Guidelines for authors

Registered Reports are a new form of empirical article in which the methods and proposed analyses are pre-registered and reviewed prior to research being conducted. The cornerstone of the Registered Reports format is that a significant part of the manuscript will be assessed prior to data collection, with the highest quality submissions accepted in advance. This format is designed to minimize bias in deductive science, while also allowing complete flexibility to conduct exploratory (unregistered) analyses and report serendipitous findings. The guidelines for this report draw upon the journal's more extensive Author Guidelines and the Open Science Framework.

Registered Reports generally will report empirical work using a new design, though replication studies may also be permitted. Registered reports may also involve replications of an original study with an improved or novel design. Authors can submit registered reports for secondary data analysis provided that they can supply evidence to confirm that they had no prior access to the data (e.g., a letter from an independent gatekeeper).

Registered Reports involve a two-stage submission process:

Stage 1: Pre-data collection

The Stage 1 manuscript (pre-data collection) includes the following sections:

a. **Cover Letter**: Authors will provide a brief scientific case for considering their manuscript, a statement confirming all ethical approvals have been secured, a conflict of interest statement detailing any potential financial or personal relationships that may bias their work, a statement that data collection will commence immediately upon receipt of in-principal acceptance (IPA) and the anticipated timeline for completion of the study.

b. **Introduction**: A review of the relevant literature that motivates the research question and a full description of the experimental aims and hypotheses. Once the Stage 1 submission has received IPA the substance of the introduction cannot be changed.

c. **Methods**: The methods section should include a full description of the sample characteristics and the inclusion and exclusion criteria. The materials and procedures should be described in enough detail that another researcher could conduct the study exactly as intended without further guidance. The methods section should justify the planned sample sizes (e.g., an a priori power analysis), include all preprocessing steps, and a precise description of planned analyses, including appropriate correction for multiple comparisons.

d. **Results**: Although a Stage 1 manuscript is reviewed prior to data collection, the manuscript should include a results section that conveys the analysis plan in detail. Pilot data (if available) can be included to establish proof of concept, effect size estimations, or feasibility of proposed methods. Any pilot experiments will be published with the final version of the manuscript and will be clearly distinguished from data obtained for the pre-registered experiment(s). Only those analyses described in the Stage 1 manuscript results section can be treated as planned analyses for the final Stage 2 submission. However, unplanned exploratory analyses are welcome.

After undergoing an initial review by the editorial team to ensure manuscripts meet the stringent criteria as set above and in the extended Author Guidelines, proposals will proceed for review by subject-area experts. Reviewers will be asked to assess the following when

considering papers at the registration stage:

1. The logic, rationale and plausibility of the proposed hypotheses.
2. The soundness and feasibility of the methodology and analysis pipeline (including statistical power analysis where appropriate).
3. Whether the clarity and degree of methodological detail is sufficient to exactly replicate the proposed experimental procedures and analysis pipeline.
4. Whether the authors have pre-specified sufficient outcome-neutral tests for ensuring that the results obtained are able to test the stated hypotheses, including positive controls and quality checks.

Following Stage 1 peer review, manuscripts will be rejected outright, offered the opportunity to revise, or be accepted. Proposals that meet the highest standards of scientific rigor will be issued an IPA, indicating that the article will be published pending completion of the approved experiments and analytic procedures, passing of all pre-specified quality checks, and a defensible interpretation of the results.

Once the Stage 1 manuscript has received IPA, authors will conduct the study as planned. In the event of **deviations from the stated procedures, regardless of how minor it may seem, the authors are advised to follow the necessary journal-set procedures to report said deviations, so as to avoid publication delays or potential rejection of the manuscript at Stage 2.**

Following Stage 1 in principle acceptance, authors are required to register their approved protocol on the Open Science Framework (https://osf.io/rr) or other recognised repository, either publicly or under private embargo until submission or acceptance of the Stage 2 manuscript.

