Transparency and Openness in Research: a Survey Among Researchers, Peer Reviewers and Editors Across Scientific Disciplines

Mario Malički, IJsbrand Jan Aalbersberg, Lex Bouter, Adrian Mulligan, Gerben ter Riet
METHODS

- Survey on 100,000 randomly selected Scopus authors

  e-mails sent: 24 April 2018
  reminders: 9 & 24 May 2018
  closed: 12 June 2018
SURVEY

1. 1 Q to distinguish peer reviewers, authors and editors
2. Attitudes towards the TOP guidelines – 11
3. Perceptions of work climate – 13 + 2 OE
4. Prevalence of detrimental research practices – 14 + 1 OE
5. Knowledge of statistics – 1 to 3
6. Socio-demographic data – 8
7. Final 1 OE: any comments on the survey or its questions

Project website and protocol: https://data.mendeley.com/datasets/53cskwwpdn/2
TOP Guidelines

- Citation Standards
- Data Transparency
- Analytic Methods (Code) Transparency
- Research Materials Transparency
- Design and Analysis Transparency
- Study Preregistration
- Analysis Plan Preregistration
- Replication

Center for Open Science  2015

>5000 signatories
100,000 emails sent
25,251 invalid
3,659 responses
4.89% response rate

FOR RESULTS
Authors 3459 (94%) 1389
Reviewers 2209 (60%) 1833
Editors 434 (12%) 434

Male 2037 (64%)
Female 1055 (33%)
Prefer not to say 76 (2%)

126 Countries
USA, India, UK, Brasil, Spain, China

University 1976 (62%)
Research institute 607 (19%)

6099 Open Ended (OE) Responses
<table>
<thead>
<tr>
<th>TOP Guidelines – Authors must:</th>
<th>Authors</th>
<th>Reviewers</th>
<th>Editors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cite all data, methods, code and materials</td>
<td>93</td>
<td>96</td>
<td>95</td>
</tr>
<tr>
<td>Indicate if data will be made available/shared</td>
<td>82</td>
<td>85</td>
<td>83</td>
</tr>
<tr>
<td>Deposit all data and code in a repository</td>
<td>62</td>
<td>60</td>
<td>55</td>
</tr>
<tr>
<td>Follow appropriate reporting guidelines</td>
<td>75</td>
<td>74</td>
<td>71</td>
</tr>
<tr>
<td>Pre-register their studies</td>
<td>26</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>Include full data analysis plan in pre-reg.</td>
<td>26</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Journals must replicate analysis</td>
<td>58</td>
<td>46</td>
<td>38</td>
</tr>
<tr>
<td>Journals must encourage replication studies</td>
<td>59</td>
<td>64</td>
<td>57</td>
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</table>
Perceptions of the work climate

<table>
<thead>
<tr>
<th>Having access to others data would benefit me</th>
<th>Authors</th>
<th>Reviewers</th>
<th>Editors</th>
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<tbody>
<tr>
<td></td>
<td>77</td>
<td>81</td>
<td>76</td>
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</tbody>
</table>

1163 OE for agreeing and 39 OE Answers for disagreeing (4%)

“We lean on information from each other to produce more information.”

“It is crucial to compare research findings; access to others' research data is paramount to achieve that goal.

“As taxonomists, we plod through the material we have to hand. It is now impossible to ship specimens so obtaining others' material or types is not possible.”

“I think it is impractical and to some extent unfair--someone has worked really hard to gather that data and to make it open and available means others will use it for their own gain.”
It is difficult to publish null or negative results

<table>
<thead>
<tr>
<th>Perceptions of the work climate</th>
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<th>Editors</th>
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<tbody>
<tr>
<td>It is difficult to publish null or negative results</td>
<td>69</td>
<td>76</td>
<td>70</td>
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</table>

1016 OE for agreeing and 354 OE answers for disagreeing (19%)

“Because journals and referees are not going to give a positive response to it.”

“Because they are not useful to the community.”

