Combat to College: Challenges Faced by Veterans with Traumatic Brain Injuries

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Presenters and Format

• Shoba Sreenivasan, Ph.D., GLA Psychologist: Theoretical
• Dan Smee, M.S.W./Combat Iraq War Veteran: Experiential
• Sandra Buenrostro, M.A., CRC, Adjunct Counselor/Riverside Community College Application
• “To care for him who shall have borne the battle, and for his widow, and his orphan” ~ Abraham Lincoln
Mild Traumatic Brain Injury (mTBI)

- A traumatically induced physiological disruption of brain function, as manifested by at least one of the following: [from blow or jolt to head]
  - any period of loss of consciousness (LOC)
  - any loss of memory for events immediately before or after the accident (posttraumatic amnesia, PTA)
  - any alteration in mental state at the time of the accident (e.g., feeling dazed, disoriented, or confused)
  - focal neurologic deficit(s) that may or may not be transient

- Harrington et al., (1993) from Wortzel, 2009
The severity of the injury does not exceed the following:

- LOC $\leq 30$ minutes
- after 30 minutes, Glasgow Coma Scale = 13-15
- PTA $\leq 24$ hours

TBI producing disturbances that exceed these criteria is classified as moderate or severe

Wortzel, 2009
Mechanism of Injury – Acceleration/Deceleration

(image from braininjury.com)
Injury Factors: Translation, Rotation, & Angular Acceleration Forces (Figure from Arciniegas and Beresford, 2001)
Blast Injury

- Primary – blast wind from explosive
- Secondary – from explosion, fragments objects thrown
- Tertiary – individual thrown by blast and strikes and object
- Quaternary – burns, toxic inhalation
Posttraumatic Amnesia
(Wortzel, 2009; MIRECC)

John Kirk, PhD
A Model of Influences on Neurobehavioral Outcome after TBI (Wortzel, 2009 as adapted from Silver & Arciniegas, 2006)

Pre-Injury Factors

Traumatic Brain Injury

Post-Injury Psychosocial Factors

Cognitive Disturbance

Emotional Disturbance

Behavioral Disturbance

Physical Disturbance

Disturbed Consciousness
Impaired Attention
Slowed Processing
Working Memory Problems
Memory Disturbance
Functional Communication Impairments
Executive Dysfunction
Depression
Anxiety
Irritability/Lability
Rage
Agitation
Aggression
Disinhibition
Apathy
Sleep Disturbance
Headaches
Pain
Visual Problems
Dizziness/Vertigo
Seizures

(Adapted from Silver and Arciniegas 2006)
Pre-Injury Factors: Wortzel, 2009

- Age and gender
- Baseline intellectual function
- Psychiatric problems & substance abuse
- Sociopathy
- “Risk-taking” and “novelty-seeking” behavior
- Premorbid behavioral problems
- Social circumstances and SES
- Neurogenetic
Post-Injury Risk: Re-deployed into high stress war-zone
Post-injury Factors

• EXPOSURE TO ADDITIONAL BLASTS/DIRECT HITS-CUMULATIVE TRAUMA EFFECTS (Iverson, 2010)

• CIVILIAN ISSUES: (Wortzel, 2009)
  • Lack of family, friends, or resources to support recovery
  • Premature return to work/school with ensuing failure to perform at expected levels
  • Poor adjustment to or coping with disability by injured person or family
  • Litigation or other legal entanglements
Posttraumatic Cognitive Impairments (Wortzel, 2009)

• In the acute and late periods following TBI, the domains of cognition most commonly affected by TBI include:
  – arousal/disturbances of consciousness
  – processing speed/reaction time
  – attention (selective, sustained, alternating, divided)
  – working memory
  – memory (new learning, retrieval, or [usually] both)
  – functional communication (use of language)
  – executive function

(Reviewed in: Bigler 2007; Arciniegas and Silver 2006; Nuwer 2005; Meythaler et al. 2001)
Common Mild TBI/Posttraumatic Symptoms
Wortzel, 2009

