It is well established that performance across the visual field is not necessarily homogenous at iseccentric locations; however, the extent and direction of this heterogeneity vary depending on the cognitive function engaged in the task.

In this study, we asked participants to perform a visual short-term memory task to investigate the effect of stimulus location on short-term memory performance. Visual stimuli (memory sets) constitute four to ten equidistant English letters organized in a circular pattern; the number of letters in each stimulus demonstrated the difficulty of that trial. On each trial, memory sets were presented for a short duration(100ms), and participants were asked to memorize as many letters as possible. After a brief delay, a single letter was presented, and is responded based on presence/absence of the corresponding target..

We found that: 1) visual stimuli presented on top and right hemifields yield significantly better memory performance than the bottom and left, respectively. 2) recall performance gradually and significantly decreases as the visual stimulus location varies from top-right visual quadrant to top-left, bottom-right, and bottom-left.

Our findings indicate that short-term memory, like many other cognitive functions such as visual search, distractibility, and sensory discrimination, is influenced by the location of stimulus around the visual field. These results are consistent with previous cognitive findings and extend our understanding of visual asymmetries to short-term memory.