Stage 2: Full manuscript review

Once the study is complete, authors prepare and resubmit their manuscript for full review as a revision to the provisionally accepted Stage 1 manuscript. The following additions will be included in the Stage 2 manuscript:

a. **Cover Letter**: Stage 2 submissions must be accompanied by a cover letter providing details that include a statement of authors collectively certifying that the research was carried out according to the originally approved Stage 1 protocol. Authors must clearly report and justify any deviations from the original approved protocol, including (but not limited to) any deviations with respect to research design, sample size, sampling strategy and statistical analyses.

b. **Introduction**: Apart from minor stylistic revisions, **the Introduction cannot be altered from the approved Stage 1 submission, and the stated hypotheses cannot be amended or appended**. At Stage 2, any description of the rationale or proposed methodology that was written in future tense within the Stage 1 manuscript should be changed to past tense. Any relevant literature that appeared following the date of IPA should be covered in the Discussion.

c. **Methods**: Any textual changes to Methods (e.g. correction of typographic errors, deviations in any experimental procedures that were pre-approved, etc.) must be clearly marked in the Stage 2 submission. Authors should include access to all

data and materials and all registered analyses must be conducted.

d. **Results and Discussion**: The outcome of all registered analyses must be reported in the manuscript, except in rare instances where a registered and approved analysis is subsequently shown to be logically flawed or unfounded. In such cases, the authors, reviewers, and editor must agree that a collective error of judgment was made and that the analysis is inappropriate. In such cases the analysis would still be mentioned in the Methods and include a description/warning of why it was wrong so that others do not cite it inappropriately. The analysis can be omitted with justification from the Results. The paper may include additional exploratory analyses in a separate sub-section of the results section as well as in online supplementary materials. Any relevant literature that appeared after the provisional acceptance of the Stage 1 manuscript should be covered in the Discussion section.

e. Supplemental Materials: Authors must certify that all data were collected after the provisional acceptance of the Stage 1 manuscript. Raw data and any digital experimental materials, laboratory logs, etc. should be made freely available in a public repository. In some instances, this may be a requirement for acceptance of the Stage 2 manuscript. Other than pre- registered and approved pilot data, no data acquired *prior* to the date of IPA is admissible in the Stage 2 submission. Where raw data is presented, it must be accompanied by guidance notes to assist other scientists in reproducing the analysis pipeline. Authors should also upload any relevant analysis scripts and other experimental materials that would assist in reproducibility (e.g. stimuli & presentation code). Any supplementary figures, tables, or other text (such as supplementary methods) can either be included as standard supplementary information that accompanies the paper, or archived together with the data.

The resubmission will be sent out for an expedited review process in which the original reviewers will consider:

1. Whether the data are able to test the authors' proposed hypotheses by satisfying the approved outcome-neutral conditions (such as quality checks, positive controls)
2. Whether the Introduction, rationale and stated hypotheses are the same as the approved Stage 1 submission
3. Whether the authors adhered precisely to the registered experimental procedures
4. Whether any unregistered *post hoc* analyses added by the authors are justified, methodologically sound, and informative
5. Whether the authors' conclusions are justified given the data

The review process will iterate until the final manuscript is accepted. Note that statistical significance, novelty and nature of the findings (e.g., negative findings) will not factor into editorial judgments for a Stage 2 manuscript; those were already evaluated at Stage 1, prior to data collection.

Incremental Registrations

Authors may add experiments to approved submissions. In such cases the approved Stage 2 manuscript will be accepted for publication, and authors can propose additional experiments for Stage 1 consideration. Where these experiments extend the approved submission (as opposed to being part of new submissions), the editorial team will seek to fast-track the review process. This option may be particularly appropriate where an initial experiment reveals a major serendipitous finding that warrants follow-up within the same paper. In cases where an

incremented submission is rejected (at either Stage 1 or 2), authors will retain the option of publishing the most recently approved version of the manuscript. For further advice on specific scenarios for incremental registration, authors are invited to contact the editorial office.