Preregistration Study „Re-Building Trust“

Also available under https://osf.io/2zypf

Study Information

Title

Provide the working title of your study. It may be the same title that you submit for publication of your final manuscript, but it is not a requirement.

Re-Building Trust

Authors

Jürgen Schneider, Samuel Merk

Description

Please give a brief description of your study, including some background, the purpose of the study, or broad research questions. (optional)

The Replication Crisis diminishes trust in empirical sciences and with it the perceived value of science (Lupia, 2018, 10.1007/978-3-319-54395-6_41). Open Science Practices (i.a. open data, open analysis script, open materials) are an increasingly popular approach to deal with challenges in replication and to rebuilt trust (Geukes et al, 2016, 10.1026/1612-5010/a000167). First investigations could, however, deliver no evidence toward the effect of Open Science Practices (OSP) on trustworthiness (Wingen, Berkessel & Englich, 2019, 10.31219/osf.io/4ukq5). The study investigated the effect on a discipline level (psychology) with an abstract description of OSP. Within the ongoing discussion about incentives for OSP (e.g. badges for OSP), we want to shift the focus from discipline level to concrete individual journal articles and consider epistemic beliefs of readers to play a role (Merk & Rosman, 2018, 10.31219/osf.io/cduqe): Will visible OSP (vs. not visible vs. visibly non-OSP) foster perceived trustworthiness when reading journal articles of empirical studies? Will multiplistic epistemic beliefs moderate the relationship between OSP and trustworthiness?

Hypotheses

List specific, concise, and testable hypotheses. Please state if the hypotheses are directional or non-directional. If directional, state the direction. A predicted effect is also appropriate here. If a specific interaction or moderation is important to your research, you can list that as a separate hypothesis.

Confirmatory, H1: Visible OSP (vs. not visible vs. visibly non-OSP) influence the perceived trustworthiness (subscale integrity) in the empirical study. Our assumption: The more openness, the more trustworthy with small to moderate effects: $\mu 1 < \mu 2 < \mu 3$
Confirmatory, H2: The higher the topic specific multiplism, the lower the perceived trustworthiness (subscale integrity). Negative correlation. Exploratory, H3: Topic specific multiplism moderates the effect of OSP on perceived trustworthiness (subscale integrity). Exploratory, H4: Visible OSP (vs. not visible vs. visibly non-OSP) have a negative effect on topic specific multiplism.

Design Plan

Study type

Please check one of the following statements

- Experiment - A researcher randomly assigns treatments to study subjects, this includes field or lab experiments. This is also known as an intervention experiment and includes randomized controlled trials.

Blinding

Blinding describes who is aware of the experimental manipulations within a study. Mark all that apply.

- For studies that involve human subjects, they will not know the treatment group to which they have been assigned.
- Personnel who interact directly with the study subjects (either human or non-human subjects) will not be aware of the assigned treatments. (Commonly known as “double blind”)

Is there any additional blinding in this study?

Blinding (Other) (optional)

Study design

The design will include three conditions: visible Open Science Practices (visOSP), Practices not visible (nonvis) and visible non-Open Science Practices (nonOSP). Two of the conditions are randomized within person. Realizing all three conditions within person would highlight the variation between conditions as too obvious and thus undermine blinding of subjects. visOSP condition: Subjects receive a title page of an empirical study (Title, Abstract, Keywords, Introduction, ...) together with three Open Science badges. The badges are explained using hints in style of speech bubbles and indicate that the authors engaged in the OSP open data, open analysis script and open materials. nonvis condition: Subjects receive a title page of en empirical study (Title, Abstract, Keywords, Introduction, ...) with no further information on Open Science, reflecting a "standard" journal article. nonOSP condition: Subjects receive a title page of an empirical study (Title, Abstract, Keywords, Introduction, ...) together with three Open Science badges. The badges are explained using hints in style of speech bubbles and indicate that the authors did not engage in the OSP open data, open analysis script and open materials. As participants are exposed to more than one condition, we create all three conditions for three different empirical studies (topics). This way we avoid participants to see one study topic twice under different conditions, which would undermine the blinding.

(optional)

- No files selected

Randomization

If you are doing a randomized study, how will you randomize, and at what level? (optional)

Randomization 1: Two of the three conditions will be randomly assigned to the participants. Randomization 2: The order of presentation will be randomized between the two conditions, within the participant. Randomization 3: Within each of the six combinations of randomization 1 & 2, we will randomize the order of the topic between (topic 1-2, 2-3, 3-1). This way all topics appear twice: once on the first, once on the second place.

Sampling Plan

Existing Data

Preregistration is designed to make clear the distinction between confirmatory tests, specified prior to seeing the data, and exploratory analyses conducted after observing the data. Therefore, creating a research plan in which existing data will be used presents unique challenges. Please select the description that best describes your situation. Please see https://cos.io/prereg for more information.

