

2018

A frontotemporal regional model of Post-Traumatic Stress Disorder

Catherine Mikkelsen, Arash Yazdanbakhsh. 2018. "A Frontotemporal Regional Model of Post-Traumatic Stress Disorder." *Journal of Vision*. Vision Sciences Society. <https://doi.org/10.1167/18.10.103>
<https://hdl.handle.net/2144/40526>

"Downloaded from OpenBU. Boston University's institutional repository."

A Frontotemporal Regional Model of Post-Traumatic Stress Disorder

Catherine Mikkelsen; Arash Yazdanbakhsh

+ Author Affiliations

Journal of Vision September 2018, Vol.18, 103. doi:<https://doi.org/10.1167/18.10.103>

Abstract

The flashback is a phenomenon in Post-Traumatic Stress Disorder (PTSD) in which traumatic memories are replayed as a reaction to a stimulus. However, the underlying neural mechanisms for this phenomenon are still under investigation. We created a multi-layer model of visual input, entorhinal cortex, hippocampus, prefrontal cortex, basolateral amygdala, and the central nucleus of the amygdala, as a multi-area network to determine how these regions may be distinctively encoding the traumatic events that produce these replays. The current model dynamic shows that highly emotional visual stimuli can be generalized to similar stimuli, more so than events related to neutral stimuli. This result mimics electrophysiological results in the amygdala (Ghosh & Chattarji, 2015). Our network dynamics can be used to create a more nuanced approach to PTSD treatments: it could replicate outcomes of techniques such as Prolonged Exposure (PE) and Eye Movement Desensitization and Reprocessing (EMDR) and improve the spatial and temporal configuration of the technique. Our model characterizes the spatio-temporal aspects of the flashback phenomenon and as such aids in the spatio-temporal fine-tuning of treatments such as EMDR. As a future direction, we can incorporate in the model individual and developmental differences in plasticity in responding to current treatments based on visual stimuli to come up with optimized treatment for each individual affected by PTSD.

Meeting abstract presented at VSS 2018

This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).



This site uses cookies. By continuing to use our website, you are agreeing to [our privacy policy](#).

| [Accept](#)