



## Linguistics

### An Interdisciplinary Journal of the Language Sciences

#### Instructions for Authors: Registered Reports

These guidelines are based on the templates provided by the Centre for Open Science, which can be found here: <https://cos.io/rr/>.

#### 1. Introduction

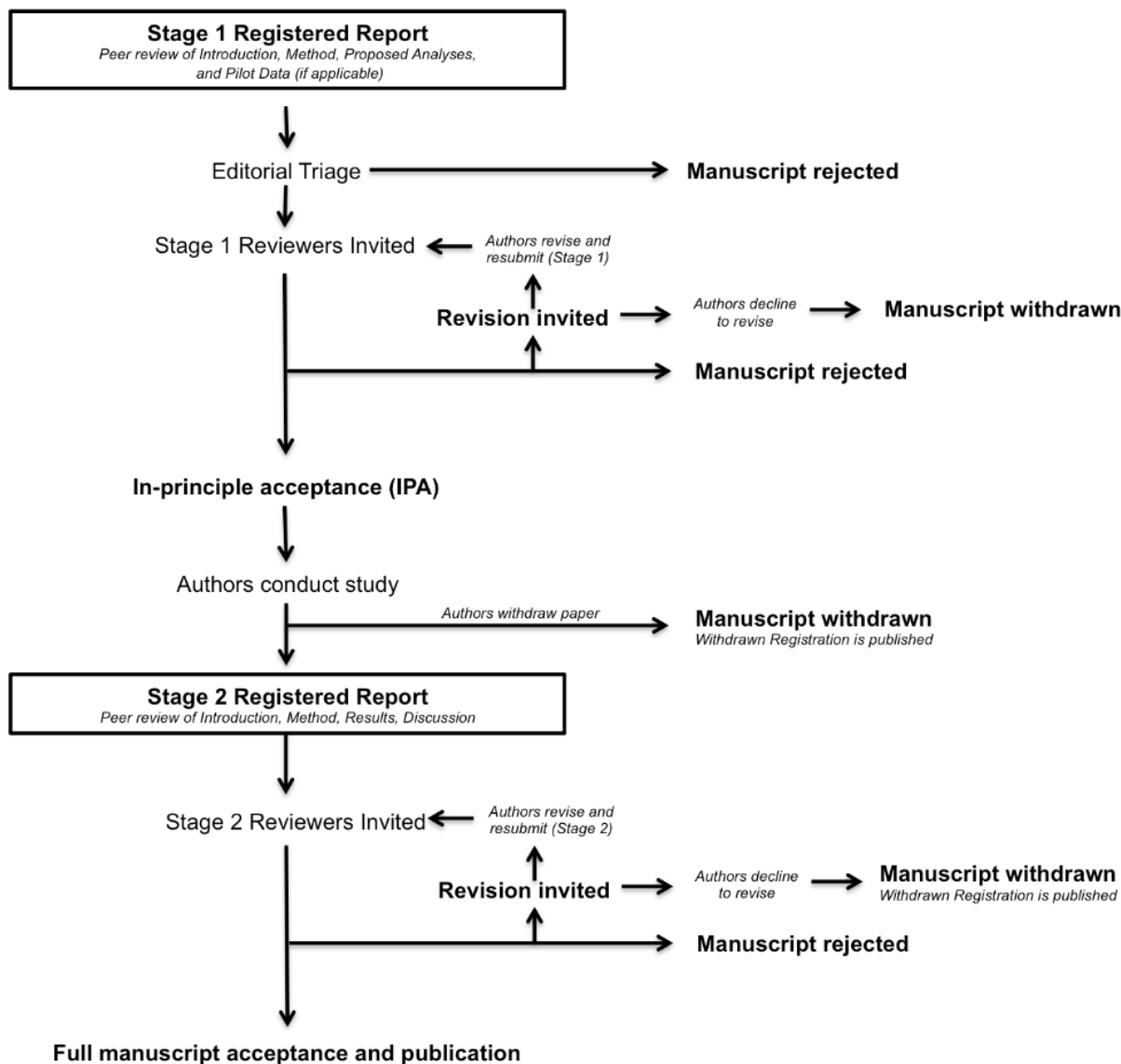
Registered reports (RR) are a publishing format for empirical studies in which new quantitative data is collected. The introduction, methods and proposed analysis strategy are pre-registered and peer-reviewed by the journal prior to data collection (Stage 1 Registered Reports). High quality Stage 1 articles are then provisionally accepted for publication before data are collected ('In-Principle Acceptance'). Once the data are collected, the authors add results and discussion sections (Stage 2), which are re-appraised by the reviewers. Provided the necessary conditions are met, publication is then virtually guaranteed.

