



THE INTEGRATION OF ARTIFACTUAL CUES WITH LANDMARK AND BODY-BASED CUES

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Mobile organisms use spatial cues to navigate effectively in the world. Recent work has demonstrated that human navigators can optimally combine landmark and body-based cues during homing. However, new technologies (e.g., virtual and augmented reality) provide additional cues to navigation, such as digital over-head maps (artifactual cues), which are increasingly relevant with the advent of Global Positioning Systems and assisted navigation. In the current study, human navigators performed a homing task in immersive virtual reality. Navigators first walked a two-legged outbound path before attempting to return to the beginning of the path (home path). The number of cues available during the home path was systematically manipulated. In single-cue trials, navigators had access to all three cues. In conflict trials, all three cues were available, but were placed in conflict. Statistically optimal cue combination was predicted from response variability in the single-cue conditions. Navigators were more precise during homing when they had access to all three cues. However, performance in conflict trials suggests that artifactual cues were integrated with landmark or body-based cues depending on which cues were placed in conflict.

