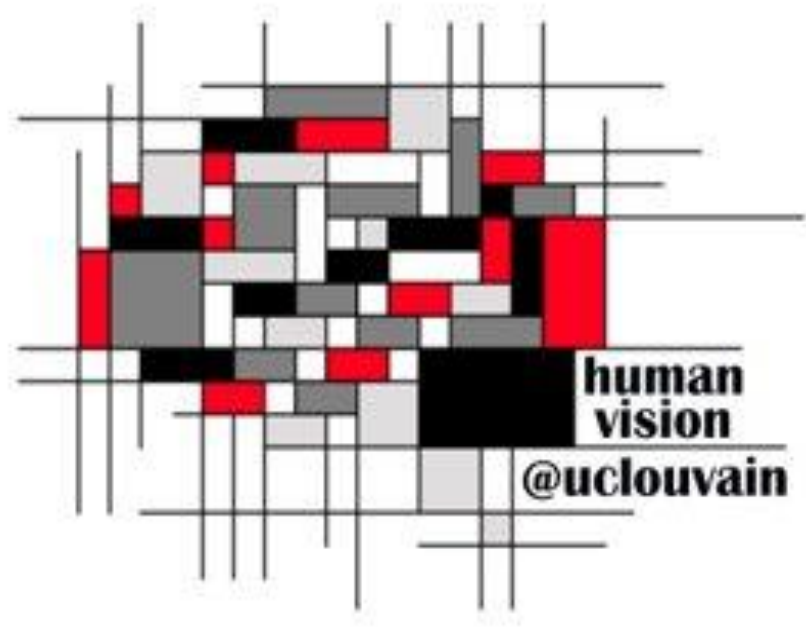




How Radial Biases Influence Fast Saccades Towards Faces in the Periphery

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Introduction

- Saccadic choice studies have demonstrated that faces are more rapidly and accurately fixated in the periphery than other stimuli, such as objects or scenes^[1-3]
- Such ultra fast saccades towards faces are typically measured with lateral stimulus presentation, i.e., stimulus placed along the horizontal meridian^[4-6]
- Face recognition preferentially relies on horizontally-oriented visual cues (Fig. 1)^[7]
- We recently found that face-selective mechanisms are more engaged along the horizontal meridian compared to the vertical meridian^[10] likely due to the combined influence of the peripheral radial biases^[8,9] and the horizontal tuning of face recognition (Fig. 2)

To what extent do peripheral radial biases contribute to ultra fast saccades towards faces along the horizontal meridian?

