

Chapter 11

Using the Experience of Evoked Emotion in Virtual Reality to Manage Workplace Stress: Affective Control Theory (ACT)

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ABSTRACT

This chapter explores how immersion in virtual reality (VR) evokes emotional states similar to those of the real world, and how deliberate immersion in high-stress situations can help teach individuals affective strategies to remain in control of their emotions. Psychological skills training programs teach techniques and strategies to assess, monitor, and adjust thoughts and feelings to cope with stress. VR allows an individual to put these skills to the test through the opportunity to practice coping with their emotional states while immersed in difficult scenarios. Keeping a clear head, ignoring fear when fear isn't useful, learning how to draw on an optimal blend of emotion and reason in times of crisis are all crucial skills for work and life. Affective Control Theory (ACT) proposes that affective strategies that typically strengthen and support performance are skills and that these skills are integral to stress management. Due to its key role in performance, recent research in psychology confirms affect as a crucial variable to consider in interventions in workplace stress.

INTRODUCTION

Research identifying the psychological and affective impact of immersion in virtual reality (VR) has enabled a shift from an emphasis on quality of image or graphic perfection to investigations of the emotional experience of the user. As a result, the emotional states that can be evoked in VR are making valuable contributions to stress-management research and training across many domains. In therapeutic settings,

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VR-based stress-management programs for people with mood disorders such as generalized anxiety disorder typically involve immersion in scenarios that are designed to evoke a positive mood (Dayang, Awang, Suziah, & Halabt, 2011; Riva et al., 2012). Using VR scenarios that induce positive visual and auditory stimulation, the therapist will combine a relaxing narrative with strategies to practice relaxation and cognitive reframing techniques to help the client cope with general stressful situations. Individuals who interact in these environments have reported significantly lowered subjective stress, depression, and anxiety (Shah et al., 2015). In terms of workplace stress, however, stress-invoking experiences are far more content specific than they are for individuals with a mood disorder. VR has been used successfully for many years to prepare personnel to work under high-stress conditions by recreating the emotional experience of coping with worst-case scenarios.

There are clearly many advantages to using VR to teach individuals ways to improve their affective strategies in order to cope with stress in the workplace. For the majority of individuals, physical symptoms of anxiety or stress can result in a range of physical symptoms, such as faster breathing, higher blood pressure, and nausea, which ultimately can interfere with their performance at work. Although the emotions associated with stress are natural—and can at times be motivational and even help people to perform under pressure—they cannot be allowed to manifest to the extent that they interfere with and reduce a person’s effectiveness. No matter how difficult or unprecedented the problem, a highly trained professional needs to have the ability to look past emotions and carefully think about the best way to proceed (Lehrer, 2009).

In aviation, pilots have long been taught to practice staying calm (Lehrer, 2009). They are able to do this through the opportunity that VR provides to practice building confidence. Examples of aviation incidents where training in VR environments has come to the fore include United Airlines flight 232, a flight originating from Denver destined for Chicago that suffered a catastrophic center engine failure during flight (the DC-10 aircraft had three engines—two wing-mounted engines and a center engine fixed to the tail). While such a failure would ordinarily be something with which a normal crew would be able to deal, and for which they would have trained, the fact that engine fragments cut essential flight control systems during the disintegration resulted in a high-stress situation. It was only through the actions of the pilots that the aircraft staggered to an emergency landing: “Their actions saved the lives of 185 crew members and passengers” (Salas, Shuffler, & DiazGranados, 2010: 252). More recently, an A320 aircraft departing from New York’s LaGuardia Airport decided to ditch in the Hudson River due to bird strikes in both engines. The actions of Captain Sullenberger saved the lives of all those on board. Sullenberger stated after the accident, “It’s what we’re trained to do” (2010: 250).

Immersion in VR environments that replicate real-world stress has been used for many years to train a range of professionals to control and use their emotions to facilitate their optimal performance. The underlying premise of VR stress training is that a professional’s confidence can be strengthened through exposures that provide the opportunity to experience mastery and control under high-stress conditions. However, while reinforcing important professional skills, VR environments also allow trainees to practice something equally important: how to draw on an optimal blend of reason and emotion. Scenarios are designed to allow them to work through fear and successfully translate it into effective performance. They learn how to ignore their fear when fear isn’t useful. Indications from VR research are that, through repeated exposure, individuals develop a skill set to control their emotions —best described as affective skills—that they become aware of within themselves and are able to bring to bear to achieve high-demand tasks under stress.

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