Masterarbeit: Exposé / Prä-Registrierung

Preregistration for Quantitative Research in Psychology (PRP-QUANT) Template

Title

T1 Title
The title should be focused and descriptive, using relevant key terms to reflect what will be done in the study. Use title case (https://apastyle.apa.org/style-grammar-guidelines/capitalization/title-case).
Conducted as planned? A detailed comparison of studies and their preregistered plans Durchgeführt wie geplant? Ein detaillierter Vergleich zwischen Studien und ihren prä-registrierten Plänen

T2 Contributors, Affiliations, and Persistent IDs (recommend ORCID iD)
Provide in separate entries the full name of each contributor, each contributor's professional affiliation, and each contributor's persistent ID. See ORCID iD for an example of persistent ID (https://orcid.org/). Optional: include the intended contribution of each person listed (e.g. statistical analysis, data collection; see CRediT, https://casrai.org/credit/).
Researchers: Emma Weaver: Master student in psychology at the University of Trier Sophia Rehbein: Master student in psychology at the University of Trier Supervisors: Lisa Spitzer: PhD student at the Leibniz Institute for Psychology (ZPID); ls@leibniz-psychology.org Michael Bosnjak: Director of the Leibniz Institute for Psychology (ZPID)

T3 Date of Preregistration

This is assigned by the system upon preregistration submission.

T4 Versioning information

This is assigned by the system upon submission of original and subsequent revisions. Should be a persistent identifier, if not a DOI.

T5 Identifier

This unique identifier is assigned by the system upon submission.

T6 Estimated duration of project

Include best estimate for how long the project will take from preregistration submission to project completion.

Five months (April 2021 until the end of August 2021)

T7 IRB Status (Institutional Review Board/Independent Ethics Committee/Ethical Review Board/Research Ethics Board)

If the study will include human or animal subjects, provide a brief overview of plans for the treatment of those subjects in accordance with established ethical guidelines. If appropriate institutional approval has been obtained for the study, provide the relevant identifier here. If the study will be exempt from ethical board review, provide reasoning here.

not applicable

T8 Conflict of Interest Statement

Identify any real or perceived conflicts of interest with this study execution. For example, any interests or activities that might be seen as influencing the research (e.g., financial interests in a test or procedure, funding by pharmaceutical companies for research).

We declare that the research was conducted in the absence of any conflict of interest.

T9 Keywords

Include terms specific to your topic, methodology, and population. Use natural language and avoid words used in the title or overly general terms. If you need help with keywords, try a keyword search using your proposed keywords in a search engine to check results.

Psychology, preregistration, open science, transparency

T10 Data accessibility statement and planned repository

"We plan to make the data available (yes / no)
If "yes", please specify the planned data availability level by selecting one of the options:

- Data access via download; usage of data for all purposes (public use file)
- Data access via download; usage of data restricted to scientific purposes (scientific use file)
- Data access via download; usage of data has to be agreed and defined on an individual case basis
- Data access via secure data center (no download, usage/analysis only in a secure data center)
- Data available upon email request by member of scientific community
- Other (please specify)

yes

- Data available upon email request by member of scientific community

T11 Optional: Code availability

We plan to make the code available (yes / no).
If "yes", please specify the planned code availability level (use same descriptors of data in T10).

yes

- Code available upon email request by member of scientific community

T12 Optional: Standard lab practices

Standard lab practices refer to a (timestamped) document, software package, or similar, which specifies standard pipelines, analytical decisions, etc. which always apply to certain types of research in a lab. Specify here and refer to at the appropriate positions in the remainder of the template:
We plan to make the standard lab practices available (yes / no).
If "yes", please specify the planned standard lab practices availability level (use same descriptors of data in T10).

not applicable

Abstract (written by Emma Weaver)

A1 Background

(See introduction I1)