Figure 1. Horizontal tuning of face recognition in central vision

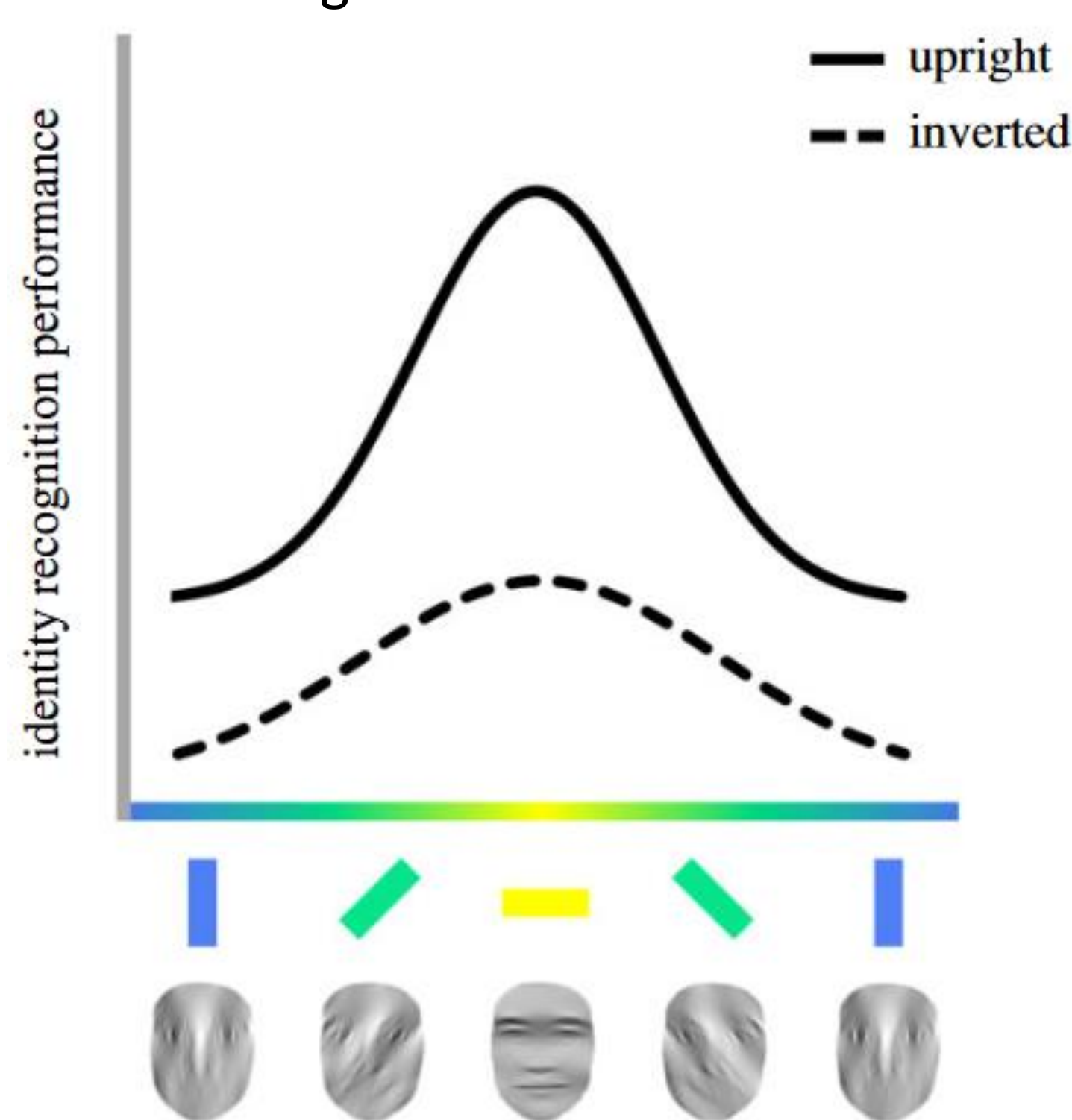
