

# 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 ( <a href="https://apastyle.apa.org/style-grammar-guidelines/capitalization/title-case">https://apastyle.apa.org/style-grammar-guidelines/capitalization/title-case</a> ).

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 ( <a href="https://orcid.org/">https://orcid.org/</a> ). Optional: include the intended contribution of each person listed (e.g. statistical analysis, data collection; see CRediT, <a href="https://casrai.org/credit/">https://casrai.org/credit/</a> ).

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.

#### **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.

#### **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).

### **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.

### **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)

### **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).

### **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).

# Abstract

(150 words)

## A1 Background

(See introduction I1)

## A2 Objectives and Research questions

(See introduction I2)

## A3 Participants

(See methods M4)

## A4 Study method

(See methods M10-14)

# Introduction

(no word limit)

## I1 Theoretical background

Provide a brief overview that justifies the research hypotheses.

## I2 Objectives and Research question(s)

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

## 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.

## 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.

# Method

## 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)

## 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.

## *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).

#### **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).

#### **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.

#### **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).

#### **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.



### **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).

### **M9 Other information (optional)**

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

## ***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..

### **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.).

### **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).

### **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.

### **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.

### **M15 Other information (optional)**

# Analysis plan

(NOTE: If this varies by hypothesis, repeat analysis plan for each)

## 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.

## 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).

## 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.

### **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).

### **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.

<b>AP8 Exploratory analysis (optional)</b>
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.

<b>AP9 Other information (optional)</b>

# Other information optional

(NOTE: If needed, multiple lines with other information can be included)

## 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., <a href="https://apastyle.apa.org/style-grammar-guidelines/references/examples">https://apastyle.apa.org/style-grammar-guidelines/references/examples</a> )

This document was created using the **Psychological Research Preregistration-Quantitative (aka PRP-QUANT) Template**, version 2 (available at <https://www.psycharchives.org/>).

The template was developed by a task force composed of members of the American Psychological Association (APA), the British Psychological Society (BPS), the German Psychological Society (DGPs), the Center for Open Science (COS), and the Leibniz Institute for Psychology (ZPID). This work is licensed under the [CC BY 4.0](#) license. Thus, you are free to share and adapt the content, given that you attribute the source and indicate if changes were made.

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To receive a timestamp and a DOI (digital object identifier), submit your preregistration protocol to **PsychArchives** via <https://pasa.psycharchives.org/>, preferably as PDF.