Transparency in research: protocol for a cross sectional survey of authors, editors and peer reviewers across scientific disciplines

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Reporting: This protocol was drafted in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines,1 as well as Improving the Quality of Web Surveys: The Checklist for Reporting Results of Internet E-Surveys (CHERRIES).2

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Abstract

**Background**

Recently calls have been made to increase transparency of conducting and reporting of research through use of reporting guidelines, depositing of study data and authors’ versions of manuscripts on pre-print servers or institutional repositories, registering planned research before the data collection or the research process begins, and replicating research findings. In light of this, it was our goal to assess differences in attitudes and practices of researchers, peer reviewers and editors towards transparency in research, environment they find themselves in and their perceptions of the frequency of detrimental research practices.

**Methods and analysis**

An online anonymous survey on researchers, peer reviewers and editors will be conducted using the ConfirmIT survey platform and Elsevier’s Scopus database of published researchers on 24 April 2018, with two reminders on 9 and 24 May 2018. The responses will be presented as absolute numbers, percentages and 95% confidence intervals. We will use ordinal logistic regression to explore associations between attitudes, work climate and the perceptions of the frequency of detrimental research practices with sociodemographic variables and self-declared knowledge of statistics.

**Ethics and dissemination**

An ethical waiver for the study has been obtained from the Medical Ethics Review Committee of the Academic Medical Center, University of Amsterdam, reference number W18_112 on 6 April 2018, and all anonymized data will be shared on the project’s data repository site.
Introduction

Scientific publishing has been steadily increasing for the last two centuries with almost 2.3 million articles published in 2016. With the increase in the number of journals, articles, and scientists, there have also been concerns about the increase in the number of questionable research practices, as well as the inability to reproduce published research. Additionally, effectiveness and usefulness of peer review have been called into question, as were methods of evaluating and funding researchers or projects. In efforts to improve current research practices, calls have been made for increased transparency through use of reporting guidelines, depositing of study data and authors’ versions of manuscripts on pre-print servers or institutional repositories, registering planned research before the data collection or the research process begins, and replicating research findings.

In 2014, The Transparency and Openness Promotion (TOP) Committee developed guidelines for journals aimed at promoting and implementing eight transparency standards regarding: 1) citations, 2) data, 3) analytic methods (code), 4) research materials, 5) data and analysis reporting, 6) pre-registration of studies, 7) pre-registration of analysis plans, and 8) replication of research. By the end of 2017 more than 5000 journals and 80 societies/publishers have become the TOP guidelines signatories. The guidelines provide modular standards with three levels of stringency (e.g. in case of data sharing, level 1 refers to describing if the data is available; level 2 refers to requiring depositing of data in a trusted repository; and level 3 refers to requiring depositing of data and independently reproducing the data analysis), thus allowing journals and editors to gradually increase their requirements, while also reflecting the diversity of attitudes towards full research transparency. In the last two years, major publishers such as Springer Nature, Wiley and Elsevier, have conducted large scale surveys in which 60-69% of researchers reported sharing their data, (mostly as supplementary materials in journals), and expressed concerns regarding ethical aspects of data sharing, confidentiality, misuse, and other researchers generating publications based on the data someone else collected. Additionally, respondents acknowledged the large time investment needed to prepare the data for sharing or reuse. However, to the best of our knowledge, attitudes towards the TOP guidelines have not yet been assessed, and therefore it is our goal to assess differences in attitudes and practices of researchers, peer reviewers and editors regarding the TOP transparency standards as well as the research environment which they find themselves in. Ultimately, we hope the results will lead to practical suggestions to
stakeholders to improve and further realize research transparency along the standards set by the TOP guidelines.

**Methods**

*Study design*

A cross sectional study – an online survey delivered by email using the ConfirmIT survey platform. The invite email template is available at our project’s data repository site.

*Setting*

The initial invitation to complete the survey will be sent on 24 April 2018, with reminders on 9 and 24 May 2018. The survey will be closed on 12 June 2018. All data will be stored on the Elsevier platform, and deposited on our projects’ data repository site.

*Participants*

Participants will be randomly selected from the Scopus database of published researchers (n=100,000), with the sample profiled per country and scientific area. Additionally, within our project *Fostering Transparent and Responsible Conduct of Research: What can Journals do?* we collected journals’ instructions to authors and email addresses of editors (study protocol available at our project’s data repository site) and our survey sample will include the 355 collected email addresses. Additionally, 40,000 of the planned 100,000 participants, will be the authors who have published in the 835 journals. Emails sent to the participants will contain unique links to access the survey.

*Informed consent and ethics approval*

The ethical waiver for the study has been given on 4 April 2018 by the Medical Ethics Review Committee of the Academic Medical Center, University of Amsterdam, reference number W18_112. Participants will be informed in the invitation letter and in the survey description about the purpose of the study, the research team behind the survey, the median time (12 minutes) needed to complete the survey (based on our survey pilot data), that the data will be made publicly available after anonymisation, and that by filling out the questionnaire they will be giving their consent to participate in the research.
**Incentives**
No incentives, except the option to be alerted of the study results, will be offered to the participants.

