



# The effect of criterion setting on finding neural correlates of unconscious processing

Johannes J. Fahrenfort<sup>1,2,3</sup>, Niels A. Kloosterman<sup>4,5</sup>, Philippa Johnson & Simon van Gaal<sup>1,2</sup>

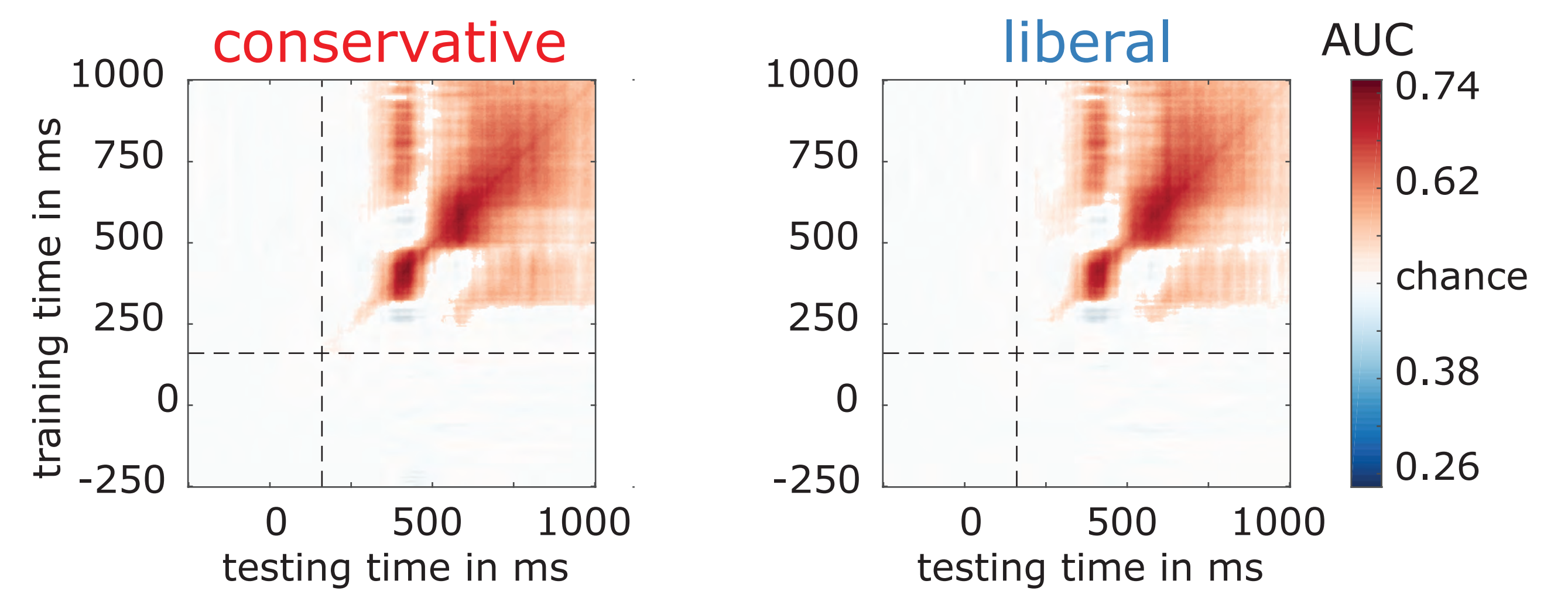
e-mail:  
fahrenfort.work@gmail.com

1. Department of Psychology, University of Amsterdam, Amsterdam, the Netherlands  
 2. Amsterdam Brain and Cognition (ABC), University of Amsterdam, Amsterdam, the Netherlands  
 3. Department of Experimental and Applied Psychology, Institute Brain and Behavior Amsterdam (IBBA), VU University, Amsterdam, the Netherlands  
 4. Max Planck UCL Centre for Computational Psychiatry and Ageing Research, Max Planck Institute for Human Development, Berlin, Germany  
 5. Center for Lifespan Psychology, Max Planck Institute for Human Development, Berlin, Germany

