

## Double blinding in peer review: is it worth the hype?

Colin Suen, BMSc<sup>1</sup>

<sup>1</sup>Faculty of Medicine, University of Ottawa

### INTRODUCTION

Without a doubt, peer review is the measuring stick by which science is judged. Peer review is a longstanding tradition in academic circles as the standard practice for evaluating articles for publication, grants and academic promotions. The term itself conjures up certain connotations and mixed emotions. Knowing that a body of work has successfully gone through peer review immediately increases credibility and, although academics would be hesitant to confess, it is too frequently unquestioned. A recent article by John Bohannon in *Science* tells the story of how his bogus paper full of glaring fatal flaws was accepted by an astonishing 157 out of 255 open-access “peer reviewed” journals [1], casting doubt on the level of scrutiny from journals claiming to perform peer review. Perhaps it is time to cast aside our blind faith and understand the limitations of peer review.

### ASSESSING FAIRNESS OF PEER REVIEW PRACTICES

At its core, peer review is a quasi-democratic way of assessing the scientific merit of a given paper. A manuscript is received by the journal’s editor, who then selects reviewers (usually experts in the field of the article in question) to provide criticism and feedback for the editor to decide the outcome of the submission. Journals vary in their policy on controlling the author-reviewer relationship. The most common practice is a single-blinded review, in which the identity of the reviewer is unknown to the author (for more information, see Table 1). The identity of the author is not masked to the reviewer, which can potentially be a major source of bias and misconduct. The classic example against single-blinding is a submission that cruises through peer review based on the author or group’s reputation in the field. Conversely, competing interests may cause reviewers to inten-

tionally delay or hold back papers that are otherwise scientifically sound or, in the worst case, steal other’s ideas. Other factors such as institution, country, race, or even gender can also affect the reviewer’s ability to be objective. Recently, some reputable scientific journals such as *Nature Geoscience* are beginning to recognize these flaws and are moving towards double-blind review, which means that neither authors nor reviewers know each other’s identity [2].

### DOUBLE-BLIND REVIEW: IS IT WORTH THE EFFORT?

If double-blinding is the standard for minimizing bias in randomized controlled trials, should we not hold our journals to the same standard? In theory, concealing the author’s identity would remove the effect of competing interests and any preconceived notions of credibility relating to author reputation. Thus, work would be assessed solely on its quality. In terms of practicality, double-blinding requires editors to spend additional time and effort to ensure anonymity. This is particularly challenging for larger international journals, which are already overwhelmed with the existing volume of submissions. Therefore, it is worthwhile to evaluate the evidence to determine whether or not investing in this practice is actually beneficial.

Indeed, some journals have investigated the value and reception of this type of review. A survey commissioned by the Publishing Research Consortium revealed that out of 3040 academics surveyed around the world, the majority (72%) viewed double-blind review to be an effective form of review in comparison to 52% for single-blind [3]. In the 1990s, a series of reports evaluating the merits of double-blinding were featured in the *Journal of the American Medical Association (JAMA)*. A case

**Table 1.** Comparison of different types of peer review

Type	Identities Masked	Advantages	Disadvantages
Single-blind	Reviewer to Author	Honest, critical reviews without fear of judgment from authors	Accountability for one’s comments is minimal, subject to conflicts of interest and more prone to “scooping” since reviewer identities cannot be traced
Double-blind	Reviewer to Author Author to Reviewer	Reduces bias from knowing identity of the authors	Significant efforts are required to ensure anonymity, reviewers can often deduce the author’s identity based on citations
Open	None	Accountability is increased, lower chances of misconduct or unprofessional behaviour because identities are revealed	Reviewers may decline due to fear of fallout and potential damage to relationships that could affect career prospects, promotions and grant funding

