Behavioural Analysis

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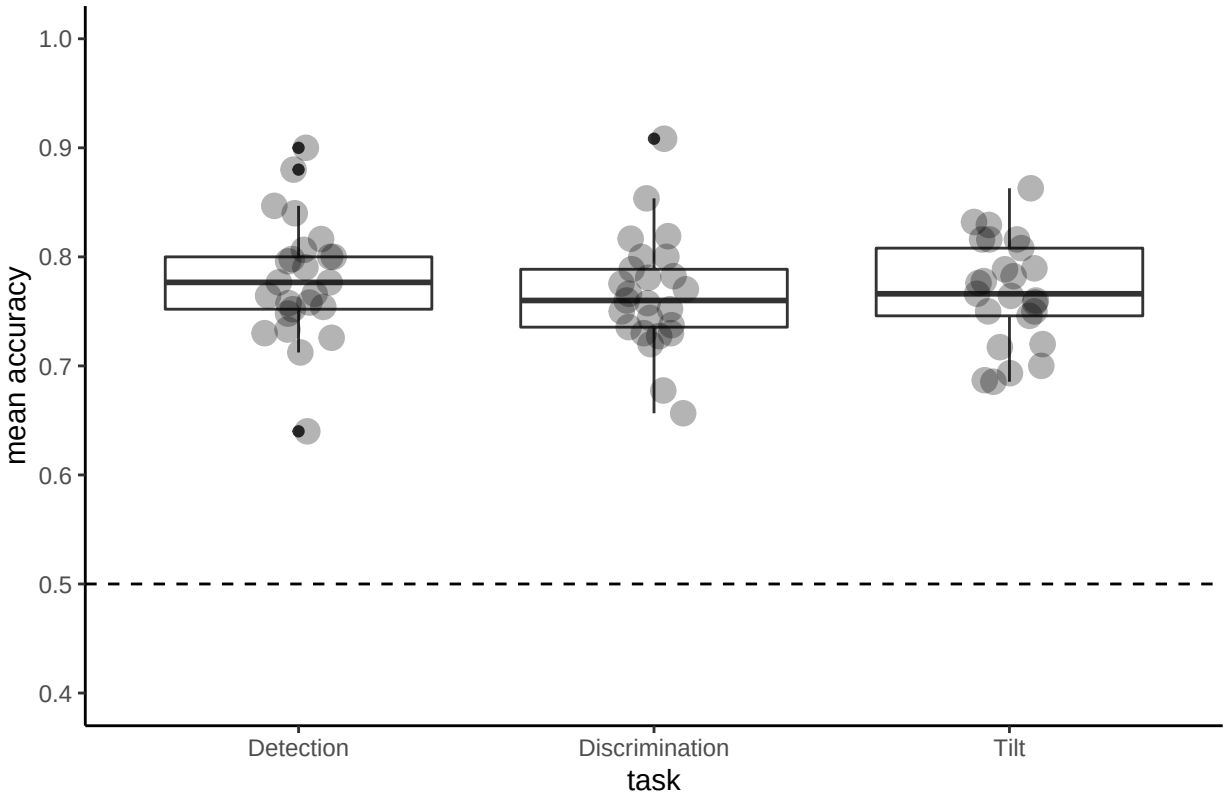
1.Performance across different tasks.

Fig.1 Mean accuracy



Mean performance for each task

Performan across the three tasks, detection (accuracy= 0.78, d'= 1.80), discrimination (accuracy= 0.77, d'= 1.54) and tilt recognition (accuracy = 0.77, d'= 1.96) was similar. An one-way ANOVA failed to detect a significant difference between the accuracy of these threee tasks (F= 0.47, p= 0.63,) and d' (F= 3.20, p= 0.05).

The probability of responding YES in detection was 0.46 (± 0.07), and was significantly different from 0.5 (ADD T TEST RESULTS). The probability of responding CLOCKWISE was 0.51 (± 0.11) and was not significantly different from 0.5. For the tilt recognition task, the probability of responding TILTED was (0.43 ± 0.07).