**Variables**
All survey questions and the order in which they will be asked are available on our project’s data repository site.\(^{21}\) In short, after the identifying question on whether the respondent is an editor, researcher or peer reviewer (multiple roles possible), the survey is divided into 4 sections: a) attitudes toward transparency in reporting and conducting research, b) perceptions of the respondents work climate, c) perception of prevalence of detrimental research practices, and d) knowledge of statistics and socio-demographic data. At the end of the survey, the participants may leave a comment on the survey or any of its questions. The participants will be able to change their answers at any time before submitting the filled-out questionnaire, but not after.

**Outcome variables:**

1) Attitudes towards transparency in reporting and conducting research (Likert-type scale with answers ranging from strongly agree to strongly disagree), specifically attitudes towards: citation practices, data availability, data sharing, replication of findings, use of reporting guidelines, study registration, sharing of data analysis plans, and journals’ endorsement of replication studies;

2) Perceptions of the work climate (Likert-type scale with answers ranging from strongly agree to strongly disagree), specifically towards: publication pressure, publishing studies with null or negative results, funders influence, data sharing, obtaining ethics approvals, peer review experience, quality of mentoring of young researchers, quality of publications, funding availability, recommending peer reviewers for publications;

3) Perception of prevalence of detrimental research practices (Likert-type scale with answers ranging from very prevalent to never occurring), specifically: falsification or fabrication, plagiarism, selective citing, correction and retraction of publications, underserved or ghost authorship, undeclared conflict of interest, self-reporting of limitations, use of reporting guidelines, open peer review, and publishing of author’s versions (non-peer reviewed) of publications on pre-print servers.
Additionally, reasons for respondents’ (dis)agreement with the questions listed under 1) and 2) will be explored through an open-ended format (What is the main reason why you agree/disagree with the statement?)

Explanatory variables:

1) Knowledge of statistics (self-declared as being either none, basic, intermediate, or advanced)
2) Current domicile (selected from a drop-down list of areas)
3) Current scientific field (list of 30 scientific areas based on the Scopus All Science Journal Classification, ASJC)
4) Number of publications (grouped into 7 ordinal categories)
5) Number of reviews conducted in the last year (only for peer reviewers, grouped into 4 ordinal categories)
6) Type of organization (nominal, grouped into 6 categories)
7) Respondents position in their organization (grouped into 5 ordinal categories)
8) Gender (male, female, other, prefer not to say)
9) Age (in years, ratio scale)

Data sources/ measurement
The respondents will be required to answer all of the survey questions or choose ‘do not know/not applicable’ option. Time for completion of the survey will be measured within the survey platform itself.

Development and testing
As previously mentioned, this survey is a part of a research project Fostering Transparent and Responsible Conduct of Research: What can Journals do? and was developed after: 1) literature search on surveys of editors, researchers and peer reviewers; 2) review of more than a dozen guidelines on publication ethics; 3) information obtained during interactive group sessions using MeetingSphere software; 22, 23 4) stakeholder consultations. The first version of the questionnaire was drafted by MMal, following which all authors expanded and modified the survey through several team meetings. The survey was piloted on 12 March 2018. Out of 19,999 invites (randomly selected from the Scopus database), we received 228 completed surveys (1.14 % response rate), with an additional 142 respondents starting but not finishing
the survey. Following the pilot, we decided to decrease the number of questions per survey pages, as most of respondents who did not complete the survey stopped at the second page of the pilot survey which contained an interrupted set of 11 questions. We also rephrased the invitational email in an attempt to better motivate the potential respondents. Median time required to complete the pilot was 12 minutes (IQR 9-18).

Before we send out the survey, a final check, including the technical access will be performed by the authors on 23 April 2018. Lastly, the respondents will have an option of contacting the investigators, if they encounter any technical or other difficulties.

Bias
As any large anonymous online survey, it is possible we may experience response bias, i.e. respondents’ opinions differing systematically from those of non-respondents. Additionally, we expect a small response rate, which we will try to increase by having a short opening question, small number of question per survey page, having the total time required to complete the survey be less than 20 minutes, not including a progress bar, using personalised emails, guaranteeing respondent anonymity in data sharing and providing the project description and investigators names and affiliations.24-26

Study size
We will send the survey to 100,355 researchers, and the reminders to the non-respondents. The reminder email will be also made available at our project’s data repository site.21

Statistical methods
The categorical variables will be presented as absolute number and percentages and (exact) 95% confidence intervals (CI) around percentages using Wilson’s methods, while the continuous variables will be presented as means or medians with accompanying 95% CIs. Equal representation of sociodemographic characteristics of participants will be explored using the chi-squared test, ANOVA or Kruskal-Wallis test, depending on data distribution. Additionally, association of multiple exploratory variables on the outcome variables will be explored using ordinal logistic regression on the ordered Likert-type scales.
Conclusions

The proposed survey will be able to provide a snapshot of the current scientific environment and attitudes of researchers, peer reviewers and editors towards the call for greater transparency in research.

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