

Basic shapes guide visual attention based on search goals

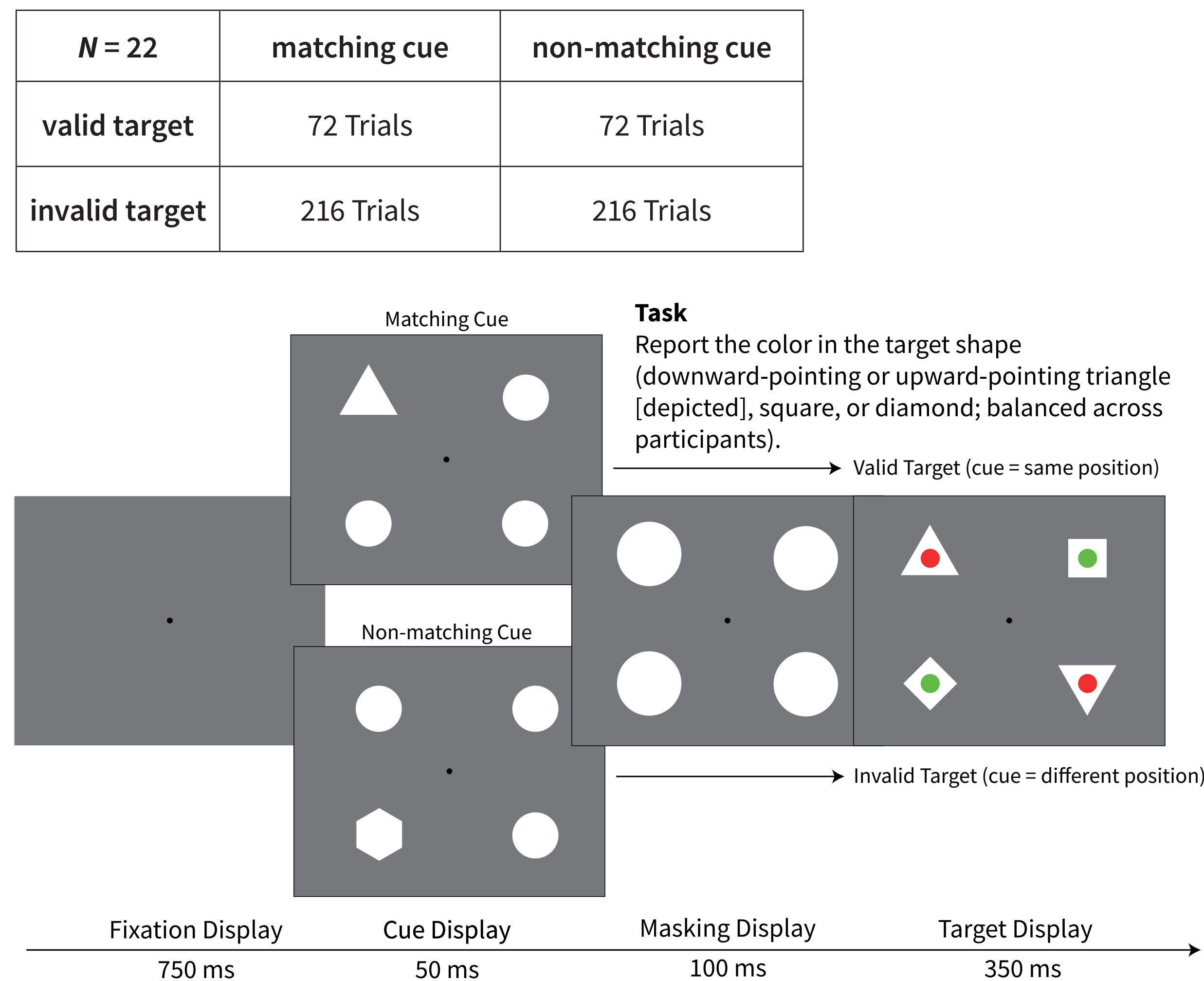
Experiment 1

Design and Procedure

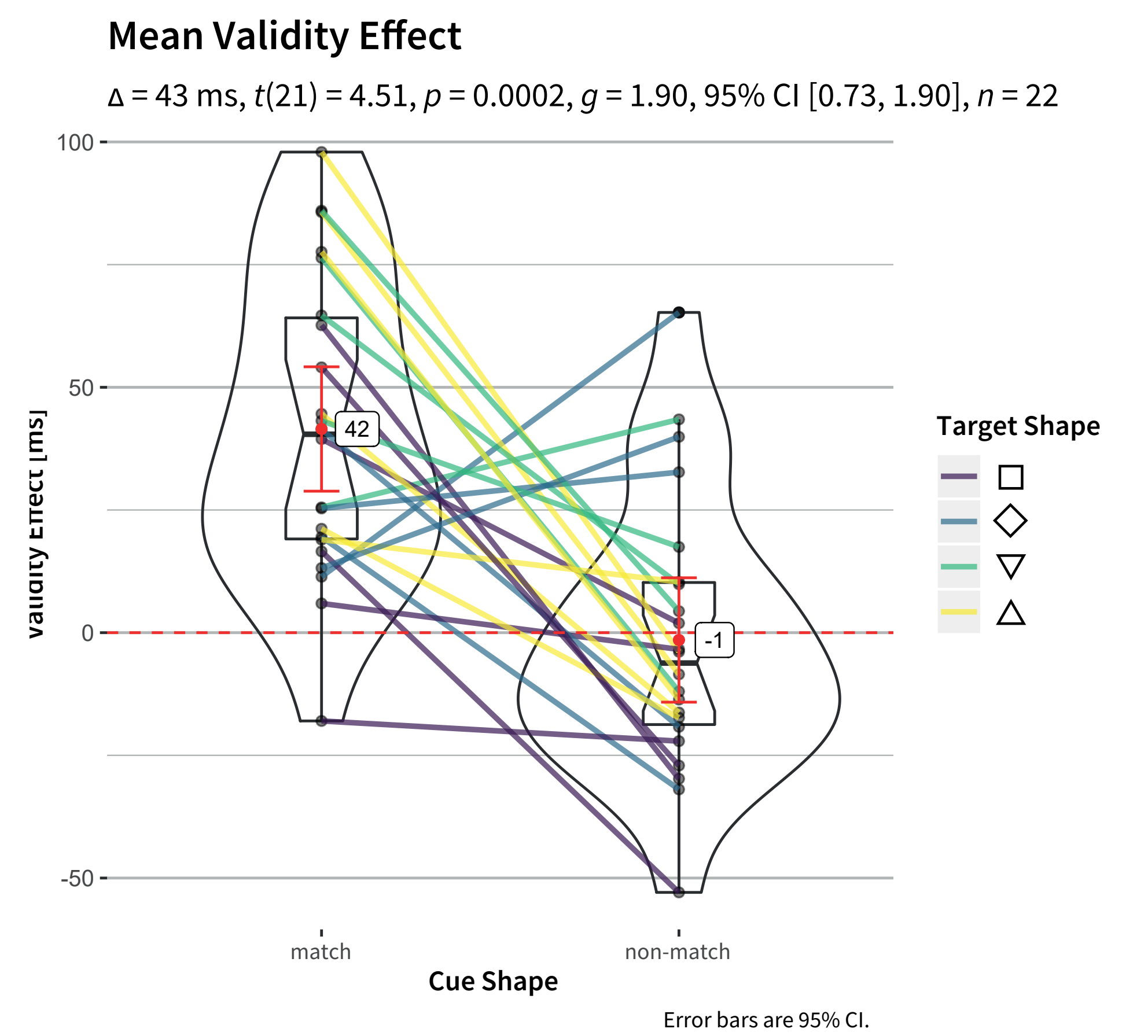
Results

Cues matching the searched-for target shape captured attention.

Non-matching cues did not capture attention, despite being a salient singleton.



We used the mean reaction times of correctly answered trials to calculate the validity effect (mean reaction time in valid trials compared to invalid trials).

