



Innovative Uses of Virtual Worlds to Improve Psychological Health Care

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Combat Duty in Iraq and Afghanistan, Mental Health Problems, and Barriers to Care

Charles W. Hoge, M.D., Carl A. Castro, Ph.D., Stephen C. Messer, Ph.D., Dennis McGurk, Ph.D.,
Dave I. Cotting, Ph.D., and Robert L. Koffman, M.D., M.P.H.

“...The percentage of study subjects whose responses met the screening criteria for major depression, generalized anxiety, or PTSD was significantly higher after duty in Iraq (15.6 to 17.1 percent) than after duty in Afghanistan (11.2 percent) or before deployment to Iraq (9.3 percent)” (Hoge et al., 2004)

Bringing the War Back Home

Mental Health Disorders Among 103 788 US Veterans Returning From Iraq and Afghanistan Seen at Department of Veterans Affairs Facilities

Karen H. Seal, MD, MPH; Daniel Bertenthal, MPH; Christian R. Miner, PhD; Saunak Sen, PhD; Charles Marmar, MD

Background: Veterans of Operations Enduring Freedom and Iraqi Freedom (OEF/OIF) have endured high combat stress and are eligible for 2 years of free military service–related health care through the Department of Veterans Affairs (VA) health care system, yet little is known about the burden and clinical circumstances of mental health diagnoses among OEF/OIF veterans seen at VA facilities.

Methods: US veterans separated from OEF/OIF military service and first seen at VA health care facilities between September 30, 2001 (US invasion of Afghanistan), and September 30, 2005, were included. Mental health diagnoses and psychosocial problems were assessed using *International Classification of Diseases, Ninth Revision, Clinical Modification* codes. The prevalence and clinical circumstances of and subgroups at greatest risk for mental health disorders are described herein.

Results: Of 103 788 OEF/OIF veterans seen at VA health care facilities, 25 658 (25%) received mental health di-

agnosis(es); 56% of whom had 2 or more distinct mental health diagnoses. Overall, 32 010 (31%) received mental health and/or psychosocial diagnoses. Mental health diagnoses were detected soon after the first VA clinic visit (median of 13 days), and most initial mental health diagnoses (60%) were made in nonmental health clinics, mostly primary care settings. The youngest group of OEF/OIF veterans (age, 18-24 years) were at greatest risk for receiving mental health or posttraumatic stress disorder diagnoses compared with veterans 40 years or older.

Conclusions: Co-occurring mental health diagnoses and psychosocial problems were detected early and in primary care medical settings in a substantial proportion of OEF/OIF veterans seen at VA facilities. Targeted early detection and intervention beginning in primary care settings are needed to prevent chronic mental illness and disability.

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RAND Report

- 19% of vets from OEF/OIF screen positive for PTSD and/or MDD
- About 300,000 in all by mid 2008
- Slightly more than half sought treatment
- Perceived Stigma
- Access to care issues
 - Physical distance from VA or MTF
 - Limited Resources
 - Command support

Source: Tanielian, Terri, Jaycox, Lisa H., Schell, Terry L., Marshall, Grant N., Burnam, M. Audrey, Eibner, Christine, Karney, Benjamin R., Meredith, Lisa S., Ringel, Jeanne S., Vaiana, Mary E., et. al. Invisible Wounds of War. Summary and Recommendations for Addressing Psychological and Cognitive Injuries. Arlington, VA: RAND Corporation. 2008.

Military Behavioral Health Challenges

- Two key challenges to military treatment and PTSD:
 - Perceived Stigma
 - Decreased treatment response and adaptive emotional disengagement

Perceived Stigma

- Negative and erroneous reactions of the general public to persons with mental illness is common (Crisp et al., 2000)
- When individuals are aware of public stigma, barriers to care may occur (Green-Shortridge et al., 2007)
- Particularly challenging in military cultures where a key shared value is strength (Reger et al., 2007)

