Telepsychology and Self-Help: The Treatment of Phobias Using the Internet

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Abstract

One of the challenges today in the research of psychological treatments based on evidence is their dissemination. Efficacious and effective psychological treatments should be available and accessible for both practitioners and consumers. However, only a small percentage of potential patients actively seek help for psychological problems that could be ameliorated by therapy. Internet-based self-help interventions may help to solve this problem by reducing the amount of actual contact between therapist and patient and by overcoming the geographical barriers that separate them. The aim of this work is to present a completely self-applied telepsychology program (Without Fear) to treat small animal phobia (spiders, cockroaches, and mice), which uses virtual reality scenarios for the exposure tasks. Preliminary data about the efficacy and effectiveness of this program in a series of 12 cases is offered. Participants showed an improvement in all clinical measures at posttreatment, and the therapeutic gains were maintained at a 3-month followup.

Introduction

Today the treatment of choice for specific phobias is the exposure technique.1 However, there are still some limitations regarding the availability of this treatment. On one hand, Boyd et al.2 found that only 15% of phobics seek help. Furthermore, around 25% of the patients do not benefit from in vivo exposure because they find the procedure too aversive, and they do not accept the treatment or they abandon it.3,4 On the other hand, in some cases, although the patients accept the exposure treatment, the presence of the therapist for the exposure tasks outside the consulting room is needed, which presents some limitations, such as the lack of confidentiality or the notable increase of the therapy time and its consequent cost. Therefore, the dissemination of empirically supported interventions is a very important issue that authors should pay attention to. It is crucial to develop strategies that increase the availability, attractiveness, and acceptance of this treatment. In this sense, the use of self-help procedures and new technologies can be particularly helpful.

Several review works5 have concluded that self-help procedures in behavior therapy can be effective. In a more recent review work, Newman et al.6 concluded that self-administered treatments were effective for specific phobias.

Regarding new technologies, the development of telepsychology programs via Internet can facilitate the availability of psychological treatments for those individuals who do not seek help at the mental care settings of their community or who do not have access to them.7 Several authors have pointed out the advantages offered by Internet psychotherapy. Also, the New Freedom Commission on Mental Health strongly encourages the continuity of development in health and telehealth with the aim of facilitating the contact with a high number of people.8 Those online telepsychology programs that have been studied empirically have shown to be effective for treating a variety of psychological problems. With regard to the treatment of phobias to small animals, Smith et al.9 developed and tested the efficacy of a computerized treatment program for spider phobia. More recently, Vasteneenwegen et al.10 showed the efficacy of using videotapes of spiders in multiple contexts for the exposures tasks in reducing fear of spiders in spider-anxious students. However, these computerized programs do not use the Internet to deliver them, and they are not completely self-applied. Moreover, the Vasteneenwegen et al. study was conducted

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with a subclinical population. In the telepsychology program we present here, following Glasgow and Rosen’s classification, the whole treatment is self-administered and is delivered entirely over the Internet. The efficacy is tested in a clinical sample.

As far as we know, there is only one other telepsychology program (“Talk to Me”) for the treatment of public speaking fear with the same features developed by our own group. This program uses videotaped real audiences that simulate feared social situations for the exposure tasks. Its efficacy has been proven in some preliminary studies and a controlled study that has shown the same efficacy for the self-administered program versus the same program applied by the therapist and compared to a waiting list.

The present work is the first one that uses virtual reality (VR) exposure over the Internet. VR scenarios can be seen as less aversive by the patients. In this line, Garcia-Palacios et al. found that clinical participants with specific phobias were more willing to start with VR exposure than with in vivo exposure.

Finally, our program is a low-cost program: a head-mounted display (HMD) is not required, and the program can be run with a Pentium III PC. Literature has pointed out that the efficacy of VR depends on the sense of presence experienced by the user so it could be expected that the use of HMD facilitates presence because it is an immersive device. However, previous studies have proven that VR therapy is effective for clinical (mental health) participants by using relatively cheap hardware and software on standalone computers currently in the market.

In summary, the combination of new technologies and self-help procedures could be a promising alternative for those potential patients who do not seek help for psychological problems. In the present work, a self-administered Internet-based telepsychology program called Without Fear was developed by our team to treat small animal phobia (spiders, cockroaches, and mice). Preliminary data about the efficacy of this program, which provides VR scenarios online in a series of 12 cases, is also offered.

