

The time course of the closure superiority effect: An ERP study

Weina Zhu^{1,2,3,4}, Xiaoxuan Du¹, Yuanye Ma²

¹School of Information Science, Yunnan University, China

²Kunming Institute of Zoology, Chinese Academy of Sciences

³Department of Psychology, Giessen University, Germany

⁴CIMeC, Trento University, Italy

Contact: zhuweina.cn@gmail.com

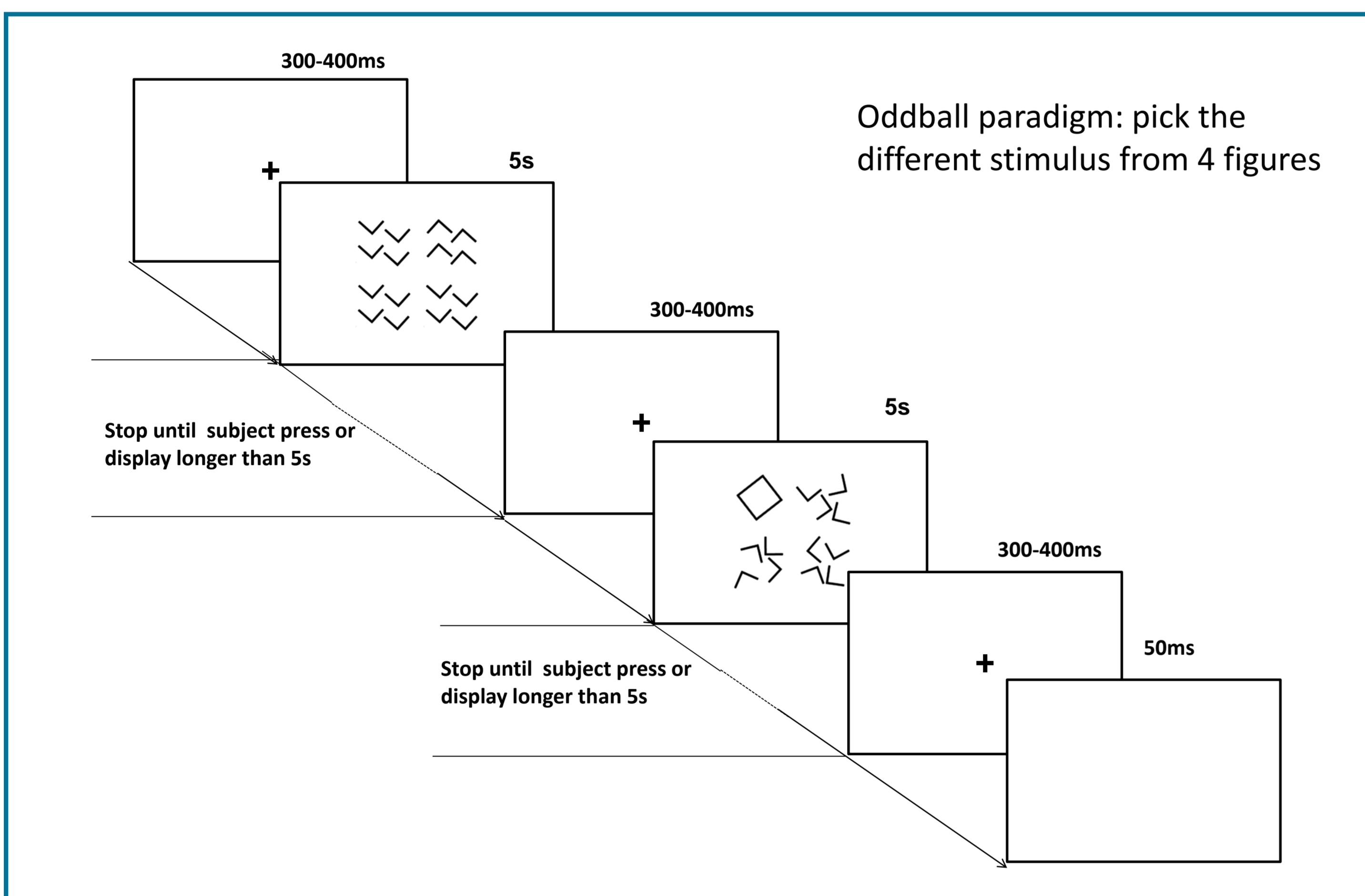


Introduction

The discrimination of closure is typically faster and easier than that of other geometrical features (Pomerantz, Sager et al. 1977; Treisman and Paterson 1984). However, the time course of the closure-superiority effect is still not clear.

