

BIOFEEDBACK AND VIRTUAL REALITY FOR FEAR OF FLYING

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Current literature reviews reveal that virtual reality (VR) treatments are effective in reducing anxiety related to fear of flying (FOF). Furthermore, close examination of these studies suggests that biofeedback techniques based on respiratory sinus arrhythmia (RSA) may bolster the VR protocol and, thus, are worthy of investigation. Psychologists, who seek to help patients reduce sympathetic arousal, frequently employ breathing techniques designed to generate RSA and thus feelings of relaxation. Biofeedback equipment is used to measure heart rate, EKG, respiration rate, diaphragmatic (belly) breathing and thoracic (chest) breathing. By engaging in slow (approximately six breathes per minute) diaphragmatic breathing and making sure to keep chest breathing to a minimum, patients gradually enter a state of RSA. This is clearly revealed on the computer monitor when inhalation is paired with an increase in heart-rate and exhalation is paired with a decrease. A “scalloping” effect emerges as both waves move together. The greater the disparity between maximum inhalation heart-rate and exhalation heart-rate drop, the larger the RSA, and thus, the more relaxed the patient appears to become. It appears that deep states of RSA are accompanied by feelings of deep relaxation, which can later be paired to phobic situations, in virtual reality, that typically generate anxiety. The present study will examine an experimental biofeedback (RSA) treatment protocol using VR for fear of flying phobia in comparison to the existing state-of-the-art VR treatment therapy protocol of exposure therapy and extinction (No breathing). Treatment will be delivered over an 8-week period at Behavioral Associates (BA), investigating 40 patients seeking treatment for fear of flying. Participants will be randomly assigned to one of two treatment groups after they sign informed consent. Both groups will meet with their therapist for 45-min once a week for eight consecutive weeks. Furthermore, both groups will be requested to do at home exercises for 15 min daily and will receive VR treatment as the method of exposure. One group will receive a treatment protocol of VR only. The experimental group will receive a combination of RSA biofeedback and VR exposure. Assessment will include a set of self-report measures at baseline and at the end of treatment, assessing personality (MMPI2), anxiety symptoms, sleep patterns, medication and treatment history. In addition, physiological responses of heart rate, respiratory rate and galvanic skin resistance will be recorded while being exposed to the feared stimulus via VR. It is expected that both treatment groups will exhibit clinically significant reductions in anxiety, but a greater reduction of anxiety is expected in the experimental group. Thus, we expect to see an interaction by treatment group. Outcome will be based on both subjective self-reports of anxiety and objective physiological responses (from biofeedback instruments).