RRs at Linguistics are not yet available for analyses of secondary data. However, we encourage authors to pre-register such studies; guidelines can be found here: <https://osf.io/x4qzt/>.

RRs are designed to reward best practices in adhering to the hypothetico-deductive model of the scientific method while simultaneously allowing the flexibility to report exploratory (unregistered) analyses and unexpected findings. They have a number of advantages:

- They eliminate certain questionable research practices, including low statistical power and selective reporting of results.
- Once a Stage 1 report is provisionally accepted, the journal will commit to publishing the results regardless of the outcome, provided the final study conforms to the initially approved proposal and meets all quality checks. This means that publication bias is reduced as negative results will not prevent publication.
- Peer review of the research proposal provides an opportunity for the authors to receive constructive critical feedback that may help them to fine-tune the study design prior to conducting the experiment. This process can help reduce researcher bias and can enhance the credibility of the research.

## 2. The submission process



Initial submissions (Stage 1 Registered Reports) will be triaged by an editor. Those that pass triage will then be sent for in-depth peer review (Stage 1). Following review, the article will be either rejected or accepted in principle for publication. Following In-Principle Acceptance, the authors will then proceed to conduct the study, adhering exactly to the peer-reviewed procedures. When the study is complete the authors will submit their finalised manuscript for re-review (Stage 2) and will upload their raw data, digital study materials, and laboratory log to a publicly accessible file-sharing service. Pending quality checks and a sensible interpretation of the findings, the manuscript will be published regardless of the results.

### 2.1. Creating a Stage 1 Registered Report

Stage 1 submissions include the manuscript and a brief cover letter.

#### 2.1.1. The Stage 1 cover letter

The Stage 1 cover letter must include:

- A brief scientific case for consideration. Authors are encouraged to refer to the likely [replication value](#) of the research. Replication studies are welcome in addition to novel studies.

- A statement confirming that all necessary support (e.g. funding, facilities) and approvals (e.g. ethics) are in place for the proposed research. Note that manuscripts will be generally considered only for studies that can start immediately; however, authors with alternative plans are encouraged to contact the journal office for advice.
- An anticipated timeline for completing the study.
- A statement confirming that the authors agree to share their raw data, any digital study materials, and code used for the analysis as appropriate.
- A statement confirming that, following In-Principle Acceptance, the authors agree to register their approved protocol on the Open Science Framework or some other recognized repository, either publicly or under private embargo until submission of the Stage 2 manuscript. Accepted protocols can be quickly and easily registered using a tailored mechanism for Registered Reports on the Open Science Framework: <https://osf.io/rr/>.
- A statement confirming that if the authors later withdraw their submission, they agree to Linguistics publishing a short summary of the pre-registered study under a section *Withdrawn Registrations*.

### 2.1.2. Manuscript preparation guidelines: Stage 1

Initial Stage 1 submissions must include the following sections:

- **Introduction**
  - A review of the relevant literature that motivates the research question and a full description of the experimental aims and hypotheses. Please note that following In-Principle Acceptance, the Introduction section cannot be altered apart from correction of factual errors, typographic errors and changing tense forms from future to past.
- **Methods**
  - Full description of proposed sample characteristics, including criteria for data inclusion and exclusion (e.g. outlier extraction). Procedures for objectively defining exclusion criteria due to technical errors or for any other reasons must be specified, including details of how and under what conditions data would be replaced.
  - A description of experimental procedures in sufficient detail to allow another researcher to repeat the methodology exactly, without requiring further information. These procedures must be adhered to exactly in the subsequent experiments or any Stage 2 manuscript can be rejected.
  - Proposed analysis pipeline, including all preprocessing steps, and a precise description of all planned analyses, including appropriate correction for multiple comparisons. Any covariates or regressors must be stated. Where analysis decisions are contingent on the outcome of prior analyses, these contingencies must be specified and adhered to. Only pre-planned analyses can be reported in the main Results section of Stage 2 submissions. However, unplanned exploratory analyses will be admissible in a separate section of the Results (see below).
  - Studies involving Neyman-Pearson inference must include a statistical power analysis. Estimated effect sizes should be justified with reference to the existing literature or theory. Since publication bias overinflates published estimates of effect size, power analysis must be based on the *lowest* available or meaningful estimate of the effect size. For frequentist analysis plans, the *a priori* power must be 0.9 or higher for all proposed hypothesis tests. In the case of highly uncertain effect sizes, a variable sample size and interim data analysis is permissible but with inspection points stated in advance, [appropriate Type I error correction for 'peeking' employed](#), and a final stopping rule for data collection outlined.
  - Methods involving Bayesian hypothesis testing are encouraged. For studies involving analyses with Bayes factors, the predictions of the theory must be specified so that a Bayes factor can be calculated. Authors should indicate what distribution will be used to represent the predictions of the theory and how its parameters will be specified. For example, will you use a uniform up to some specified maximum, or a [normal/half-normal to represent a likely effect size](#), or a

[JZS/Cauchy with a specified scaling constant](#)? For inference by Bayes factors, authors must be able to guarantee data collection until the Bayes factor is at least 6 times in favour of the experimental hypothesis over the null hypothesis (or *vice versa*). Authors with resource limitations are permitted to specify a maximum feasible sample size at which data collection must cease regardless of the Bayes factor; however to be eligible for In-Principle Acceptance this number must be sufficiently large that inconclusive results at this sample size would nevertheless be an important message for the field. For further advice on Bayes factors or Bayesian sampling methods, prospective authors are encouraged to [read this key article by Schönbrodt and Wagenmakers](#).

- Full descriptions must be provided of any outcome-neutral criteria that must be met for successful testing of the stated hypotheses. Such quality checks might include the absence of floor or ceiling effects in data distributions, positive controls, or other quality checks that are orthogonal to the experimental hypotheses.
  - Timeline for completion of the study and proposed resubmission date if Stage 1 review is successful. Extensions to this deadline can be negotiated with the Registered Reports editor.
  - Any description of prospective methods or analysis plans should be written in future tense.
- **Pilot Data**
    - Optional. 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).

Stage 1 submissions that are considered to be of sufficient quality by the Editorial Board and fall within the scope of the journal will be sent for in-depth peer review. In considering papers at the registration stage, reviewers will be asked to assess:

1. The importance of the research question(s).
2. The logic, rationale, and plausibility of the proposed hypotheses.
3. The soundness and feasibility of the methodology and analysis pipeline (including statistical power analysis where appropriate).
4. Whether the clarity and degree of methodological detail is sufficient to exactly replicate the proposed experimental procedures and analysis pipeline.
5. Whether the authors have pre-specified sufficient outcome-neutral tests for ensuring that the results obtained can 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 (in principle) accepted. In-Principle Acceptance means that the article will be published pending completion of the approved methods and analytic procedures, passing of all pre-specified quality checks, and a defensible interpretation of the results. Stage 1 protocols are not published by the journal following In-Principle Acceptance. Instead they are registered by the authors in a recognised repository (either publicly or under embargo until Stage 2) and then integrated into a single completed article following approval of the final Stage 2 manuscript.