A current problem in research is that the bias against studies with negative results is increasing sharply in the social sciences, including psychology (Fanelli, 2012). Increasing publication pressure is also increasing the rate of positive outcome rates. Thus, positive outcome rates are inflated by publication bias, among other factors (Scheel et al., 2020). Preregistration is one possible solution to avoid publication bias, especially with Registered Reports. Other advantages of preregistration are a transparent approach, as well as the detection and avoidance of questionable research practices, such as multiple testing, selective reporting of results, hypothesizing after the results are known (HARKing) or p-hacking (Bakker, Dijk & Wicherts, 2012; Nelson, Simmons & Simonshon, 2011; Nosek Ebersole, DeHaven & Mellor, 2018; Lindsay, Simons & Lilienfeld, 2016).
However, just because a study has been preregistered does not mean that the authors will adhere to all aspects of that preregistration. This is shown in a study by Claesen and Gomes (2019), who took a closer look at 27 preregistered studies and examined them for deviations between the published study and the previous preregistration. They revealed that there were discrepancies in all 27 preregistered studies. Only one of the 27 studies (3.7%) fully disclosed all discrepancies. In the other 26 studies (96%), at least one deviation was not fully disclosed, with eight of these studies (30%) not fully disclosing any deviation.

The goal of this study is to investigate whether most of the deviations today still occur in the methodological aspects of sample size, exclusion criteria, and analysis, as in the study by Claesen and Gomes (2019). Claesen and Gomes (2019) examined published studies for deviations from their preregistrations. The study by Claesen and Gomes (2019) serves as the basis for this study, although deviations will be considered in more detail in this study. Across the various methodological aspects (hypothesis/research question, variables, sample size, exclusion criteria, analysis), the goal is to look at what changes were added, omitted, or modified from the preregistration to the published study. Another goal of this study is to be able to determine whether researchers are now better adhering to their preregistration and whether there are fewer deviations by comparing the study by Claesen and Gomes (2019) and this study.

A2 Objectives and Research questions

(See introduction I2)

The goal of this study is to provide a more detailed comparison between studies and their preregistrations. The aim is to uncover in which areas deviations occur most frequently. Furthermore, it will be investigated whether the preregistrations have improved over time and whether researchers now adhere better to their preregistrations and there are fewer deviations. Furthermore, it will be investigated whether a new, more detailed coding of the 27 preregistrations by Claesen and Gomes (2019) leads to fewer deviations compared to their original coding.

Research question 1
In which methodological aspects of preregistrations do (undisclosed) deviations primarily occur? Are there systematic differences in deviations over different methodological aspects?

Research Question 2:
Does a new, more detailed coding have an impact on the number of deviations in the 27 preregistrations by Claesen and Gomes (2019)? And did researchers become better at preregistering or adhering to preregistered plans? (Comparison to the results of Claesen und Gomes, 2019)

A3 Participants

(See methods M4)

Sample 1: New studies and more detailed coding
This sample includes 27 preregistrations from 18 articles published between June 2020 and March 2021 and coded according to our new detailed coding scheme.

Sample 2: Original studies and more detailed coding
This sample consists of 27 preregistrations from the original 16 articles by Claesen and Gomes (2019), which are coded according to our new detailed coding scheme

Sample 3: Original studies and original coding
This sample consists of 27 preregistrations from the original 16 articles by Claesen and Gomes (2019), which have already been coded by Claesen and Gomes according to their original coding scheme.

A4 Study method

(See methods M10-14)

This study is an extension of Claesen and Gomes (2019) study, using the original preregistration set by Claesen and Gomes (2019) to add a new, more detailed coding scheme and in addition a new sample of 27 preregistrations.

Introduction (written by Emma Weaver)

I1 Theoretical background

Provide a brief overview that justifies the research hypotheses.

Definition of preregistrations
Preregistration is about setting up the study plan before data collection/sighting. This plan is usually documented using a *Template*. The preregistration template should contain the following items: hypothesis and/or research question, dependent and independent variables, sample size, exclusion criteria, study procedure, and planned statistical analyses. The preregistration is saved in an online archive, where this file is time-stamped and cannot be edited. The goal here is to clarify which hypotheses and analyses were established a priori and which were added exploratively during the course of the study (Nosek et al., 2018).

Why is it important to preregister a study?
A current problem in research is that the bias against studies with negative results is increasing sharply in the social sciences, including psychology (Fanelli, 2012). Increasing publication pressure is also increasing the rate of positive outcome rates. Thus, positive outcome rates are inflated by publication bias, among other factors (Scheel et al., 2020). In a study by Fanelli (2010), positive outcome rates were found to differ across disciplines. The highest percentage of positive outcomes was shown in psychology and psychiatry at 91.5%.
Advantages of preregistration are a transparent approach (which analyses were planned a priori and which were added post hoc?), as well as the detection and avoidance of questionable research practices, such as multiple testing, selective reporting of results, hypothesizing after the results are known (HARKing) or p-hacking (Bakker, Dijk & Wicherts, 2012; Nelson, Simmons & Simonshon, 2011; Nosek et al., 2018; Lindsay, Simons & Lilienfeld, 2016). Preregistration is also one possible solution to avoid publication bias, especially with Registered Reports.