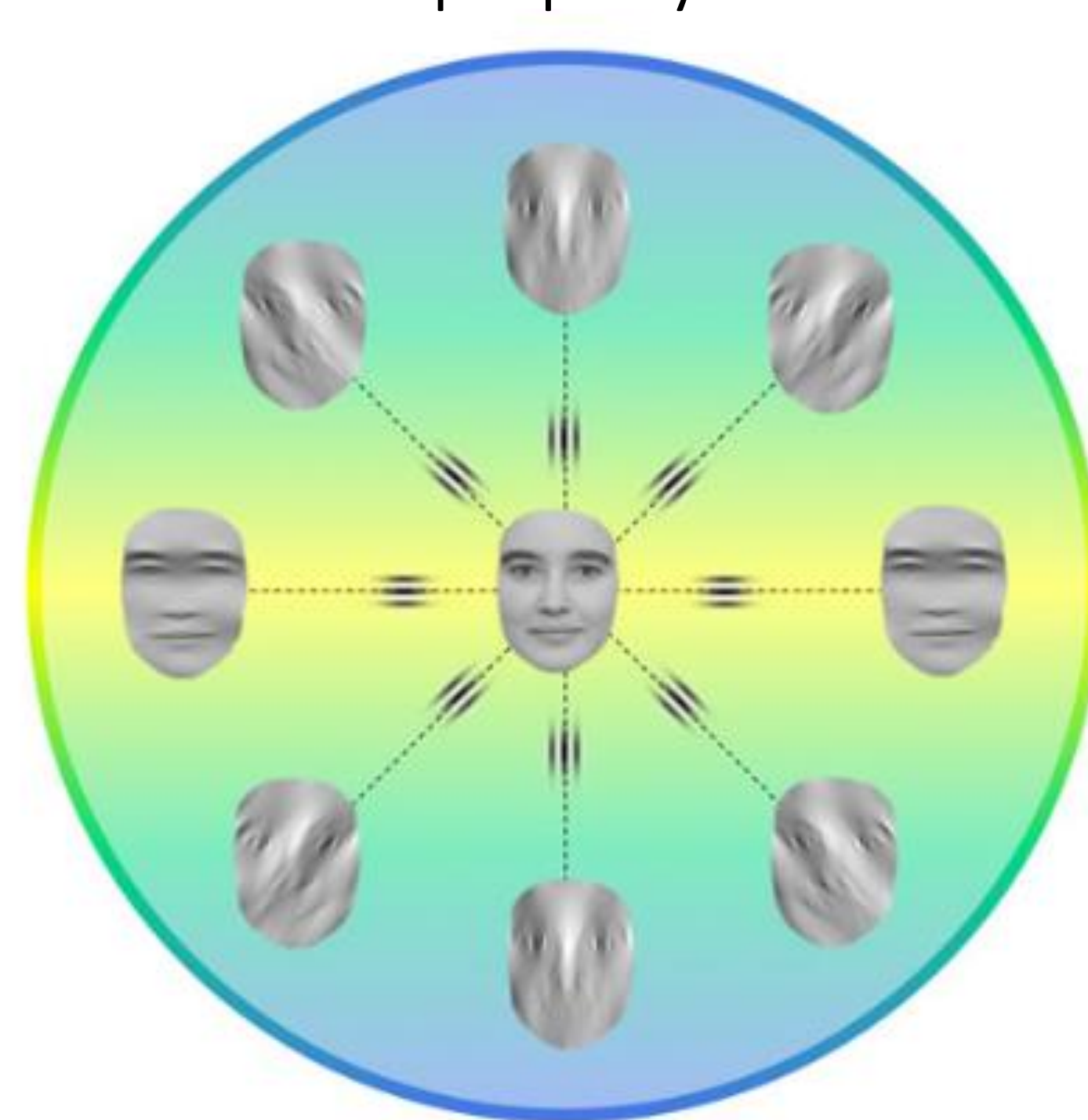
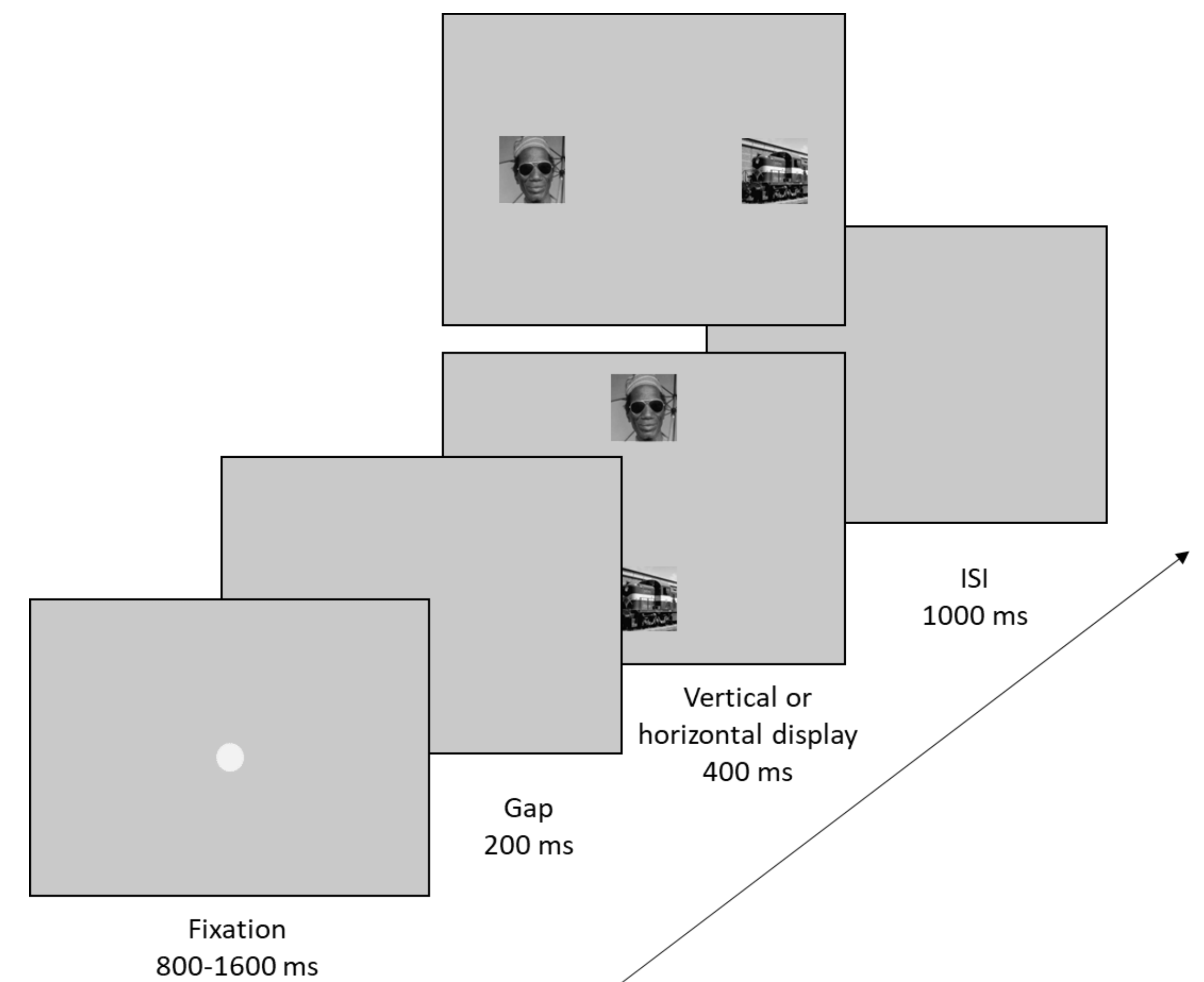


