The Role of Spatial Information in Search and Rescue: A Virtual Reality Experiment

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ABSTRACT

Firefighters often need to digest complex spatial information within a short period of time for search and rescue. Previous wayfinding literature has documented evidence about how the general population in normal situations leverages different forms of spatial information to develop spatial knowledge and guide wayfinding. However, little is known about how the arbitrarily given spatial information affects firefighter wayfinding behavior and performance when the time is limited and there is no privilege for them to develop complete spatial knowledge in an evolving manner. To narrow the knowledge gap, we conducted a wayfinding experiment with firefighters (n=40) using Virtual Reality (VR). In the experiment, firefighters were required to find three victims in a simulated office maze. Each firefighter randomly experienced different spatial knowledge conditions. The results indicated that the route and survey spatial information was more efficient in facilitating firefighters to memorize the layout, leading to a better wayfinding performance.