- Headache
- Sleep Disturbances
- Fatigue

- Dizziness
- Light sensitivity
- Sound sensitivity

Immediately post-injury 80% to 100% describe one or more symptoms

Most individuals return to baseline functioning within a year

NOTE: MAY NOT ACCOUNT FOR COMBAT BASED RECURRENT EXPOSURE TO TRAUMA

Ferguson et al. 1999, Carroll et al. 2004; Levin et al. 1987
Data from Lisa Brenner, Ph.D. 2009

• From Dr. Brenner’s power point 2009

• Data related to Fort Carson personnel
Ft. Carson: Post-Deployment Data (n = 907)

Currently Symptomatic: Onset of Symptoms (n = 844)

- Headache
- Dizziness
- Balance Problems
- Irritability
- Memory Problems

Post-deployment Onset (New Sx)
Persistent Sx since TBI

Posttraumatic Emotional and Behavioral Problems

- Depression
- Suicide risk increased (especially TBI+PTSD)
- Anxiety
- Irritability or loss of temper ("rage episodes")
- Disinhibition
- Agitation/Aggression ("socially inappropriate behavior")
- Apathy (loss of drive to think, feel, and/or behave)
- Psychosis

(From Wortzel, 2009)
Simpson & Tate (2007)

Suicide risk compared to general population…
Standardized Mortality Ratios and 95% CI

<table>
<thead>
<tr>
<th>Category</th>
<th>Rate</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males with TBI</td>
<td>3.9</td>
<td>3.13-4.59</td>
</tr>
<tr>
<td>Females with TBI</td>
<td>4.7</td>
<td>3.06-7.06</td>
</tr>
<tr>
<td>Age at injury &lt; 21</td>
<td>3.5</td>
<td>1.92-6.27</td>
</tr>
<tr>
<td>21-40</td>
<td>4.7</td>
<td>3.35-6.50</td>
</tr>
<tr>
<td>41-60</td>
<td>5.2</td>
<td>3.73-7.17</td>
</tr>
<tr>
<td>&gt;60</td>
<td>2.5</td>
<td>1.55-4.01</td>
</tr>
<tr>
<td>Concussion</td>
<td>3</td>
<td>2.82-3.25</td>
</tr>
<tr>
<td>(Severe) Lesion</td>
<td>4.1</td>
<td>3.33-4.93</td>
</tr>
<tr>
<td>Comorbid Substance Abuse</td>
<td>7.4</td>
<td>4.32-12.82</td>
</tr>
</tbody>
</table>
TBI and PTSD

Stein & McAllister 2009

TBI+ PTSD: increases risk for suicide
Shared Anatomy of TBI & PTSD

From PPT by Wortzel, 2009
Pilot Study Findings
Combat to College: Cognitive Fatigue as a Challenge in Iraq and Afghanistan War Veterans with Traumatic Brain Injury: Pilot Study Survey Results

Dan Smee
Sandra Buenrostro
Thomas Garrick
Shoba Sreenivasan
Linda E. Weinberger
Objectives

1. To identify the needs of returning veterans with TBI who are college students.
2. Identify the types of college programs and services that could meet their needs.
3. Identify how to market the services to veterans.
Combat Operations

Approximately 2.5 million servicemembers have deployed in the Global War on Terror (GWOT) includes OEF/OIF/OND

Approximately 320,000 service persons sustained probable traumatic brain injury (TBI) during deployment (RAND, 2008)

(Source: RAND Corporation, 2008)
TBI effect are Persistent

Combat TBI typically involves

• multiple exposures to blasts waves (from explosions, disrupts brain functioning)
• Direct hits by I.E.D.

Combat TBI reflects cumulative exposures to injuries to brain from blasts/direct hits

Persistence of symptoms even if category is “mild TBI” over years
“Mild” TBI is not “Mild” in impact

Added problems of blast exposure
  • Impact of the direct hit of the Bomb blasts
  • Impact of blast Injuries
  • Impact of no recovery time in a combat zone

In combat there is no period of rest / high stress, high sympathetic nervous system arousal – no period of recovery “hyper alert” mode = brain continuous stress
TBI effects = lowering of mental efficiency

Mild combat TBI = chronic and unremitting headache, dizziness, nausea/vomiting, trouble concentrating, irritability, fatigue, ringing in the ears and sensitivity to noise and light.

