Qualitätsindikatoren für die Auswahl von Methodenforschenden

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For the original template see `https://resque-framework.github.io/website/web/`
All changes are marked in blue. Comments where necessary are emphasized in the text. Deleted questions are still pasted.
Note that this template only focuses on research and not teaching aspects which will be evaluated in separate step.

1 Publication

DOI _____

Paper title (automatically added via doi)

Year of publication (automatically added via doi)

Top papers currently selected:

☐ This is one of my best papers.

Contribution type and impact

Article type [SC] [1]

☐ Empirical paper

☐ Meta-Analysis

☐ Theoretical contribution / Review

☐ Methods article

[1] *Currently in the app a multiple choice item. Needs to be adjusted so that the subselection for methods articles works.*

☐ Other (please specify)

If "Methods article" is selected, an additional choice appears:
Please choose those boxes that represents the article best [MC].

☐ Methodological development *(e.g., conceptual or theoretical developments that propose quantitative methods, or provide conceptual comparisons between such methods)*[2]

☐ Performance evaluation *(e.g., simulation studies or sensitivity analysis)*

☐ Method dissemination or illustration *(e.g., new software implementation or tutorial-type papers, application of state-of-the-art methodology with an empirical data set and/or didactic purpose)*

All remaining blocks here are specific for methods articles. If empirical article etc. is selected, the template does not show these options and the original template is used (e.g., experiments or evaluation studies that fall under the general area of methods professorships can be listed under the original template)

Publication status [SC]

☐ Published paper / Paper in press (peer reviewed)

☐ Preprint

☐ Conference proceeding

☐ ~~Stage 1 registered report with IPA~~

☐ Monograph

☐ Book chapter

☐ Test or instrument

☐ Other (please specify)

Does this contribution fit well into the assessment scheme? [SC] (If 'No': Skip all other indicators; the paper will not be included in the scoring but processed manually)

☐ No, it should be processed manually (provide explanation)

☐ Yes

[2]The term "quantitative method" is used here in a broad fashion and includes the derivation of a new model for specific contexts, a different estimator, or the adaptation of existing estimators or methods to new problems (typically in psychological science).

~~**Is this paper a multi-study paper?**~~ [3]

Scientific contribution [SC] *Optional new item based on article comment. Objective judgment only for external referees (no self-evaluation).*

Please categorize the contribution:

- ☐ Major (e.g., completely new approach/quantitative method for a relevant problem, a simulation with comparisons of different quantitative methods under a large set of conditions, a tutorial paper with detailed software implementation or an open-source software publication. The paper should provide an original and outstanding idea or information that substantially advances the field of methodological research, or offers substantial educational value for the dissemination of methods to researchers from applied fields)

- ☐ Relevant (e.g., an adaptation of existing approaches/quantitative method, for instance for improved power or different application fields, a simulation study that focuses on a specific aspect but is general enough to be applied to many scenarios, a tutorial paper for an established procedure that focuses on applied users with less experiences. The results provide new information and are, for example, in line with a series of similar publications.)

- ☐ Minor (e.g., a variation of an existing approach/quantitative method for a specific data type, a medium-sized simulation study for a specific set of conditions, a short tutorial paper.)

CRediT roles [MC] [4]

Please indicate your individual contributions to the publication. You can get a description of each role by clicking on the name of each role. Where multiple individuals serve in the same role, the degree of contribution should be specified as 'lead', 'equal', or 'supporting'.

- lead: You were the single leader for this specific activity. If you are the only person in a specific role, choose 'lead'

- equal: You contributed equally to this activity, together with one or more other contributors (Choosing this option implies that no other co-author would choose the 'lead' option, and at least one other co-author would choose the 'equal' option).

- supporting: You had a supporting role, which was below the contribution of a leading or equal role.

[3] Irrelevant for methods articles.

