Title: Post-traumatic Stress Disorder Biomarkers and Neurobiology: A Case for Virtual Reality

Author: Sudarshan Ramanan

Abstract:

Post-traumatic stress disorder (PTSD) is triggered by exposure to a traumatic event, and is one of the most common and debilitating psychiatric disorders. This has tremendous economic impact on healthcare systems and a patient’s quality of life. There is considerable debate and significant gaps in current understanding as to why PTSD affects individuals differently. To date, this disorder is treated using several pharmacological and non-pharmacological interventions. However, there are several limitations with these interventions due to variable efficacy leading PTSD to remain a major area of unmet therapeutic need. While there has been some progress in elucidating the neurological and cellular mechanisms implicated in PTSD, it is pivotal to identify specific biomarkers and cellular mechanisms involved in regulating stress resiliency and vulnerability, which are critical for improving treatment efficacy. Recent progress in digital therapeutics platforms such as virtual reality (VR) offers considerable promise in treating the disorder. This study explores and discusses key mechanisms and biomarkers that play critical roles in the prevalence of the disorder and attempts to provide a perspective on why virtual reality can be a powerful technology for the treatment of PTSD.