Materials and Method

Participants

Twelve voluntaries (9 women and 3 men) took part in the study. Some of them came to seek help for their specific phobia at the Emotional Disorders Clinic in Jaume I University, and others came through advertisements located around the university campus about our Internet program. The mean age was 27.33 (SD = 9.49), ranging from 20 to 51. Nine participants were single and three were married. Most of the participants were university students or had already finished their university studies (N = 10), 1 went to primary school, and 1 went to high school.

All participants met DSM-IV criteria for Specific Phobia Animal Type: 2 (16.7%) participants had spider phobia, 7 (58.3%) suffered from cockroaches phobia, and 3 (25%) presented mice phobia. For the diagnosis, an adaptation for Specific Phobias of the Structured Clinical Interview for DSM-IV Axis I disorders was used. The diagnosis was carried out by Ph.D. students trained in the application of the structured interview and supervised by expert clinicians, members of our research team. An independent diagnosis was also obtained by a second interviewer. The exclusionary criteria considered were: current alcohol or drug dependency, primary diagnosis of major depression and psychosis, and being treated with a similar program at that moment or in the past.

Measures

Fear Spider Questionnaire (FSQ). Adapted from Szymanski and O’Donohue, the FSQ is composed of 18 items concerning situations related to the fear of these animals, which are rated in a 9-point Likert scale. A generally excellent internal consistency has been found in different studies with Cronbach’s alphas ranging from 0.88 to 0.97. Murris and Merckelbach also found a good test–retest reliability of 0.91. For the assessment of cockroaches and mice phobias, adaptations of this questionnaire (in which all items referred either to cockroaches or mice) were used.

Spider Phobia Beliefs Questionnaire (SPBQ). Adapted from Arriz et al., the SPBQ is composed of 78 items; 42 items measure the strength of the fearful beliefs regarding spiders, and the rest measure the strength of fearful beliefs about one’s reaction to encountering a spider. All items are rated on a 0 to 100 scale. Arriz et al. found a good internal consistency for both the spider-related (α = 0.94) and self-related (α = 0.94) subscales. They also found an acceptable test–retest reliability for both subscales (r = 0.68 and r = 0.71 respectively). Again, in order to assess the fearful beliefs about cockroaches and mice, adaptations of this were used.

Behavioral Avoidance Test (BAT). A container with the feared animal inside is located in a room 5 meters from the entrance door. The participant is asked to enter the room and approach the animal as much as possible. The test is scored taking into account the distance in meters the participant can approach to the animal and his or her level of anxiety experienced during the test using the subjective units of discomfort scale. The distance measure was converted to a behavioral score that ranged from 0, the participant refuses to enter the room, to 8, the participant opens the container.

Target behaviors. In this measure, adapted from Marks and Mathews, participants were assessed on a scale from 0, No fear at all/I never avoid, to 10, Severe fear/I always avoid the level of fear and avoidance experienced in situations in which they had to confront small animals. For this work, the most important target behavior chosen by each participant was used. The degree of belief in catastrophic thought was also assessed in a 0 to 10 scale.

Impairment Questionnaire. Adapted from Echeburúa et al., this questionnaire measures the level of impairment caused by the problem in different areas of each participant’s life using 0 to 10 scales. It has shown good psychometric properties in Spanish populations. In this study, only the global impairment scale was used.

Attitudes toward the self-help program measure. This instrument was specifically designed for this research. Partic-
participants answered several questions on 0 to 10 scales, which included three measurements: (1) motivation on the treatment program; (2) confidence in the Internet as a medium for finding information to solve problems, computers as a means of delivering treatments, this self-administered program, and the ability to self-apply a treatment; (3) and opinion about the treatment—after treatment, participants’ opinions on several issues were measured: to what extent they thought the treatment was logical, to what extent they were satisfied with it, to what extent they would recommend it to others, to what extent they thought it was useful to treat other psychological problems, how aversive they found it, and how useful they thought it had been treating their small animal phobia.

**Self-help treatment program description**

Without Fear is an Internet-based self-applied telepsychotherapy program for the treatment of small animal phobia (spiders, cockroaches, and mice) that can be run with a Pentium III PC (www.internetmeayuda.com).

