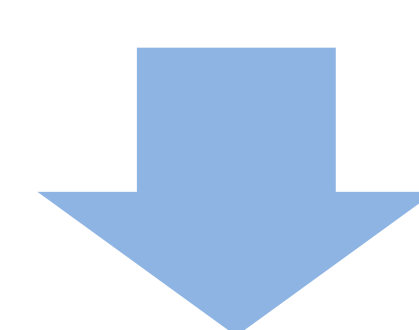


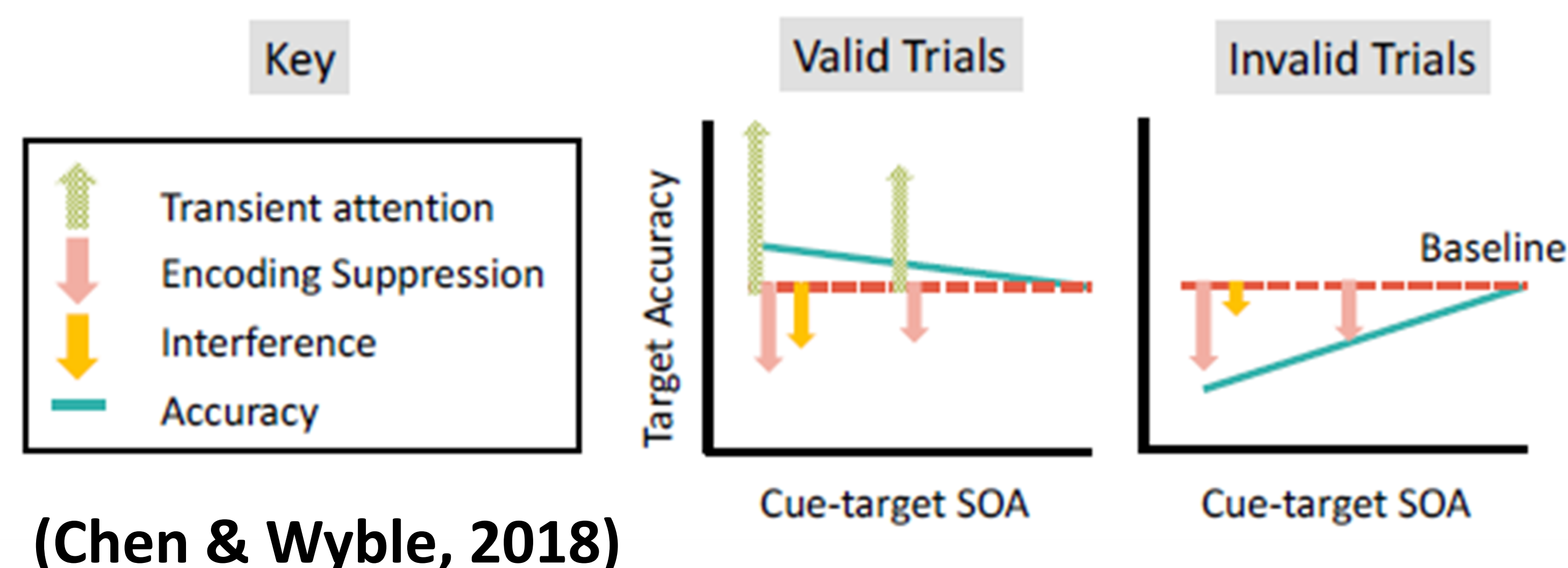
Introduction

Memory Encoding Cost (MEC) Theory :

- Two distinct mechanisms underlying the exogenous spatial cueing effects—
 - Attentional Facilitation at cued location;
 - Nonspatiotopic Attention Suppression caused by memory encoding of cue (e.g., location).



- Cost effect (invalid vs. no cue): Partially or entirely caused by Encoding-Induce Suppression;
- Cueing effect (valid vs. invalid): Representing the Attentional facilitation evoked by the cue;
- Benefit effect (valid vs. no cue): Caused by the net effect of above-mentioned two separate mechanisms.