Perceived Stigma

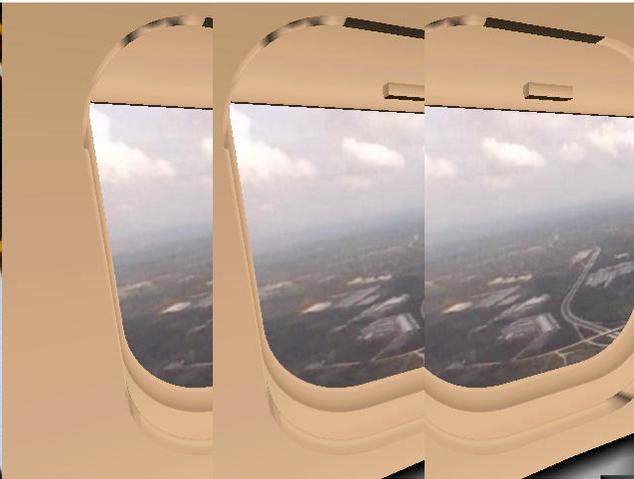
- Those who screened positive for a mental health disorder were twice as likely to report fears of treatment stigma and barriers to care (Hoge et al., 2004)
- Only 38% to 45% of those screening positive for a mental health disorder were interested in care (Hoge et al., 2004)
- Service Members may be hesitant to access treatment that will identify psychological problems