**Assessment protocol.** Without Fear presents several assessment instruments for evaluating the problem in order to inform the user if he or she can benefit (or not) from the program. Then the program screens the target behaviors for the exposure tasks and the degree of fear and avoidance related to them. Without Fear makes a diagnosis and customizes the exposure tasks for each person. Furthermore, the system assesses the user not only at pretreatment but also during the treatment (offering feedback about the user’s progress) and after the treatment completion. The system has “barriers” between the different stages of the treatment: the user is allowed to progress to the next step only if the present step has been overcome.

**Treatment protocol.** Without Fear is a cognitive behavior therapy program with three components: education, virtual reality (VR) exposure therapy, and relapse prevention. The educational component presents the rationale of the treatment and offers information about anxiety, fear, and phobias and the role of negative thoughts in anxiety. The main therapeutic component of the program is VR exposure therapy in which an HMD is not needed, but virtual situations are shown on a computer screen.

The virtual scenario consists of a kitchen where the user can find different 3D small animals and must achieve three objectives that relate to confronting small animals and are graded according to the degree of difficulty: approaching the animal (Level 1), searching for the animal (Level 2), and getting rid off the animal (Level 3). In Figure 1, a screenshot of the virtual scenario showing Level 5 is displayed. The user begins with the easiest situation of the first objective (Level 1), and after overcoming this level, the user is offered the next level, and the system proceeds in this way until the last level is achieved (Level 9). Participants can finish the exposure task, and they can also repeat any level at their will. The system asks the user the level of anxiety experienced every 5 minutes. At the end of the exposure task, the system provides the user feedback using graphs about the progress of anxiety. The program reinforces the participant for the effort and success achieved. Because Without Fear is in a testing phase, in the present work, the system does not include self-exposure assignments between sessions. Finally, once the participant has succeeded in all the levels, the program presents a brief relapse prevention component before assessing the results.

**Technical aspects**

The application is placed in a Web server. Users’ pages are generated dynamically from the information extracted from the database. In order to store in the database the contents of the different steps, XML (Extensible Markup Language) is used. Each step of the treatment described in an XML document is transformed in HTML (HyperText Markup Language). In the XML file are the questionnaires and images that will be inserted. A script is used to visualize the text in “sections” by means of XMLDOM (XML document object model) objects. For the development of the virtual environment, we used Virtools Dev interactive technology that allows the visualization of the environments in a Web page.

**Procedure**

All participants underwent a screening assessment; those who met the inclusion and exclusionary criteria were applied the treatment protocol. After evaluating the problem, participants are asked to sign a consent form. Next, the participants started to self-administer the self-help program in a room at our clinic. An intranet system was used because Without Fear is still being tested, and so we could intervene if any clinical or technical problem appeared. However, participants could come to our clinic at will and enter the room and self-apply the program on their own. Because it is a self-help program, the length and frequency of the sessions were different for each participant. The average number of sessions for these 12 participants was 4.25 ($SD = 1.86$). Finally, all participants were assessed again at posttreatment and at 3-month followup.

**Results**

Changes from pretest to posttest and followup were analyzed using repeated analyses of variance. Means and standard deviations are presented in Table 1.
Results showed a significant time effect for all measures. All participants showed a significant decrease in all self-report questionnaires: FSQ, \( F(2, 10) = 20.437, p < 0.001 \); SPBQ for both subscales SBQ-1 (\( F(2, 10) = 31.999, p < 0.001 \)) and SBQ-2 (\( F(2, 10) = 20.189, p < 0.001 \)). Scores in the BAT also improved after treatment (\( F(2, 10) = 17.860, p < 0.001 \)). An improvement was also found for the level of fear (\( F(2, 10) = 49.982, p < 0.001 \)), avoidance (\( F(2, 10) = 44.995, p < 0.001 \)), and degree of belief in the catastrophic thought (\( F(1, 11) = 87.707, p < 0.001 \)).