Methods

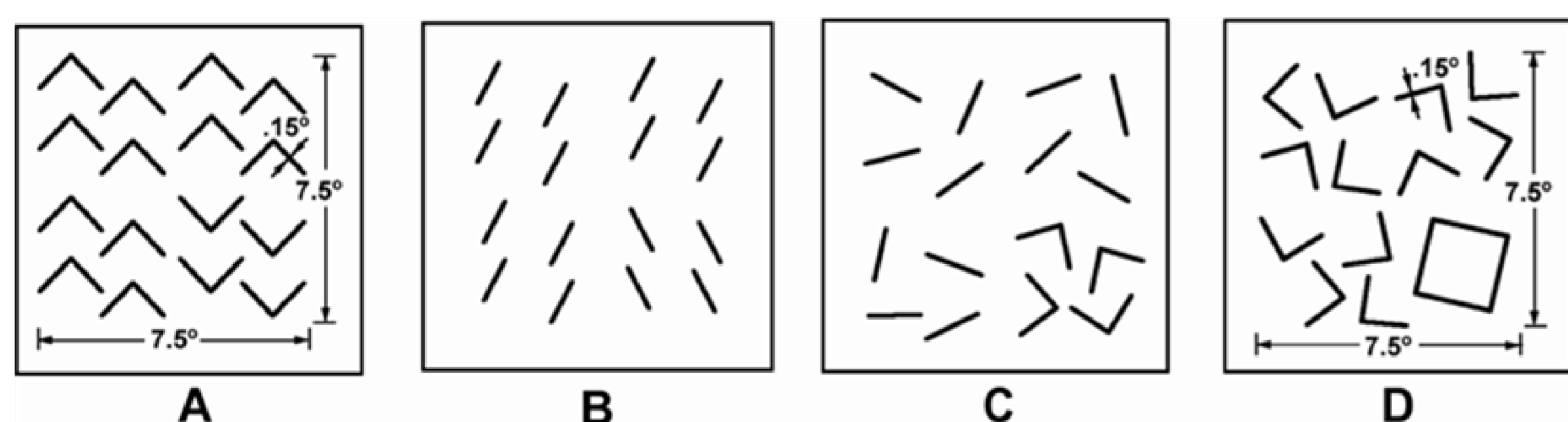
We recorded event-related potentials (ERPs) during an odd-quadrant task. Subjects were asked to point the odd figure that differed from the rest.



Stimuli: Each trial consisted of a set of four figures.

Four groups of well controlled figures were used as stimuli (Chen, 2005). In each group of stimuli, figures differed

- in orientation of angles (A)
- in parallelism (B)
- in collinearity (C)
- in closure (D).

