



Measuring the field of contrast sensitivity via saccadic foraging

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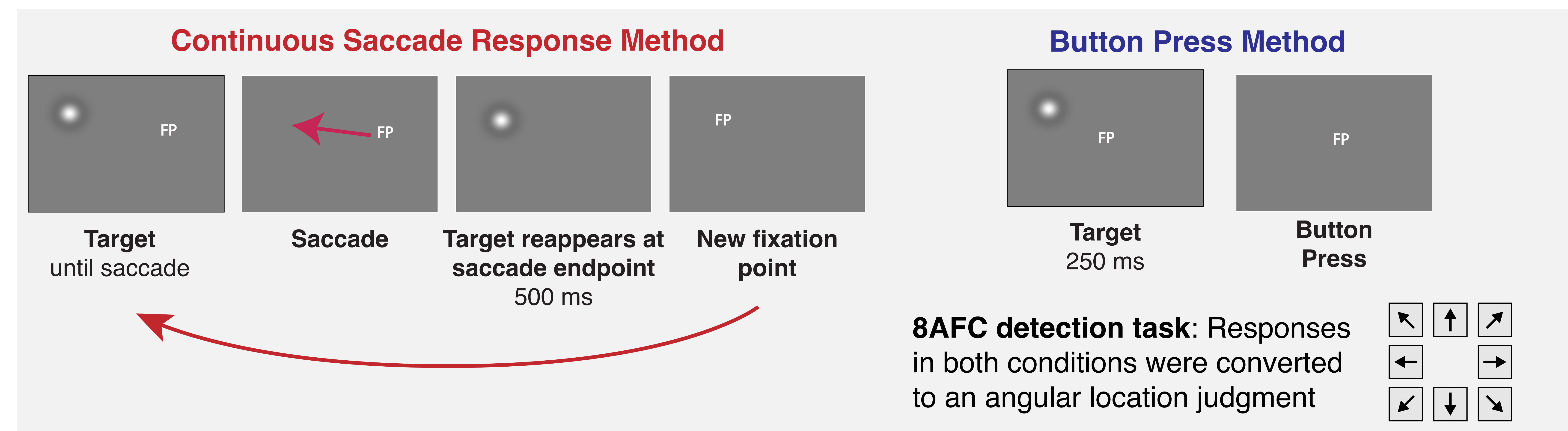
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The field of contrast sensitivity

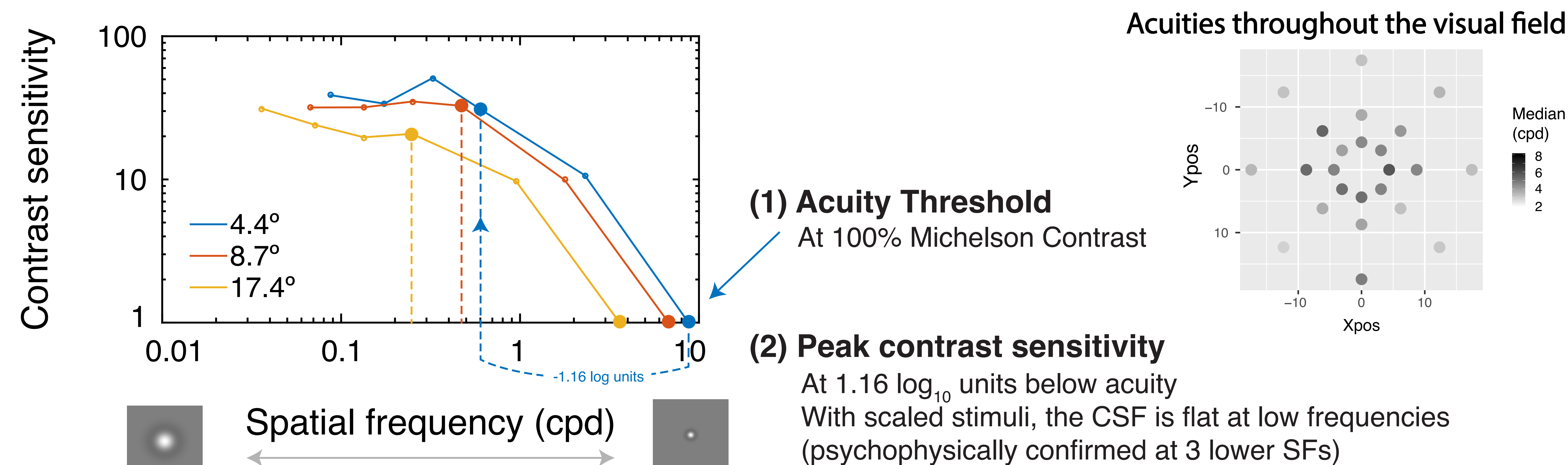
Measuring the contrast sensitivity function (CSF) across the visual field (field of contrast sensitivity; Watson, 2018) has significant value, but requires too many measurements for practical applications. However, simplification may be possible via a spatial scaling factor (Strasburger et al, 2011), using a saccadic foraging task (Jones et al., 2016), and only testing 2 points (Chung & Legge, 2016).

