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Wayfinding and Spatial Learning with Navigation Assistance

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Abstract

Computer-based navigation aids support navigation by foregrounding route instructions. Using those aids can have detrimental effects on the ability to orient oneself without assistance. Rather than providing allocentric spatial information in the form of conventional maps, navigation aids may support another form of human spatial memory that is essentially egocentric. In the present study, visualizations for navigation assistance systems were experimentally varied using a virtual environment. Effects on wayfinding success and orientation after navigation were investigated. Results show that dynamic, user-aligned views during navigation (providing spatial directional information to unseen targets) reduced the risk of making erroneous turning decision during navigation and improved orientation after navigation, in contrast to view-independent representations with a stable north-aligned coordinate system. It is concluded that user-aligned views can facilitate the acquisition of egocentric survey knowledge while avoiding representational conflicts during navigation.