Behavioural Analysis

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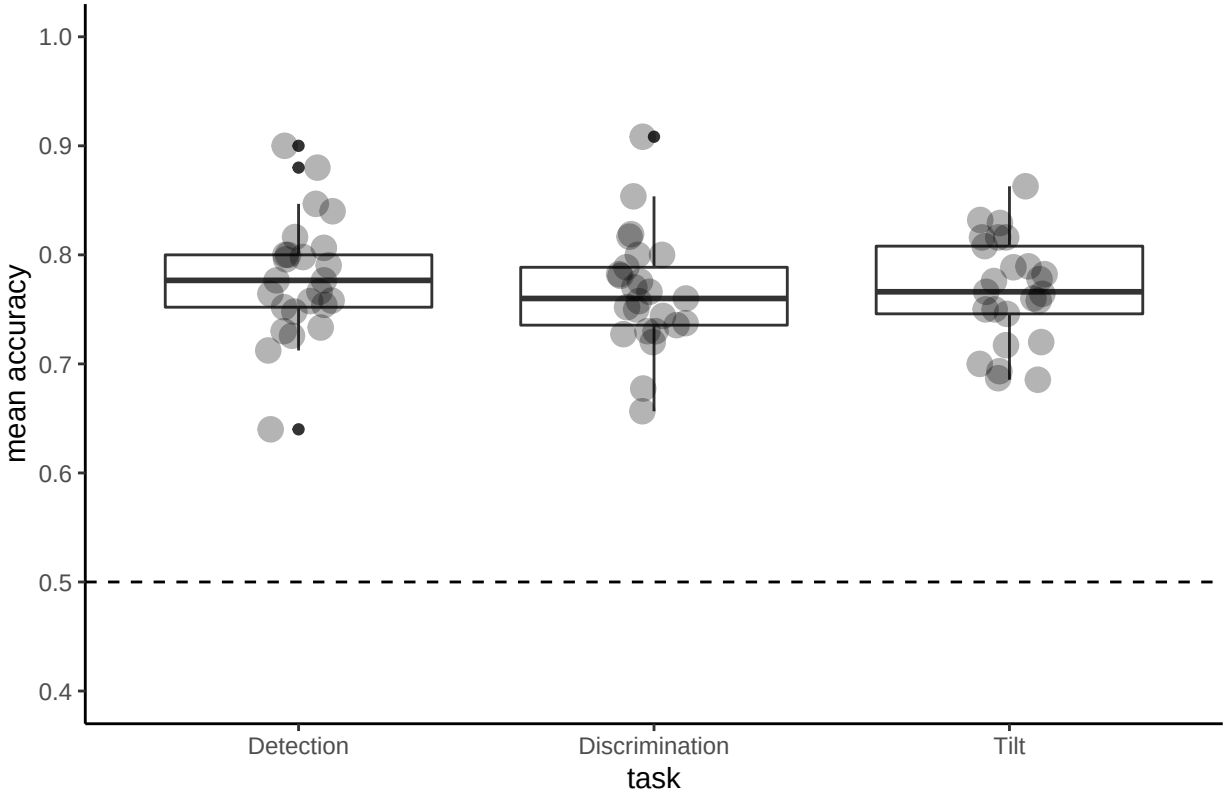
1.Performance across different tasks.