Response time was faster for correct response (1st quartile= 866.66, median= 916.63, 3rd quartile= 951.57 milliseconds) than incorrect responses (1st quartile= 925.50, median= 1000.10, 3rd quartile= 1075.16 milliseconds). A one-way analysis of variance failed to detect a significant overall effect of responses type in

detection (YES vs. NO, t=0.44 p=0.66), discrimination (CLOCKWISE vs. ANTICLOCKWISE, t=0.82, p= 0.41) and tilt recognition (VERTICAL vs. TILTED, t=-1.69, p= 0.09).

2.Confidence distributions

Fig.2 Detection

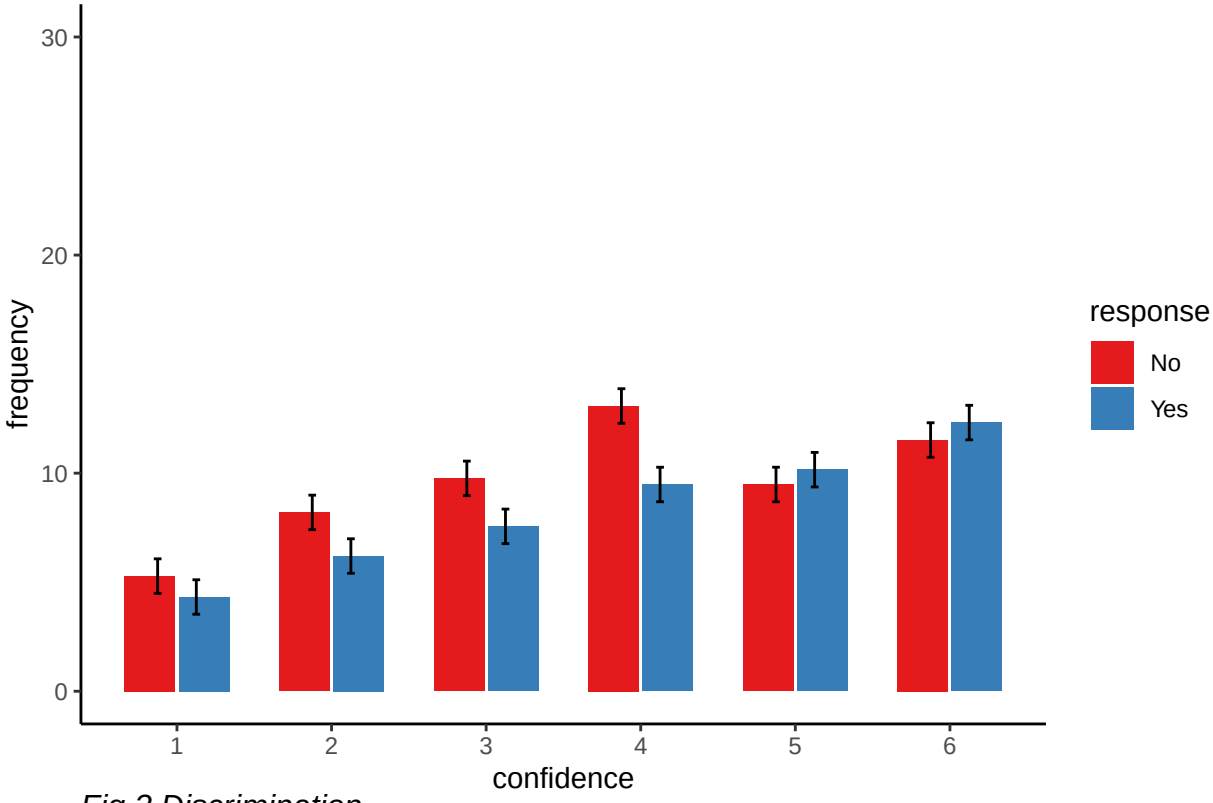


Fig.3 Discrimination

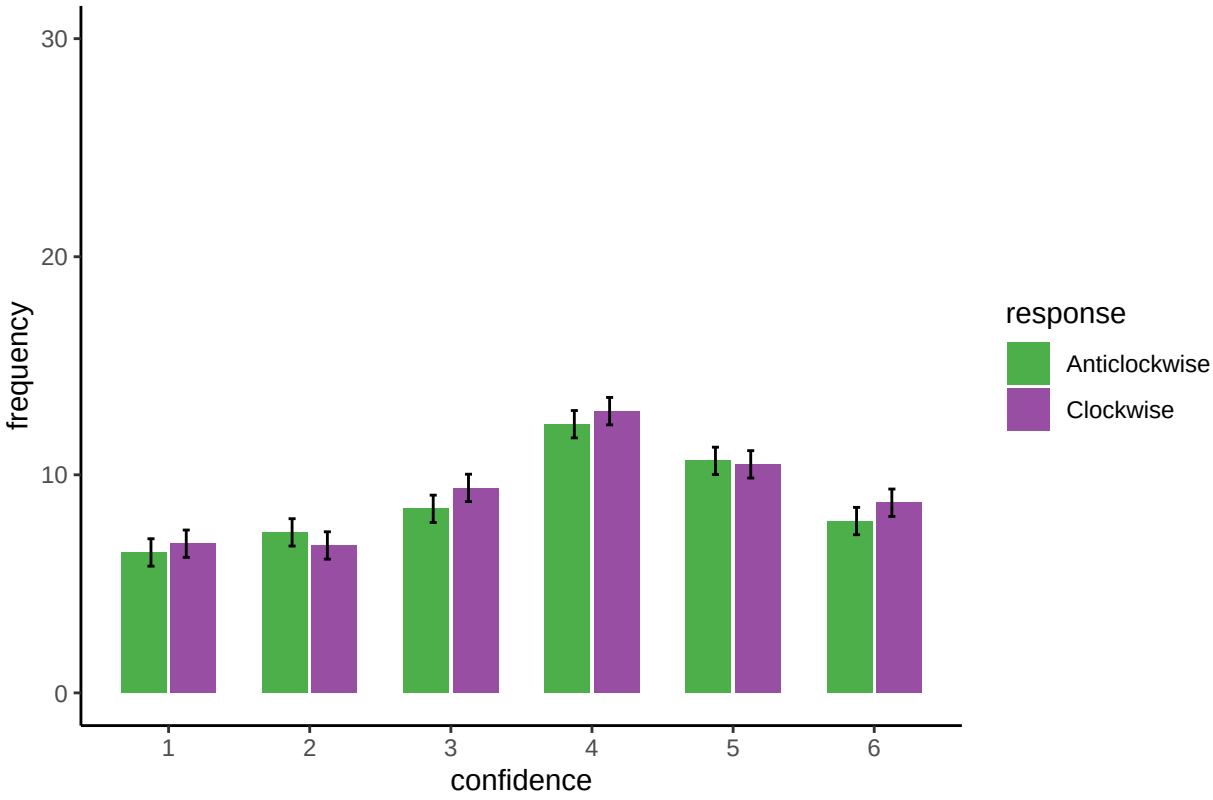
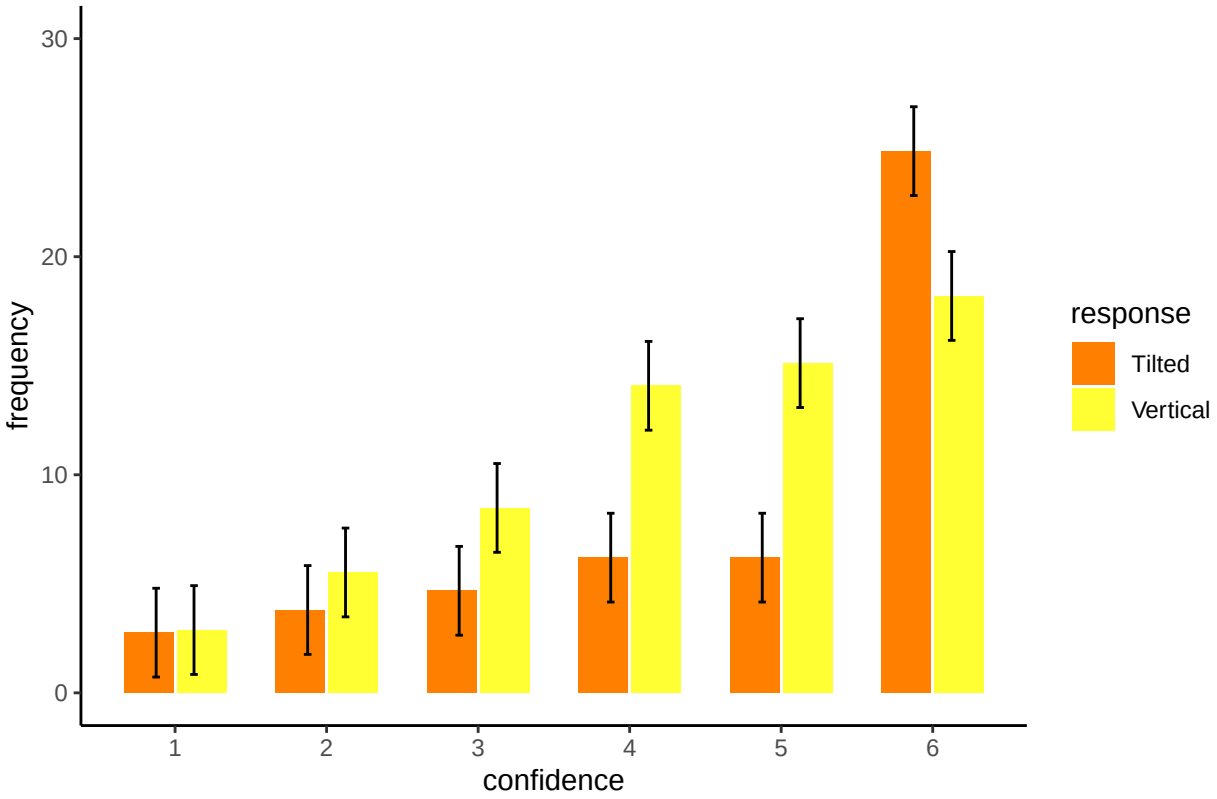


