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Immersive virtual reality: A P4 framework for psychosomatic disorders

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Statement of the Problem: Evidence supporting the effectiveness of immersive virtual reality (VR) in understanding and treating a growing number of psychiatric conditions has been documented in recent reviews. Much of studies conducted focus on exposure and/ or training designed to decrease reactive symptoms and/or to learn and to practice adaptive behaviors. The utility of a P4 framework – personalized, predictive, preventive and participatory medicine is clear and open for further exploration. Extending the application of a P4 framework by linking each of these dimensions of modernizing medicine to guide the design of immersive VR experience in applications related to psychosomatic disorders is the focus of this presentation.

Methods & Theoretical Orientation: VR scenarios can be personalized to suit, study and challenge a given patient. This has been the chief dimension exploited thus far in crafting therapies unilaterally; that is, based on the presenting symptoms, VR exercises are prescribed by the clinician and undertaken by the patient. VR scenarios can create an immersive experience presenting situations and features that can shed light on predictive psychological factors and, as some studies have done, teach patients how to master adaptive behaviors aiming to prevent symptom onset and exacerbation. Real-time adjustment of VR immersive experience based on live patient feedback using emotion detection (via facial and verbal expression, wearable sensors) will greatly improve these capabilities. By integrating modern technologies enabling patient-centered design of tailored immersive VR interventions, therapists can truly empower participatory involvement in both prevention and treatment.

Conclusion & Significance: The P4 framework with illustrative technologies that bring it to a new level of bilateral implementation is presented. This toolkit will extend the range and improve the impact of immersive VR therapies relevant for improving empathy toward and treating psychosomatic illnesses.



Biography

George Tolomiczenko has experience as a Clinician, Researcher, Teacher and Administrator, which helps him in his Administrative Director role to guide and run the Health, Technology and Engineering program at USC (HTE@USC). After an interdisciplinary undergraduate degree at Caltech, he earned a Doctorate in Clinicial Psychology at Boston University. As both a Scientist and Clinician working at medical institutions affiliated with Harvard University, his focus shifted to public health and policy issues involving homelessness and mental illness. In Toronto, his efforts were devoted to creating and funding programs and partnerships enabling disease-focused basic research, knowledge translation and adapting chronic disease models. He is now focused on developing USC's interdisciplinary collaborative strengths applied to medical device and process innovation. He teaches courses designed to form and train teams linking engineering and medicine to create innovative and licensed technology and start-up companies.

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