Fig.1 Mean accuracy across three tasks



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

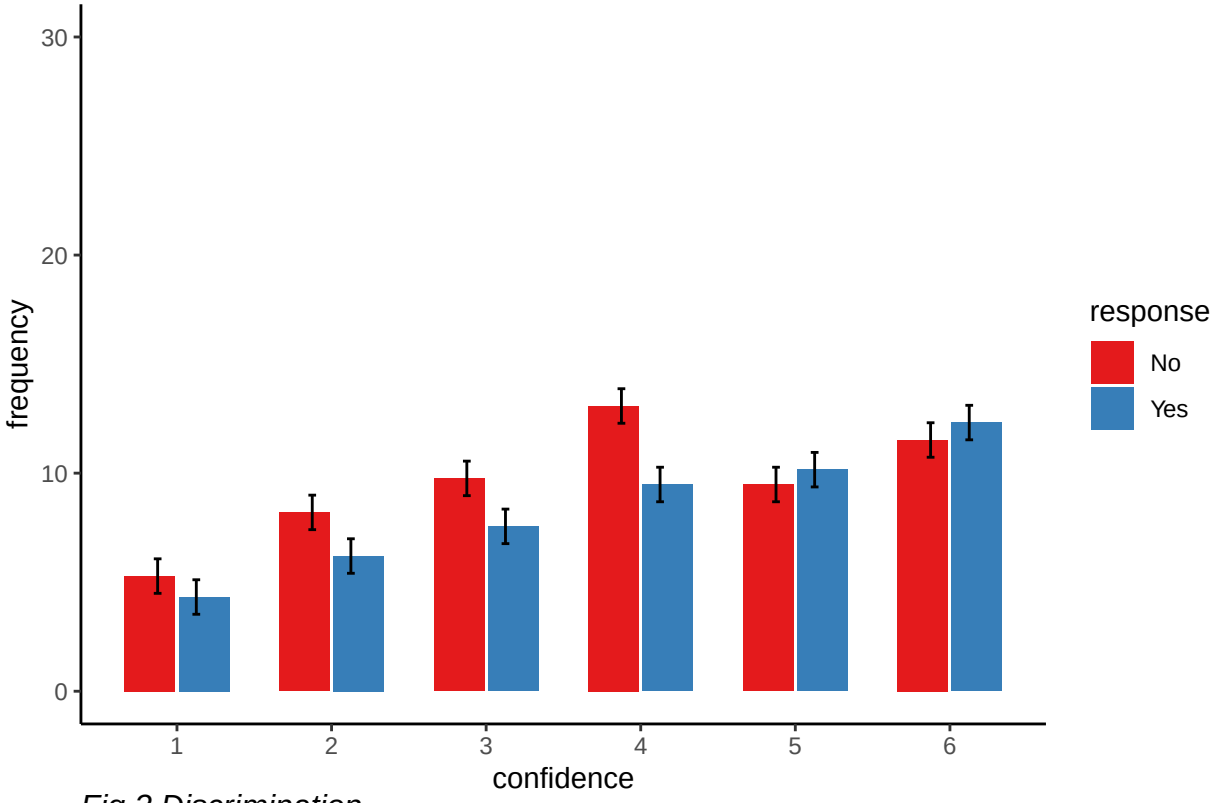