Authors are reminded that any deviation from the stated experimental procedures, regardless of how minor it may seem to the authors, could lead to rejection of the manuscript at Stage 2. In cases where the pre-registered protocol is altered after In-Principle Acceptance due to unforeseen circumstances (e.g. change of equipment or unanticipated technical errors), the authors must consult the Editorial office immediately for advice, and prior to the completion of data collection. Minor changes to the protocol may be permitted per editorial discretion. In such cases, In-Principle Acceptance would be preserved and the deviation reported in the Stage 2 submission. If the authors wish to alter the experimental procedures more substantially following In-Principle Acceptance but still wish to publish their article as a Registered Report, the manuscript must be withdrawn and resubmitted as a new Stage 1 submission. Note that registered analyses must be undertaken, but additional unregistered analyses can also be included in a final manuscript.

## 2.2. Stage 2: Full manuscript review

Once the study has been completed, authors prepare and resubmit their manuscript for full review, with the following additions:

- **Cover letter.** The Stage 2 cover letter must confirm:
  - that the manuscript includes a link to the public archive containing anonymized study data, digital materials/code and the laboratory log. The cover letter should state the page number in the manuscript that lists the URL;
  - that the manuscript contains a link to the approved Stage 1 protocol on the Open Science Framework or other recognised repository. The cover letter should state the page number in the manuscript that lists the URL;
  - that, for primary Registered Reports, no data for any pre-registered study (other than pilot data included at Stage 1) was collected prior to the date of in principle acceptance.
- **Submission of anonymised raw data, digital study materials, and laboratory log**
  - Anonymised raw data and digital study materials must be made freely available in a public repository/archive with a link provided within the Stage 2 manuscript. Authors are free to use any repository that renders data and materials freely and publicly accessible and provides a digital object identifier (DOI) to ensure that the data remain persistent, unique and citable. Potential repositories include (but are not limited to), [Zenodo](#), [Figshare](#), [Harvard Dataverse](#), and [Dryad](#). For a comprehensive list of available data repositories, see <http://www.re3data.org/>.
  - Data files should be appropriately time stamped to show that data was collected *after* In-Principle Acceptance and not before. Other than pre-registered and approved pilot data, no data acquired *prior* to the date of In-Principle Acceptance is admissible in the Stage 2 submission. Raw data must be accompanied by guidance notes where required, to assist other scientists in replicating the analysis pipeline. Authors are required to upload any relevant analysis scripts and other digital experimental materials that would assist in replication.
  - Any supplementary figures, tables, or other text (such as supplementary methods) can either be included as standard supplementary information that accompanies the article, or they can be archived together with the data. Please note that the raw data itself should be archived (see above) rather than submitted to the journal as supplementary material.
  - A basic laboratory log must also be provided outlining the range of dates during which data collection took place. This log should be uploaded to the same public archive as the data and materials.
  - The Stage 2 manuscript must also contain a link to the registered protocol (deposited following in principle acceptance) on the Open Science Framework or other recognised repository.
- **Background, Rationale and Methods**
  - 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 textual changes to the Introduction or Methods (e.g. correction of typographic errors) must be clearly marked in the Stage 2 submission. Any relevant literature that appeared following the date of In-Principle Acceptance should be covered in the Discussion section.
- **Results & 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. The analysis would still be mentioned in the Methods but omitted with justification from the Results.
  - It is reasonable that authors may wish to include additional analyses that were not included in the registered submission. For instance, a new analytic approach may

have become available between In-principle Acceptance and Stage 2 review, or a particularly interesting and unexpected finding may emerge. Such analyses are admissible but must be clearly justified in the text, appropriately caveated, and reported in a separate section of the Results titled *Exploratory analyses*. Authors should be careful not to base their conclusions entirely on the outcome of statistically significant *post hoc* analyses.

- Authors reporting null hypothesis significance tests are required to report exact  $p$ -values and effect sizes for all inferential analyses.

The resubmission will most likely be considered by the same reviewers as in Stage 1, but could also be assessed by new reviewers. In evaluating articles at Stage 2, reviewers will be asked to decide:

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 (required);
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.

Reviewers are informed that editorial decisions will not be based on the perceived importance, novelty or conclusiveness of the results. Thus, while reviewers are free to enter such comments on the record, they will not influence editorial decisions. Reviewers at Stage 2 may suggest that authors report additional *post hoc* tests on their data; however, authors are not obliged to do so unless such tests are necessary to satisfy one or more of the Stage 2 review criteria.