But: preregistration ≠ adhere to it
However, just because a study has been preregistered does not mean that the authors will adhere to all aspects of that preregistration. This is shown in a study by Claesen and Gomes (2019), who took a closer look at 27 preregistered studies and examined them for deviations between the published study and the previous preregistration. They wanted to examine the following areas for deviations: *hypothesis/ research question, variables, sample size, exclusion criteria, procedure, analysis*. Claesen and Gomes (2019) revealed that there were discrepancies in all 27 preregistered studies. Only one of the 27 studies (3.7%) fully disclosed all discrepancies. In the other 26 studies (96%), at least one deviation was not fully disclosed, with eight of these studies (30%) not fully disclosing any deviation, whereas the remaining 18 of the 26 studies (66%) fully disclosed at least one deviation. Most of the undisclosed deviations were in the areas of *sample size, exclusion criteria* and *analysis*.

Goal of this study

1. **One goal is to look at the proportion of deviations separately for the different methodological aspects.** The focus is on whether most deviations today still occur in the methodological aspects of *sample size, exclusion criteria,* and *analysis*, as in the study by Claesen and Gomes (2019).
2. **To provide a fair, more detailed comparison between preregistrations and published studies**. For this purpose, the study by Claesen and Gomes (2019) is extended. Claesen and Gomes (2019) divided their investigated studies into the three groups "*no deviations*", "*disclosed deviations*" and "*undisclosed deviations*". This study now goes one step further into detail and looks for the different methodological aspects (*hypothesis/research question, variables, sample size, exclusion criteria, analysis*) which changes were added, omitted or modified from the preregistration to the published study.
3. Another goal of this study is a **time comparison** between the published preregistered studies, from February 2015 to November 2017, of the study by Claesen and Gomes (2019) and the published preregistered studies, between June 2020 and March 2021, of this study, to determine if researchers are now adhering better to their preregistration and if there are less deviations.

I2 Objectives and Research question(s)

Outline objectives and research questions that inform the methodology and analyses (below).

The goal of this study is to provide a more detailed comparison between studies and their preregistrations. The aim is to uncover in which areas deviations occur most frequently. Furthermore, it will be investigated whether the preregistrations have improved over time and whether researchers now adhere better to their preregistrations and there are fewer deviations. Furthermore, it will be investigated whether a new, more detailed coding of the 27 preregistrations by Claesen and Gomes (2019) leads to fewer deviations compared to their original coding.

Research question 1
In which methodological aspects (research question and/or hypothesis, list of variables, sample size, exclusion criteria and analysis) of preregistrations do (undisclosed) deviations primarily occur? Are there systematic differences in deviations over different methodological aspects?

Research Question 2:
Does a new, more detailed coding have an impact on the number of deviations in the 27 preregistrations by Claesen and Gomes (2019)? And did researchers become better at preregistering or adhering to preregistered plans? (Comparison to the results of Claesen und Gomes, 2019)

I3 Hypothesis (H1, H2, …)

Provide hypothesis for predicted results. If multiple hypotheses, uniquely number them (e.g., H1, H2a, H2b,) and refer to them the same way at other points in the registration document and in the manuscript.

H1a: In some methodological aspects, more deviations are made than in others.

H1b: In some methodological aspects, the percentage of undisclosed deviations is higher than in others.

H1c: In some methodological aspects there is more deviation from the preregistered plan in percentage terms than in others.

H2a: The new, more detailed coding as well as the introduction of a tolerance range of the study by Claesen und Gomes (2019) leads to fewer deviations than their original coding.

H2b: There are generally fewer deviations in the new sample compared to the original sample examined by Claesen und Gomes (2019).

I4 Exploratory research questions (if applicable; E1, E2, ...)

If planning exploratory analyses, provide rationale for them here. If multiple exploratory analyses, uniquely number them (E1, E2, ...) and refer to them in the same way in the registration document and in future publications.

E1: How many deviations occur in which methodological aspects?

E2: Do deviations mainly consist of additions, omissions, or changes to the preregistered methods?

E3: What is the percentage of those deviations that were disclosed or not disclosed?