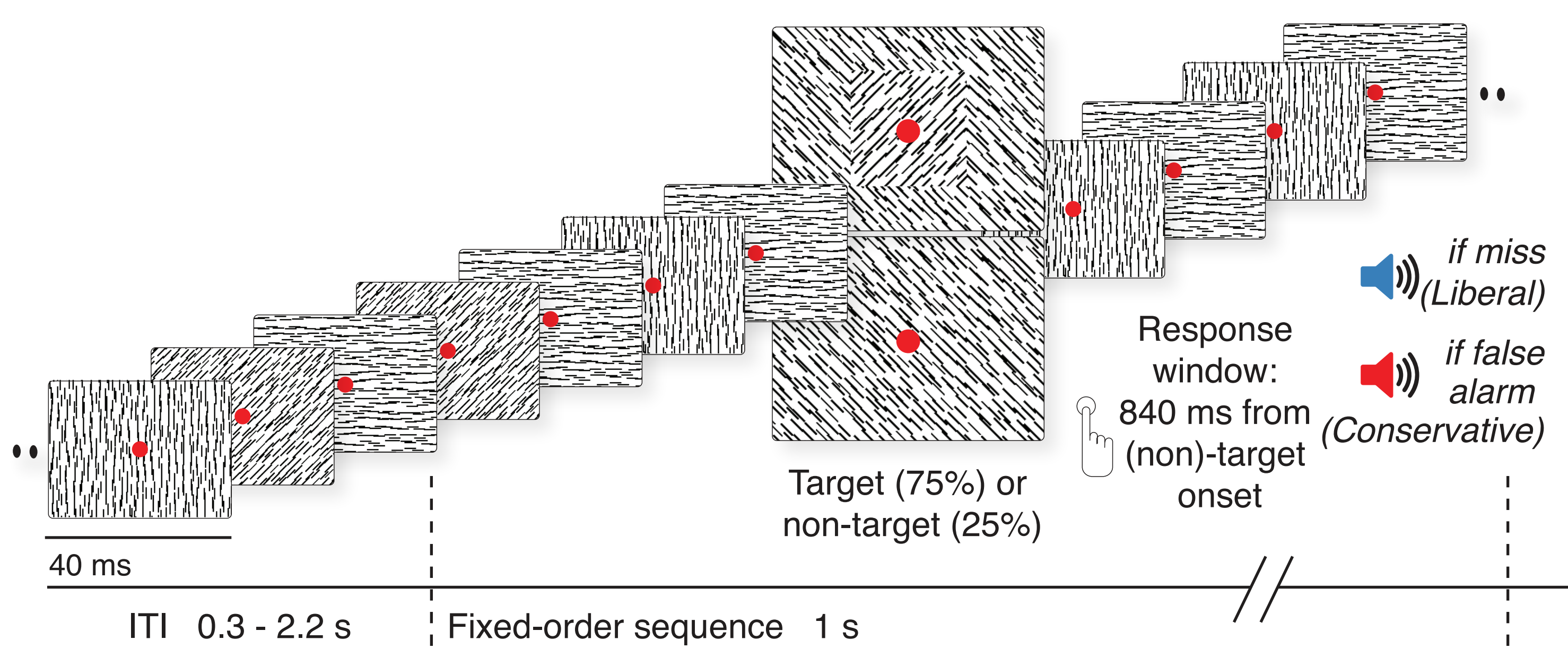
## Research questions

- Exp 1. What is the impact of criterion setting on the putative correlate of 'unconscious' processing when analyzing neural data contingent on post-hoc selection of 'unseen' trials?
- Exp 2. To what extent does the Perceptual Awareness Scale (PAS) mitigate this issue by enforcing a 'stable' criterion?