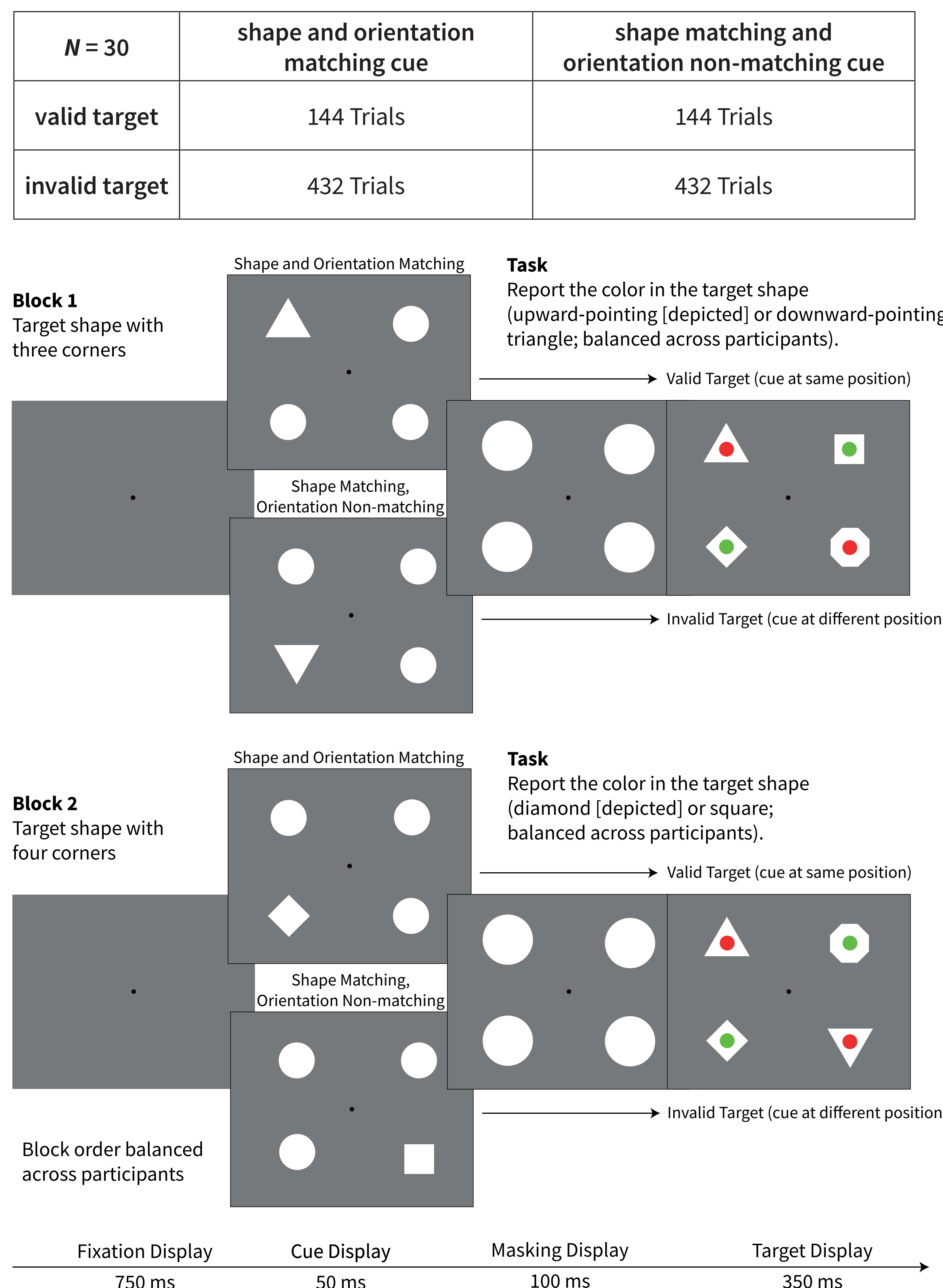


Experiment 2

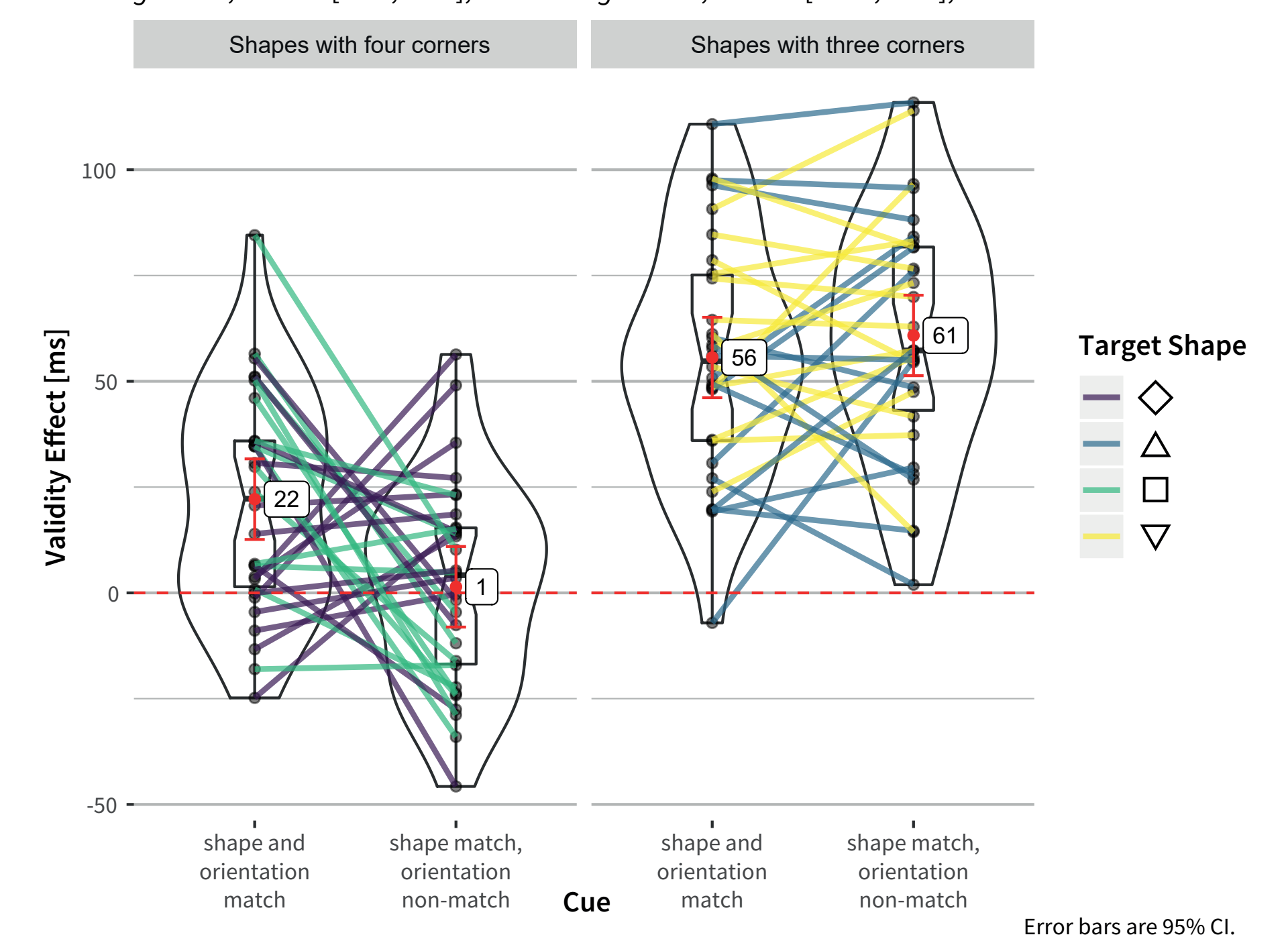
Shapes with three corners captured attention independent of orientation.

As long as the cue is the same shape as the searched-for target, it captures attention.