E4: What is the number of preregistrations in which there was no deviation?

E5: Does the specific template used influence the rate of deviations? (For example, are preregistrations based on very extensive templates more likely to show adherence to the preregistered plans?)

E6: Does the length of the preregistrations (measured in the word count of the preregistration) have an impact on the number of deviations?

Method (Up to M9 written by Emma Weaver; from M10 "Conditions and design" written by Sophia Rehbein)

M1 Time point of registration
Select one of the options: ● Registration prior to creation of data ● Registration prior to any human observation of the data ● Registration prior to accessing the data ● Registration prior to analysis of the data ● Other (please specify; might include if T1 longitudinal data has been analyzed, but T2 has not yet been analyzed)
● Registration prior to analysis of the data

M2 Proposal: Use of pre-existing data (re-analysis or secondary data analysis)
Will pre-existing data be used in the planned study? If yes, indicate if the data were previously published and specify the source of the data (e.g., DOI or APA style reference of original publication). Specify your level of knowledge of the data (e.g., descriptive statistics from previous publications), whether or not this is relevant for the hypotheses of the present study, and how it is assured that you are unaware of results or statistical patterns in the data of relevance to the present hypotheses.
This study is an extension of the study published in 2019 by Claesen and Gomes (10.31234/osf.io/d8wex). Accordingly, the original preregistration coding scheme of Claesen and Gomes (2019) is used to develop a new, more detailed coding scheme from it. Sample 2 and 3 correspond to the sample of the original study by Claesen and Gomes (2019). Sample 2 consists of the original sample of Claesen and Gomes (2019) coded according to the new, more detailed coding scheme, whereas sample 3 also corresponds to the original sample of Claesen and Gomes (2019), but coded according to the original coding scheme.

Sampling Procedure and Data Collection

M3 Sample size, power and precision

(1) Relevant sample sizes: e.g., single groups, multiple groups, and sample sizes (or sample ranges) found at each level of multilevel data. (2) Provide power analysis (e.g. power curves) for fixed-N designs. For sequential designs, indicate your 'stopping rule' such as the points at which you intend to be viewing your data and in any way analyzing them (e.g., t-tests and correlations, but even descriptively such as with histograms).

Sample Size
To ensure comparability of this study with the study by Claesen and Gomes (2019), the two researchers will first code the 27 preregistrations of the sixteen articles from the original study by Claesen and Gomes (2019) using the new, more detailed coding scheme. They will then code an additional 27 preregistrations from 18 articles from the journal *Psychological Science*, namely those articles that meet the inclusion and exclusion criteria for the articles (see M4). This results in a total number of a maximum of 54 preregistrations that will be coded according to our new coding scheme, coded by both raters. If studies of the original sample by Claesen and Gomes (2019) need to be excluded, the number of studies in the new sample will be reduced too. So that sample 1 and samples 2 and 3 consist of an equal number of preregistrations.

Power
Because of the specification of 27 new preregistrations to better draw comparisons to the 27 original preregistrations of Claesen and Gomes (2019), a power analysis prior to the start of the study is not useful. Instead of this, test power will be calculated as part of the study.

M4 Participant recruitment, selection, and compensation

Indicate (a) methods of recruitment (e.g., subject pool advertisement, community events, crowdsourcing platforms, snowball sampling); (b) selection and inclusion/exclusion criteria (e.g., age, visual acuity, language facility); (c) details of any stratification sampling used; (d) planned participant characteristics (gender, race/ethnicity, sexual orientation and gender identity, SES, education level, age, disability or health status, geographic location); (e) compensation amount and method (e.g., same payment to all, pay based on performance, lottery).

The study includes three different samples:

Sample 1: New studies and more detailed coding
This sample includes 27 preregistrations from 18 articles published between June 2020 and March 2021 and coded according to our new detailed coding scheme.