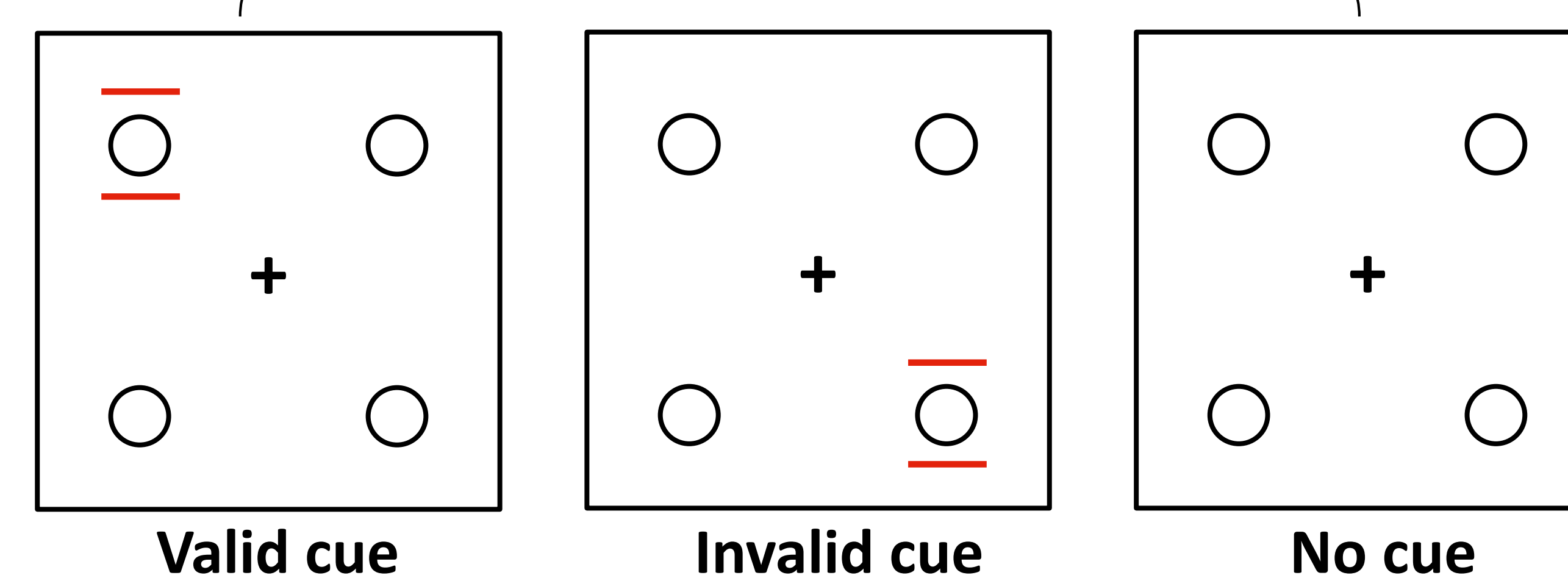
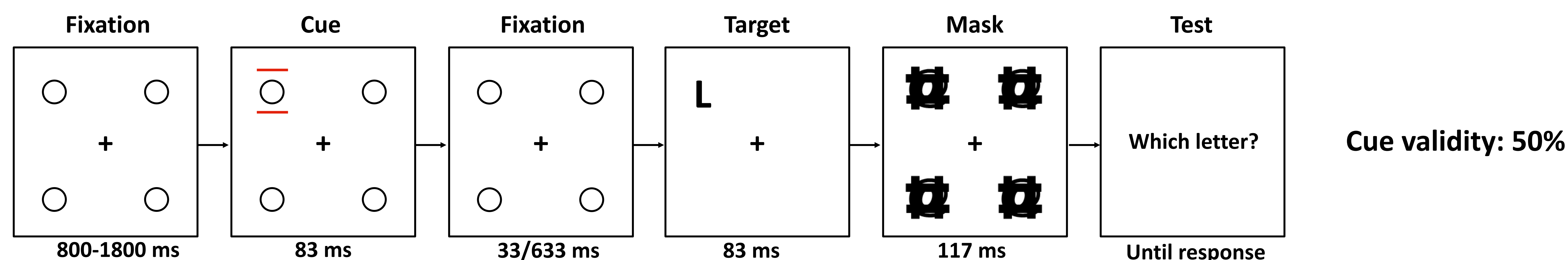
Research Question

How does expectation violation evoked by rare events modulate the exogenous spatial cueing effects?