Adaptive Disengagement

- Emotional Disengagement Adaptive in Combat Zone
- Allows SM to focus on task at hand
- Prolonged and Repeated Deployments leads to overlearning this skill
- May result in decreased treatment benefit

Adaptive Disengagement





Meta-Analysis of VRET

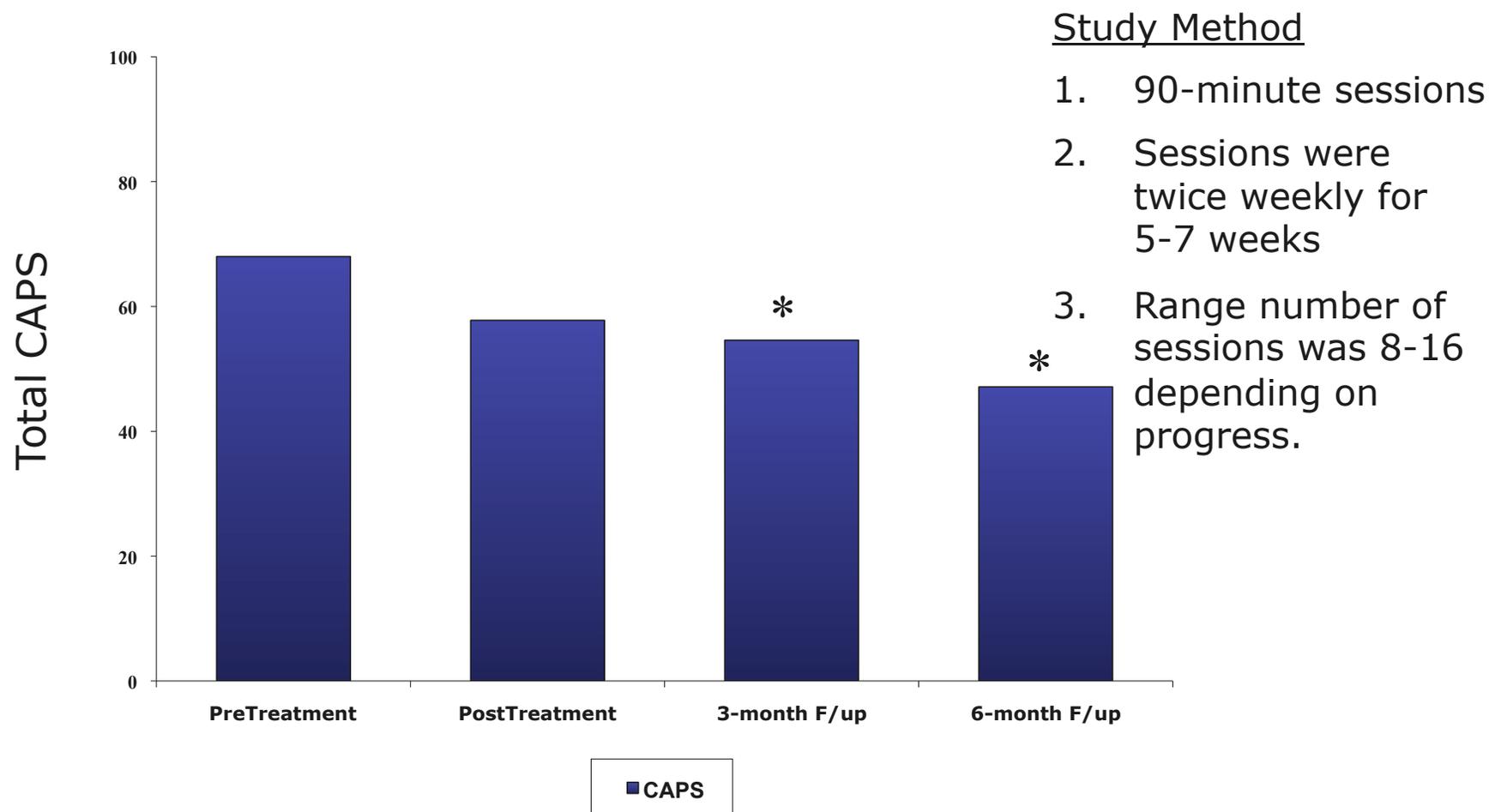
Parsons & Rizzo (2008) Journal of Behavior Therapy and Experimental Psychiatry