Sample 2: Original studies and more detailed coding
This sample consists of 27 preregistrations from the original 16 articles by Claesen and Gomes (2019), which are coded according to our new detailed coding scheme

Sample 3: Original studies and original coding
This sample consists of 27 preregistrations from the original 16 articles by Claesen and

Gomes (2019), which have already been coded by Claesen and Gomes according to their original coding scheme.
The articles selected for this study meet the following selection criteria:

1. All Articles were selected from the journal *Psychological Science*, because
   - the journal offers a preregistration badge
   - the journal offers open access for at least part of their studies
   - the impact factor of this journal is above 1.00 (this corresponds to the top 80% in the research field of psychology → Source: https://www.scijournal.org/articles/good-impact-factor)
   - all articles from this journal contain psychological content
     → this approach allows a better comparison of this study and the study by Claesen and Gomes (2019)

2. Selection criteria for articles:
   - only articles with a preregistration badge available
   - only articles with open access or which are available with an university license of University Trier
   - only articles with psychological content
   - no Registered Reports
   - no study with a preregistration after the data was already analysed
   - no studies with more than five preregistrations within one article (to allow for variance in the articles)
   - only articles published after November 2017 (to allow comparison of any temporal differences with the study of Claesen and Gomes (2019))

The preregistrations of the articles that meet all of the above inclusion and exclusion criteria were examined more closely for two additional exclusion criteria Accessibility Score and Minimal methodological detail score. Only preregistrations with an accessibility score of six as well as only articles with a minimal methodological detail score of six will be included in this study. If a respective score of six cannot be achieved, the preregistration is excluded. These two scores result from the sum values of the respective criteria. The criteria are coded as follows:
1 = the criterion is fulfilled
0 = the criterion is not fulfilled

1. **Accessibility Score**:
   - The preregistration cannot be removed. On the OSF this means that the preregistration is stored on a frozen page.
   - The preregistration cannot be edited. On the OSF this means that the preregistration is stored on a frozen page.
   - There should be a time stamp of the day the preregistration is created (uploaded).
   - A preregistration should be accessible by anyone with an internet connection.
   - The amount of time and effort to find the preregistration or to reconstruct all information to one preregistration, should not be too high.
   - The preregistration is stored on an acknowledged third party repository, for instance the OSF, PsychArchives, or AsPredicted.
2. **Minimal methodological detail Score**:
   - Does the preregistration contain an hypothesis and/or a research question?
   - Does the preregistration contain dependent and independent variables?
   - Does the preregistration contain a planned sample size and/or stopping

rule?
- Does the preregistration contain any planned exclusion criteria?
- Does the preregistration contain a procedure?
- Does the preregistration contain some kind of statistical model/ analysis?

Based on these inclusion and exclusion criteria as well as based on achieving an accessibility score of six and a minimal methodological detail score of six, 27 preregistrations from 18 articles were found. These new 27 preregistrations form sample 1. Sample 2 and 3 contain the 27 preregistrations of the original study by Claesen and Gomes (2019).

M5 How will participant drop-out be handled?

Indicate any special treatment for participants who drop out (e.g., there is follow-up in a manner different from the main sample, last value carried forward) or whether participants are replaced.

not applicable

M6 Masking of participants and researchers

Indicate all forms of masking and/or allocation concealment (e.g., administrators, data collectors, raters, confederates are unaware of the condition to which participants were assigned).

Because of the classification of the studies into the three samples, based on whether they are preregistrations from the original study by Claesen and Gomes (2019), or newly coded preregistrations, both raters know which preregistration they are assigning to which sample and masking is not possible.

M7 Data cleaning and screening

Indicate all steps related to data quality control, e.g., outlier treatment, identification of missing data, checks for normality, etc.

Prior to this preregistration
Before the submission of this preregistration, based on the exclusion criteria for articles (M4), studies that were still eligible were prescanned. The prescreening consisted of the accessibility and minimal methodological detail score. Only preregistrations with an accessibility and minimal methodological detail score of six are going to be included in the study. This prescreening served to assess whether 27 preregistrations could be reached at all. It was found that 27 preregistrations met the criterion of accessibility and minimum methodological detail of six, and thus are included in further analyses. During the prescreening process the accessibility score and minimal methodological detail score of the first ten preregistrations of the new sample were coded by both rates, to ensure that differences or ambiguities could be resolved through discussion.
To test the new detailed coding scheme 2 studies were already coded by both raters.

Following this preregistration
Both raters will code all 54 preregistrations with respect to adherence dimensions (M13). If any uncertainties or doubts arise during the coding process regarding the correct coding, these must be addressed and discussed between the two raters in order to create agreement and clarity for the further coding process.
After successful coding of all 54 preregistrations, all data is going to be transferred to R to start the statistical analyses.

M8 How will missing data be handled?

