

A desensitization program using a driving simulator to treat post-traumatic stress disorder following a motor vehicle collision: a case-study in progress.

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Acknowledgements

- Sylvie Joly, Psychologist
- Pierro Hirsch, Virage Simulations
- SAAQ
- CAA-Québec
 - Yvon Lapointe
 - Hamid Rekouane

Post-Traumatic Stress Disorder (PTSD)

- Prevalence
 - Crash / Collision survivors, military
- Risk factors
 - Events, consequences, ...
- What are the common treatment for PTSD?
 - Desensitization
 - Associated health issues

VIRTUAL REALITY AND PTSD

Case study

- Mr. EF (55y.o.) who was diagnosed with post-traumatic stress disorder (PTSD) in 2010 after he was involved in a motor vehicle collision (MVC).
 - Driving at night on a two-lane undivided highway
 - Truck in the oncoming lane, driven by a drowsy driver, drifted across the center line
 - In order to avoid a head-on collision, Mr. EF steered his car abruptly into a ditch where it overturned.

What has been done?

- After the crash:
 - Mr. EF expressed severe anxiety and fear related to being hit by other vehicles.
 - Even as a passenger, he manifested anxiety and these symptoms were more present and severe at night in situations similar to the MVC he experienced.
 - Mr. EF is highly motivated to resume his normal life by driving again.
 - However, despite multiple attempts under the guidance of therapists, Mr. EF remains afflicted by debilitating anxiety and fear and has not been able to drive since then.
- *N.B. I don't want to critic what has been done before but only referred to it to give you a proper presentation of the case.*

Consequences

- Medications
 - Ativan, Citalopram, Celexa, Séroquel...
- PTSD
 - March 29, 2010
- Driving
 - Stop driving
 - Experience as a passenger

Abitibi to Montreal

- Highly motivated to resume independant driving
- Contacted Virage Simulation
- CAA-Québec
- SAAQ

Objectives

- Evaluate the impact of a therapeutic treatment consisting of progressive exposures to simulator-based driver training scenarios to reduce levels of anxiety and stress while he executes normal driving behaviours.

Hypothesis

- By having access to cognitive reframing program, driving specific feedback and a practice environment, Mr. EF will be able to:
 - Visualized his own driving behaviors
 - Put in place appropriate responses
 - Driving behaviors
 - » Lavallière et al. 2012a
 - » Romoser et Fisher, 2009
 - Psychological and physiological responses
 - » Bouchard et al. 2012
 - » Lavallière et al. 2012b

Methods

- A driving-specific feedback program aimed at desensitizing driving fears was introduced to enable a cognitive reframing of the traumatic MVC event.
 - Cognitive-behavioural reframing strategies, mindfulness training and relaxation periods.
 - Driving simulator practice period
 - CAA-Qc in Pointe-Claire (Montreal, QC)

All intended to ensure that Mr EF will be able to cope properly with different real world driving situations.

Why a driving simulator?

- Safe environment
- Successful with other clientele
 - TBI, Stroke, ...



Virage Simulation Pictures

Protocol

- Suggested structure
 - What was planned
 - Access to simulator
 - Rural to urban environment
 - No/Low to high traffic density
 - Automatic to manual control of the simulator
 - On-road

What happened...

Results: visit 1, December 2, 2013

- Able to sit in the car seat of the simulator and hold the steering wheel on two occasions.
 - No driving
- Physiological response
 - Sweat and high level of stress
 - During the session, Eric vomited more than once and one of those times he was on the simulator.
- Perceived capacity
 - Perceptibly more relaxed than before as a passenger and this greater calmness has persisted.

Postpone the simulator treatments due to winter road conditions

WHAT'S NEXT ?

Discussion

- Patience, patience, patience
- Limitations
 - Severity of the PTSD
 - Prolonged time without driving
 - Associated medications

Conclusion

- Access to rehabilitation facility
 - Urban sprawl
 - Availability of such services
- Development of new curriculum of interventions
 - Technologies
 - Practices and curriculum

Questions Thank you

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