## EEG decoding: all targets vs all non-targets

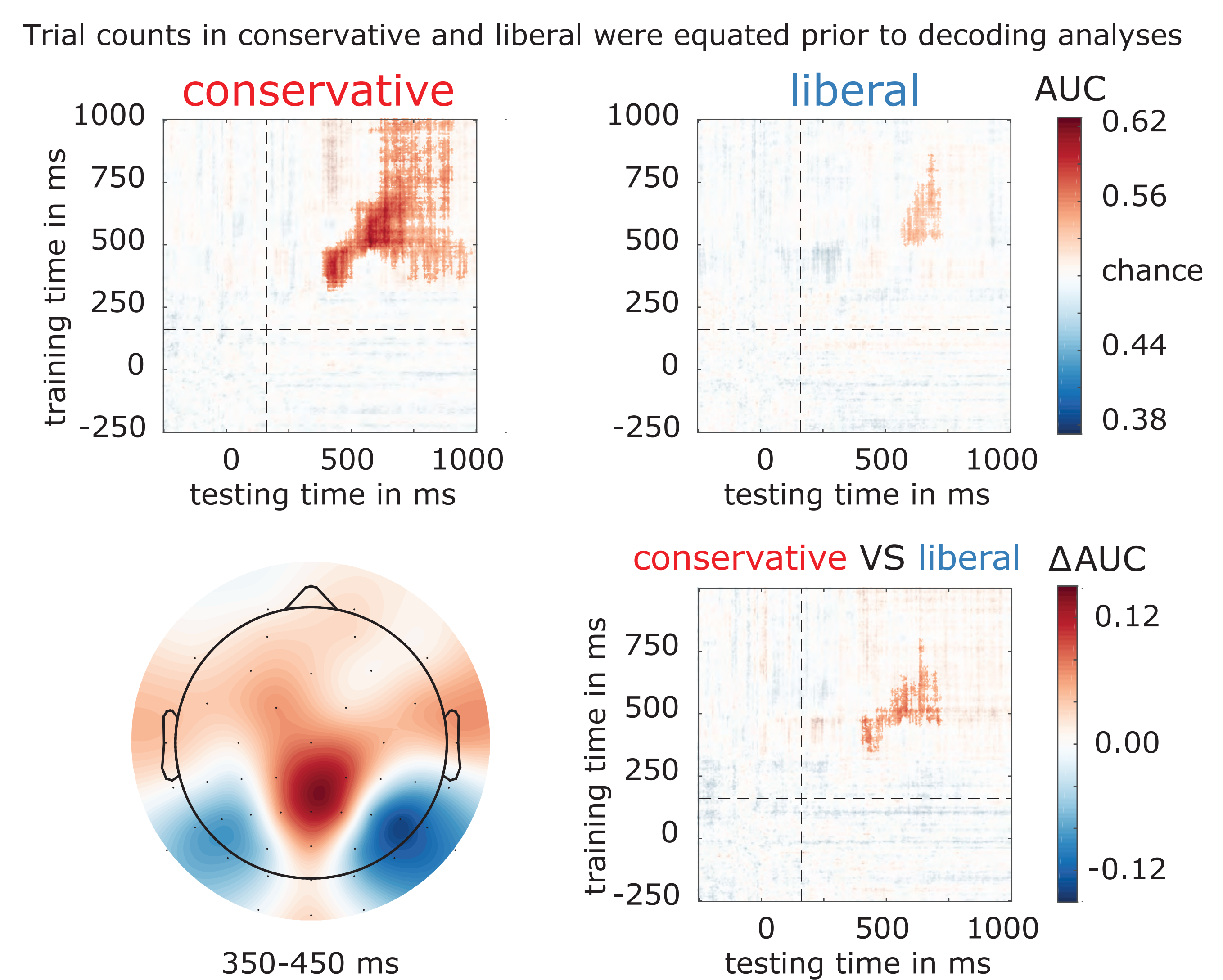


## Exp 1. Task, N = 16, 3 EEG sessions

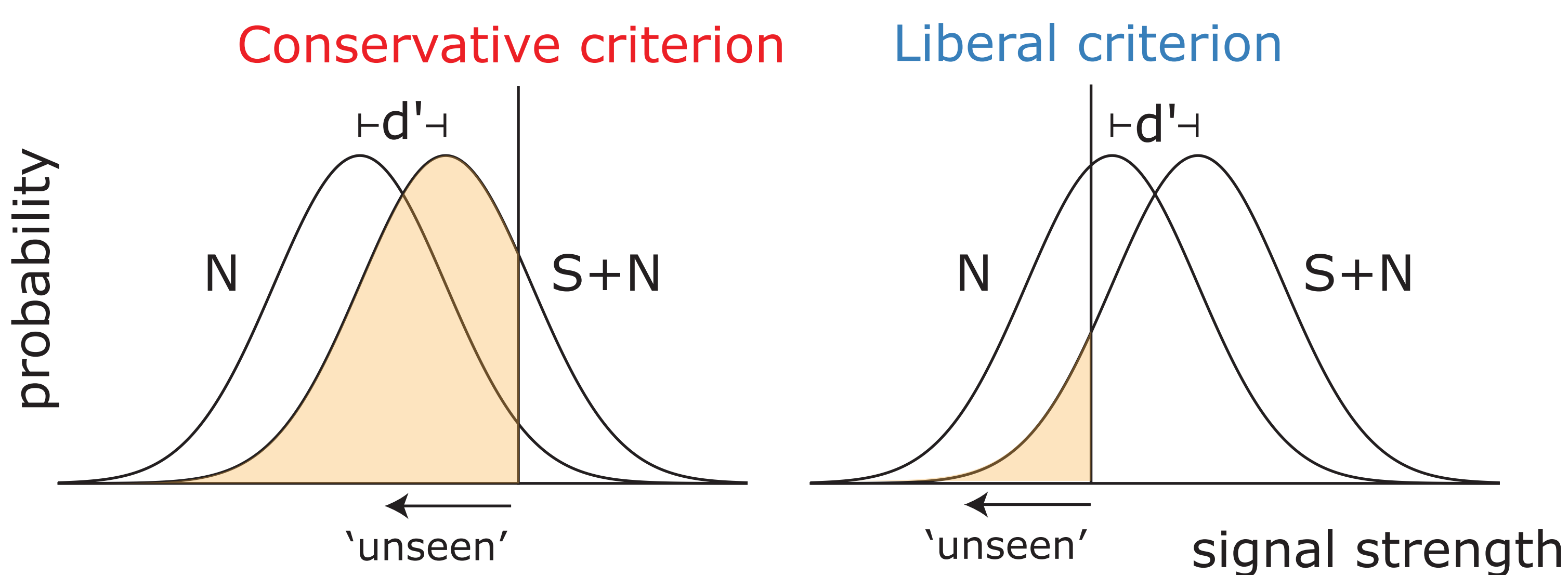


1. Punish *false alarms*: conservative criterion
2. Punish *misses*: liberal criterion