Indicate any procedures that will be applied during the analysis to deal with missing data, such as (a) case deletions; (b) averaging across scale items (to handle missing items for some); (c) test of missingness (MAR, MCAR, MNAR assumptions; (d) imputation procedures (FIML vs. MI); (e) Intention to treat analysis and per protocol analysis (as appropriate).

not applicable

M9 Other information (optional)

For example, training of raters/participants or anything else not yet specified.

Test phase new coding scheme
To test the new detailed coding scheme 2 studies were coded by both raters. Any uncertainties or doubts during the coding process regarding the correct coding, were addressed and discussed between the two raters in order to create agreement and clarity for the further coding process.

Conditions and design

M10 Type of study and study design

Indicate the type of study (e.g., experimental, observational, crosssectional vs. longitudinal, single case, clinical trial) and planned study design (e.g., between vs. within subjects, factorial, repeated measures, etc.), number of factors and factor levels, etc..

Type of study
This study is an extension of Claesen and Gomes (2019) study, using the original preregistration set by Claesen and Gomes (2019) to add a new coding scheme and in addition a new sample of 27 preregistrations.

Study design
This study contains a within-subject design as well as a between-subject design.

M11 Randomization of participants and/or experimental materials

If applicable, describe how participants are assigned to conditions or treatments, how stimuli are assigned to conditions, and how presentation of tests, trials, etc. is randomized. Indicate the randomization technique and whether constraints were applied (pseudo-randomization). Indicate any type of balancing across participants (e.g., assignments of responses to hands, etc.).

Due to the study design and the classification of the three samples a randomized assignment of the preregistrations to the three samples is not possible.

M12 Measured variables, manipulated variables, covariates

This section shall be used to unambiguously clarify which variables are used to operationalize the hypotheses specified above (item I3). Please (a) list all measured variables, and (b) explicitly state the functional role of each variable (i.e., independent variable, dependent variable, covariate, mediator, moderator). It is important to (c) specify for each hypothesis how it is operationalized, i.e., which variables will be used to test the respective hypothesis and how the hypothesis will be operationally defined in terms of these variables. The description here shall be consistent with the statistical analysis plans specified under AP6 (below).

Recorded preregistration aspects based on the original study by Claesen und Gomes (2019)
Following the study by Claesen and Gomes (2019), the following preregistration aspects are also captured in the coding scheme of this study to compare for consistency between preregistration and published study.

- Research question and/or hypothesis
- List of variables
- Sample size
- Exclusion criteria
- Analysis

The aspect *procedure* is not included in this coding scheme since this aspect cannot be captured adequately with regard to the new more detailed coding scheme.

New variables recorded in this study
A new feature of this study is the recording of the following variables in order to be able to check in detail the correspondence between the preregistration and the study separately for the preregistered aspects.

- Number of preregistered criterions
- Number of criterions carried out as planned
- Deviation aspects
    - Number of criterions added
    - Number of criterions omitted
    - Number of criterions changed
- Disclosed deviation
    - Number of disclosed criterions added
    - Number of disclosed criterions omitted
    - Number of disclosed criterions changed

Each number is going to be calculated per preregistered aspect (research question and/or hypothesis, list of variables, sample size, exclusion criteria, analysis) and coded by a binary encoding.

- 1 = at least one deviation
- 0 = no deviation

Exclusion of *sample size* for the following formula
The quantification of *sample size* according to same criteria as the quantification of *research question and/or hypothesis, list of variables, exclusion criteria* and *analysis* is not possible. Due to that reason it will be excluded in some of the following calculations.

Formula: Deviation Score (for each preregistered aspect except sample size)
Deviation Score = Number of deviations added + Number of deviations omitted + Number of deviations changed

Formula: Deviation Score Overall
Deviation Score = Number of deviations added (per preregistered aspect) + Number of deviations omitted (per preregistered aspect) + Number of deviations changed (per preregistered aspect)

Formula: Disclosed Deviation Proportion Score (for each preregistered aspect except sample size)
Disclosed Deviation Proportion = Sum score all disclosed deviations / sum score all deviations

Formula: Deviation Proportion Score (for each preregistered aspect except sample size)
Deviation Proportion Score = (Sum score carried out as planned - number of methodological aspects added) / number of preregistered methodological aspects

Formula: Deviation Proportion Score Overall
Deviation Proportion Score Overall = (Deviation Proportion Score research and/or hypothesis + Deviation Proportion Score list of variables + Deviation Proportion Score exclusion criteria + Deviation Proportion Score sample size + Deviation Proportion Score analysis) / 5

Tolerance range
In some hypothesis an additional tolerance range of 10% per methodological aspect will be added. This should lead to a more differentiated view of quantification in order to compare the samples more detailed and to avoid that even the smallest deviations are counted as deviations.

