

Virtual 'forest' used to measure navigation skills

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A new study recently published in Journal of Vision, an online, free access publication of the Association for Research in Vision and Ophthalmology (ARVO), shows that an individual's navigation skills can be measured by using an immersive virtual "forest" in which peripheral visual field losses are simulated.

The study, conducted by researchers from the Lions Vision Center, Wilmer Eye Institute, Johns Hopkins University in Baltimore, Md., involved varying the study participants' visual field of view and recording several performance measures such as walking time and path efficiency.

Participants were then identified as either "good navigators" or "poor navigators." The results suggest that poor navigators rely on visual information to solve the task while good navigators are able to use visual information in conjunction with an internal representation of the environment. As a result of these differences, the performance of the poor navigators improved more than the performance of the good navigators as the amount of available visual information increased.

"By simulating peripheral visual field losses during navigation, we were able to create a paradigm that systematically controls the amount of external visual information available to participants. This allows us to directly test the extent to which participants rely on this type of information, and identify those individuals who are able to rely on alternative sources of information to learn about their environments,"

said lead researcher Francesca Fortenbaugh, BS.

“Knowing what types of information individuals use when navigating and how performance deteriorates when that information is removed is important not only for understanding human navigation in general, but also for the development of rehabilitation protocols for individuals with visual impairments.”

Source: Association for Research in Vision and Ophthalmology

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