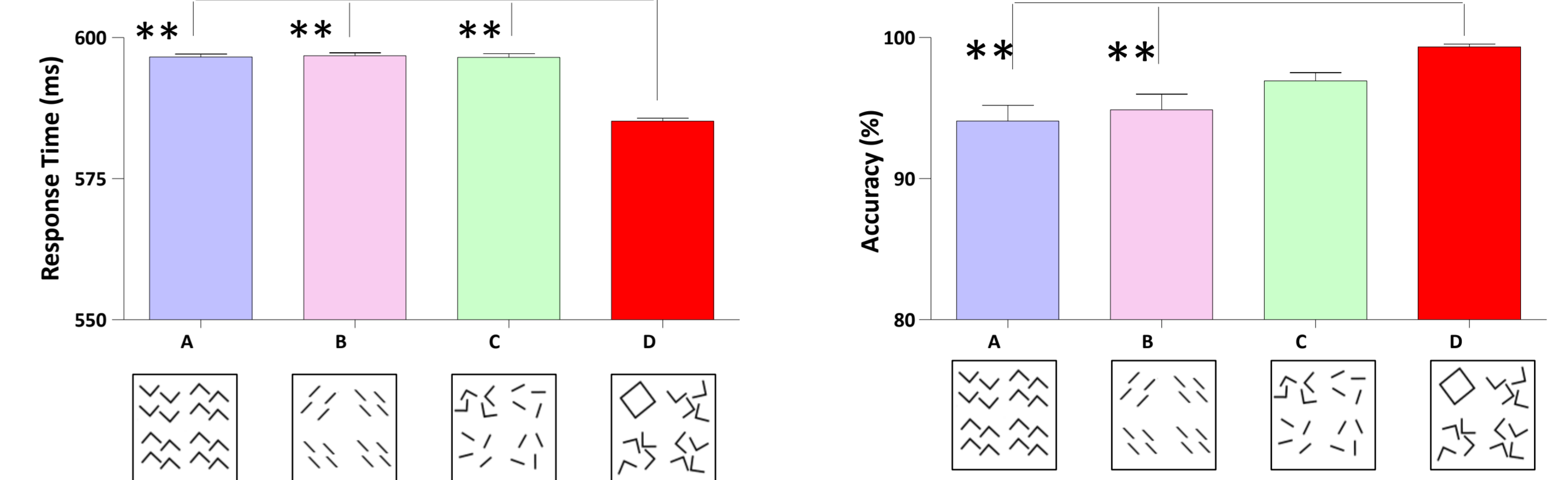


References

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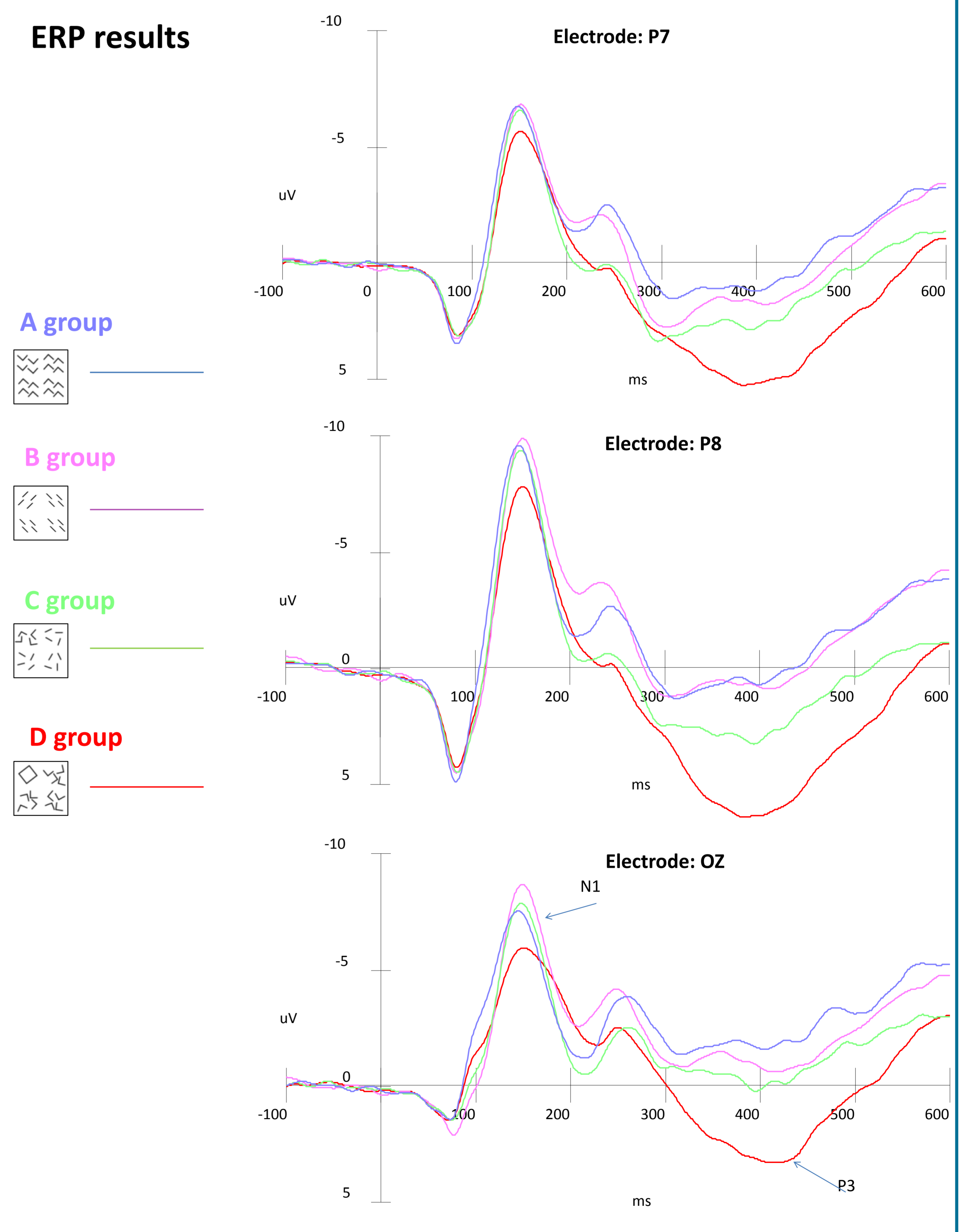
Results

Behavioral results



- The stimulus with closure difference (D) had the shortest Response Time (585.2 ms, $F=104.9$, $P<0.001$) and highest Accuracy (99.3%, $F=7.64$, $P<0.001$).
- There was no significant difference between the other stimuli.

ERP results



Conclusions

Our results indicate that the closure superiority effect in our brain

- starts around 150 ms (N1) after stimulus onset
- and arrived at the max value at around 400ms (P3)

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