H1a: (with sample 1)
- IV: Different preregistered aspects (research question/hypothesis, variables, exclusion criteria, analyses)
- DV: Deviation Score

H1b: (with sample 1)
- IV: Different preregistered aspects (research question/hypothesis, variables, exclusion criteria, analyses)
- DV: Disclosed Deviation Proportion Score

H1c: (with sample 1)
- IV: Different preregistered aspects (research question/hypothesis, variables, exclusion criteria, sample size, analyses)
- DV: Deviation Proportion Score

H2a: (with sample 2 and sample 3)
- IV: Deviation Score in respect of the tolerance range (Deviation Score Overall for sample 2, Deviation Score Overall for sample 3)
- Expected values: Number of deviations per preregistered aspect and overall in the original coding
- Observed values: Number of deviations as determined by our recoding (while maintaining the tolerance range)

H2b: (with sample 1 and sample 2)

- IV: Sample (sample 1, sample 2)
- DV: Deviation Proportion Score Overall (Deviation Proportion Score Overall for sample 1, Deviation Proportion Score Overall for sample 2)

M13 Study Materials

Please describe any relevant study materials. This could include, for example, stimulus materials used for experiments, questionnaires used for rating studies, training protocols for intervention studies, etc.

Study material based on the original study by Claesen und Gomes (2019)
As in the study by Claesen and Gomes (2019), this study captures both Accessibility and Minimal methodological detail.
Accessibility is captured by the following criteria: permanent, read-only, time-stamped, public, not uniquely available and stored in a third-party repository.
Minimal methodological detail is captured by the following criteria: research question and/or hypothesis, list of variables, sample size, exclusion criteria, procedure and analysis.

More detailed coding scheme
A new feature of this study is the recording of the following variables in order to be able to check in detail the correspondence between the preregistration and the study separately for the preregistered aspects.

Adherence dimension
The **Adherence dimension** will be considered in more detail. Therefore, the included studies will be examined for potential differences between published studies and their preregistrations. The preregistrations and the published studies are checked for consistency of the six minimal methodological detail variables (research question and/or hypothesis, list of variables, sample size, exclusion criteria, analysis).
Based on the comparison of Claesen and Gomes (2019) three samples are going to be compared. Sample 1 is a new sample of 27 preregistrations and their studies, sample 2 is the original sample from Claesen and Gomes (2019) coded with the new coding scheme and sample 3 implies the original sample and coded dataset from Claesen and Gomes (2019).
For the purpose of a more detailed comparison of deviations between studies and their preregistrations, a new coding scheme for sample 1 and 2 has been developed.
Deviations per methodological aspects are coded and considered as followed:

- Number of preregistered criterions per preregistered aspect
- Number of criterions carried out as planned per preregistered aspect
- Number of deviations
    - Number of criterions added
    - Number of criterions omitted
    - Number of criterions changed
- Number of disclosed deviations
    - Number of disclosed criterions added
    - Number of disclosed criterions omitted
    - Number of disclosed criterions changed

In addition, we added the following variables to the coding sheet of Claesen and Gomes (2019):

- Exclusion criteria for articles (for an overview of the reason we excluded studies)
- Templates (to identify which template was used for the preregistration)
- Platform (on which platform was the preregistration posted?)
- Number of characters of the preregistration (how detailed is the template edited?)

M14 Study Procedures

Please describe here any relevant information about how the study will be conducted, e.g., the number and timing of measurement time points for longitudinal research, the number of blocks or runs per session of an experiment, laboratory setting, the group size in group testing, the number of training sessions in interventional studies, questionnaire administration for online assessments, etc.

Before the submission of this preregistration the studies were prescanned, regarding inclusion- and exclusion criteria as well as regarding their accessibility and minimal methodologial detail score. 27 preregistrations met the criterion of an accessibility and minimal methodologial detail score of six. The next step will be the coding of the new sample as well as the original data set by Claesen and Gomes (2019) with the new coding scheme.
To test the new detailed coding scheme 2 studies will be coded.
Both raters will code all 54 preregistrations with respect to adherence dimensions (M13).
If any uncertainties or doubts arise during the coding process regarding the correct coding, these must be addressed and discussed between the two raters in order to create agreement and clarity for the further coding process.

