

## Anticipation of response biases working memory

### Abstract

Working memory (WM) allows us to hold and manipulate information which is relevant to our plan objectives and task goals over a short period of time. Previous neural evidence has revealed persistent neural activity during retention interval of delayed response. However, recent studies showed that WM can be maintained in an activity-silent state. Directing attention toward relevant information in WM can increase the activity state and re-activate relevant representations in anticipation of the response. In this study, we investigated whether the variability of WM retention duration can influence the anticipation of WM response. Participants first viewed and remembered the orientation of a sample grating for 200 ms. After a short delay interval, a probe grating appeared, and participants indicated which way it was rotated compared to the sample grating. WM retention duration (fixed: 1500-ms, small variability: 1300-1700-ms, large variability: 800-2200-ms) and response type (clockwise or counterclockwise) were manipulated in a within-subjects factorial design. We showed that reaction times (RTs) for the large variability condition were significantly longer than the RTs for the fixed and small variability conditions. In conclusion, we suggest that modulation of activity-silent state contributes to the mechanisms of attention over WM performance.