Fig.3 Discrimination

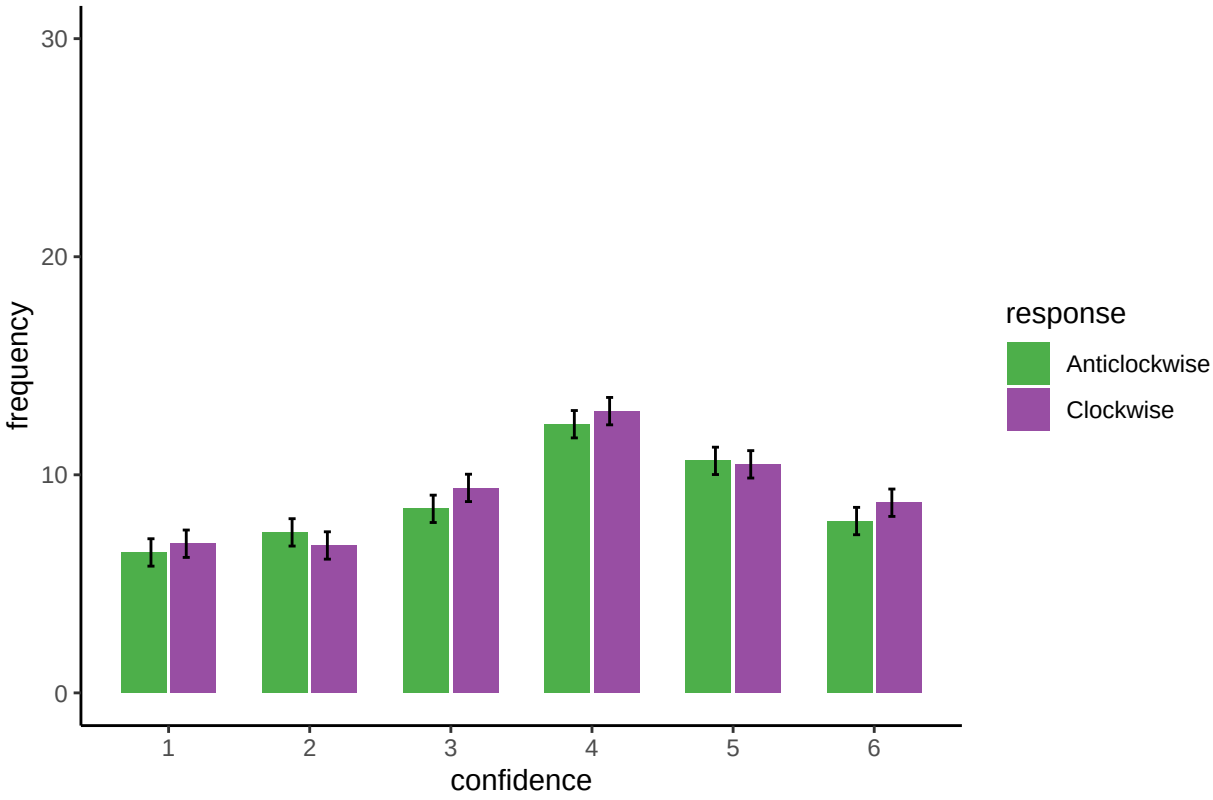
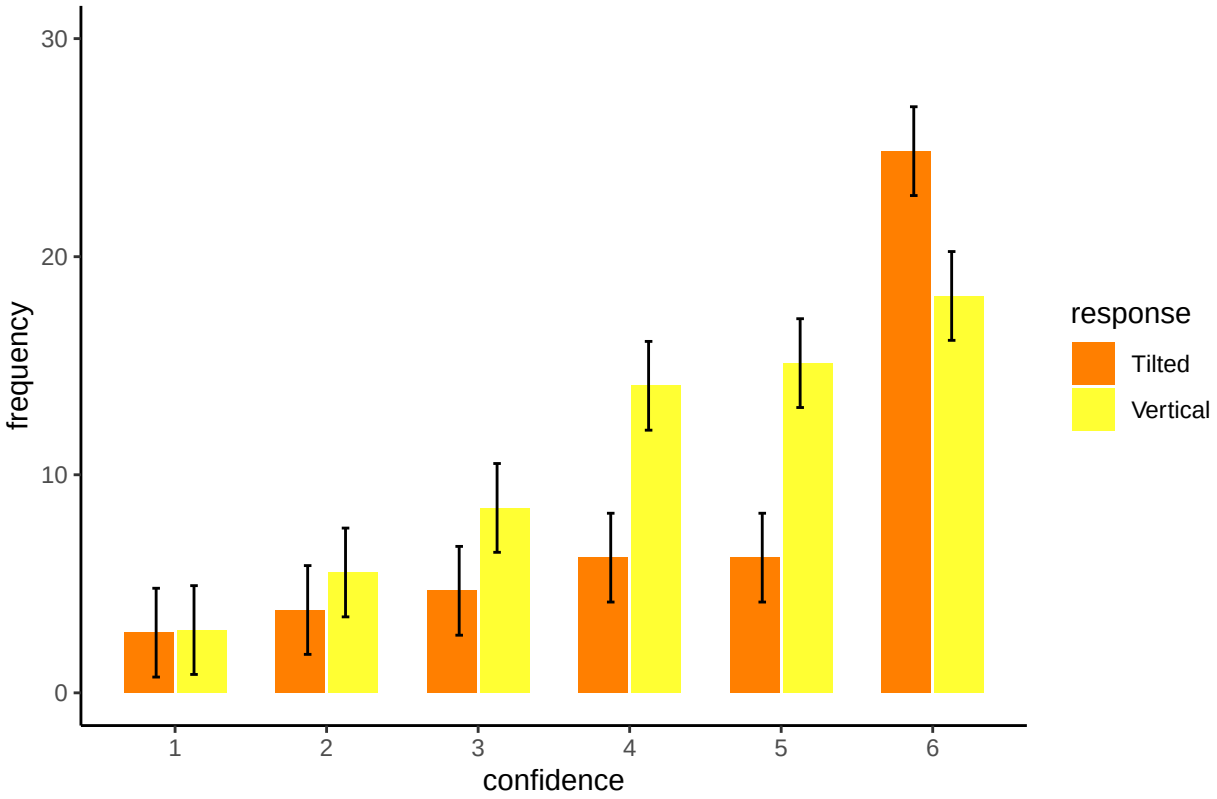


