

# PCIRR-Karakashevskaja-stage2

## *Peer Community In Registered Reports*

Putting things into perspective: Which visual cues facilitate automatic extraretinal symmetry representation?[Stage 2 Registered Report]

Congratulations to the authors for successfully completing their project. I have carefully checked the stage 2 submission against the IPA version, and the main assessment criteria have been met. My only concern is whether inferential statistics should be reported at all in the exploratory section. I also think the presentation of the results should be improved. Other than that, the data and design can answer the research question, and only minor changes were made to the text, all clearly explained. The conclusions are consistent with the results. So I do not have any concern about the RR aspect, only comments and suggestions about the reporting.

## Main points to address

Page 12: “normally distributed” / “assume that normality” – the ridgeplot cannot demonstrate normality, it can only suggest symmetry. By definition, SPNs cannot be normally distributed, as the tails cannot extend to infinity. Many symmetric distributions could give rise to the plot in Figure 4A. In this paragraph the conclusion should be about plausible symmetry and normality should be presented as a reasonable approximation only.

Page 20: the behavioural results should be illustrated using scatterplots to reveal distributions of individual effects. Paired observations should be linked and ideally distributions of pairwise differences should be provided. I have highlighted the importance of such detailed graphical representations in this short editorial for instance:

<https://onlinelibrary.wiley.com/doi/10.1111/ejn.13400>

Figure 8 could be improved by adding the time-course of the difference to each plot showing two conditions. This will help put the difference in context, relative to the ERP components. Currently the plots are equivalent to bar graphs without error bars. In the right column, it is good practice to add confidence intervals. Another figure is also needed to better illustrate the differences: in a new 3 column figure, I strongly recommend to show the individual differences for each of the three contrasts, with the average superimposed.

Figure 9: given that the goal is to illustrate the topographies, contrast should be increased. The relative values can be assessed separately in Figure 8. I would replace the confusing GFP with the straightforward STD.

Figures 10 and 11 provide outdated and unacceptable graphical representations of the results. Bar graphs hide data and distort perception. Instead, scatterplots of individual measurements should be reported, with linked pairwise observations. Marginal means can easily be superimposed, by plotting short horizontal lines for instance. Confidence intervals could be added

too. The system of little stars is confusing, as it suggests that p values measure the importance or strength of an effect, which they obviously do not. You could use one star to indicate significance at the pre-registered threshold.

In the text, and matching the revised graphical representations, it would be very informative to report the number of participants showing effects in the same direction as the group.

Page 24: “There was no difference...  $p = .729$ ” – this should be rephrased to avoid this classic statistical fallacy. Here are suggestions on how to report frequentist statistics:

<https://discourse.datamethods.org/t/language-for-communicating-frequentist-results-about-treatment-effects/934>

In the section on exploratory analyses, my preference would be to report mostly detailed graphical representations, and to remove inferential tests. P values are only interpretable in a narrow pre-registered context, unless you can run simulations to derive sampling distributions for your exploratory analyses.

Correlation analyses: correlations are very noisy, and in that context it is important to report the minimum correlation you could detect, in the long run, given your sample size. It is also essential to illustrate some of these correlations – see Anscombe’s quartet:

[https://en.wikipedia.org/wiki/Anscombe's\\_quartet](https://en.wikipedia.org/wiki/Anscombe's_quartet)

Finally, the estimator is an important choice that must be justified. The default is to use Pearson, which is maximally sensitive to linear relationships, but is also sensitive to other features of the data than an association (outliers, heteroscedasticity, range restriction...). As such, a significant Pearson correlation cannot be used to conclude that there is association.

## Typos & minor comments

Page 10: “with mean amplitude is on the X axis” – delete “is”

Page 12: “in given a block” -> in a given block

Page 14: “Similar stimuli have previously been found TO generate large SPNs” – TO is missing, or use “been associated with large SPNs”.

“Makin et al. (2024), which found” – I suggest using reported instead of found, to avoid the awkward “paper... found”.

Page 17: “were informed that THE task” – the missing.

Page 19: “across time windows” – would be clearer as “time points”, as this paragraph starts by defining one time window.

“ERPs were computed from electrode cluster” -> “ERPs were computed from two electrode clusters: ...”

Page 20: extra “obtain” at top of page.

“Prior to analysis of the ERP data...” – this sentence is unfinished.

## Discussion:

The two sentences that start with “People could” and “Optic invariants” read as fragments.  
“indicated that” / “indicates that” – use “suggests” in second one to avoid repetition.  
“internal visual representationS” – s missing.

The paragraphs starting with “The SPN is not specific” and Makin et al. (2015) need better transitions.

Two side-by-side sentences start with “Some implicit lines”.

“The participants experienced the 3D interpretation of the stimuli.” -> “Participants experienced 3D interpretations of the stimuli.” – other phrasing suggests they all experience the same interpretation. Maybe I’m over-thinking it.

“there is another explanation FOR this SPN equivalence” – FOR is missing.

“did not find zero perspective cost during regularity” – maybe avoid double negative?

“on THE open science framework” – THE missing