A Cross-Cultural Validation of VR Treatment System for Flying Phobia in the Mexican Population

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\textbf{Abstract.} Anxiety as a symptom or disorder is affected by multiple variables such as antecedent events, interpretation of the events, psychological vulnerability, and individual differences in the reaction towards an event. Nowadays, virtual-reality therapy is used as a therapeutic tool for patients suffering from some kind of anxiety disorder. In Mexico, the National Survey on Psychiatric Epidemiology \cite{1} informed that anxiety disorders are the most common disorders followed by affective disorders, which are more prevalent in women than in men. Among the different anxiety disorders, the category of specific phobias (7.1\%) was the most common. Based on this demand, a collaborative effort between research groups from the University Jaume I in Spain and the National Autonomous University of Mexico (UNAM), initiated a project which purpose was the technological transfer of systems based on virtual reality for the treatment of Fear of Flying to be implemented and evaluated in the Mexican population. The treatment protocol developed by Botella et al., \cite{2,3} has been applied to five volunteer participants. In this paper we present data of adapted treatment protocols in Mexican population that support the efficacy of VR of treatment of fear of flying, achieved by the Spanish research group.

\textbf{Keywords.} Virtual reality, fear of flying, phobias, cognitive-behavioral treatment

\section*{Introduction}

Anxiety as a symptom or disorder is affected by multiple variables such as antecedent events, interpretation of the events, psychological vulnerability, and individual differences in the reaction towards an event. Cross-cultural research emphasized that different reactions from people depend on their social context, and they are different in each culture. In Mexico, the National Survey on Psychiatric Epidemiology \cite{1} reported that anxiety disorders are the most common disorders followed by affective disorders. Among the different anxiety disorders, the category of specific phobias (7.1\%) was the most common. We present the results obtained from a cross-cultural validation in Mexican population of the Fear of Flying treatment system developed by Botella et al. \cite{2,3}, which had been proved their efficacy in Spanish population and in process of cross-cultural validation in Holland and Mexico.

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1. Method

1.1 Participants

The clinical sample was conformed of five participants who had asked for psychological services to overcome the fear flying at the Psychology Health Center at UNAM. Women between 18 and 60 years old (M= 46.8 years old) consisted as our sample. All the participants met DSM-IV criteria for Specific phobia situational type (flying phobia).

1.2 Experimental Design and Procedure

Before the clinical implementation, an adaptation process was carried out to evaluate clarity and cultural pertinence of the program’s assessment instruments and treatment protocol as well as in the VR system developed by Botella et al. [2,3]. A content validation by ten acknowledging Mexican experts in the field was performed through several judges that scored: (1) cultural and contextual relevance, (2) wording, that the questions were stated correctly in linguistic terms, and (3) language, that the questions used appropriate words for Mexican population and (4) theoretical validity. Once the assessment instruments were replace or adjusted based on the judges evaluation, the study started the initial evaluation including three baseline periods (1, 2 and 3 weeks), and the participants were randomly assigned to them. The reasons for choosing a multiple baseline design for this preliminary study is because the interest to observe with a greater degree of clinical details the differences and tendency of fear and avoidance ratings in Mexican population. Data obtained will offer the empirical database in order to compare control conditions with studies carried out with diverse cultural samples to prove cross-cultural efficacy of evidence-based programs.

2. Results

From the interjudge cross-cultural validation, results obtained of the assessment instruments used for the treatment of Fear of Flying by expert judges point out a high agreement degree. Table 1 shows the mean percentage of agreement among judges for the instruments, evaluated in four dimensions.

<table>
<thead>
<tr>
<th>Questionnaire of presence and reality judgment</th>
<th>Agreement among judges (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>Language</td>
</tr>
<tr>
<td>99.17%</td>
<td>96.94%</td>
</tr>
</tbody>
</table>

Table 2. Mean scores in flying phobia protocol assessment questionnaires in Mexican population.

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Pre-treatment</th>
<th>Post-treatment</th>
<th>3 months follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI</td>
<td>9.4</td>
<td>6.2</td>
<td>5.25</td>
</tr>
<tr>
<td>STAI-T</td>
<td>40</td>
<td>36.2</td>
<td>33.5</td>
</tr>
</tbody>
</table>
Data obtained from the clinical implementation were analyzed with non-parametrical statistics (Wilcoxon signed-rank tests), to estimate the significance of the efficacy data. The scores of the participants showed significance decrease from pre-test to post-test (STAI-T: $Z = -2032; p < 0.05$; DEFAS- Anxiety expectations, $Z: -2.023; p < 0.05$) and DEFAS Danger expectations: $Z: -2.023; p < 0.05$). Finally the statistics revealed significance differences from pre-test to three months follow-up in STAI-T ($Z: -1.826; p < 0.05$). In the Depression (BDI) measures, the ratings showed no difference between pre-test and post-test ($Z: -677; p > 0.05$).

3. Discussion

Preliminary results confirm the efficacy in the reduction of variables established as the study carried out by Botella et al., 2005. Findings support the hypothesis stated by Good & Kleinman [4], about the necessity to contextualize the treatment protocols and assessment instruments regarding social relevance and cultural differences. As expected with the main aim of this study, the data offers evidence about the convenience to cross-cultural validation for treatment protocols, considering that the emotional perception of the problems as well as the idiomatic expressions have to be adapted to the cultural and social context of the target population. The results obtained from the assessment instruments used for the treatment of flying phobia by expert judges showed a high percentage average agreement between judges in the dimensions of cultural pertinence, language, and theoretical validity in the dimension of wording the average scores above 90%.

On the other hand, the preliminary clinical data support significance decrease between pre-test and post-test in STAI and DEFAS measures. VR exposure was effective for the treatment of flying phobia in the Mexican population. The participants achieved improvement about their avoidance and fear. They were able to control their anxiety levels. All participants were able to fly in the three months after the treatment.

4. Conclusions

Currently, the replacement of the audios that have been adapted to the Mexican colloquial language are under validation, comparing the original version with the one adapted, in order to know which one gives the user a better immersion, sense of presence, and reality judgment. The audios will be changed with flight attendant’s directions before, during and after the flight, as well as directions in the waiting area. We expect in the future to have the complete adapted system as result of this other study, in order to benefit and disseminate this treatment protocol to the Mexican and Latino population.

References

