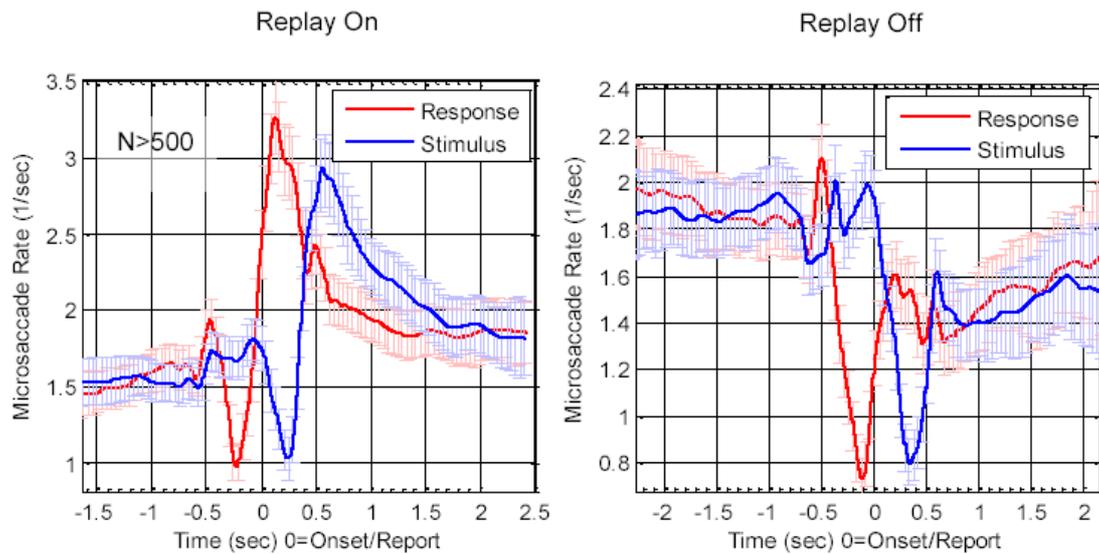
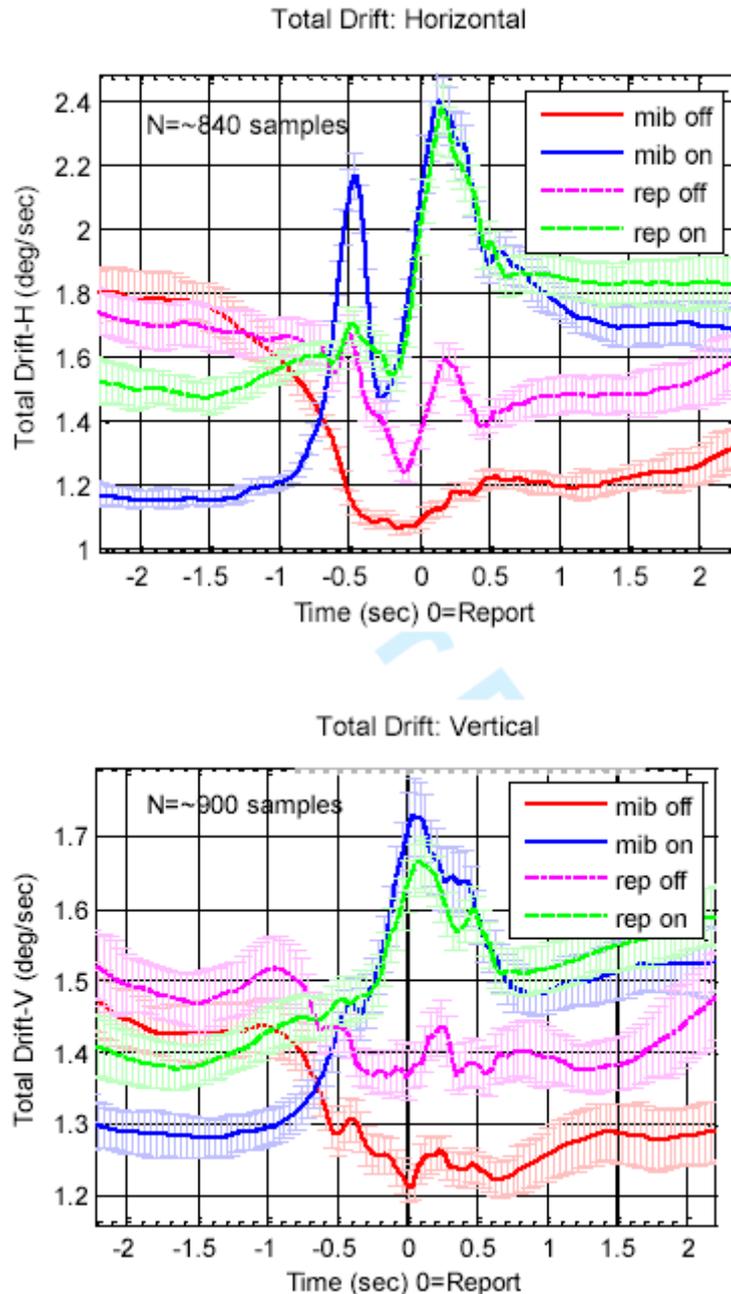


