**Reviewer 2:**

In their article “Perceptual Similarities Among Wallpaper Group Exemplars”, Kohler and colleagues investigate the perceived similarity of different exemplars of the same wallpaper groups in a group of untrained participants. Results showed that P1 was the most self-similar group among the others, which did not differ much in terms of self-similarity.

The article is clearly written, and the provided figures help the reader to follow the text. Nevertheless, more background is needed in the Introduction section to introduce the topic. The adopted methods are appropriate to investigate the research question. However, a subsection in which authors report the statistical approach of the study in the Materials and Methods is needed. Regarding the statistical approach of the study, a statistical correction of the significance level should be adopted when conducing post-hoc pairwise comparisons among groups. Finally, results should be reported in standard format throughout the whole manuscript.

**We thank the reviewer for these helpful comments and have addressed them below. The pdf file “wallpaper\_sort\_symmetry\_revised.pdf” holds the new version of the manuscript and the file “wallpaper\_sort\_symmetry\_revised\_changes.pdf” holds the same manuscript but with changes from the initial submission highlighted for the reviewer’s convenience.**

**Major Issues**

* The article is missing keywords, which are an important hint for the reader to create a better picture of the context in which the article is rooted. Please add them.

**We agree with the reviewer that keywords are important and have added them.**

* The Introduction section does not provide enough background to the reader. What is the definition of symmetry? What is a wallpaper group? What does each mentioned symmetry type mean?

**The reviewer raises an important point. We have extensively revised the Introduction to provide more background, and now include a figure showing the four fundamental symmetries. We think this will make the paper more accessible to non-experts, and hope the reviewer agrees.**

* In the Results section, the authors referred to group P1 without providing its features. How is P1 different from other groups? Please clarify.

**In fact, a general introduction to the features/symmetry content of the five wallpaper groups used in the study was missing. In our view, this belongs in the Introduction, and we have added it there. We appreciate the reviewer bringing this to our attention.**

* Line 87: Please report results in the standard format. When the authors posit “[…] other groups (median = 4-5)”, which groups have median 4 and which groups have median 5? Please clarify.

**We are not sure what is meant by “the standard format” here. We are reporting that the median number of sets generated was 3 for group P1, and 4-5 for the four other groups. The intention is to provide a general overview of our results, and we refer the reader to a figure where exact data from each group can be read out. We have minimally updated the sentence, and hope this will adequately address the reviewer’s concern.**

* Line 90: “Post-hoc pairwise t-tests showed that the mean number of sets was lower for P1 than all other groups, but no other means differed.” Please report the results. Also, was any statistical correction adopted to adjust the significance level based to control for repeated measures? If not, please adopt a correction (e.g., Bonferroni correction) and add it to the manuscript every time that post-hoc pairwise comparisons are conducted.
* Lines 96-97: “Post-hoc pairwise t -tests showed that P1 had higher Jaccard indices than all other groups”. Please add the results and not only p-value.
* Lines 101-102: “Our pairwise t-tests also showed that P31M had lower Jaccard indices than P6”. Please add the results and not only p-value.

**We are now reporting corrected significance. All statistics are for the two sets of post-hoc pairwise t-tests are now reported in Table 1.**

* How were participants recruited? Please clarify.

**Participants were recruited from the undergraduate participant pool in the Department of Psychology at the Pennsylvania State University. We now report this in the Methods.**

* Please add a Statistical Analysis subsection in the Materials and Methods section in which the authors report the statistical approach to data of their study.

**We have added a Statistical Analysis subsection and moved most of our discussion of ANOVAs and post-hoc t-test there.**

**Minor Issues**

* Lines 35-39: the authors posited “Brain imaging studies using functional MRI (Kohler et al., 2016) and EEG (Kohler et al., 2018; Kohler and Clarke, 2021) have shown that the human visual system carries detailed and precise representations of the symmetries within the individual wallpaper groups.” The sentence seems a bit too generic and an example of what the authors mean for “the human brain carries detailed and precise representation of the symmetries” is needed.

**We have added another sentence that hopefully provides the needed example.**

* Lines 39-42: the authors posited that: Functional MRI evidence from macaque monkeys reveal similar representations in analogous areas of the macaque visual system”. To which brain areas are the authors referring?

**We have modified the sentence to be clearer about the brain areas we are referring to.**

* Lines 43-45: “These representations, complex as they are, […]”, which representations? Please clarify.

**We have modified the sentence to be clearer about the representations we are referring to.**

* Figures and tables should be inserted in the main text and not on the side of the text. Please revise Figure 1 and Table 21 accordingly.

**We have revised accordingly.**

* Lines 62-83: this part does not seem to fit the Introduction section and it regards more the Methods and the Results of the study. Please move it to the Materials and Methods and Results sections.

**While we think it is appropriate to briefly discuss the experiment design in the Introduction, we agree with the reviewer that this section had excessive detail for this section of the paper and have revised accordingly.**

* Figure 4: “unlike Figure 3 were each data point is a participant” should be “unlike Figure 3 where each data point is a participant”.

**We have corrected this error.**

* Figure 4: “The box boundary and whiskers follow the same logic as in Figure 3”. Figures’ captions should be self-explanatory. Please clarify the logic of box boundary and whiskers also here, without referring to Figure 3 again.

**We have now merged Figures 3 and 4, so this problem has been addressed.**

* “We will explore this idea more in depth shortly, but for now we can conclude that […]”. There are no temporary conclusions in a paper. Please delete this part of the sentence, stick to data, and state the conclusions.

**We have deleted the sentence as requested.**

**Final comments**

I would recommend the article to undergo Major Revision.