(Ruff, 2005; Iverson, 2010)
TBI Symptoms Cognitive Fatigue:

Under high demand, such as high intensity academic situations, combat TBI symptoms of migraine headaches and/or vertigo may be aggravated and may reduce cognitive efficacy and require a **prolonged** recovery period.
Cognitive Fatigue Syndrome

High Intensity Academic Cognitive demands

COGNITIVE FATIGUE
- Slowed thinking,
- Headache,
- Dizziness,
- Light/noise sensitivity

COGNITIVE BURNOUT
- Depletion of mental energy
- Inability to attend
- Inability to complete tasks

PROLONGED RECOVERY TIME
- Cannot bounce back from fatigue
- Longer time for brain to “recharge”

COLLEGE FAILURE
- POOR STUDY SKILLS AND PROGRESS
- CHRONICALLY DROPPING CLASSES
- FAILING CLASSES
- DROPPING OUT OF COLLEGE
TBI: Additional effects due to Blast Exposure

- Atmospheric pressure changes that result in brain injury—call this blast TBI (bTBI)
- OIF/OEF veterans have multiple blast exposures
- Do not seek treatment until two or more exposures
- Persistent post-concussion symptoms present: headache, concentration, dizziness, tinnitus
CSF Cavitation: Biomechanics of why blasts cause the brain to be injured

CSF cavitations causes “bubbles” in the liquid areas (cerebrospinal fluid) of the brain (ventricles)

When a frontal blast wave encounters the head, a shock wave is transmitted through the skull, cerebrospinal fluid (CSF), and tissue, causing negative pressure at the contrecoup that may result in cavitation
Non- Cavitating & Cavitating

FIGURE 5. Comparison of the distributions peak brain tissue pressure between the non-cavitating (left) and cavitating (right) models for the 500 kPa/4 ms blast condition.
Humvee after IED blast
Humvee
In one blast crater
Stakeholders

Veterans

Family Members

Veteran Groups
Stakeholders

Dept. of VA

Vocational Rehab  TBI Clinic

Colleges & Universities

Administrators  Professors

Colleges & Universities

Veterans Services  Disabled Student Services
Methods
Methodology: Rationale

Use of survey data for quantitative analysis

Use of a qualitative method

• Gathering individual perspectives
• Obtaining information about experiences and struggles in academic environment
• Identifying what programs and services are needed for successful college performance
Pilot Study Design

• Self-identified as having a V.A. diagnosis of TBI
• Subject Recruitment: Through Veteran Service Organizations (I.A.V.A, Wounded Warrior Project, and TBI support groups)
• 2 community colleges
Participants

16 responded

(January-June 2011)

2 community colleges
2 OIF/OEF organizations
• Low N believed due veterans surveyed would be reluctant to identify themselves as disabled due to discomfort in doing so as related to having a “hidden wound” of war as opposed to a readily visible wound such as a missing limb.