[4] *The CRediT roles are based on the official roles here* `https://credit.niso.org/` *and here* `https://www.elsevier.com/researcher/author/policies-and-guidelines/credit-author-statement`. *We agreed with the RESQUE-AG not to develop a new set of roles, and instead adapt the original ones. Some roles needed additional clarification because they might be ambiguous for methodological articles (especially the roles of conceptualization, formal analysis, investigation, and methodology). Here we propose a clear definition with examples as guidelines to provide objective reports.*

- no role: You did not contribute substantially to that activity.

- n/a: This role was not relevant for the research.

- **Conceptualization**: Article content (Ideas; formulation or evolution of overarching research goals and aims. In methods articles, this refers to overall conceptualization of an quantitative method, which is typically addressed in an introductory part of a journal article. It refers more to the general applicability of the method and its necessity than its actual statistical derivation that is rated under Methodology.)

- Data curation (Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse. This applies to both empirical and simulated data.)

- **Formal analysis** (Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data. This aspect includes designing, implementing, conducting and summarizing simulation studies or analyses of empirical data. This aspect is less relevant in theoretical articles when no simulation study is conducted nor actual data sets are analyzed.)

- Funding acquisition (Acquisition of the financial support for the project leading to this publication. *OK.*)

- **Investigation** (Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection. This aspect typically does not apply to methods articles except when actual experiments with e.g., human subjects are included. The conduction of simulation studies is part of the Formal analysis role above.)

- **Methodology** (Development or design of methodology; creation of models. Development of a quantitative method or a new estimator, proofs or other theoretical derivations that typically can be found in the model, methods and/or estimator sections of a methods article.)

- Project administration (Management and coordination responsibility for the research activity planning and execution. *OK.*)

- Resources (Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools. *OK.*)

- **Software** (Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components. *OK.*)

- Supervision (Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team. *OK.*)

- Validation (Verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs. *OK.*)
- Visualization (Preparation, creation and/or presentation of the published work, specifically visualization/data presentation. *OK.*)
- Writing - original draft (Creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation). *OK.*)
- Writing - review & editing (Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages. *OK.*)

Open Science

Does this paper use any kind of data in a substantive way (new data, reuse of existing data, or simulated data?) [SC]

- ☐ No
- ☐ Yes

If yes: What kind of data do you use? (check all that apply) [MC]

- ☐ Own new data collection (own new empirical data collection such as gathering data through direct observation or experimentation, conducting surveys, experiments, field studies, or web-scraping.)
- ☐ Reuse of someone else's existing data set
- ☐ Reuse of own existing data set
- ☐ Completely synthetic/simulated data
- ☐ Partly synthetic/simulated data (i.e., an existing empirical data set that was then manipulated artificially)
- ☐ Aggregating (own or other's) existing data sets (e.g., from literature reviews, archival research, theoretical analysis, or data mining from databases.)

Comment HB: What is the plan with machine learning or large language models? Data is used to train the models in a very different way than what can be subsumed here? Any ideas?

~~**If yes: Type of data (check all that apply)**~~ *Irrelevant*

If yes: Is the raw data available as open source? [SC]

- ☐ Not applicable [provide explanation such as: If legal regulations or binding conditions of the data provider prohibit data publication and not even restricted access is possible.]
- ☐ Not available
- ☐ Yes, parts of the data (e.g., only empirical data but not synthetic data) [provide doi or URL]
- ☐ Yes, all data (including synthetic/simulated data, e.g., via replicable scripts or as actual data set)[5] [provide doi or URL]

Only if 'own new data collection' is yes or if data was partly or completely synthetic/simulated: Is the data in FAIR format? [MC]

- ☐ The data set has a globally unique, citable and persistent identifier (e.g., DOI, PURL, ARK)
- ☐ All variables are comprehensively described in a codebook with a structured format or in an annotated syntax
- ☐ The data set is stored in a structured, open format (e.g., .csv, .tsv, .tab, .txt, .json; not .sav, .xlsx, .pdf) or can be generated using open source software (such as `R`)

Only if 'own new data collection' is yes or if data was partly or completely synthetic/simulated: Preregistration [6]

