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LETTERS TO THE EDITOR

Orchestrated efforts to foster responsible research

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In his paper "Fostering responsible research practices is a shared responsibility of multiple stakeholders" (April 2018), Lex M. Bouter [1] highlights and appeals for orchestrated efforts to foster responsible research. We applaud Bouter's scholarship on promoting transparency and openness in biomedical research, and we share the same concern on the current replicability crisis.

The science development is inevitably imbued with errors, fabrications, and falsifications, which makes reproducibility essential by separating true science from mere anecdote and even pseudoscience. When scientists try to replicate previous studies, two scenarios will emerge: consistent if not exactly the same findings as the formers, or different or conflicting results. Regardless either due to misconducts or flawed research, irreproducibility, without proper explanations, often casts shadows on responsible research. This applies to both natural and social sciences.

We echo Bouter's appeal that improving reproducibility requires persistent and adaptive efforts of all stakeholders in research ecosystem. And we believe this is particularly important for emerging science powers where academic misconducts are looming over their escalating R&D investment and scientific achievements (Hu et al. 2018) [2].

Fortunately, tremendous efforts facilitating research integrity and reproducibility have been put forth by major funding agencies, universities, and third parties globally. Take China for example. Over the last decade, the Chinese government has penned substantially stricter regulations combating research misconduct. A cornucopia of guidelines promulgated by a variety of government organizations has conveyed a clear signal of China's tighter stance fostering responsible research. Yet, prescription alone is not sufficient to deter prospective fraudsters and irresponsible researchers. All countries including China need to move beyond releasing guidelines and penalizing egregious cases. Orchestrated including institutionalizing research ethics and integrity training through education is critical in fostering responsible research in the long run.

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Unsuccessful replication is not a sign of research misconduct

I applaud Tang et al. for pointing out that in China—as is the case in Asia at large—interesting initiatives to foster research integrity are being taken [1]. In fact this is one of the main reasons that the 6th World Conference on Research Integrity will be held in Hong Kong (www.wcri2019.org). I'm also grateful for the opportunity to clarify some common misunderstandings about replicability and replication.

First, these two concepts should be separated. Replicability means that a study can be repeated because a detailed study methods description is available. Replication means that a study is actually replicated, with or without reaching the same conclusions. No replication without replicability. Therefore the rising tide of preregistration [2] and registered reports [3] is so important. When a detailed study protocol is formulated and made accessible—possibly conditional or with an embargo—before the data are collected, this serves two important goals: (1) the study is replicable, and (2) instances of selective reporting can be identified.

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Table 1
Forms of replication and criteria for successful replication

Forms	Reanalysis of the same data set (with same or alternative data analysis plan)
	Direct replication (methods reproducibility): collect (and analyze) new data with the same study protocol
	Conceptual replication (external validity, triangulation): collect (and analyze) new data with an alternative study protocol for the same study objective
Criteria	Same direction of conclusion
	Same direction of conclusion and similar effect size
	Same direction of conclusion, similar effect size, and similar *P*-value, confidence interval or Bayes factor

Second, we must realize that replication can take a number of different forms and also that different criteria might be used to decide whether a study is successfully replicated [4]. Table 1 outlines the available options. The discussion gets fuzzy when it's not clearly stipulated what form and which criterion are used.

Third, and arguable most importantly, an unsuccessful replication attempt says almost nothing about validity and is only in rare cases indicative of research misconduct [5,6]. On these issues, I respectfully disagree with Tang et al. When a study and its replication lead to different conclusions, one of them or both can be wrong. When the two studies do conclude the same, this indeed increases confidence in these conclusions. But still these can be wrong in the sense of providing an invalid or biased answer to the research question. So replication has little to do with validity. Furthermore, when the results of the primary study are not replicated successfully, this constitutes at most very weak evidence of questionable research practices or research misconduct. In these instances, it's important to scrutinize the details of both studies. Lack of power and selective reporting is presumably the root cause of most unsuccessful replication attempts. Researchers should realize that when colleagues try to replicate their work, it's not a vote of distrust. In fact, the message is that the primary study is important and worth the effort of replication.

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A digital media strategy to obtain unpublished data for a systematic review yields a very high author response rate

Dear editor,

While conducting a systematic review, we developed a three-stage digital media strategy to obtain unpublished data from trial authors [1]. This strategy yielded a high response rate (95%), and nearly doubled the number of randomized controlled trials (RCTs), outcomes, and participants included in our systematic review. Conventional author contact strategies are resource-intensive [2,3], and yield low response rates (7% to 80% [2−4]), and limited unpublished data (under 30% [2]). Despite recommendations to contact trial authors about unpublished data, less than half of the systematic reviews published in high impact journals or the Cochrane Library report doing so [5−8]. However, over 50% of trial outcomes remain unpublished [9]. Omission of these unpublished data results in incomplete and biased evidence syntheses [10]. We describe our strategy, its impact on author response rate and the total number of participants, outcomes, and RCTs included in the meta-analysis.

This digital media strategy involved a single inquiry with a concise and simple digital data request sent out in three stages, over a period of 4 weeks, using different media. In each of the three stages, the principal investigator (C.G-S.) sent an email request to the corresponding author of the potentially eligible trials published between 1999 and 2017. In addition, in the third stage, she copied in (cc) the last author, and reached out to the corresponding author through social media (ResearchGate and LinkedIn). The content of the request was personalized and included i) a friendly and concise statement of the purpose of the request, ii) a link to the registered protocol of the meta-analysis in PROSPERO [1], iii) evidence of our team's expertise in conducting meta-analyses (number of published systematic reviews and meta-analyses, and a link to an interview of the principal investigator on a peer-reviewed medical journal blog). A data template was attached to all emails to facilitate data sharing. In addition, social media visibility of the principal investigator was ensured from the onset. An internet search of the principal

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