REVIEW

The authors provide empirical evidence that data from subjects performing a "You draw it" task replicate previous findings in graph perception, namely the finding that, when asked to fit a line on a scatterplot, participants draw a line that minimizes the Euclidean distance of the points to the fit instead of the vertical one (such as in OLS). The paper is written in a good English although the sections describing the statistical analyses are quite complex and a little verbose.

My main concern about the manuscript is about its novelty. In fact, authors state that they confirm previous findings by Mosteller et al. (1981). However, the study by Ciccione and Dehaene (2021) that they cite in the manuscript, has already provided the exact same results: people minimize the orthogonal distance of points to the fit when asked to provide their best estimation of the regression line. The authors are surely aware of this (since they account for it on page 5, line 24); however, throughout the abstract, the rest of the introduction and the discussion, the authors present their results as novel and simply extending Mosteller study. In fact, what they called "a principal axis component" is mathematically equivalent to the "Deming regression" (as it is called in Ciccione & Dehaene), that minimizes the orthogonal distance of the points.

In my opinion, the actual "novel" aspects of the presented research work are: 1) the fact that an online tool initially meant for the general public can replicate empirical findings from the literature on graph perception; 2) the use of generalized additive mixed models. Concerning this second aspect, I am seriously wondering whether it was necessary at all to use such complex models to prove that participants minimized the orthogonal distance of the points to the fit. Simpler statistical analyses could have been (or could be) provided. However, since I am not an expert of these models, I recognize that it might be of interest for a specialized readership.

In conclusion, I strongly believe that the manuscript should concentrate on the actual novel aspects mentioned above (the use of an online tool and the use of generalized additive mixed models) and not on an aspect that the literature has already empirically tested and statistically confirmed and formalized. If such a major revision is undertaken by the authors, the article might be worth publishing (especially within the scope of the journal).

Below I provide a series of other aspects that should also be considered.

Authors should avoid any form of plagiarism: for example, lines 43 to 46 (page 2) and line 55 (page 8) and line 22 (page 9) are identical excerpts from Ciccione & Dehaene.

Page 3, line 20. The method of adjustment is introduced but not explained, leaving the reader wondering what it refers to.

Page 3, line 50. The line-up protocol is introduced but, again, no clear explanation is provided.

Page 5, line 21. The concept of "ensemble perception" is not clearly related to what is described just before: how can the finding itself of human fitting a principal axis on scatterplot "support" (as the authors say) the work on ensemble perception? The link needs to be clarified or avoided.

Page 8, table 1. I think it's a little bit confusing to see that the intercept parameter is called y_x whereas in the equation in the text is called β_0. The authors should choose one notation or the other and stay consistent through the text.

Page 10, line 39. The reader is invited to refer to an R function for the description of the regression equation based on the principal component axis. Authors should provide an actual formalization of the equation.

Page 12, line 48 and page 15, line 45. Again (as in page 5, line 21), the authors' work is directly presented as providing support for ensemble perception. Ensemble perception simply states that human perception tends to average, in parallel, the information coming from various items/locations in the visual field. Evidence for a principal axis component extraction does not provide a direct piece of evidence for ensemble perception. Authors should better clarify this link or avoid introducing the concept of ensemble perception.