could be made that concealing author identities improves the quality of peer review, based on the results from a double-blind randomized trial conducted at the editorial office of the Journal of General Internal Medicine [4]. In this study, manuscripts were randomly assigned to blinding versus non-blinding to a block of two reviewers. Overall, blinding significantly improved the quality of the review from the editor's perspective. However, when asked for the authors' opinion of the reviews, they found no benefit to blinding for parameters such as thoroughness, constructiveness, and fairness. In deciding whether an article is either accepted or rejected, arguably the most important outcome, Fisher et al showed that blinding had no effect [5]. This is consistent with another large randomized study conducted by the British Medical Journal (BMJ), where no differences were found between blinding and nonblinding for acceptability and author's or editor's opinion of review quality [6]. Furthermore, masking the author's identity is not always successful, as 27-46% of reviewers are able to accurately identify them from self-referencing or knowledge of work [4, 5]. It appears that, at most, there is only a marginal benefit to double-blinding over single-blinding, despite its theoretical merits.

## DISCUSSION

It must be noted that the previously mentioned studies were conducted by relatively large international medical journals and may not be generalizable to all types of publications. In small academic communities such as institutional journals, the impact of professional and often, personal relationships (e.g. classmates, friends or co-workers) on the review process may be amplified. A reviewer may be sympathetic and offer more constructive feedback or be more critical depending on the nature of their relationship with the author. The University of Ottawa Journal of Medicine (UOJM) recognizes this as a legitimate issue in its close-knit medical and graduate student communities. Therefore, it has been the UOJM's policy from the very beginning to utilize double-blind peer review. Specific steps have been taken to streamline blinding procedures to be efficient and timely. For instance, UOJM is transparent about its blinding procedure and authors are required to separate all identifying information on an "Author Submission Form" outside of the manuscript. From this point forward, editors and reviewers can focus their attention on reviewing the quality and validity of the blinded manuscript. Another perceived challenge in double blinding is the tendency for reviewers to deduce author identities based on self-citation or familiarity with the group's type of research. This issue is perhaps more prevalent in major medical journals because authors tend to have established a track record in their field. The majority (we emphasize, not all) of authors submitting to UOJM are trainees at the beginning of their research careers. As a measure to prevent post-blinding identification for a given manuscript, all UOJM reviewers are asked to declare a conflict of interest and are replaced by another reviewer if they are able to identify the author.

In summary, there is no simple answer to whether there is hope or simply hype in doubleblinding. In general, the UOJM

leadership believes that double-blinding has more positive than negative impacts on the quality of peer review in the context of an institutional journal. To our knowledge, there is no compelling evidence against double-blinding, although the most convincing argument is that of practicality. However, by finding ways to integrate double-blind peer review in a practical and feasible manner, we minimize the "additional effort" that prevents its uptake in traditional journals. Therefore, journals considering double-blinding can adopt similar methods as UOJM so that practicality is no longer a deterrent. If there is a way to improve the quality of peer review and publications, however minimal, we believe it is worth the effort.

## REFERENCES

1. Bohannon J. Who's afraid of peer review? *Science*. 2013;342:60-5
2. Double-blind peer review. *Nat. Geosci*. 2013;6:413
3. Kmietowicz Z. Double blind peer reviews are fairer and more objective, say academics. *BMJ*. 2008;336:241
4. McNutt RA, Evans AT, Fletcher RH, Fletcher SW. The effects of blinding on the quality of peer review. A randomized trial. *JAMA : the journal of the American Medical Association*. 1990;263:1371-6
5. Fisher M, Friedman SB, Strauss B. The effects of blinding on acceptance of research papers by peer review. *JAMA : the journal of the American Medical Association*. 1994;272:143-6
6. van Rooyen S, Godlee F, Evans S, Smith R, Black N. Effect of blinding and unmasking on the quality of peer review: A randomized trial. *JAMA : the journal of the American Medical Association*. 1998;280:234-7

**Keywords:** peer review, journalology, review bias, double-blind, single-blind, editorial, institutional medical journals