

**SPN real things without prior experience (#29153)**

Created: 10/14/2019 03:59 AM (PT)

Public: 10/28/2019 06:23 AM (PT)

**Author(s)**

Alexis Makin (University of Liverpool) - alexis.makin@liverpool.ac.uk  
Marco Bertamini (University of Liverpool) - m.bertamini@liverpool.ac.uk  
Giulia Rampone (University of Liverpool) - giulia.rampone@liverpool.ac.uk  
Elena Karakashevska (University of Liverpool) - E.Karakashevska@student.liverpool.ac.uk

**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?**

A symmetry related ERP, called the SPN, will be approximately the same for symmetry in abstract patterns, landscapes and flowers, even though participants are attending to Color. This was found in a previous experiment, and we expect a simple replication in this control condition. In the previous experiment participants were somewhat familiar with the stimuli before the EEG recording began. Here they will not be familiar with the stimuli before the experiment begins. We do not think this will dramatically change the results.

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

SPN amplitude at PO7, O1, O2 and PO8, from 300 to 1000 ms post stimulus. SPN is the difference between symmetry and asymmetry waves.

**4) How many and which conditions will participants be assigned to?**

This is a within subjects design. There are two within subjects factor (3 Stimulus domain, Abstract, Flowers, Landscapes X 2 Regularity (Symmetrical, Asymmetrical) X Color (Colored, Greyscale).

**5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.**

This will follow the same EEG pre processing pipeline as the previous experiment which we are attempting to replicate. ICA will be used to removed blink and other artifacts. Trials where amplitude exceeds 100 micro volts at any electrode will be excluded. SPN will be defined as the difference between symmetry and random waves from 300 to 1000 ms as PO7, O1, O2 and PO8. The Greenhouse-Geisser factor will be used whenever the assumption of sphericity is violated.

We will used a mixed ANOVA to test whether the SPN results of our new control experiment significantly differ from results of previous experiment. We predict no main effect of Experiment, and no interaction between Stimulus domain and Experiment.

We predict that SPN will be significantly more negative than zero in all stimulus domains.

**6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.**

Participants will be removed if more than half of their trials have to be removed.

**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.**

This will be 20, the same as the previous experiment we are trying to replicate.

**8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)**

We have already started collecting EEG data, but not analysing it. Therefore we feel it is proper to pre-register the study.