

# Gaze Patterns during Map Reading as Predictors of Route Learning

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## Abstract

Participants (N = 74) learned a predefined route from a digital map, during which gaze patterns were recorded. Subsequently, participants navigated the route from memory in a virtual environment, and navigation errors were measured. This task was performed twice, with half of the participants receiving specific map reading instructions between the pretest and posttest. Based on sequences of distances between fixations and the indicated destination of the route, gaze patterns were categorized as systematic (following the route with their gaze) or unsystematic. In the pretest, navigation performance of systematic readers was significantly better, and navigation performance was positively associated with repetitions of systematic reading following the route. Moreover, more systematic reading was found in the posttest, and navigation errors decreased from pretest to posttest. No effect was found for instruction. Results show that effective map reading can be predicted by gaze patterns.