### **3. Manuscript withdrawal and Withdrawn Registrations**

It is possible that authors with In-principle Acceptance may wish to withdraw their manuscript following or during data collection. Possible reasons could include major technical errors, the inability to complete the study due to other unforeseen circumstances, or the desire to submit the results to a different journal. In all such cases, manuscripts can of course be withdrawn at the authors' discretion. However, the journal will publicly record each case in a section called *Withdrawn Registrations*. This section will include the authors, proposed title, the abstract from the approved Stage 1 submission, and brief reason(s) for the failure to complete the study. Partial withdrawals are not possible; i.e. authors cannot publish a part of a registered study by selectively withdrawing one of the planned experiments. Such cases must lead to withdrawal of the entire paper. Studies that are not completed by the agreed Stage 2 submission deadline (which can be extended in negotiation with the editorial office) will be considered withdrawn and will be subject to a Withdrawn Registration.

### **4. 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 of Linguistics at [linguistics@uni-jena.de](mailto:linguistics@uni-jena.de).

## 5. Tips for Avoiding Desk Rejection at Stage 1

Registered Report submissions may be desk rejected at Stage 1, prior to in-depth review, for failing to sufficiently meet the Stage 1 editorial criteria. In many such cases, authors are invited to resubmit their studies once specific shortcomings are addressed, although major problems can lead to outright rejection. To help minimize the chances of authors' submissions being desk rejected, below we list the top ten reasons why Stage 1 submissions are rejected prior to review.

1. Cover letter does not make necessary statements concerning ethics, data archiving, and so forth (see above).
2. The protocol contains insufficient methodological detail to enable replication and prevent researcher degrees of freedom. One commonly neglected area is the criteria for excluding data, both at the level of participants and at the level of data within participants. In the interests of clarity, we recommend listing these criteria systematically rather than presenting them in prose.
3. Lack of correspondence between the scientific hypotheses and the pre-registered statistical tests. This is a common problem and severe cases are likely to be desk rejected outright. To maximize clarity of correspondence between predictions and analyses, authors are encouraged to number their hypotheses in the Introduction and then number the proposed analyses in the Methods to make clear *which analysis tests which prediction*. Ensure also that power analysis, where applicable, is based on the actual test procedures that will be employed to test those hypotheses; e.g. do not propose a power analysis based on an ANOVA but then suggest a linear mixed effects model to test the hypothesis.
4. Power analysis, where applicable, fails to reach the minimum level stated in journal policy.
5. Power analysis is over-optimistic (e.g. based on previous literature but not taking into account publication bias) or insufficiently justified (e.g. based on a single point estimate from a pilot experiment or previous study). Proposals should be powered to detect the smallest effect that is plausible and of theoretical value. Pilot data can help inform this estimate but is unlikely to form an acceptable basis for choosing the target effect size.
6. Intention to infer support for the null hypothesis from statistically non-significant results, without proposing use of Bayes factors or frequentist equivalence testing.
7. Inclusion of exploratory analyses in the analysis plan. Manuscripts proposing exploratory analyses will usually be desk rejected until such analyses are removed because inclusion of exploratory "plans" at Stage 1 blurs the line between confirmatory and exploratory outcomes at Stage 2. Instead, such analyses can be included at Stage 2 and need not be pre-registered. Under some circumstances, exploratory analyses could be discussed at Stage 1 where they are necessary to justify study variables or procedures that are included in the design exclusively for exploratory analysis.
8. Failure to clearly distinguish work that has already been done from work that is planned. Where a proposal contains a mixture of pilot work that has already been undertaken and a proposal for work not yet undertaken, authors should use the past tense for pilot work but the future tense for the proposed work. At Stage 2, all descriptions shift to past tense.
9. Lack of pre-specified positive controls or other quality checks, or an appropriate justification for their absence. We recognise that positive controls are not possible with all study designs, in which case authors should discuss why they are not included.
10. Where applicable, lack of power analysis within proposed positive controls that depend on hypothesis testing.