Table 2: The Average Random Effect Sizes, including the Variance and Confidence Limits for the Mean Effect Sizes, for the Affective Domains and the Anxiety Total.

Domain	Average Random Effect Size	Effect Size Variance	95% CI		r	%
			Lower	Upper		
PTSD	0.94	0.01	0.78	1.10	0.42	0.18
Social phobia	0.96	0.10	0.34	1.59	0.43	0.19
Arachnophobia	0.92	0.12	0.25	1.59	0.42	0.18
Acrophobia	0.93	0.06	0.44	1.43	0.42	0.18
Panic disorder with agoraphobia	1.79	0.02	1.52	2.06	0.67	0.44
<u>Aerophobia</u>	1.75	0.07	1.25	2.26	0.66	0.43
Anxiety Total	0.96	0.02	0.68	1.25	0.43	0.19

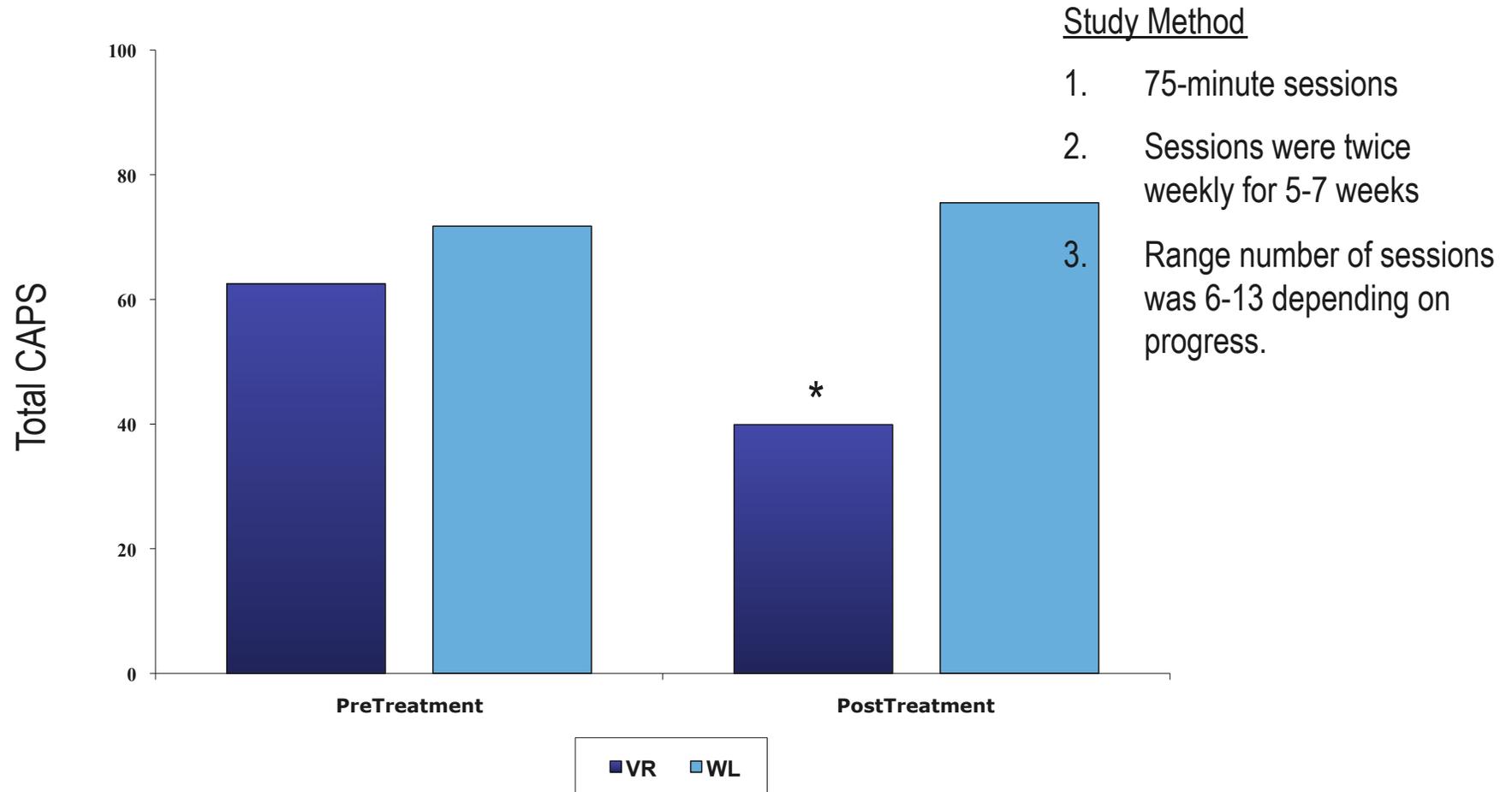
Note: All reported random effect sizes reflect large effects for VRET on decrease of negative affective symptoms. PTSD = Post-Traumatic Stress Disorder. % = percent of variance accounted for by VRET. The average weighted effect sizes were calculated for each of the six affective domains and an overall affective effect size (Anxiety Total). This involved combining the standardized effect sizes within each affective domain (within and across domains for Anxiety total) into a composite-mean weighted effect size, and examining each domain's significance. Total N= 266.

