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Virtual Reality Experience: Immersion, Sense of Presence, and Cybersickness

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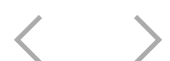
Highlights

- Sense of presence is influenced by display factors, internal factors, social factors, and emotions.
- Multisensory congruent cues such as visual, auditory, and tactile enhance presence.
- Well-designed prebriefing and briefing facilitate the immersion process.
- Support provided during the immersion did not seem to interfere with the immersion.
- Despite technological developments, VR material induced discomfort.

Abstract

Introduction

Virtual reality (VR) is a recent topic in healthcare education. Little is known about the factors affecting the immersion and the sense of presence in VR. This study aimed to understand the



elements that influence the sense of presence among undergraduate healthcare students and postgraduate (PG).

Methods

Undergraduate healthcare students ($n = 42$) and PG ($n = 19$) were immersed in a mass casualty incident–immersive simulation. Participants completed questionnaires before (immersion propensity, stress) and after immersion (sense of presence, stress, cybersickness, and satisfaction). The qualitative component of the study provided the context for the quantitative results.

Results

The sense of presence was high among both groups but higher among PG ($p = .02$) and was positively correlated to immersion propensity ($r = 0.36$; $p < .001$). The level of cybersickness was low despite a discomfort induced by the VR material. A significant group-by-time effect was found for stress ($p < .001$). Stress levels increased more in the PG through the immersion without effect on the sense of presence.

Conclusion

In accordance with the results, the mass casualty incident–immersive simulation induced a high level of sense of presence and a low level of cybersickness. The sense of presence was correlated with the individual immersion propensity.

Keywords

[sense of presence](#) • [virtual reality](#) • [simulation](#) • [immersion process](#)

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