“It can be difficult to know whether negative results truly refute an hypothesis or just represent a lack of power for the analysis. Publishing such results may discourage others to tackle the problem.”

“There are unlimited number of problems with null or negative results. I never liked mathematical paper that prove that something is impossible.”
Perceptions of the work climate

<table>
<thead>
<tr>
<th>Authors should recommend peer reviewers</th>
<th>Authors</th>
<th>Reviewers</th>
<th>Editors</th>
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<tbody>
<tr>
<td></td>
<td>57</td>
<td>51</td>
<td>55</td>
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</tbody>
</table>

114 OE for agreeing and 344 OE Answers for disagreeing (19%)

“Authors recommend friends, which undermines the objectivity of the peer-review process. This is a sure sign of corruption.”

“This might foster reciprocal favours, and is hard on newcomers.”

“Editors should select the expert unbiased reviewer. If you recommend names, you are involved in the review process.”
<table>
<thead>
<tr>
<th>Perceptions of the work climate</th>
<th>Authors</th>
<th>Reviewers</th>
<th>Editors</th>
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</thead>
<tbody>
<tr>
<td>Funders interfere in study design or reporting</td>
<td>16</td>
<td>13</td>
<td>12</td>
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</table>

114 OE for agreeing and 1188 OE for disagreeing (56%)

“The real interference is in our heads, fear of loosing subsequent contracts.”

“I design the study to fit their interests”

“They control what results can be published”
“They require to be listed as authors”
“They favour specific networks of researchers”
“They don’t allow deviations from the protocol”
“They mandate open access publishing, which is expensive”
<table>
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<th>Perceived prevalence in resp. field</th>
<th>Authors</th>
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<tbody>
<tr>
<td>Guest or gift authorship</td>
<td>34</td>
<td>40</td>
<td>39</td>
</tr>
<tr>
<td>Not citing prior relevant research</td>
<td>27</td>
<td>35</td>
<td>46</td>
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<tr>
<td>Ghost writing</td>
<td>15</td>
<td>13</td>
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<tr>
<td>Undeclared conflicts of interest</td>
<td>17</td>
<td>12</td>
<td>14</td>
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<tr>
<td>Plagiarism</td>
<td>16</td>
<td>10</td>
<td>15</td>
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<tr>
<td>Fabrication or falsification (incl. image m.)</td>
<td>12</td>
<td>9</td>
<td>12</td>
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<tr>
<td>Publication of null or negative results</td>
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<td>5</td>
<td>5</td>
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<tr>
<td>Don’t Know</td>
<td>Authors</td>
<td>Reviewers</td>
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<td>Use of reporting guidelines</td>
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</table>
“Your survey is probably the worst I’ve encountered. Presupposed answered, limited response options. If I were your supervisor I’d fail you immediately.”

Did you do what you are encouraging, and actually plan out your questions with the data and analysis technique in mind prior to collecting the data?

“I teach a module of surveys. This survey uses all the best practices. It's length is about right for an online survey. Questions have appropriate response options.”

“I found the questions well written and clear, without feeling biased. Not always the case for surveys! Thanks or a job well done.”
Limitations (using reviewers comments)

“All questionnaires are limited!”

“I wish you'll enjoy the statistical analysis of your Survey ;-)”

“These are my impressions and biased opinions, not facts!”

“Some of the questions are misleading and weighted. For example, asking whether studies should be preregistered. Yes, they should - in research fields that need it. And no they should not where they are not needed. This will create bias in your survey results. If these issues not amended, I will make sure that others are aware of this when the results are published. “

“Please be aware that you do not mislead the public when publishing your results. Good luck!”
Preliminary Conclusions

Researchers, peer reviewers and especially editors have not yet embraced all the principles of the top guidelines, especially in regards to pre-registration of studies and data sharing.

Respondents reported many detrimental research practices, of which most common was manipulation of authorship.
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**Project website:** https://data.mendeley.com/datasets/53cskwwpdn/2