Pre-registration & Open materials: The What, Why, & How

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Opening up Open Science: Nuts and Bolts for Beginners

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The purpose is to make clear what you set out to do (confirmation) & what was discovered along the way (exploration)

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- Pre-registration is just a record of our research plans

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- If unsure now, explain how & when the decision will be made

Example 1: Details on the method

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Describe the key dependent variable(s) specifying how they will be measured.

In the learning phases, each novel name was presented together with a description of the novel concept it referred to. Each trial started with the presentation of the written form of the novel name for 2000ms. Simultaneously with the onset of the written form of the novel word, the participants heard the spoken form of the novel name and, subsequently, saw the concept description. Each description was composed of four short sentences (appearing one by one) describing the semantic features of the novel concept (e.g., for a novel plant, that it can survive extreme drought by curling into a ball). The presentation of the description was followed by another presentation of the novel name, and the participants were asked to read it aloud. In total, each novel name and its description were shown 4 times, and, in Session 2, EEG responses to the novel names in the time window between 0ms and 2000ms post word onset were recorded. This resulted in 4 EEG measures per novel name. The dependent variables will be:

Analysis 1 (see section 5.1 for more detail): For every electrode and trial, amplitude every two milliseconds between 0ms and 1000ms post stimulus onset.

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2. Addressing hypotheses 2, two linear mixed-effect models will be constructed to see whether social outcome measures (familiarity and Kidd posterior ratings) will show sleep-induced consolidation effect across the two sessions. The rating scores will be the dependent variable, and sleep consolidation group (Wake vs. Sleep) and session (Session 1 vs. Session 2) will be entered as fixed factors (using contrast coding), with participant ID and pair ID as the random effects. For these analyses and all mixed models described below, we will use a BOBYQA optimizer with a set maximum of 200,000 iterations to increase chances of convergence. Models will include a maximal random effects structure (Barr et al., 2013) to capture variability across items, participants, and/or pairs. For models that do not converge, a backward-fitting approach will be used in which the random effect that captured the least variance will be removed for each consecutive model until it converges. Different types of distribution (Gaussian, Gamma, and Inverse Gaussian) will be fitted to each social outcome data, and the best-fit distribution will be selected with the highest performance score based on different model comparison metrics (the "Performance" package in R, Lüdecke et al., 2021).

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  - Made a silly mistake? *Just say so!*

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- Yet another factor that exacerbates reproducibility crisis

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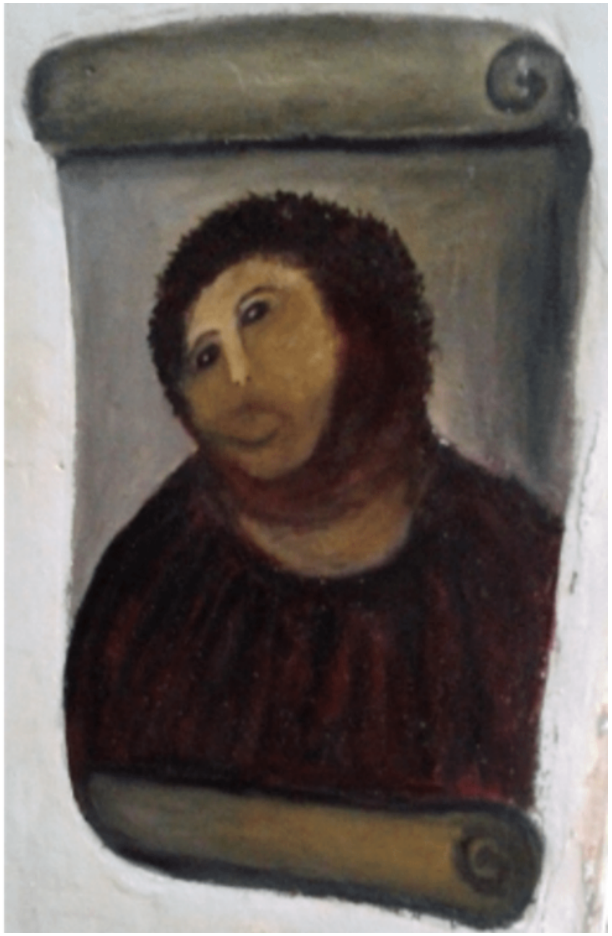

Thank you!