Dear Prof. Eisen,

I am writing to submit our manuscript entitled *“Re-evaluating frontopolar and temporoparietal contributions to detection and discrimination confidence*” for consideration as an *eLife* Research Advances article.

Understanding the neural basis of perceptual confidence is central to a number of models of both metacognition and conscious awareness. In a previous *eLife* publication (“*Distinct neural contributions to metacognition for detecting, but not discriminating visual stimuli*”, Mazor, Friston & Fleming, 2020) we identified a quadratic modulation of confidence in a frontoparietal network, and showed that this modulation was specific to detection but not discrimination decisions. We speculated about the computational origins of our findings, and contrasted two classes of explanations: one that is based in signal detection theory, and one that postulates distinct metacognitive processes underlying detection and discrimination decisions. In this submission, we present a pre-registered fMRI experiment which aims to arbitrate between these two explanations by introducing a new ‘hybrid’ experimental condition: a discrimination task with the distributional properties of a detection task. We successfully replicated a quadratic modulation of perceptual confidence in a frontoparietal network, but, in contrast to our previous publication, find no difference in the magnitude of this effect between detection and discrimination decisions. Instead, our newly introduced hybrid condition provides indirect evidence for sensitivity of this quadratic modulation to the variance structure of stimulus distributions.

Our previous study has contributed to the growing field of visual metacognition by providing initial evidence for a qualitative distinction between the neural underpinning of visual discrimination and detection. This current contribution qualifies and further unpacks this original set of findings by showing that a quadratic modulation of confidence is not unique to detection, and that it is sensitive to distributional properties of the perceptual landscape. We therefore think that a “Research Advance” at eLife is a perfect venue for publishing our findings, which directly extend and build on our previous work.

All raw imaging data is freely available on OpenNeuro (<https://openneuro.org/datasets/ds004081/versions/1.0.0>). Full analysis scripts are available on GitHub: <https://github.com/matanmazor/unequalVarianceDiscrimination>. Each named author has substantially contributed to conducting the underlying research and drafting this manuscript. Additionally, to the best of our knowledge, the named authors have no conflict of interest, financial or otherwise.

Sincerely,

Matan Mazor, on behalf of all co-authors