Figure 2. Radial bias in the periphery



Task

- The procedure and task are similar to previous saccadic-choice studies^[1-4] except that the stimuli are displayed at 15° of eccentricity either along the vertical or the horizontal meridian.
- The stimuli are drawn from Guyader et al.^[2] and encompass a collection of 240 images divided between human faces and vehicles. These images showcase variations in both size and perspective and cover 8° of visual angle.
- The participants are instructed to saccade as fast and accurately as possible towards a predefined target category (either faces or vehicles)

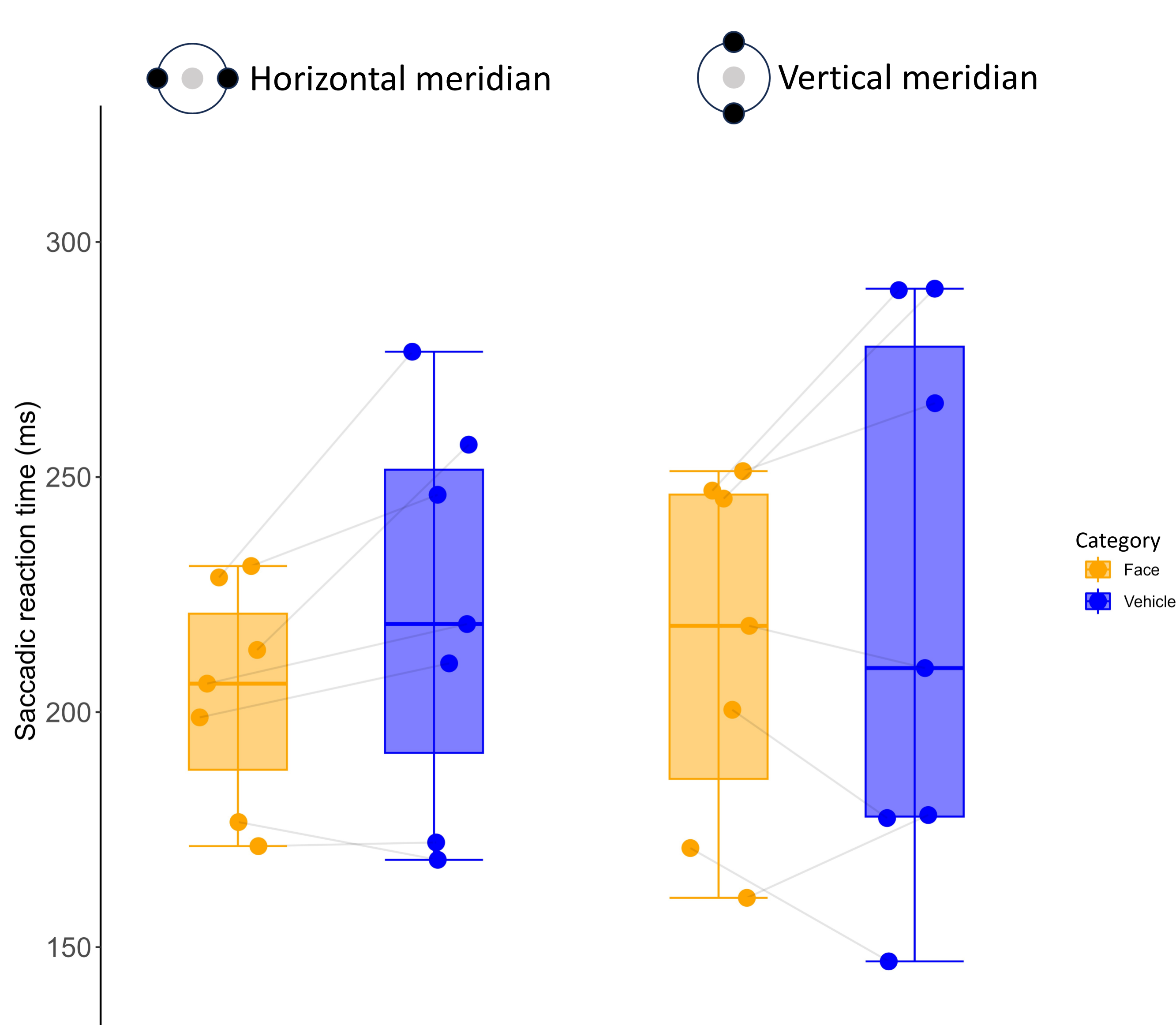


Saccadic reaction times (SRT)