- Registration prior to creation of data

Explanation of existing data

If you indicate that you will be using some data that already exist in this study, please describe the steps you have taken to assure that you are unaware of any patterns or summary statistics in the data. This may include an explanation of how access to the data has been limited, who has observed the data, or how you have avoided observing any analysis of the specific data you will use in your study. (optional)

Data collection procedures

Our goal it to obtain a sample from the population of student teachers or teachers. This population is specifically suited to study the effect of Open Science Practices on trustworthiness, because it is part of their job to engage in evidence-based practice and thus stay up to date with research (Munthe & Rogne, 2015). We plan to pass the data collection on to the Leibniz-Zentrum für Psychologische Information und Dokumentation (ZPID).

(optional)

- No files selected

Sample size

Describe the sample size of your study. How many units will be analyzed in the study? This could be the number of people, birds, classrooms, plots, interactions, or countries included. If the units are not individuals, then describe the size requirements for each unit. If you are using a clustered or multilevel design, how many units are you collecting at each level of the analysis?

We conducted Bayes Factor Design Analyses: https://osf.io/gu58n/ (won't open in OSF, you would need to download). As conditions are rotated (participants receive 2 out of 3 conditions) we conducted BFDA for two t-tests. Required sample size for small to medium effect, stopping rule of Bayes Factor of 10 (1/10 respectively) and 80% Power are N= 220. We thus aim for a Nmax=250 with optional stopping at BF 10 or 1/10 respectively. Due to expected variations in the BF with low n, we begin observing the data at n=150.

Sample size rationale

This could include a power analysis or an arbitrary constraint such as time, money, or personnel. (optional)

Please see Bayes Factor Design Analyses: https://osf.io/gu58n/ (won't open in OSF, you would need to download).

Stopping rule

If your data collection procedures do not give you full control over your exact sample size, specify how you will decide when to terminate your data collection. (optional)

Bayes Factor of 10 (1/10 respectively)

Variables

Manipulated variables

(optional)

There are three conditions: visOSP condition: Subjects receive a title page of an empirical study (Title, Abstract, Keywords, Introduction, ...) together with three Open Science badges. The badges are explained using hints in style of speech bubbles and indicate that the authors engaged in the OSP open data, open analysis script and open materials. nonvis condition: Subjects receive a title page of an empirical study (Title, Abstract, Keywords, Introduction, ...) with no further information on Open Science, reflecting a "standard" journal article. nonOSP condition: Subjects receive a title page of an empirical study (Title, Abstract, Keywords, Introduction, ...) together with three Open Science badges. The badges are explained using hints in style of speech bubbles and indicate that the authors did not engage in the OSP open data, open analysis script and open materials.

(optional)

- No files selected

Measured variables

Trustworthiness: We apply the Muenster Epistemic Trustworthiness Inventory (METI, 10.1371/journal.pone.0139309) with all three subscales. However as dependent variable we will only employ the subscale integrity. The other two subscales are used for further exploratory analyses. Topic-specific multiplism: We apply the subscale of topic specific multiplism from Merk et al. (2017, 10.1371/journal.pone.0184971) Topic-specific consistency: We apply the three item-measure from Merk et al. (2017, 10.1371/journal.pone.0184971) Treatment check: We test the perceived openness/ transparency of the empirical study. Additional small set of demographic variables will be assessed.

(optional)

- No files selected

Indices

(optional)

(optional)

- No files selected

Analysis Plan

Statistical models

see attached html

(optional)

- https://osf.io/32duk

Transformations

If you plan on transforming, centering, recoding the data, or will require a coding scheme for categorical variables, please describe that process. (optional)

Inference criteria

What criteria will you use to make inferences? Please describe the information you'll use (e.g. specify the p-values, Bayes factors, specific model fit indices), as well as cut-off criterion, where appropriate. Will you be using one or two tailed tests for each of your analyses? If you are comparing multiple conditions or testing multiple hypotheses, will you account for this? (optional)

Data exclusion

How will you determine which data points or samples if any to exclude from your analyses? How will outliers be handled? Will you use any awareness check? (optional)

Missing data

How will you deal with incomplete or missing data? (optional)

Multiple imputation will be used.

Exploratory analysis

If you plan to explore your data set to look for unexpected differences or relationships, you may describe those tests here. An exploratory test is any test where a prediction is not made up front, or there are multiple possible tests that you are going to use. A statistically significant finding in an exploratory test is a great way to form a new confirmatory hypothesis, which could be registered at a later time. (optional)

Hypothesis 3: BF Moderation Analysis will be conducted with visible OSP (vs. not visible vs. visibly non-OSP) as predictor, topic specific multiplism as moderator and perceived trust (subscale integrity) as dependend variable Hypothesis 4: BF analysis with visible OSP (vs. not visible vs. visibly non-OSP) as predictor and topic specific multiplism as dependend variable will be computed

Other

Other

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. (optional)