M15 Other information (optional)

Analysis plan (written by Sophia Rehbein)

AP1 Criteria for post-data collection exclusion of participants, if any
Describe all criteria that will lead to the exclusion of a participant's data (e.g. performance criteria, non-responding in physiological measures, incomplete data). Be as specific as possible.
The preregistration will be excluded, if there is no clear allocation between study and preregistration (e.g. if there are different versions without a clear structure and a lack of classification).

AP2 Criteria for post-data collection exclusions on trial level (if applicable)
Describe all criteria that will lead to the exclusion of a trial or item (e.g. statistical outliers, response time criteria). Be as specific as possible.

AP3 Data preprocessing
Describe all data manipulations that are performed in preparation of the main analyses, e.g. calculation of variables or scales, recoding, any data transformations, preprocessing steps for imaging or physiological data (or refer to publicly accessible standard lab procedure, cf. T12).
Calculation of the accessibility score, minimal detail score and adherence dimensions to receive a detailed comparison between the three samples (see M13).

AP4 Reliability analysis (if applicable)

Specify the type of scale reliability that will be estimated, whether it is internal consistency (e.g. Cronbach's alpha, omega), test-retest reliability, or some other form (e.g., a confirmatory factor analysis incorporating multiple factors as sources of variance). In a study involving measure development, researchers should specify criteria for removing items from measures a priori (e.g., largest factor loading magnitude, smallest drop in alpha-if-item removed).

AP5 Descriptive statistics

Specify which descriptive statistics will be calculated for which variables. If appropriate, specify which indices of effect size will be used. If descriptive statistics are linked to specific hypotheses, explicitly link the information given here to the respective hypothesis.

The following aspects are coded and considered, especially regarding the comparison of the samples (see M4)

- Number of studies
- Number of preregistrations
- Length of preregistrations
- Number of studies that adhere to the preregistered plans vs. deviate
- In which methodological aspects did deviations occur
- Number of deviations because of additions, omissions, or changes to the preregistered methods
- Percentage of deviations that were disclosed or not disclosed
- Number of deviations were disclosed or not disclosed

AP6 Statistical models (provide for each hypothesis if varies)

Specify the statistical model (e.g. t test, ANOVA, LMM) that will be used to test each of your hypotheses. Give all necessary information about model specification (e.g., variables, interactions, planned contrasts) and follow-up analyses. Include model selection criteria (e.g., fit indices), corrections for multiple testing, and tests for statistical violations, if applicable. Wherever unclear, describe how effect sizes will be calculated (e.g., for d-values, use the control SD or the pooled SD).

All data in this study will be coded in Microsoft onedrive (for more details see M12). All analysis of this study will be conducted using R.

H1a-H1c:

- Repeated measures ANOVA
- Planned contrasts would be one-sided, pairwise t-tests would be two-sided
- Bonferroni correction

H2a: Chi Square Test

H2b: t-Test

AP7 Inference criteria

Specify the criteria used for inferences (e.g., p values, Bayes factors, effect size measures) and the thresholds for accepting or rejecting your hypotheses. If possible, define a smallest effect size of interest. If inference criteria differ between hypotheses, specify separately for each hypothesis and respective statistical model by explicitly referring to the numbers of the hypotheses. Describe which effect size measures will be reported and how they are calculated.

To analyze the data of this study, the following statistical tests are used: Repeated measures ANOVAs (including post hoc analysis), Chi Square Tests and t-tests.
The *p*-values will be inspected with a threshold of alpha = 5%. To counteract the problem of alpha-error due to repeated t-tests the Bonferroni correction will be used.

AP8 Exploratory analysis (optional)

Describe any exploratory analyses to be conducted with your data. Include here any planned analyses that are not confirmatory in the sense of being a direct test of one of the specified hypotheses.

All exploratory analyses of the exploratory research questions E1-E6 (see I4) are examined with descriptive analyses.

AP9 Other information (optional)

Other information optional

O1 Other information (optional)
If there is any additional information that you feel needs to be included in your preregistration, please enter it here. Literature cited, disclosures of any related work such as replications or work that uses the same data, or other context that will be helpful for future readers would be appropriate here.

References

R1 References

Enter your references below. Use a consistent format (e.g., https://apastyle.apa.org/style-grammar-guidelines/references/examples)

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