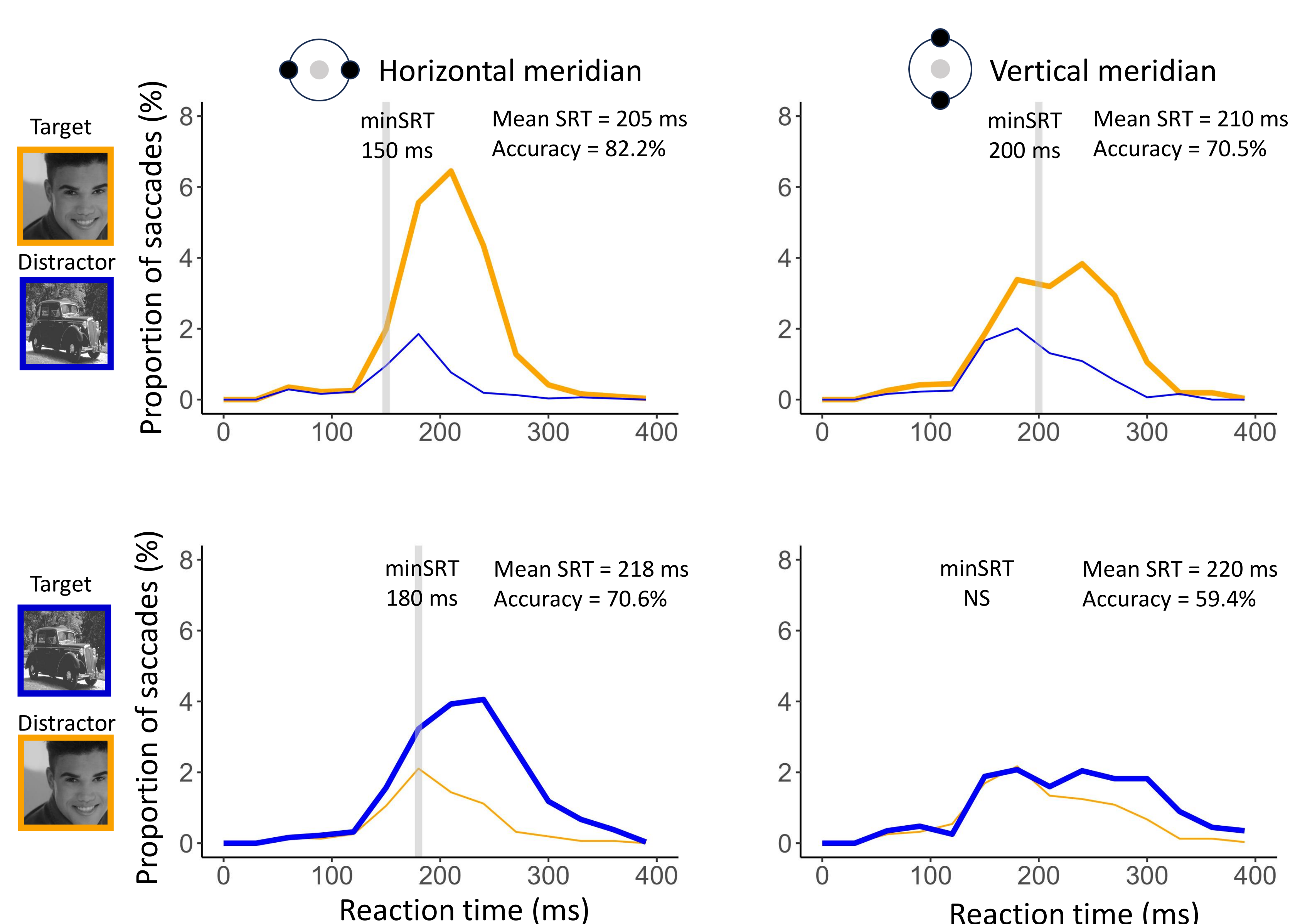
- Seven healthy adults participated (Mean age = 31 (+/- 9.28); six right-handed; 4 women)
- Trials with an SRT inferior to 50 ms or where a blink occurred during stimulus presentation were discarded from analysis (5.97% of the trials).

- The saccadic reaction time (SRT) of correct and incorrect saccades were separately divided into 10-ms bins.
- If the proportion of correct responses surpassed the proportion of incorrect responses (χ^2 test, $p < .05$) over five consecutive bins, the first bin was taken as the minimum SRT (minSRT).

Group-averaged SRT



Proportion of saccades as a function of SRT



Conclusion

Our **preliminary findings** indicate that:

- Saccades are faster and more accurate towards faces than vehicles both along the horizontal and vertical meridians.
- The accuracy and latency of saccades towards faces in the vertical meridian are comparable to that observed for vehicles in the horizontal meridian.
- Presenting stimuli along the vertical meridian severely slows down and compromises the accuracy of saccadic behavior towards faces and vehicles, which aligns with previous findings^[11].

Vehicle and face images both contain a large amount of horizontal energy. Follow-up studies will employ less horizontally-biased non-face categories to further investigate the potential impact of radial biases on ultra-fast saccades towards faces.

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