Title:
Wayfinding in Cognitively Impaired Patients Within Virtual Environments

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References:

Abstract Summary:
This study was completed using eye-tracking glasses on cognitively impaired populations and a control group. We looked at how these individuals varied in their use of both normal environmental cues and bright salient cues in finding their way through a virtual long-term care facility.

Learning Activity:

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<th>LEARNING OBJECTIVES</th>
<th>EXPANDED CONTENT OUTLINE</th>
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<td>The learner will be able to understand the differences in the wayfinding abilities between the control and the Alzheimer’s and Mild Cognitive Impairment groups.</td>
<td>The learner will be able to understand the vast differences in wayfinding in the two groups based on success and amount of time it takes to reach the destination. These differences can also be shown based on how much time was spent fixated on cues in the right pathways, helpful cues, versus time spent fixated on cues in the wrong pathways, distractor cues.</td>
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<td>The learner will be able to identify environmental factors that enhance memory and wayfinding in the cognitive impairment.</td>
<td>Persons with Alzheimer’s disease have decreased ability to attend to relevant environmental information needed for wayfinding. This study tested the use of colorful, familiar, and large cues as memory aids for wayfinding. The subjects were tested</td>
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in both and un-cued and “cued” environment (with the salient cues). Study results show that although the subjects with AD found their way better in the cued environment, they also had were more likely to attend to cues that were not helpful for wayfinding (distractor cues). This may be due to the inability to disengage from unimportant environmental information or a decreased ability to select important environmental information from other cues.

Abstract Text:

Wayfinding is the ability to find one’s way from one place to another. Persons with Alzheimer’s disease and mild cognitive impairments have a profound wayfinding impairment and often get lost in new or challenging environments. Distinctive cues (visual landmarks) can help people find their way in complex environments. In this study, subjects with early stage Alzheimer’s disease (AD) and mild cognitive impairment (MCI), due to Alzheimer’s disease, as well as a control group of similar aged subjects with normal cognitive abilities were asked to find their way repeatedly in a virtual reality simulation of a senior living facility. The subjects were placed in two different environments, the cued and uncued conditions. The cued condition had salient cues, or cues that are bright and contrasting, while the uncued condition did not have these cues. For the purpose of this study, we focused on the effects salient cues had on the success of the cognitively impaired group within the cued condition. Data was collected using eye-tracking glasses and software to determine how much time subjects spent visually fixating on certain cues while repeatedly finding their way in the virtual environment. This study reports the amount of time subjects spent fixating on cues that were not helpful (distractor cues) as well as the time required to complete wayfinding for each trial. Results showed that persons with AD/MCI spent much more time fixating on the distractor cues than did the control group. Furthermore, the results indicated that the AD/MCI group showed improvement in the time it took to complete the wayfinding task; however, this group's improvement was less pronounced than the control group. The implications of the study are that persons with AD/MCI may have an inability to disengage from distractor cues and may need more time and reinforcement to learn which cues are helpful in complex environments.