• Most veterans would “tough it out” and minimize their difficulties due to military mentality of “suck it up and move on.”
<table>
<thead>
<tr>
<th>Table 2</th>
<th>Cognitive Fatigue Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AFTER EXERTING MENTAL CONCENTRATION ON AN ACADEMIC TASK DO YOU FIND THAT YOU BECOME TIRED AND UNABLE TO FOCUS (THAT IS FEELING MENTALLY DRAINED)?</strong></td>
<td></td>
</tr>
<tr>
<td>YES ____</td>
<td>HOW MANY TIMES IN A WEEK? ________</td>
</tr>
<tr>
<td>NO ____</td>
<td></td>
</tr>
<tr>
<td><strong>AFTER EXERTING MENTAL CONCENTRATION ON AN ACADEMIC TASK DO YOU EXPERIENCE A SEVERE HEADACHE?</strong></td>
<td></td>
</tr>
<tr>
<td>YES ____</td>
<td>HOW MANY TIMES IN A WEEK? ________</td>
</tr>
<tr>
<td>NO ____</td>
<td></td>
</tr>
<tr>
<td><strong>ARE YOU OFTEN IRRITABLE AND SHORT-TEMPERED AFTER HAVING HAD TO EXERT MENTAL CONCENTRATION ON AN ACADEMIC TASK?</strong></td>
<td></td>
</tr>
<tr>
<td>YES ____</td>
<td>HOW MANY TIMES IN A WEEK? ________</td>
</tr>
<tr>
<td>NO ____</td>
<td></td>
</tr>
<tr>
<td><strong>DOES EXPENDING ALL THIS ENERGY WEAR YOU OUT PHYSICALLY?</strong></td>
<td></td>
</tr>
<tr>
<td>YES ____</td>
<td>HOW MANY TIMES IN A WEEK? ________</td>
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<td>NO ____</td>
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<tr>
<td><strong>DO YOU FIND THAT YOU CONCENTRATE HARDER BECAUSE YOU ARE ALREADY HAVING A HARD TIME CONCENTRATING?</strong></td>
<td></td>
</tr>
<tr>
<td>YES ____</td>
<td>NO ____</td>
</tr>
<tr>
<td><strong>ARE YOU LIGHT SENSITIVE?</strong></td>
<td></td>
</tr>
<tr>
<td>YES ____</td>
<td>NO ____</td>
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<tr>
<td><strong>DO YOU BECOME EASILY FRUSTRATED IF YOU ARE EXPECTING TO DO ONE THING AND IT SUDDENLY GETS CHANGED OR SOMETHING NEW IS ADDED?</strong></td>
<td></td>
</tr>
<tr>
<td>YES ____</td>
<td>NO ____</td>
</tr>
<tr>
<td><strong>HAVE YOU FAILED CLASSES RELATED TO THESE PROBLEMS?</strong></td>
<td></td>
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<td>YES ____</td>
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</table>
Sample of Interview Questions

1. What symptoms of TBI do you experience on a day-to-day basis?
2. How do they impact your ability to complete college courses?
3. Are you comfortable disclosing your status to others (e.g., professors, enrolling in disabled students programs)? If no, why not?
4. Have you felt uncomfortable asking for special accommodations? If yes, why?
Results
Demographics

Gender

- Male 75%
- Female 25%
Demographic

Diagnosis

TBI & PTSD 31%
Demographics

AGE

- 18-25: 25%
- 25-30: 50%
- 31+: 25%
SURVEY RESULTS

SELF-REPORTED SYMPTOMS

- Light sensitivity/not associated with CE
- Physically "worn out/drained"
- Irritability/short temper
- Severe headache

SELF-REPORTED SYMPTOMS
SURVEY RESULTS

COLLEGE SUCCESS

- DROPPED OUT
- PREVIOUSLY D/T SYMPTOMS 25%
Summary

• Results demonstrate persistence of symptoms in this group (all were in college at least three years)
• Symptoms impacting class performance among the survey respondents.
• Clear reluctance to disclose their TBI to professors and others in the academic environment as well as request accommodations.
Qualitative Data

- Veterans in the survey identified need for easy access to programs as needed and having tutors.
- Veteran’s support group as on campus as a useful college program to have
Cognitive Fatigue Syndrome, Accommodations and College Success

Cognitive Fatigue Syndrome

High Intensity Academic Cognitive demands

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<td>Dizziness,</td>
<td>Inability to complete tasks</td>
<td></td>
</tr>
<tr>
<td>Light/noise</td>
<td></td>
<td></td>
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<tr>
<td>sensitivity</td>
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Standard College Disability Model

