SPN real things (#21673)

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1) Have any data been collected for this study already?
It's complicated. We have already collected some data but explain in Question 8 why readers may consider this a valid pre-registration nevertheless.

2) What's the main question being asked or hypothesis being tested in this study?
We showed participants symmetrical or asymmetrical images. The images were either colored or black and white. The images of were flowers, landscapes or abstract patterns. One group of 20 participants classed images as symmetrical/asymmetrical. Another group of 20 participants classed images as colored/black and white.

We know that an event related potential component called the Sustained Posterior Negativity (SPN) is be generated by symmetrical compared to asymmetrical stimuli.

For patterns, we predict that the SPN amplitude will be large and task independent. For landscapes, we predict a reduced SPN in the Regularity Discrimination Task, and further SPN reduction in the Color Discrimination task. For flowers we predict no SPN in either task.

3) Describe the key dependent variable(s) specifying how they will be measured.
DV = Sustained posterior negativity (SPN) amplitude.

SPN will be defined as the differences between symmetrical and asymmetrical ERP wave at posterior electrodes from 300 to 1000 ms.

4) How many and which conditions will participants be assigned to?
There are 12 conditions in a mixed design.

Two tasks (color discrimination and regularity discrimination). This is a between subjects factor.

In each task there are 6 stimulus conditions (symmetrical/asymmetrical) X (flower, landscape, pattern). This is a within subjects factor.

All analysis will average color and black and white trials.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
SPN amplitude will be analyzed with mixed ANOVA (Task (regularity, color) X Stimuli (flower, landscape, pattern)

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
All trials where amplitude exceeds +/- 100 micro volts at any electrode will be excluded from analysis. Participants with less than 50% of trials remaining will be excluded.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
There will be 20 participants in each Task. Power calculation shows that this gives a high probability (>95%) of detecting a 1 micro volt SPN.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
The EEG data has already been collected, but not yet analyzed.