Abstract

Generalized anxiety disorder (GAD) is a psychiatric disorder characterized by a constant and unspecific anxiety that interferes with daily-life activities. Its high prevalence in general population and the severe limitations it causes, point out the necessity to find new efficient strategies to treat it. Together with the cognitive-behavioral treatments, relaxation represents a useful approach for the treatment of GAD, but it has the limitation that it is hard to be learned. The INTREPID project is aimed to implement a new instrument to treat anxiety-related disorders and to test its clinical efficacy in reducing anxiety-related symptoms. The innovation of this approach is the combination of virtual reality and biofeedback, so that the first one is directly modified by the output of the second one. In this way, the patient is made aware of his or her reactions through the modification of some features of the VR environment in real time. Using mental exercises the patient learns to control these physiological parameters and using the feedback provided by the virtual environment is able to gauge his or her success. The supplemental use of portable devices, such as PDA or smartphones, allows the patient to perform at home, individually and autonomously, the same exercises experienced in therapist's office. The goal is to anchor the learned protocol in a real life context, so enhancing the patients’ ability to deal with their symptoms. The expected result is a better and faster learning of relaxation techniques, and thus an increased effectiveness of the treatment if compared with traditional clinical protocols.

Video Link

The video component of this article can be found at https://www.jove.com/video/1554/
5. Once completed the virtual reality session, physiological parameters are recorded again in rest condition;
6. Final clinical evaluation of the patient's state.

OUTSIDE THERAPIST’S OFFICE: In order to improve the efficacy of the training and to increase the effects of relaxation, patients will practice relaxation techniques outside therapist's office by experiencing a Homecare Scenario. This is realized by presenting the same virtual environment experienced during the therapy on a mobile device. The mobile device is connected via Bluetooth to a set of biosensors that includes heart rates and skin conductance. This equipment is small enough and easy-to-use to be autonomously handled by the patient (see fig. 1). The patient is required to train relaxation abilities at least once a day for the entire duration of the treatment (one month), following the treatment plan provided by the therapist.

**Representative Results**

Because both biofeedback and virtual reality are known to be effective to induce relaxation, the main expected result is that a combination of these two methods is more effective in reducing anxiety in patients affected by generalized anxiety disorder, than the two techniques individually used.

**Figure 1:** GSR/HR biosensors module.

**Discussion**

Our hypothesis is that the combination of virtual reality and biofeedback that directly modifies the virtual environment, compared with virtual reality alone, will result in a better and faster relaxation learning. If so, this new instrument created to treat anxiety disorders could be applied and tested even in other anxiety-related pathologies.

**Disclosures**

The authors have nothing to disclose.

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**References**