Fig.4 Tilt recognition



Within detection, a significant difference in mean confidence was observed between YES (target present) and NO (target absent) responses (see Fig.4 above), such that participants are more confident in their YES responses (t=-3.27, p = 0.00) and a statistical significance was also observed in the tilt recognition task between TILTED and Vertical response (t=-6.23, p = 0.00).

3.Type 1 ROC curves

Fig.5 Type 1 ROC Detection

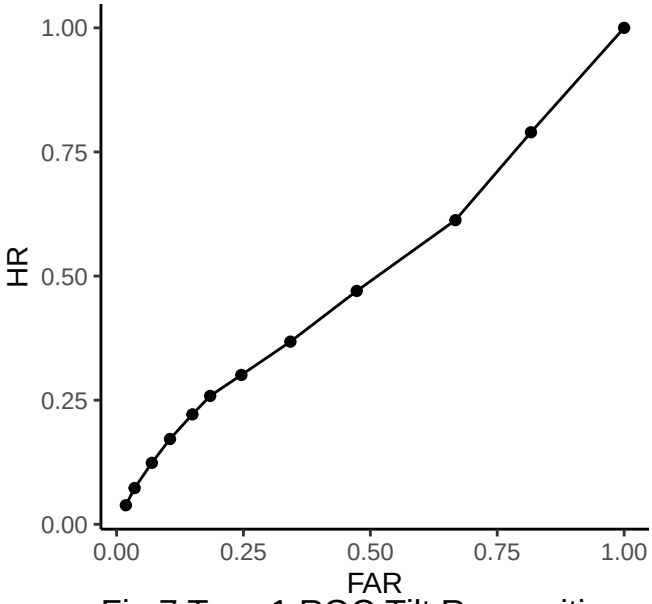


Fig.6 Type 1 ROC Discrimination

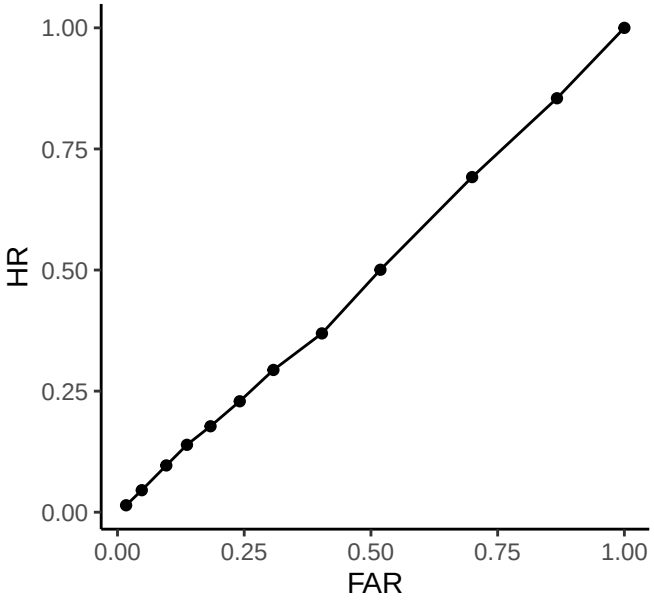
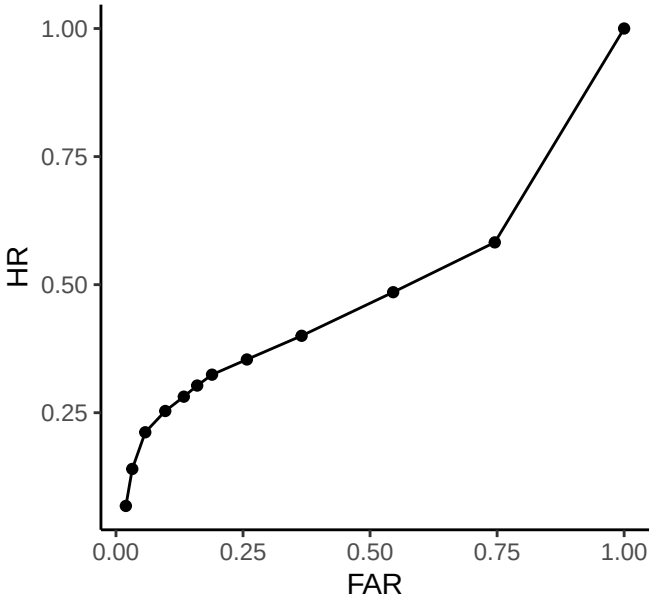


