Embodiment and immersion in cognition-focused virtual environments

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Abstract

Cognitive science has much to contribute in regard to the development of accurate and valid virtual environments where humans act as operators. For example, optimal performance for visual-motor tasks may require a strong sense of immersion with respect to flow and interactivity. The present research examined the relation of presence/absence of operator hands during simulated flight simulation to a series of key immersion factors (N=47). Furthermore, the impact of levels of immersion (using self-report scales) on operator performance were also investigated. Results show that hand presence affected both absorption and interactivity. Importantly, operator performance showed greater precision when absorption and interactivity were rated higher. These findings suggest that the development of virtual environments requiring human operators and complex cognitive functions must consider the impact of embodiment and levels of immersion.