologists who have worked with a range of research funding organisations. In UKRI, this formed part of a portfolio of work looking at safeguarding EPSRC, MRC and other Councils' peer review processes.

[3] Daumeyer, M. et.al. (2019); Nosek, B.A. et.al. (2007); Rooth, DO. (2010); Green, A.R. et al. (2007).

Figure 1: How the peer review process can introduce various types of bias[4]



3. Who is biased

Everyone is in some way bias. Some biases are more common than others, for example gender bias and ethnicity bias. But not everyone has the same biases.

4. Where do biases come from

These biases come from our:

- **Neurological programming** – Parts of the prefrontal cortex most strongly associated with recognising difference, processing threat, risk and fear, emotional associations, judgement, and decision-making.
- **Social programming** – Influence of past experiences with individuals and groups of people, as well as wider social influences; could include family, friends, and the media.

5. Examples of bias

Pearn Kandola have worked with several funding bodies, both in the UK and overseas. From their work with these organisations, they have identified a number of sources of bias that can impact peer review. Examples have also been provided in the reviewer context.

[4] Image source: Haffar et.al. (2019)

Sources of Bias	Example
Anchoring Bias – relying too heavily on your first impression.	You deem the first part of an application to be of poor quality, and this sets the scene for the rest of the review.
Cognitive Load – Trying to process too much information in too short a time period.	A good example of this would be attending to emails whilst reviewing an application or dealing with other distractions at the same time.
Confirmation Bias – The tendency to search for or interpret information in a way that confirms one's preconceptions.	You are impressed with the applicant; they are renowned in their field. You spot a flaw but are sure that with these applicants experience they will have thought of this too and so either do not mention it when reviewing or downplay the flaw as this team can handle it.
Contrast Effect – where proposals are directly compared against each other in order to arrive at an overall rating.	Providing a score for an application whilst reflecting on other applications that you have scored and where you think this application would sit in comparison to them rather than against the specific assessment criteria.
Halo Effect – Where an impression formed from a single element or characteristic influences multiple judgments or ratings.	Favouring or scoring applicants from Russell Group universities higher simply because of their institutional reputation.
Horn Effect – Closely related to the halo effect, causes one's perception to be unduly influenced by a single negative trait.	Contrary to the above, scoring applicants from what you consider to be less reputable universities lower simply because of their institutional reputation.

5.1. Reputation of applicant

Within a disciplinary community, applicants may be known to reviewers. If they are a close contact, are at the same Research Organisation please refer to the conflicts of interest policy. Knowing the applicant could lead to some reviewers using the applicant's reputation as a guide and placing greater weight on this and should be avoided.

Whilst the applicant may have a good reputation, this results in their reputation having a disproportionate influence for some applications and not others.

5.2. Time pressure

It is important to ensure sufficient time to complete reviews, as when under time pressure we default to quicker and more superficial thinking, rather than working through the criteria carefully. When we are placed under pressure to provide a decision, this also reduces our time to make it properly.

5.3. Overall impressions

Research has shown that when asked to provide overall impressions, the information shared is often highly subjective. We ask you to objectively go through the assessment criteria and review form questions and consider the specific aspects of the application and applicants.

5.4. Linguistic bias

Below is an example of linguistic bias within a review:

> "It is a pity that the application is absolutely riddled with grammatical and spelling errors and while the surname of the PI suggests that English is not their first language it is a sure sign that the co-applicants are not engaged sufficiently to revise the application as required."

This is suggestive of what has been termed 'linguistic bias' whereby there is a chance the proposal could have been judged more harshly, regardless of content, due to the writing not meeting expectations for international academic English. There is a range of published research on this subject and in relation to non-native speakers facing disadvantage in academic publishing, for instance.[5] It is important not to let this detract from the content and quality of a proposal.

Disability

In addition to this, certain disabilities or learning difficulties such as dyslexia could impact on a person's spelling, grammar, or ability to write in a coherent order. According to the NHS, approximately 10% of the British population has dyslexia to some extent and we need to ensure that this does not negatively impact on their chances for success.

An applicant shared with MRC staff that they have previously received comments on the quality of their written application from peer reviewers. The comments were unhelpful and distressing, impacted the applicant's confidence in the peer review process and put them at risk of being disadvantaged in the overall assessment of their application. The applicant had declared their disability within their CV, to ensure reviewers took it into consideration when assessing the application.

