

Differences in information use revealed by EEG following learning in a multi-strategy navigational paradigm

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During navigation, multiple strategies are available to use. These navigation strategies are: allocentric/cognitive map-based navigation, egocentric-cue navigation, and egocentric-response navigation. In the majority of navigation paradigms, only one of these strategies is investigated, or at most, two of the strategies. The Hex-Maze paradigm was developed in order to examine all three of these strategies concurrently. We sought to investigate navigational learning in this newly developed paradigm. To do so, we had participants navigate in the Hex-Maze to determine their strategy choice. Following navigation, we measured EEG and presented navigators with screenshots of information related to the three navigation strategies. Behavioural results indicated that participants were able to learn the maze, but that most navigators preferred to use an allocentric strategy rather than either of the two egocentric strategies. EEG results indicated that allocentric navigators reacted differently to navigational information that they used to find the platform compared to information that did not help them find the platform. While exploratory, the present results suggest that differences in how strategy information is used may be related to differences in attention and control. As well, the results suggest that navigators may associate finding the platform with some sort of reward, indicating hierarchical control of navigation may be present in the Hex-Maze.