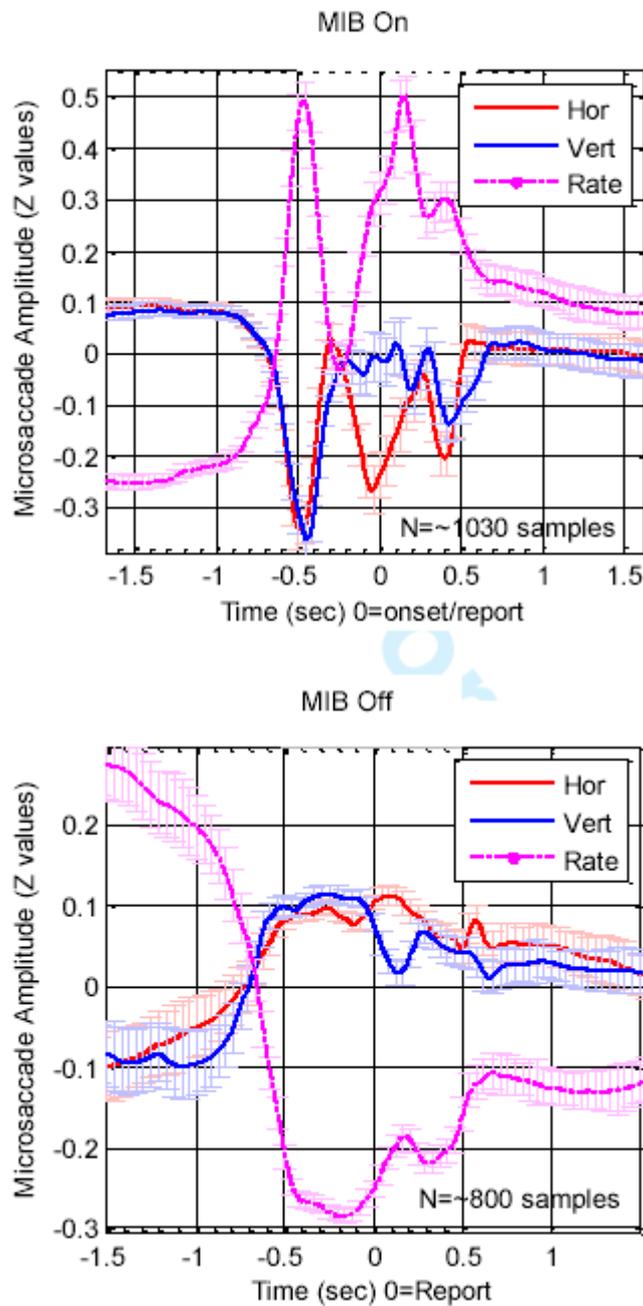
**Supplementary Figure S1.** Event-related microsaccade rate time courses, for each individual observer (same format as Figure 3). Error bars denote *SEM* across epochs in the different conditions, with unequal number of samples due to the variability of the length of perceptual states, eye blinks, and a different number of perceptual transitions across observers.



**Supplementary Figure S2.** Stimulus vs. observer's response of the Replay data. The event-related microsaccade rate time courses during the Replay condition are plotted time locked to the stimulus onset (blue) and the observer's response (red). (a) Reappearance (“on”). (b) Disappearance (“off”). Data were only available for half of the observers, averaged across all epochs ( $N > 500$  epochs for each averaged point). Error bars denote *SEM* across epochs. Note that time locking to the stimulus did not alter the shape of the event-related time courses, which only show a temporal displacement:  $\sim 410$  ms for “on” and  $\sim 470$  ms for “off,” very similar to the behavioral measure reaction times across all observers. Note also the typical wave-shape response with a minimum at  $\sim 250$  ms for “on” and  $\sim 330$  ms for “off.”



**Supplementary Figure S3.** A comparison between the patterns of the (a) horizontal and (b) vertical movements as quantified by the total drift (or retinal slip), including microsaccades (see Methods section). Data were averaged across all epochs of all observers yielding a variable number of samples. Overall, the event-related time courses for horizontal and vertical movements have a similar shape, with the exception of the peak at 0.5 s before reports of reappearance (blue, “on”). Note also that the effects in the vertical direction are smaller and more variable.



**Supplementary Figure S4.** Microsaccade directionality and magnitude during MIB. (a) Reappearance (“on”). (b) Disappearance (“off”). Red, horizontal component of microsaccade amplitude, z-scored and averaged across all epochs and observers. Blue, vertical component. Purple, microsaccade rate. Error bars denote *SEM* across epochs. Note the microsaccade rate peak 0.5 s prior to the reappearance report with an average direction leftward and downward, orthogonal to the Gabor orientation.