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Rapid Communication

Comparing Acceptance and Refusal Rates of Virtual Reality Exposure vs. In Vivo Exposure by Patients with Specific Phobias

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ABSTRACT

The present survey explored the acceptability of virtual reality (VR) exposure and in vivo exposure in 150 participants suffering from specific phobias. Seventy-six percent chose VR over in vivo exposure, and the refusal rate for in vivo exposure (27%) was higher than the refusal rate for VR exposure (3%). Results suggest that VR exposure could help increase the number of people who seek exposure therapy for phobias.

INTRODUCTION

PHOBIAS ARE SOME of the most common mental disorders.¹ In vivo exposure therapy is considered the treatment of choice for phobias. This intervention has received wide empirical support from numerous clinical trials.² The American Psychological Association (APA) report on empirically supported treatments included exposure-based treatment manuals for specific and social phobia.³ Despite the excellent efficacy data supporting in vivo exposure, it unfortunately presents some limitations. Most people who suffer phobias (around 60–80%) never seek treatment,^{1,4,5} and of those who do seek treatment, approximately 25% either refuse exposure therapy when they hear what it entails or drop out of therapy.^{6,7} One of the reasons for this refusal data could be that the main feature of exposure is con-

fronting the feared stimuli, which some people may find too frightening. New efforts are needed to increase the number of phobia sufferers who benefit from exposure therapy.

Some preliminary data from a nonclinical sample supports the acceptability of VR exposure versus in vivo exposure. Garcia-Palacios et al.⁸ surveyed 777 undergraduate students who scored high in a fear of spiders questionnaire. Participants strongly preferred VR exposure treatment to in vivo exposure therapy. This work provided preliminary data about the preference of VR exposure to in vivo exposure in a nonclinical sample.

The aim of the present work is to conduct a survey to explore whether people with phobias would prefer VR exposure to in vivo exposure in a clinical sample of people suffering specific phobias and specific social phobias (fear of public speaking).

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METHOD

Participants

The sample included 150 participants in two different samples who participated in different clinical trials exploring the effectiveness of VR exposure in the treatment of specific phobias. Some of the participants (25, or 16.7%) belonged to a sample recruited from the University of Washington in the United States. Most of the participants (125, or 83.3%) were recruited from Universitat Jaume I in Spain. The sample was composed of 73 people (48.7%) diagnosed with specific phobias: animal phobias (spiders, cockroaches, rats); 18 people (12%) were diagnosed with a situational phobia (claustrophobia); 6 people (4%) were diagnosed with a natural environment phobia (heights); and finally, 53 people (35.3%) were diagnosed with social phobia (discrete subtype: fear of public speaking). Most of the participants were women (86%). The mean age of the participants was 27.43 years ($SD = 9.71$) ranging from 18 to 69; and 62.7% had an university degree or were studying for a university degree, 30.6% had a high school education, and 6.7% had an elementary school education.

Measures

*Anxiety Disorders Interview Schedule (ADIS-IV).*⁹ We used different adaptations of the Behavioral Avoidance Test (BAT) for the various fears. See Garcia-Palacios et al.¹⁰ for a description of the BAT for specific phobia, animal type, and Botella et al.¹¹ for a description of the BAT for claustrophobia. The BAT for specific phobia, natural environment type (heights), is an adaptation from Menzies and Clarke.¹² Finally, we used the BAT developed by Beidel et al.¹³ for specific social phobia. Self-report instruments included a fear of spiders questionnaire, (FSQ),¹⁴ and an in vivo versus VR exposure questionnaire.

Procedure

Participants belonging to the United States sample were recruited from mass testing in an introductory psychology class. Participants completed the FSQ. People scoring over 2 standard deviations above the class mean in fear of spiders were invited to participate in the study. Participants belonging to the Spanish sample were recruited at Universitat Jaume I through advertisements in the university and local journals and posters around campus. The criteria to participate in the study were as follows:

1. Meet DSM-IV¹⁵ criteria for specific phobia or social phobia (fear of public speaking) according to the judgment of two clinical psychologists, using the ADIS-IV interview.
2. Have a minimum of one-year duration of the phobia.
3. Be unable to complete a BAT.
4. Have no current alcohol or drug dependence.
5. Have no severe physical illness.
6. Read and sign a consent form previously approved by an Internal Review Board.

During the assessment, participants read and completed the in vivo versus VR exposure questionnaire. This was done before starting the assessment process and before they knew which treatment they would receive. For example, participants recruited at mass testing read the explanation and answered the questions at mass testing; those coming to the clinic directly did it in the first assessment session before starting the diagnostic interview.