Additionally, the time effects of the measures were more accurately analyzed using univariate contrasts where pretest with posttest and posttest with followup were compared. All comparisons between pretest and posttest were significant for all self-report questionnaires: FSQ, \( F(1, 11) = 27.466, p < 0.001 \); the two scales of SPBQ, SBQ-1 (\( F(1, 11) = 38.956, p < 0.001 \)) and SBQ-2 (\( F(1, 11) = 23.779, p < 0.001 \)); for the BAT, \( F(1, 11) = 17.493, p < 0.005 \); and for the level of fear \( F(1, 11) = 40.692, p < 0.001 \), avoidance \( F(1, 11) = 44.995, p < 0.001 \), and degree of belief in the catastrophic thought \( F(1, 11) = 87.707, p < 0.001 \). On the other hand, comparisons between post-test and follow-up were not significant but for the level of fear related to the main target behavior \( F(1, 11) = 6.400, p < 0.05 \).

As for the global impairment caused by their problem, the ANOVA showed a significant time effect \( F(2, 10) = 5.815, p < 0.05 \). Univariate contrasts revealed a significant time effect from pretest to posttest \( F(1, 11) = 12.360, p < 0.01 \) and no significant differences were found from posttest to followup.

Finally, Table 2 shows the means and standard deviations regarding the measures about the attitudes toward the self-help program. All participants were motivated to start the program and showed a high confidence in general in the Internet, computers, the Without Fear program, and their ability to self-administer it before treatment. They were also very satisfied with the treatment at posttest.

### Table 1. Means, Standard Deviations and Effect Size for All Therapy Measures at Pretest, Posttest and Followup

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pretreatment M</th>
<th>Pretreatment SD</th>
<th>Posttest M</th>
<th>Posttest SD</th>
<th>Followup M</th>
<th>Followup SD</th>
<th>Time Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSQ</td>
<td>84.58</td>
<td>26.03</td>
<td>43.25</td>
<td>23.45</td>
<td>42.33</td>
<td>27.61</td>
<td>0.650</td>
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<tr>
<td>SBQ-1</td>
<td>48.32</td>
<td>16.63</td>
<td>17.18</td>
<td>9.35</td>
<td>20.73</td>
<td>11.16</td>
<td>0.744</td>
</tr>
<tr>
<td>SBQ-2</td>
<td>35.28</td>
<td>19.99</td>
<td>9.88</td>
<td>6.28</td>
<td>8.10</td>
<td>8.26</td>
<td>0.647</td>
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<tr>
<td>BAT</td>
<td>5.08</td>
<td>2.23</td>
<td>6.67</td>
<td>1.56</td>
<td>7.00</td>
<td>1.28</td>
<td>0.619</td>
</tr>
<tr>
<td>Fear</td>
<td>8.33</td>
<td>1.78</td>
<td>4.50</td>
<td>2.47</td>
<td>3.17</td>
<td>2.33</td>
<td>0.820</td>
</tr>
<tr>
<td>Avoidance</td>
<td>8.50</td>
<td>1.88</td>
<td>3.58</td>
<td>1.98</td>
<td>3.08</td>
<td>2.78</td>
<td>0.784</td>
</tr>
<tr>
<td>Belief</td>
<td>8.25</td>
<td>1.05</td>
<td>2.67</td>
<td>1.72</td>
<td>2.25</td>
<td>2.00</td>
<td>0.863</td>
</tr>
<tr>
<td>Global impairment</td>
<td>4.64</td>
<td>2.16</td>
<td>2.55</td>
<td>2.25</td>
<td>1.73</td>
<td>2.20</td>
<td>0.368</td>
</tr>
</tbody>
</table>

FSQ: Fear of Spider Questionnaire; SBQ-1: Spider Phobia Beliefs Questionnaire, subscale of beliefs about the animal; SBQ-2: Spider Phobia Beliefs Questionnaire, subscale of beliefs about oneself; BAT: Behavioral Avoidance Test.

### Table 2. Means and Standard Deviations for the Measures Regarding Attitudes Toward the Self-Help Program

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-treatment</th>
<th>Post-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment motivation</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>To start the treatment</td>
<td>8.67</td>
<td>1.50</td>
</tr>
<tr>
<td>Confidence in</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Internet</td>
<td>6.5</td>
<td>2.64</td>
</tr>
<tr>
<td>Computers</td>
<td>7.17</td>
<td>1.99</td>
</tr>
<tr>
<td>Self-help program</td>
<td>7.50</td>
<td>1.98</td>
</tr>
<tr>
<td>Ability to self-apply</td>
<td>7.33</td>
<td>2.84</td>
</tr>
<tr>
<td>Opinion about the treatment</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Treatment is logical</td>
<td>8</td>
<td>1.41</td>
</tr>
<tr>
<td>Satisfaction with the treatment</td>
<td>7.83</td>
<td>1.27</td>
</tr>
<tr>
<td>Recommend to others</td>
<td>8.5</td>
<td>1.38</td>
</tr>
<tr>
<td>Utility for other psychological problems</td>
<td>7.92</td>
<td>1.31</td>
</tr>
<tr>
<td>Aversive</td>
<td>2.33</td>
<td>2.23</td>
</tr>
<tr>
<td>Utility for his or her fear</td>
<td>7.5</td>
<td>1.62</td>
</tr>
</tbody>
</table>
Discussion

