

Chapter 7

Measuring and Comparing Immersion in Digital Media Multitasking

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ABSTRACT

In terms of digital media usage, immersion refers to user involvement in and focus on a single activity. However, the commonality of multi-tasking raises questions regarding whether one could enjoy immersion when using more than one media at the same time. Self-report questionnaires and eye trackers were used to measure the immersive experiences while playing video games and watching a television program at the same time. While we found evidence of immersion across the two activities while multitasking, some immersion dimensions were significantly weaker. However, we also noted that immersion experiences from multiple media might be cumulative. A possible explanation for our results is that the act of switching between two media compensated for any down time, users could abandon a less attractive medium and switch to the other, resulting in an impression of continuous immersion in the overall multitasking experience. On the other hand, keeping active awareness of other media beyond the current focus might be a primary cause of immersion degradation.

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INTRODUCTION

Of the many definitions of immersion found in the literature, one of the most cited is from Murray's work (1997): "The sensation of being surrounded by a completely other reality, as different as water is from air, that takes over all of our attention, our whole perceptual apparatus ... In a participatory medium, immersion implies learning to swim, to do the things that the new environment makes possible." However, many other researchers have come up with their own definitions. For example, in the field of virtual reality (where immersion is considered an important characteristic), Coomans and Timmermans (1997) describe immersion as "a feeling of being deeply engaged" to the degree that virtual reality is accepted as actual reality. McMahan (2003) describes it as the feeling of being "caught up" in a virtual world. Bailenson, Blascovich, and Guadagno (2008) define it in terms of how closely participants interact with a virtual world, and Witmar and Singer (1998) describe it as a "feeling of presence" in a virtual environment. Slater, Usoh, and Steed (1994) offer a similar definition for the concept of presence—that is, the feeling of being in a digital 3D virtual environment that users can interact with. However, Slater (1999) later described immersion and presence as separate factors—the first an objective description of an environment, the second a subjective user experience.

Digital game researchers and designers have long acknowledged the importance of immersion (Brown and Cairns, 2004). Jennett, Cox, and Cairns (2008) note that immersion in the form of "drawing people in" is an important factor in game design. When proposing their SCI (sensory, challenge-based, imaginative) model for analyzing video game immersion experiences, Ermi and Mäyrä (2005) defined the target concept as "becoming physically or virtually a part of the experience itself." According to their model, sensory sources include "close-to-real" video and audio effects involving factors such as screen size/resolution, virtual reality (VR), and sound quality. However, most researchers agree that while such technological features can help increase immersion, they are not required (McMahan, 2003). The SCI model addresses player feelings when overcoming game challenges, especially their enjoyment of narratives, their commitment to and empathy for story characters, and their perceptions of "game atmosphere" (Brown and Cairns, 2004). McMahan (2003) also posits that immersion sources can be either diegetic or non-diegetic. The first involves narrative elements such as story and atmosphere, the second involves active play—that is, a "player's love of the game and the strategy that goes into it" (p. 68).

Jennett, Cox, Cairns, Dhoparee, Epps, Tijs et al. (2008) used questionnaires to measure and quantify immersion, and then performed exploratory analysis to decompose the immersion concept into five dimensions: cognitive involvement, emotional involvement, challenge, real world dissociation, and control. Some dimensions correspond to the SCI model—that is, they both involve challenge and cognitive involvement (with a sufficiently strong challenge requiring an investment in cognitive effort); emotional involvement is similar to imaginative source; and real-world dissociation is somewhat similar to the SCI sensory source idea. Jennett et al. also found that individuals often need to consciously "re-engage with the real world" after being immersed in an activity. This observation offers another opportunity for researchers to objectively measure immersion by recording the time required for study participants to complete certain tasks after a gaming session, and then comparing task completion times—the greater the time requirement, the greater the level of immersion in the preceding game activity.

The literature contains many conscious attempts to create or trigger immersion. McMahan (2003) has proposed three design rules based on the relationship between players and their environments: meet player expectations (e.g., use dragons instead of aliens and UFOs in games that have medieval settings), give players a sense of control over game environments, and ensure consistency in game mechanisms

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