Conclusion and Discussion

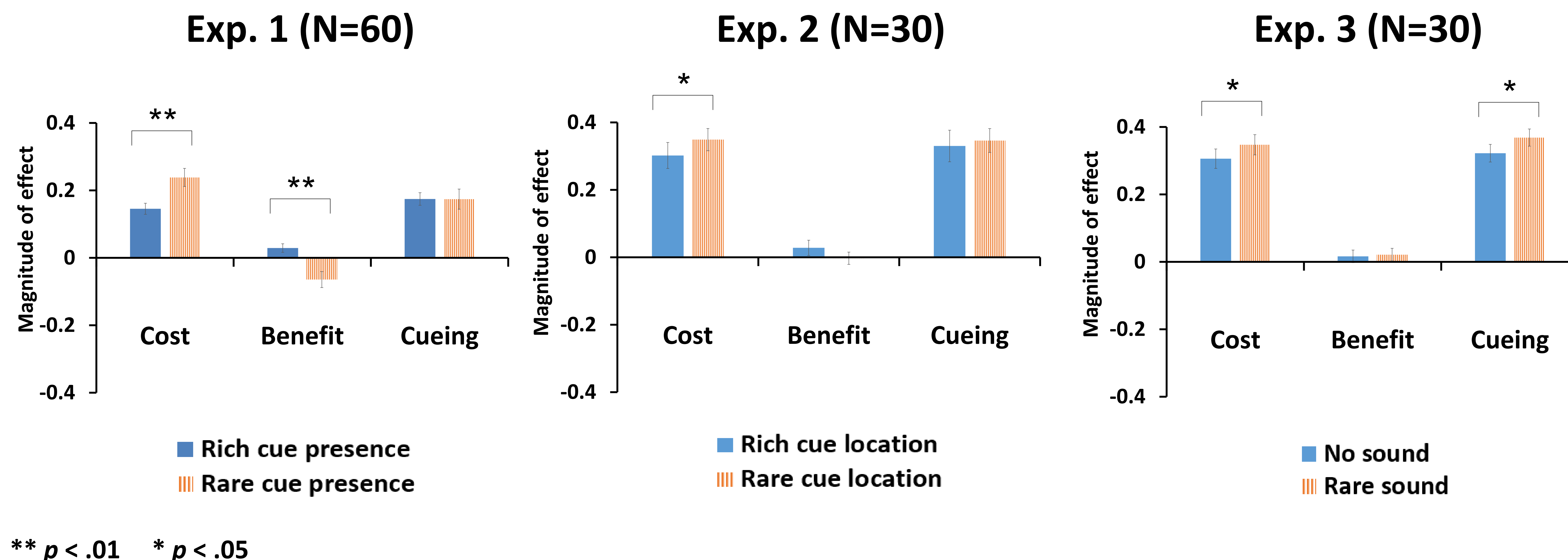
- Expectation violation triggered by rare events modulated the spatial cueing effect mainly by increasing the cost effect (Exp. 1-3), indicating that such a violation facilitated memory encoding of the cue.
- Only expectation violation evoked by rare auditory events enhanced cueing effect (Exp. 3).

Experiments 1-3



Different manipulations of expectation violation:

- Exp. 1: Cue present probability (2/3 vs. 3/10)
- Exp. 2: Cue location probability (70% vs. 30%)
- Exp. 3: Rare sound presence (20% trials, 1500 Hz)



References

- Chen, H., & Wyble, B. (2018). The neglected contribution of memory encoding in spatial cueing: A new theory of costs and benefits. *Psychological Review*, 125(6), 936-968.
- Chen, H., Yan, NY., Zhu, P., Wyble, B., Eitam, B., Shen, MW (2019). Expecting the unexpected: Violation of Expectation shifts strategies toward information exploration. *Journal of Experimental Psychology: Human Perception and Performance*, 4,513-522.

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