Fig.4 Tilt recognition



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

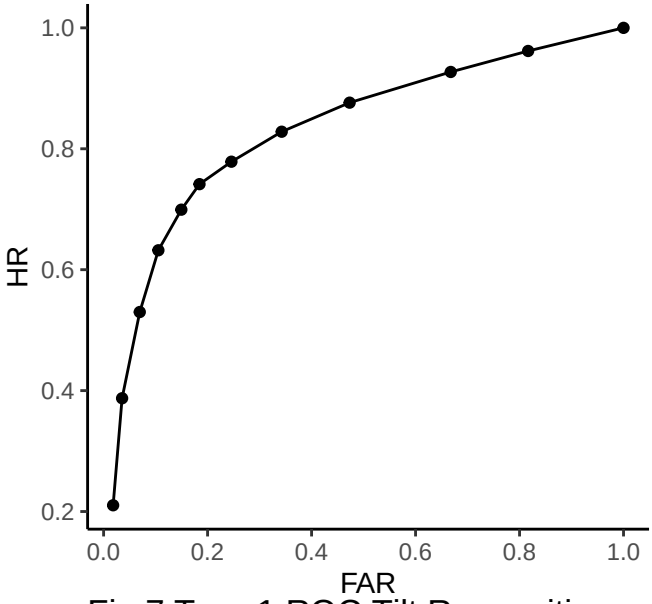


Fig.6 Type 1 ROC Discrimination

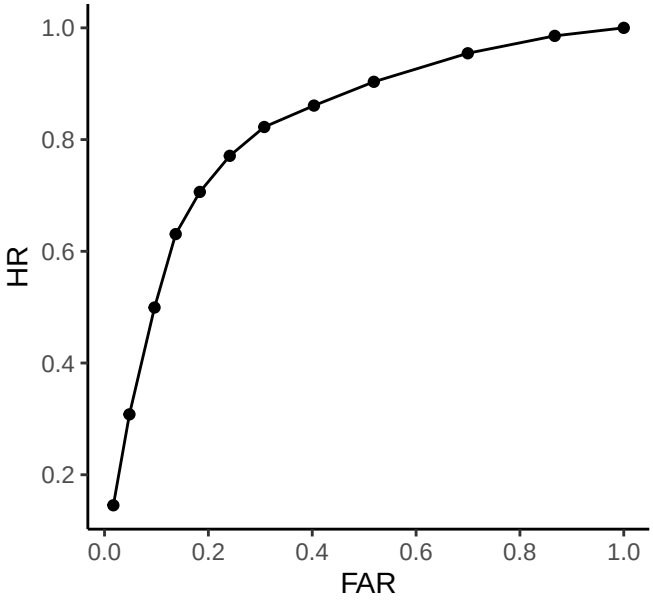
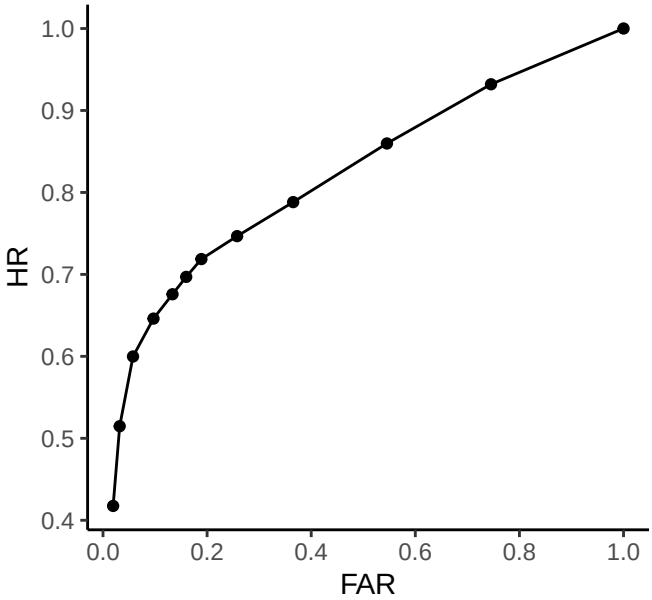