## Unseen (miss) versus non-targets (cr)



## SDT

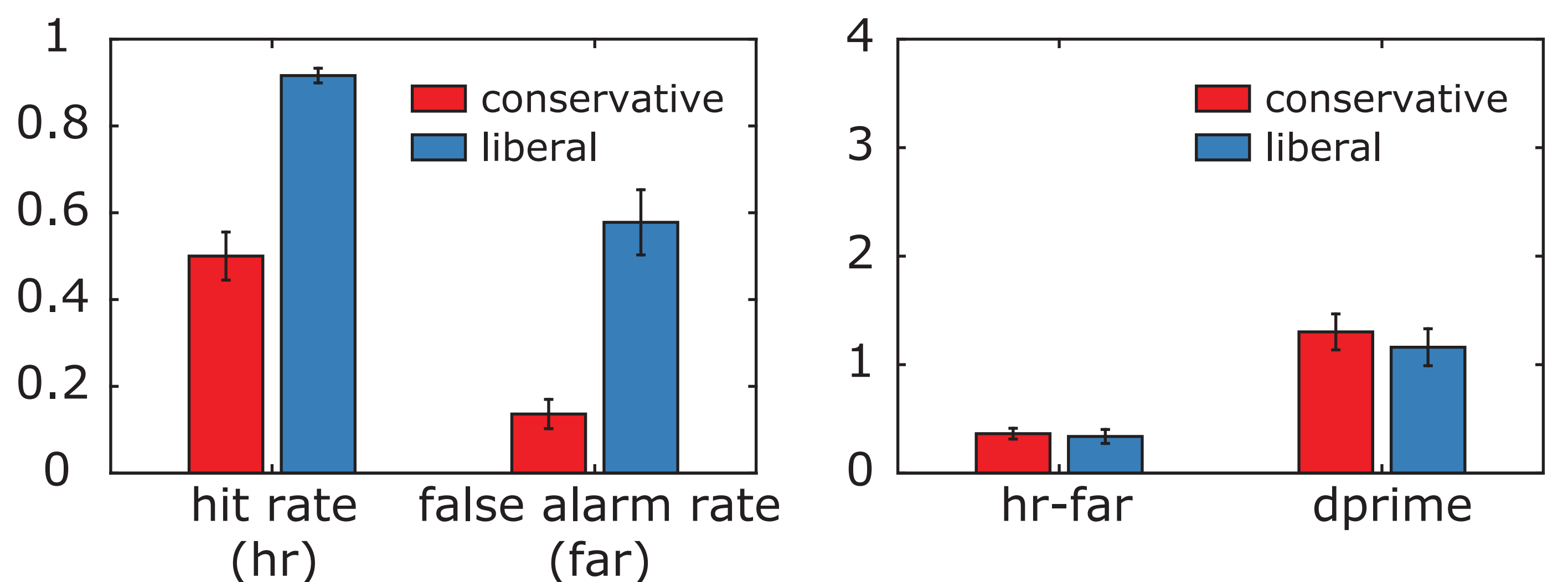


	conservative fewer 'yes' responses	CRITERION	liberal more 'yes' responses
	No response		Respond 'seen'
Target present	more misses		fewer misses
Target absent	fewer false alarms		more false alarms

