Effects of Virtual Reality Therapy on Combat-Induced PTSD

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Facts

- Due to the past wars in Iraq and Afghanistan:
  - 2.3 million veterans
  - at least 20% of veterans have PTSD
  - over 19% may have TBI
  - 7% have both TBI and PTSD
  - about 50% do not seek treatment
  - increasing rates of veteran suicides
PTSD

- Psychological condition that occurs after a traumatic event.

- Often accompanied by depression, anger issues, increased anxiety, and other mental disorders.

- Characterized by:
  - reliving the traumatic event
  - avoiding thoughts, memories, people and places related to event
  - increased physiological reactivity
Combat PTSD

- Degree of exposure to combat and adversity, trauma, and loss are the best predictors of combat related PTSD.

- Exposure to atrocities was only related to re-experiencing and avoidance (Litz et al., 2009).

- After a one year tour in Iraq, 13.8% of 522 National Guard Troops reported for PTSD (Polusny et al., 2010).
  - tend to report higher rates of PTSD post-deployment, but same severity than regular active duty
Common Treatment

- Exposure Therapy allows for fear activation and modification.

- Other therapies include Eye Movement Desensitization and Reprocessing, flooding, and systemic desensitization.

- Despite its effectiveness, Exposure Therapy has smaller pre- and post-effect sizes for combat related trauma.
  - Interference with activation of memory.
Virtual Reality Therapy

- “a way for humans to visualize, manipulate, and interact with computers and extremely complex data” (Aukstakalnis' and' Blatner,' 1992).

- Can be used for phobias, stress management, acute pain reduction, and functional skill training.

- Environments and settings are manipulated based on experienced trauma.

- First use of VR-ET began in 1997 at Georgia Tech and Emory University.
“Virtual Iraq/Afghanistan” has been used by studies to treat PTSD (Rizzo et al., 2013)
- Simulates similar environments encountered in combat.
- Can be tailored to target specific traumatic events.
- Circumvents avoidance of memories, does not rely on imagination.
- Introduces participants slowly through series of sessions.

Rothbaum (2001), reported a 34% reduction in clinician-rated symptoms and 45% for self-reported among Vietnam veterans.
Virtual Scenarios
Methods

- Articles were retrieved from PsycInfo, PsycArticles, PsycExtra, and other academic databases.

- After reviewing commonly used therapies, VR-ET computer technology as a form of therapy. Previous reviews used initial results of studies.

- Studies included required combat induced PTSD, not including mild PTSD (score 30 or below on the PCL-M).

- Rates of PTSD were measured using either the CAPS or PCL-M.
### Table

<table>
<thead>
<tr>
<th>Source</th>
<th>Participants (N)</th>
<th>PTSD Scale</th>
<th>Conditions</th>
<th>Statistics</th>
<th>$d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rizzo et al. (2013)</td>
<td>24</td>
<td>Clinician Administered PTSD Scale (CAPS)</td>
<td>Virtual Reality – Exposure Therapy</td>
<td>t(19)=5.99, p&lt;.001</td>
<td>1.08</td>
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<tr>
<td>Miyahira et al. (2012)</td>
<td>22</td>
<td>CAPS</td>
<td>Wait-List Virtual Reality – Exposure Therapy</td>
<td>F(1,20)=8.705, p=.008</td>
<td>0.72</td>
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<tr>
<td>McLay et al. (2012)</td>
<td>20</td>
<td>PTSD Checklist-military (PCL-M)</td>
<td>Virtual Reality – Graded Exposure Therapy</td>
<td>t(19)=5.92, p&lt;.001</td>
<td>1.94</td>
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<tr>
<td>Ready et al. (2011)</td>
<td>21</td>
<td>PCL-M</td>
<td>Virtual Reality – Exposure Therapy</td>
<td>N/A</td>
<td>0.80</td>
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<tr>
<td>Reger et al. (2011)</td>
<td>24</td>
<td>PCL-M</td>
<td>Virtual Reality – Exposure Therapy</td>
<td>t(23)=6.5, p&lt;.001</td>
<td>1.25</td>
</tr>
</tbody>
</table>
VR-ET has shown improvement of PTSD symptoms.
- \( d_{\text{average}} = 2.46 \)

Factors to consider:
- lack of participants
- number of dropouts
- time constraints