- ☐ Not applicable [provide explanation e.g., preregistration was not available for simulation studies when the study was conducted or it was not deemed valuable/useful due to the purely exploratory nature of the simulation study.]
- ☐ No
- ☐ Yes (but not RR) [provide doi or URL]
- ☐ Registered Report [provide doi or URL]

[5] *We decided against a separation of replicable scripts and actual data sets because simulation studies can produce large amounts of data and it often depends on the details if it is more feasible to provide the data in one or the other way.*

[6] *We included this option for future purposes. We are aware that the current scientific status does not yet provide standard tools and websites that are suitable for pregistration of simulation studies. We will address this topic at the members meeting in September.* A paper on this topic can be found here: `https://doi.org/10.31234/osf.io/ufgy6` and a new template from the same authors (Siepe et al.) here `https://www.overleaf.com/latex/templates/ademp-prereg-simulation-study-template/dkhtxjtmpbfj`

Open reproducible scripts [SC]

- ☐ Not applicable [provide explanation, e.g., paper is purely theoretical]
- ☐ Not available [provide explanation, e.g., closed black box software like Mplus or SPSS; or experimental black box standalone software]
- ☐ Yes, parts of scripts (e.g., example code for the empirical example) [provide doi or URL]
- ☐ Yes, entire scripts (e.g., including reproducible simulation study code)[provide doi or URL]
- ☐ Yes, as open source software package [provide doi or URL]
- ☐ Yes, as virtual machines [provide doi or URL]

If yes: Is the script in FAIR format? [MC]

- ☐ The code has an explicitly stated open license (e.g., BSD, CC-BY, (L)GPL, MIT)
- ☐ Timestamped repository
- ☐ Version control
- ☐ Reproducible manuscripts (e.g. with R Markdown)
- ☐ Proper documentation of code
- ☐ Reproducible software environment (e.g. conda environment, renv or groundhog in R)

(*If yes: Reproducibility Standards*) [MC?] *This question is currently revised by the original RESQUE authors.*

- ☐ Sufficiency: Project contains everything necessary to reproduce the results (all data, scripts, and supplementary information)
- ☐ Soup-to-Nuts: The entire analysis pipeline is contained, including preprocessing of the primary (raw) data.
- ☐ Portability: Any user is able to run the scripts on their own computer/workspace
- ☐ (Almost) One-click reproducibility with a master script (or equivalent)

Correctness of computational results has been independently verified [7]

- ☐ Not applicable [provide explanation, e.g., independent verification systems were not established at time of publication.]
- ☐ No / not published
- ☐ Workflow reproducibility / code completeness check
- ☐ Computational reproducibility of MAIN results has been independently verified using the original code
- ☐ Computational reproducibility of ALL numerical results has been independently verified using the original code
- ☐ Analysis replication (independent implementation & verification)

~~**Open materials (beyond the open reproducible scripts entered above)**~~ *Redundant with question on open reproducible scripts.*

~~**The paper contains a preregistered replication attempt (either direct/close or conceptual)**~~ *Delete. At least currently, replications of simulation studies are extremely rare/uncommon.*

~~**Theory usage and development**~~ *Open point for future research.*

~~**Sample size and power considerations**~~ *Open point for future research.*[8]

Merit Statement Please indicate why this research output made an important contribution to the field and why it should be considered during the hiring / promotion process. The box will expand when you enter text.

Merit / impact statement (narrative, max. 150 words)

(optional) General comments (max. 500 words)

(optional) How well did the scheme (except your merit statement) cover the merits of this research output?

[7] *Again, this question will become more relevant in the future. Current practices often do not include these kinds of verification, particularly not in a structured form. A response "Not applicable" is likely the most frequent one encountered with current methods articles.*

[8] *This aspect needs a thorough preparation that goes beyond what we can achieve for a timely initial draft.*

2 Software Package

The template for the software package will not be changed. Only with regard to the possible points, we propose to change it so that the maximum of a publication is identical to the maximum of a software package (currently, software packages can receive twice as many points).