



Augmented Reality 3MDR Therapy for the Treatment of PTSD and Comorbid Moral Injury: A Case Study Abstract

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BACKGROUND

Veteran suicide rates, PTSD, and moral injury (MI) are alarmingly high, with veteran suicide rates rising by 3.5% in males and 23.7% in females from 2020 to 2021. PTSD affects up to 30% of military personnel, and nearly 42% of combat veterans experience a morally injurious event. Comorbid PTSD and MI are strongly linked to suicidal ideation and symptom severity. This abstract examines a combat veteran with PTSD and MI and improvements after treatment with the Motion-Assisted, Multi-Modal Memory Desensitization and Reconsolidation (3MDR) therapy using augmented reality (AR).



Figure 1. HoloLens augmented reality head mount display used in intervention

METHODS

3MDR uses AR, physical activity, therapist interaction, and an eye movement dual task. In 10 sessions (90 minutes each), the participant wears an AR headset and walks on a treadmill. Each session includes three phases: warm-up, intervention, and cool-down. In warm-up, a piece of music evokes the trauma, and in cool-down, another evokes the present self. During intervention, trauma images are addressed with a therapist, who records key phrases to overlay on the image for the participant to read aloud before they fade. A dual task involving reading numbers on a red ball moving across the screen. The Subjective Units of Distress Scale (SUDS) monitors distress levels throughout.

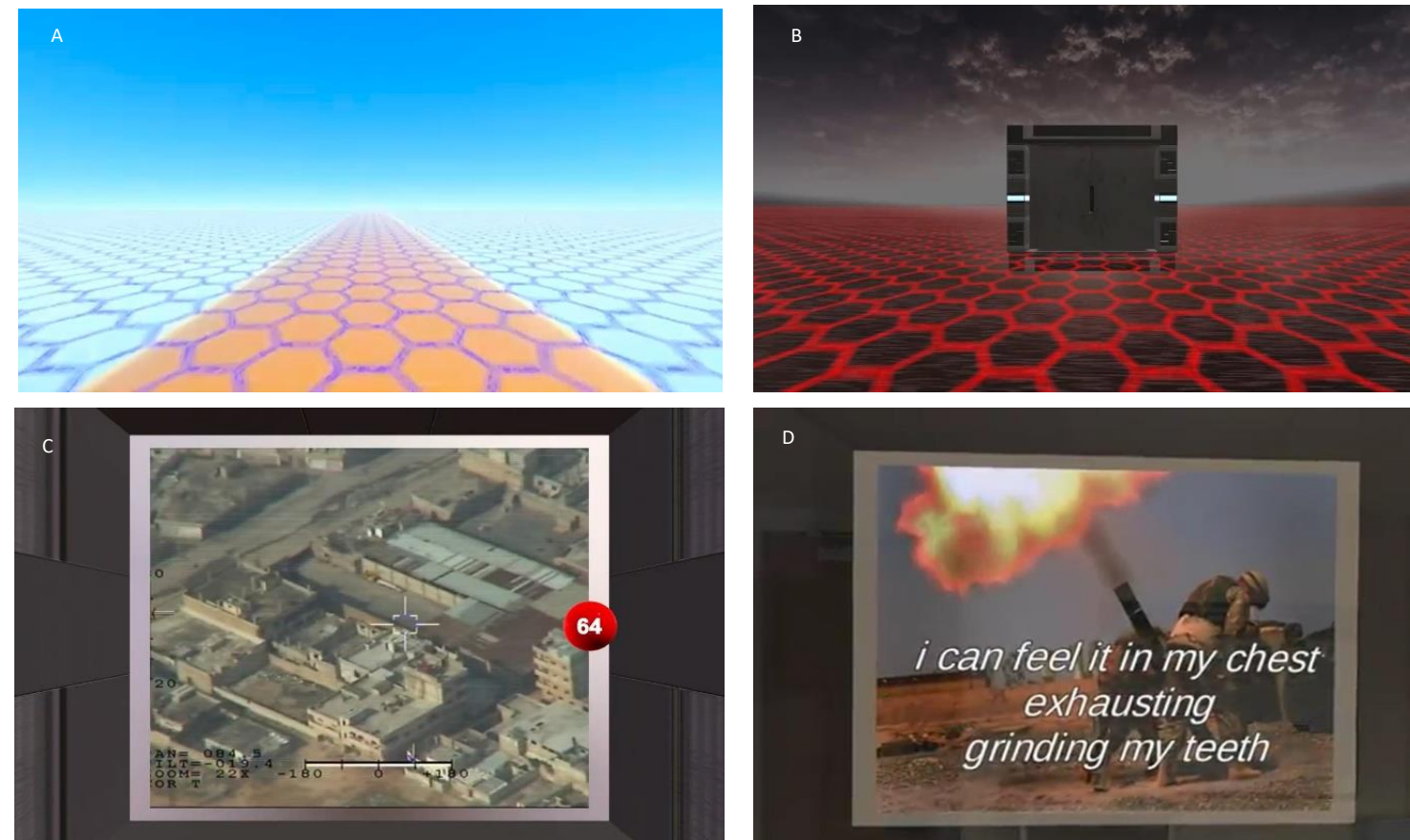


Figure 2 A-D. Images captured from the 3MDR Software. A. the blue honeycomb scene shown during the warm-up and cool down phases. B. The dark honeycomb scene shown when entering the intervention phase. C. EMDR that begins after discussing each image in the intervention phase. D. view from the HoloLens headset during the 3MDR intervention.