VR Exposure Therapy for Vietnam Veterans



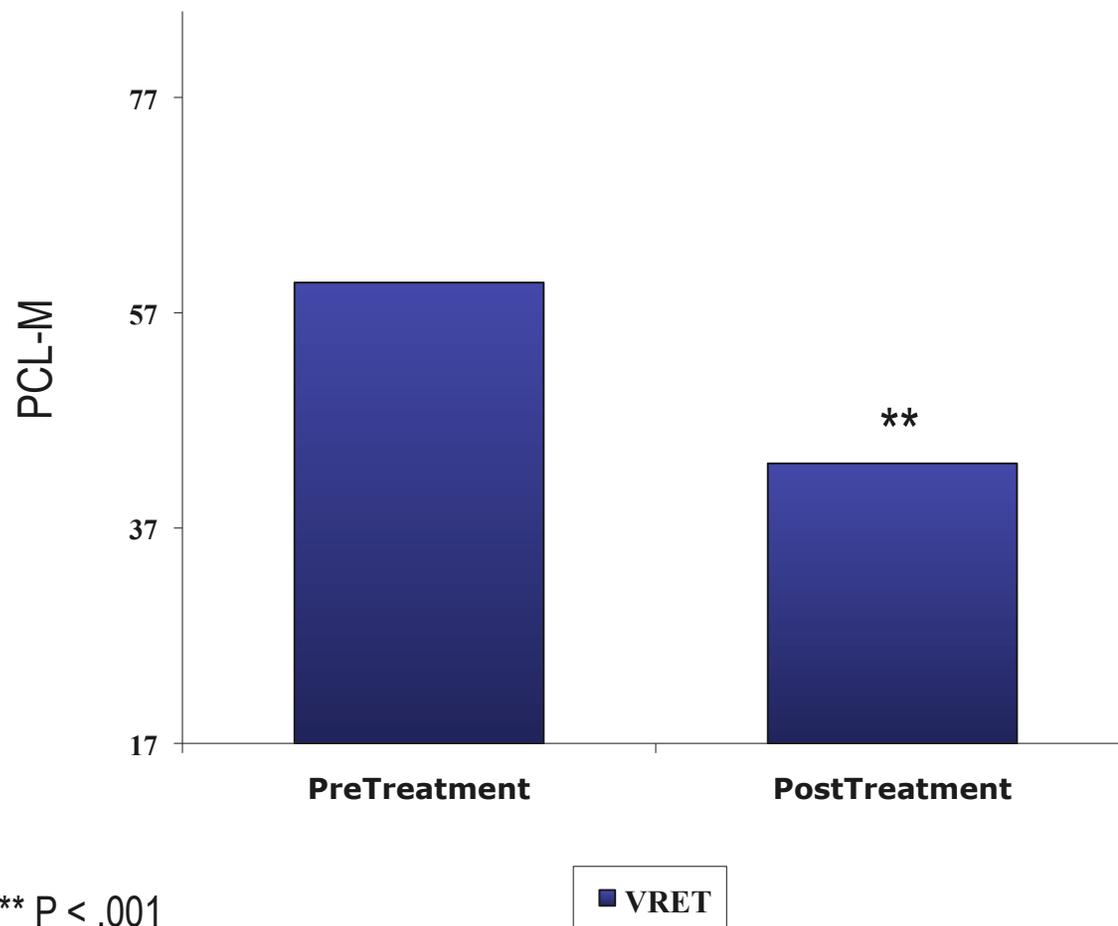
Rothbaum et al. (2001). Journal of Clinical Psychiatry

VR Exposure Therapy for WTC Survivors



Difede et al. (2007). Journal of Clinical Psychiatry

VR Exposure in Clinical Practice Madigan Army Medical Center



** P < .001

Study Method

1. PE non-responders or those specifically seeking VR treatment.
2. 90-minute sessions
3. Sessions were approx weekly
4. Range number of sessions was 5-11 depending on progress.
5. 25 patients received or currently receiving VR Exposure

Reger et al., Unpublished Data

Strengths and Limitations

- No comparison with a standard of care
- Other treatments not stabilized
- No treatment adherence check

Strengths:

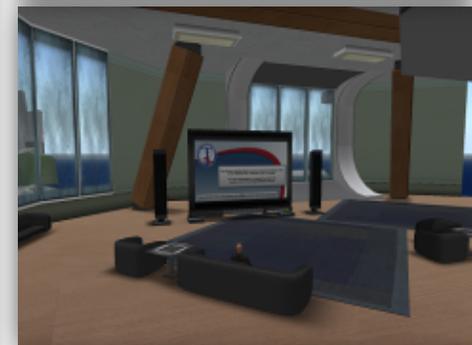
- External validity

Virtual Worlds: Rationale

- Improved Access to Care
 - **Telehealth** Interventions
 - **Web-Based**
- Reduced Stigma
 - **Anonymous** access
 - Educational Opportunities: SMs, Vets, Families
- Improved Care
 - Interactions/interventions not possible in RL
 - VEs Increase Emotional Engagement
 - Potential for Improved Outcomes



Experiential Education



Clinical Telehealth



Virtual Reality Exposure Therapy



“A new century is at hand, and a fast-spreading technology promises to change society forever. It will let people live and work wherever they please, and create dynamic new communities linked by electronics, improve the lot of the poor, and reinvent government...”

-an article about the telephone, 1898

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