Fig.7 Type 1 ROC Tilt Recognition



4.Type 2 ROC curves

Fig.8 Type 2 ROC Detection

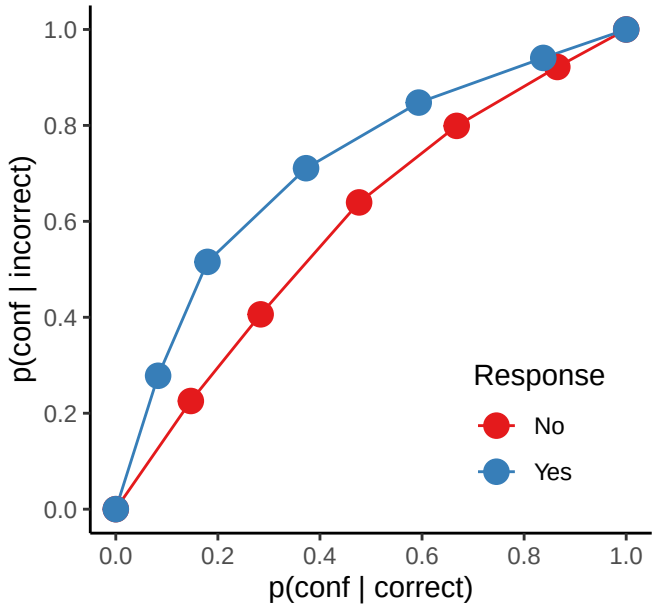


Fig.9 Type 2 ROC Discrimination

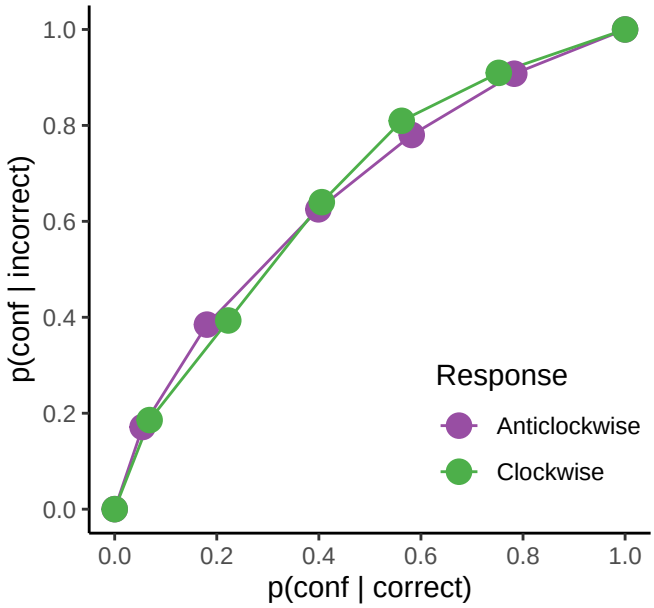
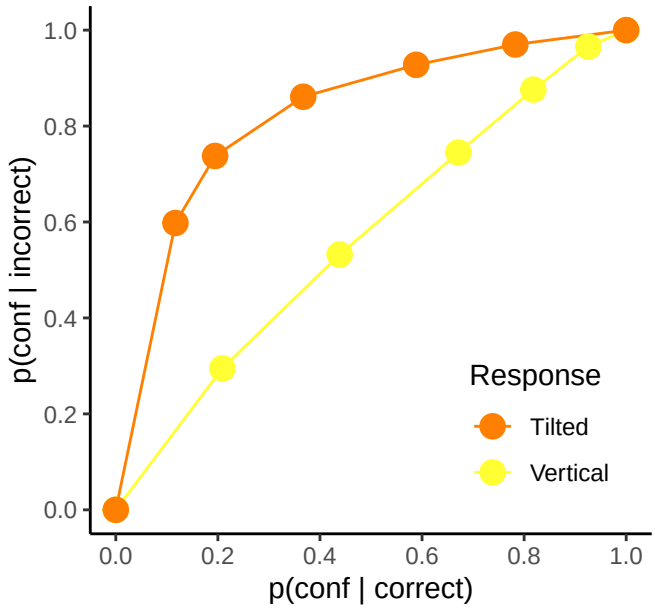
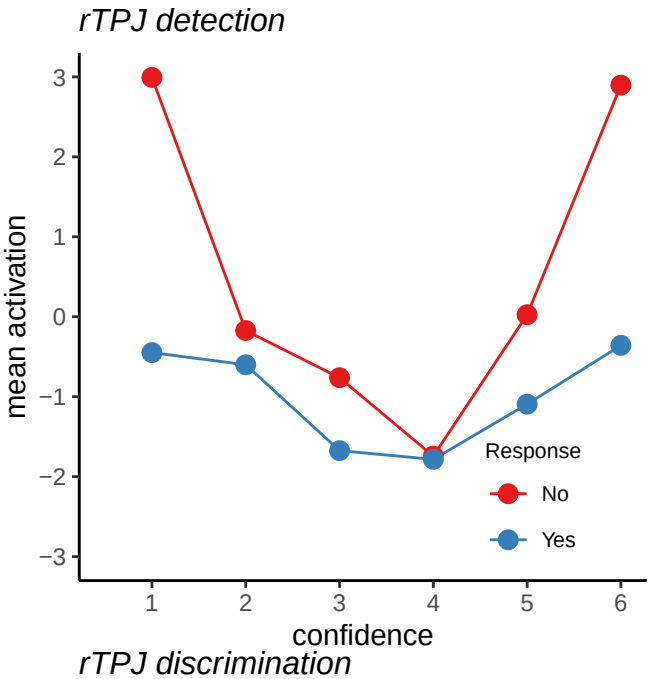
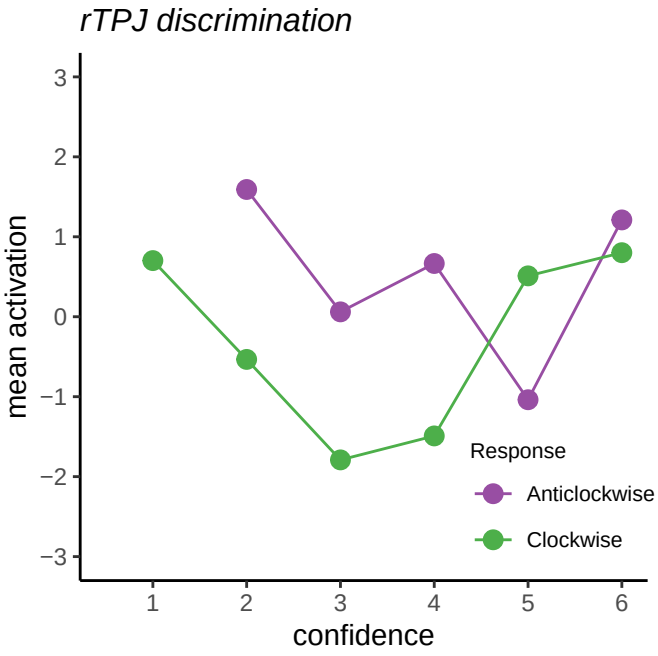