It is very important not to let elements related to written English detract from the content and quality of a proposal. Discrimination or unfair treatment on the basis of disability is also against the law under the UK Equality Act 2010.

[5] See for instance Politzer-Ahles, S. et al. (2020)

Strategies to manage bias

As a peer reviewer you play a pivotal role in the peer review process.

We can manage bias through creating an environment that limits it, and by recognising the fact that it exists and can affect the quality of our decisions. There are several approaches to managing bias in decision-making, the most important of which is awareness that your decisions are vulnerable to bias. We recommend you take the following steps during your assessment of an application:

1. **Consciously reflect.** Do not assume that your decisions will be objective. Reflect on the vulnerability to bias that all humans have. Take time to make decisions, don't feel under pressure to make quick assessments. Focus on fairness.
2. **Be consistent.** Following objective decision-making processes reduces the impact of bias. Ensure you have a clear understanding of the process, competencies and scoring process. Take notes and don't rely on memory, base decisions on evidence. Confirm that a sound rationale is provided for all decisions made. Scores should be justifiable against the provided rating scales.
3. **Challenge yourself and be receptive to being challenged.** It can be easier to spot bias in others than in yourself. MRC staff have the responsibility to speak up if they suspect that bias might be present and are encouraged to challenge a reviewer respectfully, if needed.

Works Cited

Bornmann, L. et al. (2007). "Gender Differences in Grant Peer Review: A Meta-Analysis." *Journal of Informetrics*, 1(3): 226-238. [online] Available at: <https://www.sciencedirect.com/science/article/abs/pii/S1751157707000363>.

Daumeyer, M. et al. (2019). “Consequences of attributing discrimination to implicit vs. explicit bias.” *Journal of Experimental Social Psychology*, 84): 1-10. [online] Available at: <https://spcl.yale.edu/sites/default/files/files/Daumeyer_etal2019JESP.pdf>.

Day, T.E. (2015). “The big consequences of small biases: A simulation of peer review.” *Research Policy*, 44(6): 1266-1270. [online] Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0048733315000086>.

Green, A.R. et al. (2007). "Implicit Bias Among Physicians and its Prediction of Thrombolysis Decisions for Black and White Patients". *Journal of General Internal Medicine*, 22(9): 1231-1238. [online] Available at: <https://pubmed.ncbi.nlm.nih.gov/17594129/>.

Haffar, S. et al. (2019). “Peer Review Bias: A Critical Review.” *Mayo Clinic Proceedings*, 94(4): 670-676. [online] Available at: <https://www.mayoclinicproceedings.org/article/S0025-6196(18)30707-9/fulltext>.

Nosek, B.A. et al. (2007). "Pervasiveness And Correlates Of Implicit Attitudes And Stereotypes." *European Review of Social Psychology* 18(1): 36-88. [online] Available at: <https://www.tandfonline.com/doi/abs/10.1080/10463280701489053?journalCode=pers20>.

Peters, D.P. and Ceci, S. (1982). “Peer-review practices of psychological journals: the fate of submitted articles, submitted again.” *Behav Brain Sci*, 5: 187-255. [online] Available at: <https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/peerreview-practices-of-psychological-journals-the-fate-of-published-articles-submitted-again/AFE650EB49A6B17992493DE5E49E4431>.

Politzer-Ahles, S. et al. (2020). “Preliminary evidence of linguistic bias in academic reviewing.” *Journal of English for Academic Purposes*, 47. [online] Available at: <https://www.sciencedirect.com/science/article/pii/S1475158520301685>.

Rooth, DO. (2010). "Automatic Associations and Discrimination in Hiring: Real World Evidence." *Labour Economics,* 17(3): 523-534. [online] Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0927537109000451>.

Smith, R. (2006). “Peer review: a flawed process at the heart of science and journals.” *Journal of the Royal Society of Medicine*, 99(4): 178-182. [online] Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1420798/>.

Wenneras, C. and Wold, A. (2008). “Nepotism and Sexism in Peer-Review.” *Women, Science, and Technology 2nd Ed.* Routledge [online] Available at: <https://www.taylorfrancis.com/chapters/edit/10.4324/9780203895658-12/nepotism-sexism-peer-review-christine-wenner%C3%A1s-agnes-wold>.