



CALIFORNIA STATE SCIENCE FAIR 2016 PROJECT SUMMARY

Name(s) Henry G. Low	Project Number 36206
Project Title Assessing the Effectiveness of Virtual Psychotherapies for OCD by Developing a Novel Software Application	
Abstract Objectives/Goals The goal of this research project was to develop an intuitive self-help software application for treating obsessive-compulsive disorder (OCD) that features novel virtual treatments. Available for Windows and Android, the application is intended to help patients overcome their symptoms and to assist mental health physicians with treating the disorder. After development of the application, this study investigated the effectiveness of the overall app and the individual virtual treatments at reducing OCD symptoms and anxiety levels. Methods/Materials I developed a software application called "Tranquility: An OCD Treatment App" using the Unity 3D Engine, C# programming, 3D models/animations, and custom-designed textures. The application is unlike other existing tools because it gives OCD and anxiety patients regular access to personalized treatments and can potentially serve as a useful complement to clinical sessions. The application features three novel virtual treatments - each based on an existing psychotherapy - titled The Gentle Tree of Thoughts, the Relaxation Journey, and the Personal Journal. A group of 10 research participants with OCD used the 3 treatments of the app for a 15-day testing period and took the Y-BOCS and FOCI symptom severity tests. The testers also completed daily log documents and used a unique scaling/scoring system to provide data regarding the app's effectiveness. Results The collected data indicated that the Gentle Tree of Thoughts and the Relaxation Journey were the most effective treatments, although the Personal Journal also demonstrated efficacy. It was found that effectiveness increased over time with all three therapies. In regards to anxiety levels, each therapy resulted in a decrease of anxiety levels over time, with the Gentle Tree and the Personal Journal inducing the lowest average anxiety scores. Conclusions/Discussion According to the Y-BOCS and FOCI scores, the overall application caused an approximate 8% reduction in OCD symptoms. Each individual therapy demonstrated effectiveness and was able to cause reductions in anxiety over time. This application has the potential to greatly benefit the mental health community, especially those who suffer from OCD and anxiety disorders.	
Summary Statement In this research project, I developed a novel and intuitive software application, featuring virtual psychotherapies for treating obsessive-compulsive disorder, which demonstrated effectiveness in reducing OCD symptoms and anxiety levels.	
Help Received After consulting with a mental health physician, I planned, designed, and developed the software on my own. I would like to acknowledge the assistance of the participant testers who used my app and anonymously provided data regarding its effectiveness.	