Results

Results (on a scale from 1 to 7) showed that participants were more willing to participate in a VR exposure program ($M = 6.08$, $SD = 1.31$) than in an in vivo exposure treatment ($M = 3.97$, $SD = 1.89$). The difference between the means was statistically significant, $t(149) = -13.807$, $p < 0.001$. We also studied the percentage of participants who refused to go through the two different exposure programs: 27% refused in vivo exposure, and 3% refused VR exposure. Using a stricter definition of refusal, 14% of the participants completely refused in vivo exposure, whereas none of the participants completely refused VR exposure.

Regarding the preference between the two kinds of exposure, 76% chose VR exposure, and 23.7% chose in vivo exposure. We performed a binomial test that showed that the difference between the percentage who chose in vivo and the percentage who chose VR was statistically significant ($p < 0.001$).

Most of those who chose VR exposure (90.4%) said they chose it because they were too afraid of confronting the real feared objects or situations. Some (4.1%) chose VR because they thought it was attractive and innovative; another 4.1% because they thought it would be more difficult to control real spiders; and 1.4% gave other reasons. On the other hand, most of those who chose in vivo (57.7%) said they chose this option because they considered that "it is necessary to confront real spiders to overcome the fear"; 23.1% chose in vivo because "the computer-generated spiders won't be able to make me believe that I'm confronting real spiders." Finally, 19.2% chose in vivo because "new technologies provoke distress in me."

1. Meet DSM-IV¹⁵ criteria for specific phobia or social phobia (fear of public speaking) according

DISCUSSION

The present study provides the first clinical data comparing acceptance of VR exposure vs. in vivo exposure by participants suffering phobias. These results support the use of VR exposure with the aim to increase the acceptability of one of the most efficacious techniques in clinical psychology: exposure therapy.

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REFERENCES

1. Magee WJ, Eaton WW, Wittchen HU, McGonagle KA, Kessler RC. Agoraphobia, simple phobia, and social phobia in the National Comorbidity Survey. *Archives of General Psychiatry* 1996; 53:159–68.
2. Antony MM, Swinson RP. (2000) Specific phobia. In: Antony MM, Swinson RP, eds. *Phobic disorders and panic in adults: guide to assessment and treatment*. Washington, DC: American Psychological Association, pp. 79–104.
3. Woody SR, Sanderson WC. Manuals for empirically supported treatments: 1998 update. *The Clinical Psychologist* 1998; 51:17–21.
4. Agras S, Sylvester D, Oliveau D. The epidemiology of common fears and phobia. *Comprehensive Psychiatry* 1969; 10:151–6.
5. Boyd JH, Rae DS, Thompson JW, Burns BJ, Bourdon K, Locke BZ, Regier DA. Phobia: prevalence and risk factors. *Social Psychiatry and Psychiatric Epidemiology* 1990; 25:314–23.
6. Marks IM. (1978) Behavioral psychotherapy of adult neurosis. In: Gardfield SL, Bergin AE, eds. *Handbook of psychotherapy and behavior change*, 2nd ed. New York: Wiley.
7. Marks IM. (1992) Tratamiento de exposicion en la agorafobia y el panico. In: Echeburua E, ed. *Avances en el tratamiento psicologico de los trastornos de ansiedad*. Madrid: Piramide.
8. Garcia-Palacios A, Hoffman HG, See SK, Tsay A, Botella C. Redefining therapeutic success with virtual reality exposure therapy. *CyberPsychology & Behavior* 2001; 4:341–8.
9. Di Nardo PA, Brown TA, Barlow DH. (1994) *Anxiety disorders interview schedule for DSM-IV: lifetime version (ADIS-IV)*. San Antonio, TX: Psychological Corporation.
10. Garcia-Palacios A, Hoffman HG, Carlin A, Furness III T, Botella C. Virtual reality and tactile augmentation in the treatment of spider phobia: a controlled study. *Behaviour Research and Therapy* 2002; 40, 983–93.
11. Botella C, Banos R, Villa H, Perpina C, Garcia-Palacios A. Virtual reality in the treatment of claustrophobia: a controlled multiple baseline design. *Behavior Therapy* 2000; 31:583–95.
12. Menzies RG, Clarke JC. Danger expectancies and insight in acrophobia. *Behavior Research and Therapy* 1995; 33:215–21.
13. Beidel DC, Turner SM, Jacob RG, Cooley MR. Assessment of social phobia: Reliability of an impromptu speech task. *Journal of Anxiety Disorders* 1989; 3:149–58.
14. Szymanski J, O'Donohue W. Fear of spiders questionnaire. *Journal of Behavioral Therapy and Experimental Psychiatry* 1995; 26:31–4.
15. American Psychiatric Association. (2000) *Diagnostic and statistical manual of mental disorders*, 4th ed. Washington, DC: American Psychiatric Association.

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