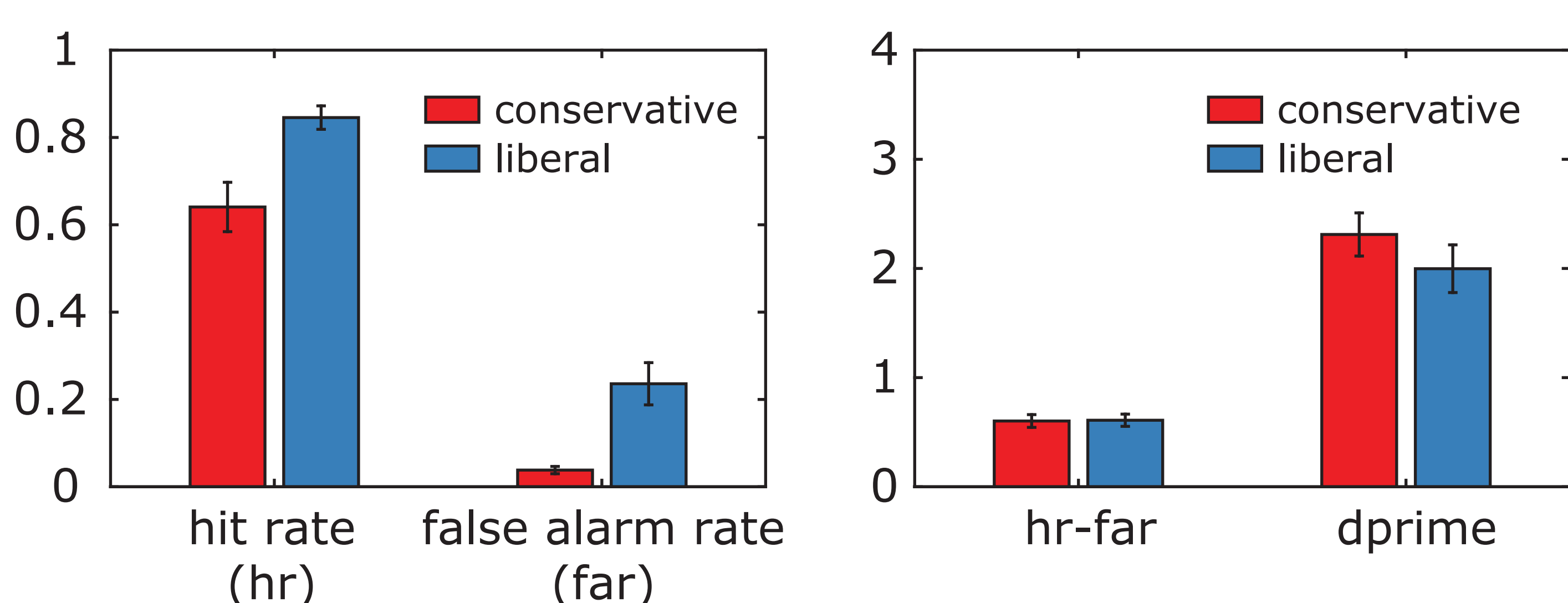
## Exp 2. Stable criterion under the PAS?

Stable criterion?	Category	Description
	0 - No experience	No impression of a stimulus.
	1 - Brief glimpse	A feeling that something has been shown.
	2 - Almost clear experience	Ambiguous experience of the stimulus.
	3 - Clear experience	Non-ambiguous experience of the stimulus.

## Behavior (PAS), N = 12, 2 EEG sessions



## Behavior ('Seen' vs no response)



## Conclusions

1. The correlate of 'unconscious processing' wavers with the subject's haphazard criterion, questioning the validity of post-hoc selection contingent on seen-unseen
2. Subjects are not able to maintain a stable criterion when using the PAS, questioning its validity. It does not behave differently than a simple yes/no task.