

THE IMPORTANCE OF VISUAL EXPERIENCE, GENDER, AND EMOTION IN THE ASSESSMENT OF AN ASSISTIVE TACTILE MOUSE

ABSTRACT

This project proposes, tactile maps are efficient tools to improve spatial understanding and mobility skills of visually impaired people. Their limited adaptability can be compensated with haptic devices which display graphical information, but their assessment is frequently limited to performance based metrics only which can hide potential spatial abilities in O&M protocols. We assess a low-tech tactile mouse able to deliver three-dimensional content considering how performance, mental workload, behavior, and anxiety status vary with task difficulty and gender in congenitally blind, late blind and sighted subjects. Results show that task difficulty coherently modulates the efficiency and difficulty to build mental maps, regardless of visual experience. Although exhibiting attitudes that were similar and gender independent, the females had lower performance and higher cognitive load, especially when congenitally blind. All groups showed a significant decrease in anxiety after using the device. Tactile graphics with our device seems therefore to be applicable with different visual experiences, with no negative emotional consequences of mentally demanding spatial tasks. Going beyond performance based assessment, our methodology can help with better targeting technological solutions in orientation and mobility protocols.