Results obtained in this study support the efficacy of our low-cost telepsychology program delivered using an intranet in a series of 12 cases. First, all participants showed an improvement for all measures related to animal phobia post-treatment. This improvement not only was maintained at 3-month followup, but participants showed additional therapeutic gains for the level of fear at this followup assessment period. Second, all participants reported a lower level of global impairment caused by their problem at post-treatment because this change also maintained at a 3-month followup. Furthermore, the improvement was generalized to real life, as shown by the scores obtained in the BAT. That is, all participants were able to approach a real, small animal at posttreatment and at followup with a lower level of anxiety, and some of them were even able to kill the animal (specifically the cockroaches). These results are in line with the conclusions about the efficacy of self-administered treatments for a wide range of target problems derived from a few meta-analyses studies. Third, it is important to highlight that the program was able to activate the participants’ anxiety during the exposure sessions, even without using an HMD. Fourth, all participants were motivated to start the treatment program. They did not find the treatment aversive, and this good opinion about the program was maintained after completing the treatment.

Nevertheless, this study presents a series of limitations. First, it is a series of cases. Second, it was carried out using an intranet in a university setting, not at the participant’s home (Internet). And third, most of the participants were university students who had a high confidence in new technologies. In spite of these limitations, these preliminary results seem very promising. Developing Internet-based treatment programs has several advantages: they increase the availability of mental health resources for people who might otherwise not receive treatment; from a cost-benefit perspective, these therapies are much more economical than traditional treatments; they provide to the user more confidentiality; and feared situations are more available. Traditional in vivo exposure requires having available and feeding several animals for the exposure tasks, and depending on the season of the year (e.g., at winter time), acquiring certain animals may be difficult. Without Fear “always” has several small animals of different sizes and types. Without Fear also permits a higher control over the feared context (by not allowing the user to continue to the next step until he or she has overcome the previous one) and offers the possibility of overlearning (the user can practice any step as many times as needed). Furthermore, before treatment, participants in this study stated that if they could choose, they would prefer VR exposure over in vivo exposure because they found the first option less aversive. Without Fear has a number of other strengths. Users can access and confront their feared situations at any time and as frequently as they desire. This accessibility and flexibility helps to maximize users’ sense of control over exposure to feared situations. Also, the immediate postexposure feedback enables individuals to track their progress over the course of treatment.

Despite its many potential benefits, it is important to proceed with caution regarding the use of Internet therapy. There is the problem of the confidentiality of the data and the need of using well-protected passwords. We must also consider ethical issues (e.g., providing suitable information to the user about the designers of the system). Additionally, the quality of the therapeutic relationship is certainly compromised in self-help Internet-based treatments. Therefore, it is recommended that Internet therapy be limited to the application of highly structured treatment protocols for clearly specified problems and to find ways of maintaining in a good situation the therapeutic relationship (e.g., to make the participant feel supported, the system could answer to an e-mail sent by him or her).

In sum, this is the first program that uses VR scenarios that are completely delivered over the Internet, so it could be concluded that VR exposure delivered over the Internet was effective for the treatment of small animal phobia. However, controlled studies with large sample sizes and long-term followup data are needed. In any case, there is little doubt that in the coming years, the Internet and related technologies will influence and shape the field of mental health, reaching the problem “wherever it is.”

Acknowledgments

This study was funded in part by Ministerio de Educación y Ciencia Spain, Proyectos Consolidador-C (SEJ2006-14301/PSIC), and Generalitat Valenciana (GV2006/180). CIBER of Physiopathology of Obesity and Nutrition is an initiative of ISCIII.

Disclosure Statement

The authors have no conflict of interest.

References


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