Fig.7 Type 1 ROC Tilt Recognition



4.Type 2 ROC curves

Fig.8 Type 2 ROC Detection

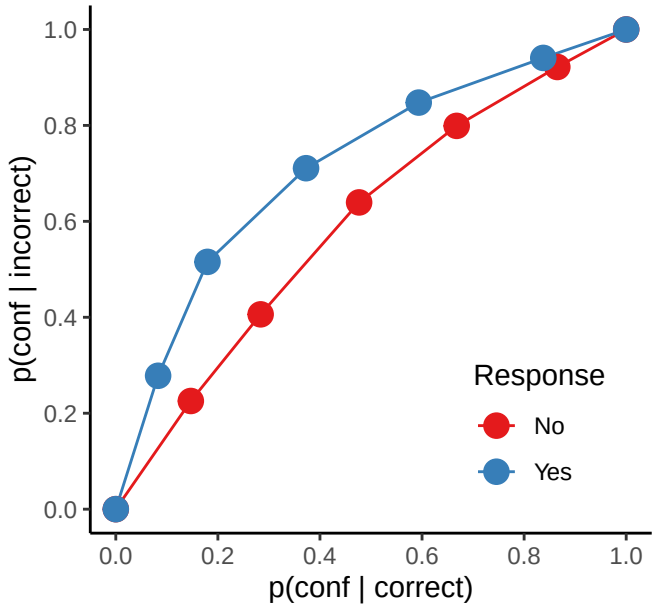


Fig.9 Type 2 ROC Discrimination

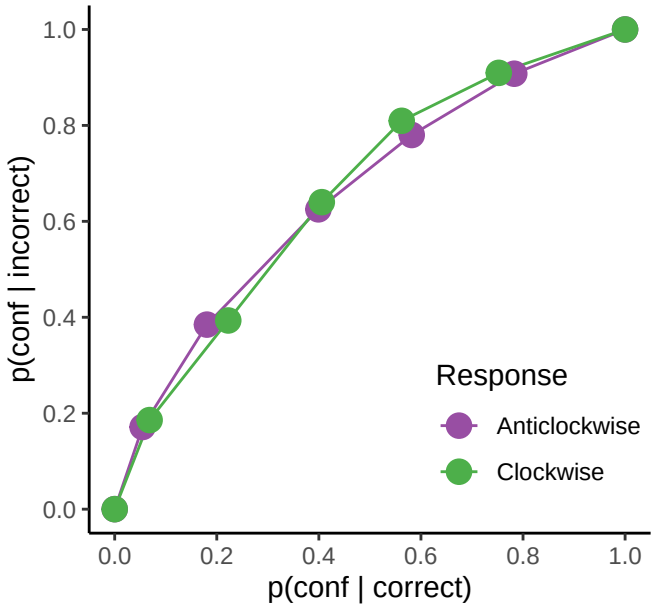
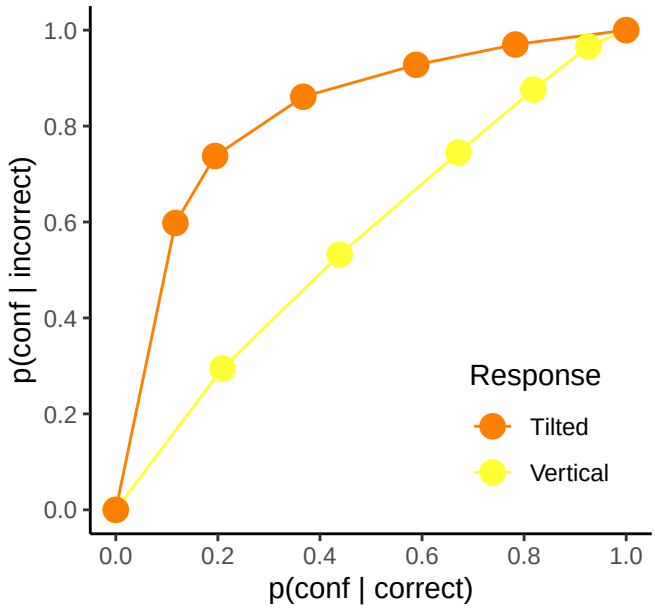


Fig.10 Type 2 ROC Tilt



Citation

(Denison et al. 2018)(Mazor, Friston, and Fleming 2020)

Reference

Denison, Rachel N., William T. Adler, Marisa Carrasco, and Wei Ji Ma. 2018. "Humans Incorporate Attention-Dependent Uncertainty into Perceptual Decisions and Confidence." *Proceedings of the National Academy of Sciences of the United States of America* 115 (43): 11090–5. https://doi.org/10.1073/pnas.1717720115.

Mazor, Matan, Karl J Friston, and Stephen M Fleming. 2020. "Distinct Neural Contributions to Metacognition for Detecting, but Not Discriminating Visual Stimuli." Edited by Thorsten Kahnt, Joshua I Gold, and Michael Graziano. *eLife* 9 (April). eLife Sciences Publications, Ltd: e53900. https://doi.org/10.7554/eLife.53900.