Method

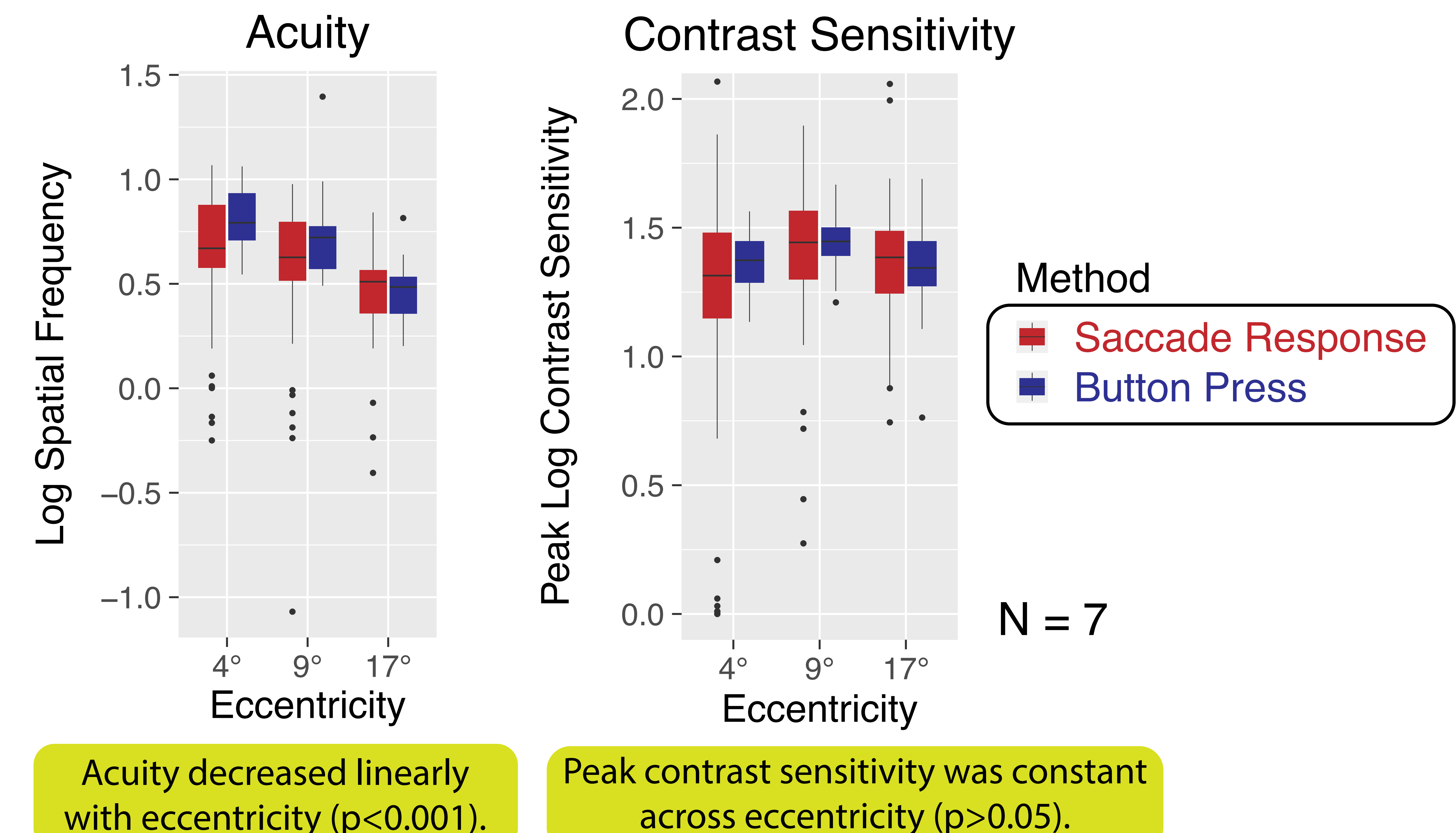
We estimated the CSF across the visual field (3 eccentricities x 8 angular locations) with spatially-scaled Laplacian-of-Gaussian (LoG) targets.



We estimated the CSF at each location from **two data points** (●):



Results



No significant differences between thresholds and test duration measured with **saccade** and **button press** responses ($p > 0.05$), suggesting that these methods are interchangeable.

Conclusions

In healthy visual systems:

- the field of resolution linearly decreases with eccentricity
- the field of peak contrast sensitivity is uniform with scaled visual stimuli.

The ease of comprehension of the eye movement task may favor its use in naive populations.

References:

Watson. The Field of View, the Field of Resolution, and the Field of Contrast Sensitivity. JPI, 2018
Strasburger et al. Peripheral Vision and Pattern Recognition: a Review. J Vis, 2011.
Jones et al. Portable Perimetry Using Eye-Tracking on a Tablet Computer—A Feasibility Assessment. Tvst, 2019.
Chung & Legge. Comparing the Shape of Contrast Sensitivity Functions for Normal and Low Vision. IOVS, 2016.

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