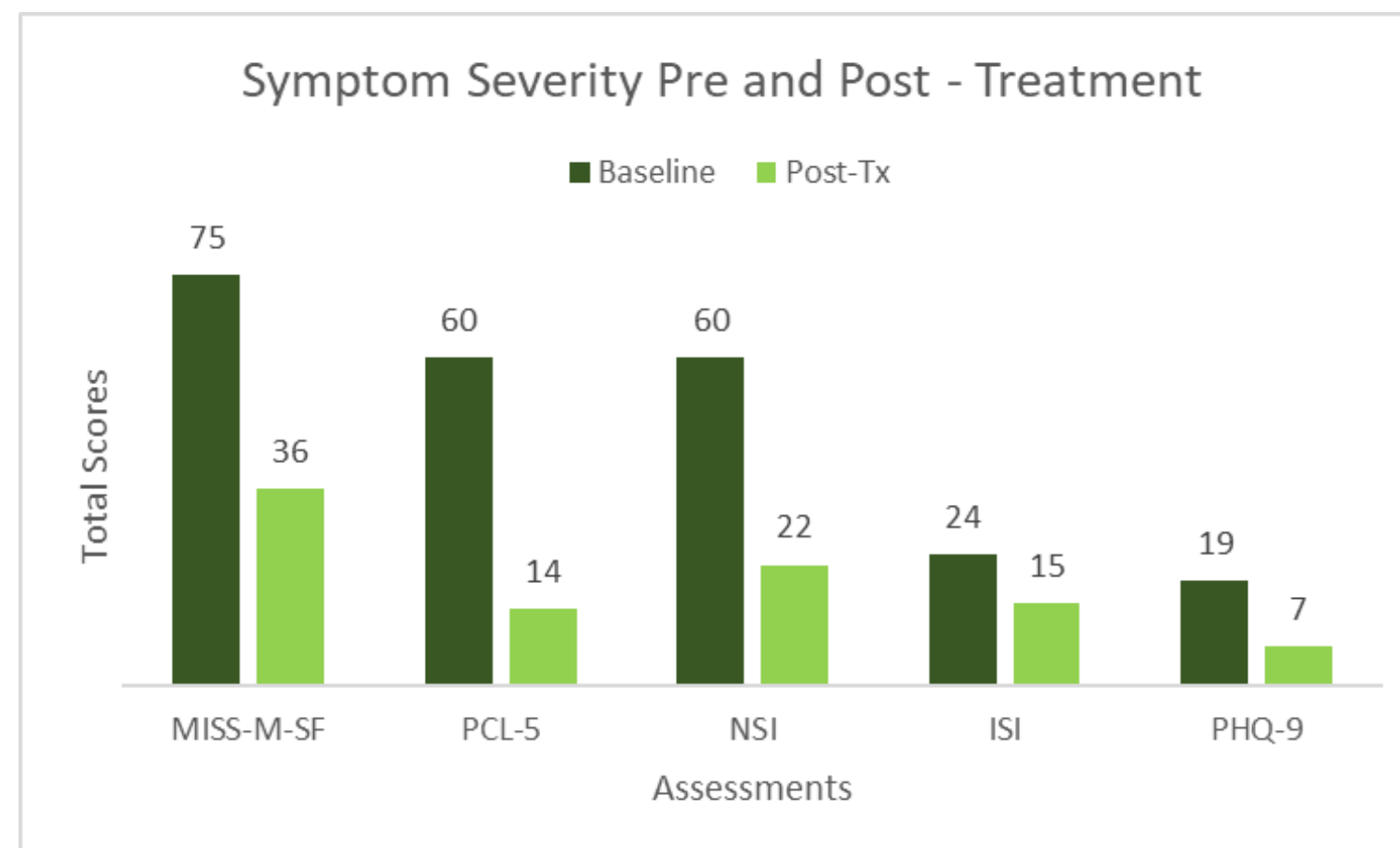


Table 1. Graphic of pre and post treatment assessment totals



RESULTS

George, a 39-year-old veteran, developed PTSD and MI after his 2004 Iraq deployment. His pre-treatment PTSD score was 60 on the PTSD Checklist for DSM-5 (PCL-5). Post 3MDR-AR, George's PCL-5 score dropped to 14, no longer meeting PTSD criteria. His MI score decreased by over 50%, from 75 to 36 on the Moral Injury Symptom Scale – Military Short Form (MISS-M-SF). Improvements were also noted in insomnia, depression, neurobehavioral symptoms, self-awareness and sense of empowerment.

CONCLUSION

3MDR-AR is a promising therapy for PTSD and MI, offering a more engaging solution. While more research is needed, this study notes the potential for AR to reduce barriers and improve outcomes for veterans.

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