

## Chapter 76

# Mobile Virtual Reality to Enhance Subjective Well-Being

**Federica Pallavicini**

*Università di Milano-Bicocca, Italy*

**Luca Morganti**

*Università di Milano-Bicocca, Italy*

**Barbara Diana**

*Università di Milano-Bicocca, Italy*

**Olivia Realdon**

*University of Milano-Bicocca, Italy*

**Valentino Zurloni**

*Università di Milano-Bicocca, Italy*

**Fabrizia Mantovani**

*Università di Milano-Bicocca, Italy*

### ABSTRACT

*Focusing on healthcare, in the last few decades advanced technologies have become crucial keys in supporting subjective wellbeing. Among them, virtual reality has been proven to be effective for mental health promotion in several research studies. Although the dramatic development in the field of virtual reality system, there are still important problems related to the use of this technology. Within this perspective, the growing availability, low-cost and easy-to-use mobile virtual reality (i.e., the integration of virtual reality system on mobile devices such as smartphone and tablet) represents a meaningful opportunity to support mental health interventions. The chapter will first briefly describe mobile virtual reality. Then, a mobile virtual reality design practice will be presented. Finally, the current application of mobile virtual reality to enhance subjective wellbeing will be discussed with the support of concrete examples and research study analysis.*

DOI: 10.4018/978-1-5225-7598-6.ch076

## INTRODUCTION

Focusing on health-care, in the last few decades advanced technologies have become crucial keys in supporting subjective well-being (Botella et al., 2012; Riva et al., 2012). Among them, Virtual Reality (VR) - defined as three-dimensional, stereoscopic, interactive computer graphics — has been proven effective in promoting mental health at different levels. In particular, several research studies showed the efficacy of VR in stress management (Gaggioli et al., 2014; Pallavicini et al., 2013; Rizzo et al., 2012; Serino et al., 2014) and in the treatment of different disorders; these include phobias (Parsons & Rizzo, 2008; Rothbaum et al., 1995), anxiety (Meyerbröcker & Emmelkamp, 2010, 2011; Pallavicini et al., 2009) and eating disorders (Ferrer-García et al., 2009; Riva, 2005). This technology is also adopted in neuropsychology, for both the assessment and training of cognitive processes (Cipresso et al., 2014; Fordell et al., 2011; Raspelli et al., 2012).

Although the dramatic development in the field of VR systems, there are still important problems related to the use of this technology (Pallavicini et al., 2015; Proffitt & Lange, 2015). First, from a technological point of view, VR are not so easy to be used, requiring a specific training for the clinician and the patient. Secondly, from a clinical perspective, these technologies are not easy to be moved at patients' home, where the delivery of interactive exercises may be useful, especially when patients are provided with a rehabilitative training (Pallavicini et al., 2015).

Within this perspective, the growing availability, low-cost and easy-to-use of Mobile Virtual Reality (MVR) (i.e., the integration of VR system on mobile devices such as smartphone and tablet) represents a meaningful opportunity to support mental health interventions (Gaggioli et al., 2014; Gorini et al., 2010; Pallavicini et al., 2009). MVR, in particular, can offer to the community an innovative tool for the management, monitoring and delivery of exercises, that can also be used in individuals 'favorite environment', their home (Pallavicini et al., 2015; Tong et al., 2015; Schroeder et al., 2013).

The present chapter will first briefly describe MVR, highlighting the specific features that characterize it. Then, a MVR design practice will be presented. In conclusion, the current application of MVR to enhance subjective well-being will be discussed, with the support of concrete examples and research studies-analysis.

## BACKGROUND

VR is a high-end user-computer interface that involves real-time simulation and interactions through multiple sensorial channels (Burdea & Coiffet, 2003). Although many authors have defined VR essentially as a technology (Heim, 1998), more recent approaches (Riva et al., 2007) forward a more complex vision, considering VR as a human experience and underlining how “the essence of VR is the inclusive relationship between the participant and the virtual environment” (Fitzgerald & Riva, 2001).

VR can be presented in at least five ways:

- **Fully Immersive VR:** It consists of 3D simulation that allow participants to observe and interact with an environment through an available set of actions. With this type of solution, the user appears to be fully inserted in the computer-generated environment. This illusion is rendered by providing a Head Mounted Display (HMD) with 3D viewing and a system of head tracking, to

11 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:  
[www.igi-global.com/chapter/mobile-virtual-reality-to-enhance-subjective-well-being/214680](http://www.igi-global.com/chapter/mobile-virtual-reality-to-enhance-subjective-well-being/214680)

## Related Content

---

### Experiences from Integrating Collaborative Filtering in a Mobile City Guide

Wolfgang Woerndl, Korbinian Moegele and Vivian Prinz (2012). *Mobile Computing Techniques in Emerging Markets: Systems, Applications and Services* (pp. 126-157).

[www.irma-international.org/chapter/experiences-integrating-collaborative-filtering-mobile/62194](http://www.irma-international.org/chapter/experiences-integrating-collaborative-filtering-mobile/62194)

### Predictive Methods of Always Best-Connected Networks in Heterogeneous Environment

Bhuvaneswari Mariappan (2019). *Algorithms, Methods, and Applications in Mobile Computing and Communications* (pp. 48-64).

[www.irma-international.org/chapter/predictive-methods-of-always-best-connected-networks-in-heterogeneous-environment/208454](http://www.irma-international.org/chapter/predictive-methods-of-always-best-connected-networks-in-heterogeneous-environment/208454)

### An Improved Gravitational Clustering Based on Local Density

Lei Chen, Qinghua Guo, Zhaohua Liu, Long Chen, HuiQin Ning, Youwei Zhang and Yu Jin (2021). *International Journal of Mobile Computing and Multimedia Communications* (pp. 1-22).

[www.irma-international.org/article/an-improved-gravitational-clustering-based-on-local-density/271385](http://www.irma-international.org/article/an-improved-gravitational-clustering-based-on-local-density/271385)

### Throughput-Delay Evaluation of a Hybrid-MAC Protocol for M2M Communications

Pawan Kumar Verma, Rajesh Verma, Arun Prakash and Rajeev Tripathi (2016). *International Journal of Mobile Computing and Multimedia Communications* (pp. 41-60).

[www.irma-international.org/article/throughput-delay-evaluation-of-a-hybrid-mac-protocol-for-m2m-communications/148261](http://www.irma-international.org/article/throughput-delay-evaluation-of-a-hybrid-mac-protocol-for-m2m-communications/148261)

### Security Issues and Possible Countermeasures for a Mobile Agent Based M-Commerce Application

Jyh-haw Yeh, Wen-Chen Hu and Chung-wei Lee (2009). *Mobile Computing: Concepts, Methodologies, Tools, and Applications* (pp. 2614-2632).

[www.irma-international.org/chapter/security-issues-possible-countermeasures-mobile/26681](http://www.irma-international.org/chapter/security-issues-possible-countermeasures-mobile/26681)