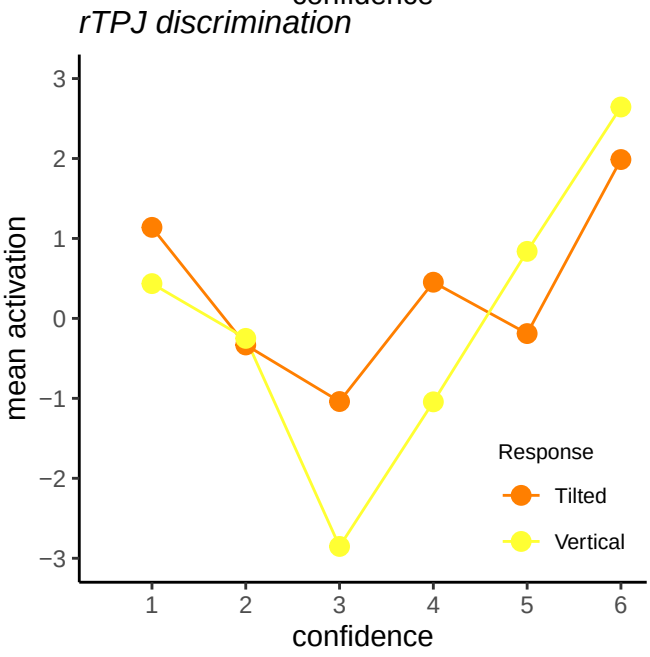


Fig.10 Type 2 ROC Tilt




rTPJ detection
mean activation
confidence
Response
No
Yes


rTPJ discrimination
mean activation
confidence
Response
Anticlockwise
Clockwise


rTPJ discrimination
mean activation
confidence
Response
Tilted
Vertical

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.