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Viability of virtual reality exposure therapy as a treatment alternative

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Abstract

Virtual reality (VR) has garnered the interest of many scientific communities over the last decade. One promising track of research lies in VR exposure therapy (VRET), where gradual exposure to a negative stimulus is used to reduce anxiety. Virtual exposure is desirable in many situations, as it can be less intimidating and less expensive than traditional in vivo treatment with much the same success. Examining the benefits and drawbacks of VRET is an important first step toward an accurate assessment of its viability as a treatment alternative. This paper will review current literature on the topic of VRET and answer several questions regarding the viability of the treatment. It will also provide some additional research direction for improving the case for mainstreaming VRET.

Keywords: Virtual reality; Psychotherapy; Treatment effectiveness evaluation; Anxiety disorders; Exposure therapy

1. Introduction

Anxiety disorders run rampant in society today. Currently, 18% of American adults suffer the effects of some form of anxiety disorder (Kessler, Chiu, Demler, and Walters, as cited in National Institute of Mental Health [NIMH], 2006). Kessler et al. found that specific phobias afflict some 19 million of these adults and social anxiety disorder about 15 million, with several million more plagued by generalized anxiety disorder, post

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traumatic stress disorder, or panic disorder. Given time, these disorders can trap the individual in patterns of worry and avoidance. Hyman and Rudorfer (as cited in NIMH) also point out that these disorders have proven responsive to medicinal or psychotherapeutic treatment, or a combination thereof. Medicinal treatment is outside the scope of this paper.

However, many such disorders go untreated. Garcia-Palacios, Hoffman, Carlin, Furness, and Botella (2002) point to several studies indicating that 60–85% of specific phobia sufferers may never seek treatment. Unless the disorder causes an unacceptable hardship, many choose avoidance over treatment (NIMH, 2006), since even considering facing their fears induces strong anxiety. Fear of public breakdown and embarrassment can also keep an afflicted person from treatment (Juan et al., 2005).

The most widely accepted form of psychotherapy for dealing with anxiety disorder is cognitive behavior therapy (CBT). CBT trains patients to change their patterns of thinking and action to prepare them to face their fears (NIMH, 2006). Once the patient is ready, the therapist will expose the patient to the feared stimulus using one of two methods. *Imaginal* exposure uses the imagination to recreate a feared situation, while *in vivo* exposure uses a physical recreation of the feared situation.

It is generally agreed that for exposure therapy to work, the patient must feel the same anxiety as they feel in the actual situation. Imaginal exposure therapy is attractive due to the safety of an office setting and the confidentiality that setting provides (Riva, Molinari, & Vincelli, 2002). Imaginal exposure therapy's success hinges largely on the patient's ability to elicit the same level of anxiety, making its results unpredictable. In vivo exposure therapy is more effective at eliciting anxiety, as the feared stimulus is often faced directly. However, this prospect is daunting for the patient, and the procedure can be costly, especially for treatment of fear of flying, as it is expensive to schedule real-life flying experiences. Also, the environment is unpredictable, giving the therapist little control over the patient's experience and increasing the risk of public embarrassment. Still, in vivo exposure is generally preferred, as it has a higher success rate (Krijn, Emmelkamp, Olafsson, & Biemond, 2004).

2. Defining virtual reality exposure therapy (VRET)

In the last 15 years, interest has grown in another type of exposure. Virtual reality has made it possible to blend these two exposure methods into a powerful new medium. Using a combination of computer hardware and software, scientists have created virtual environments that allow the patient to confront their fears. Unlike imaginal exposure therapy, patients are engaged by several of their senses, heightening the realism and hastening anxiety response. Unlike in vivo exposure therapy, the exposure happens in a safe, confidential place with the therapist in complete control (Wiederhold et al., 2002). Also, the costs associated with physically recreating the feared situation are avoided. For this reason, Riva et al. (2002) describe virtual reality exposure therapy (VRET) as an extension of imaginal exposure therapy. Table 1 presents the advantages and disadvantages of these three exposure techniques.

Perhaps one of the greatest advantages of VRET is its perception in today's culture. As we move past the idea of computers as scary or foreign, computers are becoming a natural part of life. Slater, Usoh, and Steed (1994) presented findings indicating the majority of users show the same natural avoidance to a perceived drop off in virtual reality as displayed in the classic study of the visual cliff by Gibson and Walk (1960). This indicates