

We have now received three re-reviews of your submission. As you will see, the manuscript is now within sight of Stage 1 IPA. Sander Nieuwenhuis notes that the second sentence of the Abstract is a little vague and doesn't connect that well with the opening sentence. Instead of saying 'this topic', please consider spelling out explicitly that the present study pertains to the processing of subjective brightness perception.

Martin Rolfs notes a remaining concern with the role of eye movements and microsaccades. This is a valid point and will need to be thoroughly addressed. We look forward to receiving your revision and response in due course.

We thank the recommenders and the reviewers for their valuable comments and suggestions. We now revised the manuscript accordingly.

by D. Samuel Schwarzkopf and Chris Chambers, 01 May 2024 13:55

Manuscript: https://osf.io/m2xr5?view_only=99e4cfe64c344980ae3a03324ef85eb1

version: 1

Review by Sander Nieuwenhuis, 06 Apr 2024 06:26

I am happy with the way the authors have addressed my comments, but I advise the authors to look once more at the beginning of the abstract when writing the stage-2 report:

"Pupil size is modulated by various cognitive factors such as attention, working memory, mental imagery, and subjective perception. Previous studies on this topic mainly focused on inducing or enhancing a subjective experience of brightness or darkness (for example by asking participants to attend to a bright or dark stimulus), and then showing that this affects pupil size."

My point is that readers, when reading the second sentence, won't know what 'this topic' refers to, because the topic of their paper is not mentioned in the first sentence.

We thank Sander Nieuwenhuis for raising this point and providing further clarification. We hope that the sentence is now clear.

Review by Martin Rolfs, 20 Apr 2024 21:36

Review of PCI Registered Report

The effect of covert visual attention on pupil size during perceptual fading

by Ana Vilotijević, Sebastiaan Mathôt

The authors have addressed all comments raised by the three reviewers. They have done an excellent job at responding to my concerns, perhaps with one exception: the role of eye movements. Given that all three reviewers and the editor brought up the potential impact of eye movements, I would like to come back to this once more. The authors present two main arguments. First, they argue that they use stimuli with fuzzy edges for which microsaccades should not play a role. Martinez-Conde et al. (Neuron, 2006) and follow-up studies used stimuli with fuzzy edges, too, yet they showed that microsaccades are most efficient in preventing fading and restoring faded images (McCamy et al., J Neurosci, 2012; McCamy et al., J Physiol, 2014). While these authors used much smaller targets than the submitted study, the saccades they investigated were an order of magnitude smaller than the exclusion criteria proposed here. Leading to the second point: The exclusion criterion of looking more than 7.42 degrees away from the fixation point is far beyond microsaccades. A saccade of 5.77 degrees would displace the stimuli by 1 standard deviations of the stimulus' Gaussian envelope. Eye movements of up to 7.42 degrees are almost certainly going to eliminate fading. I understand that subjective reports of fading are expected to be a valid source of information, but if any such trials contained large eye movements, the authors should investigate the role of these eye movements more closely. At the very least, they should test if eye movements indeed had no influence on fading and pupil size.

We thank Martin Rolfs for raising this point and pointing us to relevant papers. We now decided to change the exclusion criterion to 3° (instead of 7.42°). Importantly, there are no stimuli except for the fixation dot within 3° of the display center; this means that participants are very unlikely to make actual (targeted) saccades within this range, and by avoiding an overly strict criterion (say 1°) we avoid the risk of having to exclude many trials due to eye-tracking noise. Thus, through the adoption of a more stringent exclusion criterion, coupled with the data stratification based on high levels of fading reports, we hope to ensure that the impact of eye movements is minimal.

If the recommenders and reviewer insist, we can adopt a more stringent criterion, but in our view that is not necessary.

Side note that is relevant to the authors conclusion criterion: It is unclear what the stimulus inner edge is given the fuzzy nature of the stimulus edge. Please report the eccentricity of the stimulus center in the methods.

We agree with this point and we now report the eccentricity of the patches center (14.14°).

Review by anonymous reviewer 1, 23 Apr 2024 08:23

I thank the authors for their thorough response to our comments. I am satisfied with the revised manuscript and look forward to the results of this promising research.

We are happy to hear that the reviewer is satisfied with our revision.