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| --- | --- | --- | --- | --- | --- |
| Research Misbehavior item | 0 times (%) | Once (%) | Several times (%) | Regularly (%) | Always (%) |
| 1. Modified the results or conclusions of a study under pressure from an organization that (co-)funded the research? | 520 (97.2) | 9 (1.7) | 6 (1.1) | 0 | 0 |
| 1. To confirm a hypothesis, selectively deleted or changing data after performing data analysis? | 510 (95.3) | 18 (3.4) | 7 (1.3) | 0 | 0 |
| 1. Deleted data before performing data analysis? | 473 (88.4) | 24 (4.5) | 32 (6.0) | 4 (0.7) | 2 (0.4) |
| 1. Concealed results that contradicted previous research you published? | 510 (95.3) | 20 (3.7) | 5 (0.9) | 0 | 0 |
| 1. Used phrases or ideas of others without their permission? | 466 (87.1) | 38 (7.1) | 27 (5.0) | 4 (0.7) | 0 |
| 1. Used phrases or ideas of others without citation? | 464 (86.7) | 33 (6.2) | 32 (6.0) | 5 (0.9) | 1 (0.2) |
| 1. Turned a blind eye to colleagues’ use of flawed data or questionable interpretation of data? | 420 (78.5) | 61 (11.4) | 48 (9.0) | 4 (0.7) | 2 (0.4) |
| 1. Fabricated data? | 533 (99.6) | 1 (0.2) | 0 | 0 | 1 (0.2) |
| 1. Not published (part of) the results of a study? | 446 (83.4) | 49 (9.2) | 36 (6.7) | 4 (0.7) | 0 |
| 1. Deliberately not mentioned an organization that funded your research in the publication of your study? | 531 (99.3) | 0 | 4 (0.7) | 0 | 0 |
| 1. Added one or more authors to a report who did not qualify for authorship (honorary author)? | 213 (39.8) | 130 (24.3) | 150(28.0) | 39 (7.3) | 3 (0.6) |
| 1. Selectively modified data after performing data analysis to confirm a hypothesis? | 514 (96.1) | 16 (3.0) | 5 (0.9) | 0 | 0 |
| 1. Reported a downwardly rounded p value (e.g. reporting that a p value of .054 is less than .05)? | 524 (97.9) | 7 (1.3) | 3 (0.6) | 1 (0.2) | 0 |
| 1. Reported an unexpected finding as having been hypothesized from the start? | 429 (80.2) | 63 (11.8) | 39 (7.3) | 4 (0.7) | 0 |
| 1. Decided whether to exclude data after looking at the impact of doing so on the results? | 443 (82.8) | 54 (10.1) | 37 (6.9) | 1 (0.2) | 0 |
| 1. Decided to collect more data after seeing that the results were almost statistically significant? | 387 (72.3) | 69 (12.9) | 66 (12.3) | 11 (2.1) | 2 (0.4) |
| 1. Omitted a contributor who deserved authorship from the author's list? | 521 (97.4) | 7 (1.3) | 6 (1.1) | 1 (0.2) | 0 |
| 1. Stopped collecting data earlier than planned because the result at hand already reached statistical significance without formal stopping rules? | 511 (95.5) | 15 (2.8) | 5 (0.9) | 3 (0.6) | 1 (0.2) |
| 1. Deliberately failed to mention important aspects of the study in the paper? | 516 (96.4) | 14 (2.6) | 4 (0.7) | 1 (0.2) | 0 |
| 1. Not disclosed a relevant financial or intellectual conflict of interest? | 527 (98.5) | 5 (0.9) | 2 (0.4) | 1(0.2) | 0 |
| 1. Spread results over more papers than needed to publish more papers (‘salami slicing’)? | 440 (82.2) | 53 (9.9) | 29 (5.4) | 13 (2.4) | 0 |
| 1. Used confidential reviewer information for own research or publications? | 516 (96.4) | 15 (2.8) | 3 (0.6) | 1 (0.2) | 0 |

**Supplementary Table S1**. The 22 items of the research misbehavior severity score (RMSS) and their incidences in the study population

Appendix to the table S2 clarifying the severity score:

The questionnaire consisted of 22 different types of research misbehavior (see table 2). Survey respondents were asked to report to what extent they have been committed specified types of research misbehavior during the past 3 years. Answers were given on a 5 points scale (never, once, occasionally, frequently, often). To construct a misbehavior severity score of research misbehavior, the items were assigned different points to calculate a composite research misbehavior severity score (RMSS). To construct this score, the most severe misbehavior questions (items 1, 2, 8, 9, 12, 15 and 19) were assigned three points, positive answers of the severe research misbehavior questions were assigned two points (items 4, 7, 10, 14, 16,18 and 20) and positive answers of the moderate research misbehavior questions were assigned one point (items 3, 5, 6, 11, 13, 17, 21 and 22). Scores were added up to calculate the composite research misbehavior severity score (RMSS) (maximum range: 0-43).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | Total group (n=535) | Clusters of biomedical scientists | | | p-value |
| Perfectionist (n=140) | Ideal son-in-law (n=193) | Sneaky grandiose (n=202) |
| Gender | Male | 229 | 53 (24%) | 65 (28%) | 111 (48%) | P<0.001 |
| Female | 306 | 87 (28%) | 128 (42%) | 91 (30%) |
| Age | <40 yr. | 396 | 114 (29%) | 141 (36%) | 141 (35%) | P<0.05 |
| >40 yr. | 139 | 26 (19%) | 52 (37%) | 61 (44%) |
| Academic position | PhD student | 303 | 98 (32%) | 108 (36%) | 97 (32%) | P<0.001 |
| Postdoctorate, Associate or Assistent Professor | 177 | 38 (21%) | 58 (33%) | 81(46%) |
| Full Professor | 55 | 4 (7%) | 27 (49%) | 24 (44%) |
| Hirsch index (n=253) | | 15.4 (IQR 2-24) | 10.5 (IQR 2-16.5) | 16.6 (IQR 2-26) | 16.9 (IQR 3.5-25) | 0.058 |
| Research Misbehavior Severity Score (RMSS) | | 4.3 (SD+/-4.9) | 4.6 (SD +/- 6.1) | 3.6 (SD +/- 3.9) | 4.9 (SD +/- 5.0) | P<0.05\* |
| Publication Pressure Questionnaire score | | 42.6 (SD+/-6.6) | 43.7 (SD +/- 5.8) | 41.4 (SD +/- 6.5) | 42.9 (SD +/- 7.2) | P<0.01 |

**Supplementary Table S2**: number and percentages per cluster and per determinant.

Significance testing by calculating Chi-squares for dichotomous variables and ANOVA for continuous variables such as the H-Index and the PPQ.

\*We performed a Kruskal Wallis Test for the analysis of the RMSS.

RMSS: maximum range 0-43