Veteran avoids seeking services due to stigma

Disability Services Marketed to Iraq/Afghanistan Veterans

Veteran utilizes services

College Failure

| POOR STUDY SKILL & PROGRESS |
| DROPPING CLASSES |
| FAILING CLASSES |
| DROPPING OUT OF COLLEGE |

College Success

| IMPROVED LEARNING & PROGRESS |
| COMPLETING CLASSES |
| REASONABLE PROGRESS IN COLLEGE |
| COMPLETE ACADEMIC GOALS/ ADVANCE EDUCATION |

Veteran avoids seeking services due to stigma
Discomfort in asking for accommodations

“I'm not evidently disabled on the outside” and, “looking at me wouldn’t know I have an injury” that were noted to be reasons for not wishing to request academic accommodations.
Adapting College Disability Programs for Veterans
Using Military Camaraderie
Back to basics – we are one unit

Troop/Group ➔ ➔ ➔ ➔ Individual
Working Toward Mastery

- Get Started
- Utilize Resources
- Achieve Mastery
Educating the Educator

• Educators may be unfamiliar with combat-based brain injury
• Educators may think “s/he looks normal” because they are not visibly impaired
• Education would include understanding mTBI as an “invisible wound of war”
• Education would include teaching that accommodations are legitimate

RESOURCE: brainlinemilitary.org; VA Home Page
Veteran Buddy System
Veteran Buddy System

• User friendly approach- pair student veterans together

• Veteran buddy helps navigate academic requirements, college resources

• Use of cooperative learning strategies to manage cognitive fatigue

• Collaborative model; mirrors “platoon”
Reframe: Accommodations are Resilience Builders
The strength to plan, execute, and persevere through challenges
Resources

• Goal Setting for Personal & Professional Excellence: CSF-2
Step 1: Define your dream

Step 2: Know where you are right now

Step 3: Decide what you need to develop

Step 4: Make a plan for steady improvement

Step 5: Set and pursue short-term goals

Step 6: Commit yourself completely

Step 7: Continually monitor your progress
Resilience Training to Overcome TBI Obstacles from CSF-2

• Skill 1: Activating Events, Thoughts, and Consequences
• Skill 2: Avoid Thinking Traps
• Skill 3: Detect Icebergs
• Skill 4: Energy Management
• Skill 5: Problem-Solving
• Skill 6: Put It In Perspective
• Skill 7: Real-Time Resilience
Skills 9-12

- Skill 8: Character Strengths
- Skill 9: Strengths in Challenges
- Skill 10: Assertive Communication
- Skill 11: Active Constructive Responding and Praise
- Skill 12: Hunt the Good Stuff
Using 5 Pillars of Soldiers Fitness

- **Emotional fitness**: self-control, stamina, and balance
- **Family Fitness**: healthy and secure environment
- **Physical Fitness**: ability to meet the physical demands and accomplish the mission
- **Social Fitness**: maintain valued relationships
- **Spiritual Fitness**: developing /strengthening a set of beliefs, principles, or values
Veterans should be active rather than passive learners

• Tools to seek: SMART pen (pulse pen), note sharing, extended time for Test Taking, assistive technology /APPS

• Tutoring: network with Veterans groups to see if there is a Veteran in community who can serve as Veteran Mentor
What’s on Campus?
Resources
Other Resources

http://vimeo.com/94527916
After Action Reports (AAR)

- Veterans are familiar with this review process to identify what worked/didn’t in a mission
- Academic situation: conduct after class or test: what worked/did not
- Self-monitoring of triggers for cognitive fatigue
Sustaining effort to accomplish the mission despite obstacles
GOAL SETTING

Defining a dream that is personally meaningful and developing the concrete steps to create a well-documented path to success.
SALUTE

• Time-management acronym (size, activity, location, unit, time, and equipment)

• Can use to assist veteran in identifying size of task, time needed to complete, what tools need
Reflexive Training

• Military operations require repeat practice of task prior to engaging in the actual mission

• Apply to academic task: test-taking requires same mechanism of review material, repeat actions prior to actual mission (taking test)
Learning to
Better Serve
Those Who Have Served
Thank-you Veterans!

For the Freedoms that we all enjoy...
Our Thanks go to the young men and women serving in all branches of the military.

We Salute You!