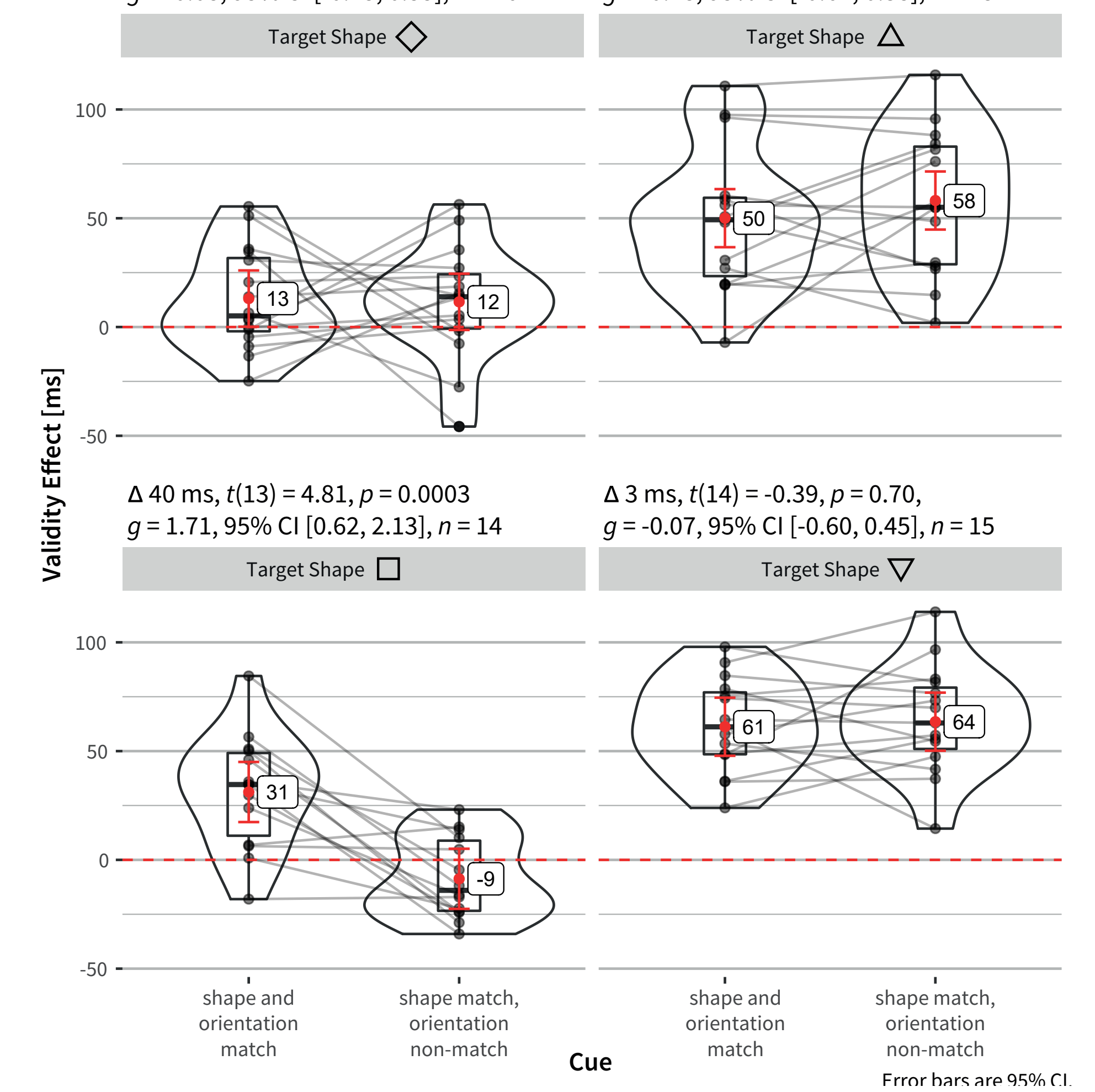
For shapes with four corners, the results are not so clear.



Mean Validity Effect per Block
 $\Delta 21 \text{ ms}$, $t(29) = 2.64$, $p = 0.013$, $g = 0.91$, 95% CI [0.20, 0.99], $n = 30$
 $\Delta 5 \text{ ms}$, $t(29) = -1.13$, $p = 0.27$, $g = -0.11$, 95% CI [-0.49, 0.24], $n = 30$



Mean Validity Effect per Target Shape
 $\Delta 1 \text{ ms}$, $t(15) = 0.15$, $p = 0.88$, $g = -0.08$, 95% CI [-0.45, 0.55], $n = 16$
 $\Delta 8 \text{ ms}$, $t(14) = -1.12$, $p = 0.28$, $g = -0.18$, 95% CI [-0.67, 0.38], $n = 15$



Conclusion

According to the contingent capture hypothesis, only stimuli that share a feature with the searched-for target capture attention (Folk, Remington, & Johnston, 1992). We showed that not only color and orientation but also basic shapes could guide visual attention in a goal-directed manner, and that guidance was not based on specific orientations matching the target shape.

Reference

Folk, C. L., Remington, R. W., & Johnston, J. C. (1992). Involuntary covert orienting is contingent on attentional control settings. *Journal of Experimental Psychology: Human Perception and Performance*, 18, 1030–1044. <https://doi.org/10.1037/0096-1523.18.4.1030>

