Sensory Experience in Sport Virtual Simulation: The Dynamics of Participants’ Sensory Stimuli, Sport Identity, Flow Experience, and Revisit Intentions

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Sport virtual simulation offers users a sport environment and game mechanics identical to those of the participants who play the sport in reality (Bideau et al., 2010; Trip, Steingröver, Wattie, Baker, & Schorer, 2015). Participants of sport virtual simulation emulate the real athletic motions such as swinging, kicking, hitting, or throwing. They absorb this virtual environment not only for their entertainment but also to master or adjust their own athletic skills. They watch, hear, and touch a variety of stimuli from the simulation’s visual and aural displays and physical controllers and respond with athletic motions according to these perceived stimuli (Claffey & Brady, 2014; Kwak, Kim, & Hirt, 2011; Uhrich & Benkenstein, 2010). Sport virtual simulation is a rapidly growing segment in the sport and entertainment businesses. Nonetheless, sport management academia has yet to give it substantial attention. Sport management scholars should pay more attention to sport participants’ virtual experiences as these could change how people engage in sport activities.

The stimulus-organism-response model suggests that a consumer shapes his/her behaviors according to the given stimuli of a surrounding context (Donovan & Rossiter, 1982; Mehrabian & Russell, 1974). This model has been tested repeatedly in sport consumer behavior. A number of studies have found that sport consumers shape their emotions in response to stimuli and that such emotions affect their behavioral outcomes (Kwak et al., 2011; Uhrich & Benkenstein, 2010). Lee, Lee, Seo, and Green (2012) developed the sensoryscape which integrated baseball spectators’ five senses into one, second-order construct. The study found that the sensoryscape affected spectators’ sense of place, social interactions, experience satisfaction, and revisit intentions. Lee, Heere, and Chung (2013) examined how each of the five senses affected university students’ sport team identity and team loyalty. All stimuli positively affected team identity except taste; team loyalty was also positively affected by sight, smell, and touch. Chung, Ryu, Green, and Kang (2015) found that sensory stimuli differentially affected the relationship between motorsport spectators’ affective outcomes and cognitive outcomes.

In addition, a number of studies have identified how sport consumers react to sensory stimuli in the context of retail shopping. Ballouli and Bennett (2014) found that favorite NFL team-themed music was more effective at eliciting positive evaluation than was generic music for NFL shop visitors. Similarly, Ballouli and Heere (2014) also identified the effects of aural stimuli on perceptions of sport brands.

Despite a number of systematic approaches made to discern the effects of sensory stimuli on sport consumers’ psychological and behavioral outcomes, little research has been performed to understand sport participants’ experiences as they perceive sensory stimuli in the context of virtual simulation. For participants to be more fully engaged in virtual simulation, it seems crucial to expose them to stimuli that seem genuine and real. The purpose of this study is to examine the differences in participants’ sport identity, flow experience, and intention to re-visit virtual simulation according to their perceptions and evaluation of sensory stimuli. Sport virtual simulation provides an ideal context in which participants are able to perceive only programmed stimuli, while controlling other contextual stimuli. Identifying their reactions to such stimuli would provide theoretical implications on how sport participants behave in such a programmed sporting context. It would also provide practical implications for the marketing of sport virtual simulations.

This study examined 345 virtual simulation participants using self-administered questionnaires. Data collection was made at two virtual simulation sites in South Korea. The samples consist of 94.8% males and 5.2% females. Their average age is 32-years-old; 74.5% of them are bachelors degree holders, and 39.4% of them also participated in an amateur baseball league.

Researchers and simulation technicians jointly identified the stimuli that would be available in the simulation. Smell and taste were found to be incompatible with a research context, as the programming for these was not possible.
Consequently, a survey was developed to measure the degree to which participants’ perceived visual, aural, and tactile stimuli in the simulation (Chung et al., 2015). The survey also asks them to report their sport identity (Xing, Chalip, & Green, 2014), flow experience (Nakamura & Csikszentmihalyi, 2014), and intention to re-visit the simulation (Lee, In, & Seo, 2015). A seven-point Likert-type scale ranging from 1 (not at all) to 7 (very much) was used for all items. All scales were deemed reliable, with Cronbach’s α ranging from .77 to .94.

Cluster analysis was used to identify segments based on participants’ perceptions of the sensory stimuli. The measures of visual, aural, and tactile stimuli were entered into a K-means cluster analysis and a total of three groups were identified. Group A reported the highest levels of perception of the three stimuli (n = 100). Group C reported the lowest perceptions of the stimuli (n = 102). Group B reported scores in the middle (n = 143). MANOVA was then used to identify differences in the dependent constructs according to the three groups. The results revealed significant multivariate effects of the three groups on participants’ baseball identity, flow experience, and behavioral intentions (Wilks’ Λ = .66, F(6, 680) = 25.97, p < .001). The effect size for the mean differences of three groups was .19 (i.e., partial η²). Univariate ANOVAs showed significant effects of three groups on participants’ baseball identity (F(2, 342) = 20.70, p < .001), on their flow experience (F(2, 342) = 65.72, p < .001), and on their intention to re-visit the simulation (F(2, 342) = 54.03, p < .001). Profiles of each of the groups were developed.

This study found that participants’ perceptions of sensory stimuli are effective at explaining their different experiences in sport virtual simulation. This study provides further insight into where sport organizations can implement virtual simulation for their marketing activities. Specific marketing strategies for each group will be discussed. The study also adds a new dimension to sport consumer behavior by revealing the dynamics of sport participants’ reactions to sensory stimuli of programmed in sport virtual simulations. Due to its interdisciplinary characteristics, the study of sport virtual simulation opens a promising field in which sport and technology can collaborate to product high-quality experiences for sport participants.