TiSEM Guideline Replication Package

Upon publishing your research project, a replication package needs to be completed and archived[1]. The replication package must be stored digitally in a secure and robust manner with automatic backups as the default: at a TiU approved server and/or at Dataverse[2] (preferred)[3]. The replication package should remain available for at least ten years following the definite publication date of the article.

The replication package consists of six elements:

(1) **Metadata and data collection:** The replication package must include metadata providing information on:
    a. when and by whom each file in the package was created and edited (for example a digital log book)
    b. who has/had access to the package
    c. if an ethical review has been carried out: the protocol number, instance
    d. role of each author/co-author (for example : 'devising and organizing the project', 'data collection', 'data analysis' and 'article writing')
    e. if applicable, who collected the data, where and at what location (can be a third party)
    f. If applicable, in the case of data from existing databases and repositories: the origin, version and date
    g. in case of external finance / grants: instance, grant number
    h. date of acceptance manuscript (include reference, e.g. DOI)

(2) **Raw data** (if applicable): The replication package must contain the 'raw data' as initially available to the TiSEM staff member digitally or in digitized form (e.g. scans of paper questionnaires). This must be a read-only file that is time marked and cannot be edited after storage. The raw data should be fixed upon completion of the data collection. The date of fixation of the source data must be registered in the replication package. This file is generally created when the data becomes available, i.e. before the article is written. Data in the raw dataset must be anonymized in accordance with ethical guidelines and applicable regulations (e.g. GDPR). The replication package must *not* include information that identifies persons or completed consent forms (which must also be retained unless other arrangements have been made on account of ethical objections). If applicable, the information letter and blank consent form should be included. In the case of non-digital source material (physiological findings, audio recordings, paper questionnaires, etc.) it must be stated where this is stored and how the data can be traced. Note: The raw dataset is the first dataset obtained digitally by the TiSEM staff member. Ideally this should be first digital file created by anyone, but in cases where datasets/secondary datasets from third parties or files e.g. downloaded from data repositories or other types of publicly available databases are used this file may also mean these. Self-collected data means data such as entered

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[1] Tilburg University Research Data Management Regulations and the Netherlands Code of Conduct for Research Integrity
[2] Tilburg University Dataverse is a trusted repository, managed by the TiU Research Data Office which also provides support depositing the data.
[3] If your co-author at another institution is responsible for the replication package or if the replication package is deposited at the journal of publication, please provide the link or other information about where the replication package is stored.

questionnaires or data collected by means of online surveys, computers or measuring tools. In the case of 'paper' questionnaires or documents the researcher is expected to take responsibility for scanning or otherwise storing these paper questionnaires or documents. If ethical guidelines, insurmountable logistical problems, privacy-related reasons or formal property rights make it impossible for the entire raw dataset to be included in the replication package by the TiSEM staff member this must be made sufficiently clear and reasoned, with documentation, in a file in the replication package. In such cases the aim should be to include in the replication package a random sample from the original dataset or a screenshot of part of the raw data. Researchers must strive for transparency in the case of such data management limitations (e.g. by means of a mention in the author's note to the article). According to the Netherlands Code of Conduct for Research Integrity the data need to be available in the event of an investigation into alleged research misconduct.

(3) **Material:** The replication package must contain all the digital research material (or material for scanning) used in the research project that is needed to replicate the research, including questionnaires, stimuli, instructional texts, experiment leader protocols, video material, software for simulation studies, etc. Any references made to the source of material published elsewhere must be accurate and sufficiently specific. Note: The principle of replicability applies here. The research can in principle be replicated by a peer, based on the documents in the package without the need for additional information.

(4) **Programming code and/or statistical processing:** The replication package must contain syntax, programming code, computer scripts or statistical logbooks so that analyses such as those reported in the article can be replicated. Note: The options here include not only those in SPSS and other statistical software to create the syntax automatically, but also e.g. commands in R or other types of programs. If the statistical software used makes it impossible to save commands automatically, a logbook should be kept specifying the analytical steps employed in an understandable manner.

(5) **Processed database** (if applicable)**:** The replication package must include a sufficiently documented and processed database enabling a peer to replicate the analyses reported in the article 'independently' without the need for additional information. Note: Again, the principle of replicability applies here. A good test of whether documentation is sufficiently specific for peers is to have one of the co-authors replicate the analyses (or part of them) as a check.

(6) **Accepted or published manuscript or publication**: An electronic version of the published manuscript is sufficient for this, this can also be a unique referral, for example a DOI.

The replication package must be available to all the co-authors of the article and in any event to at least two persons. The second person may be a co-author at or outside TiSEM. In the case of PhD research this role may be performed by supervisors/co-supervisors, and in the case of research by senior researchers the manager may perform this role. Any restrictions on the use of research data, e.g. in follow-up research, for persons with access may be laid down contractually but should not in principle present an obstacle to the verification of results in articles. Note: The principle here is that co-authors share responsibility for the handling and statistical processing of the data and the reporting of the results.

Checklist replication package

Metadata and data collection

☐ Logbook with when each file was created, who created that file and who edited the file and when it was edited

☐ Who had/has access to the package

☐ Ethical review

☐ Role of each author/co-author

☐ Who, where and when is the data collected (if applicable)

☐ If an existing database is used: add original version and date (if applicable)

☐ In case of external finance/grants, specify who provided these

☐ Date of acceptance manuscript (include reference, e.g. DOI)

Raw Database (if applicable)

☐ All anonymized data collected during the data collection. Not included: information that identifies persons and/or completed consent forms (if applicable, the information letter and blank consent form are included)

☐ In case of non-digital materials, specify where this is stored and how the data can be traced

☐ In case the data is stored elsewhere in an external archive, add the source reference

Material

☐ All digital material is in the replication package

Statistical processing

☐ Syntax / Scripts / Code (e.g. Python or R)

Processed database (if applicable)

☐ Sufficiently documented and processed database

Accepted or published manuscript or publication

➔ The replication package should be retained and remain available for at least ten years.

➔ The replication package must be stored digitally in a secure and robust manner with automatic backups as default.