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

• Shoba Sreenivasan, Ph.D., GLA Psychologist: **Theoretical**

• Dan Smee, M.S.W./Combat Iraq War Veteran/Program Manager Salvation Army Haven Senior/Alpha **Experiential**

• Sandra Buenrostro, M.A., CRC, Riverside Community College **Application**
TBI: Theory and Concepts
Shoba Sreenivasan, Ph.D.
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
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Mechanism of Injury – Acceleration/Deceleration

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

Rotational force vector

Translational force vector

Center of mass

Figure adapted 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)

Trauma

Encoding events

Retrograde Amnesia
LOC
Posttraumatic Amnesia

TIME

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
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)

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)
Suicide risk compared to general population…

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

16 responded
(January-June 2011)

2 community colleges
2 OIF/OEF organizations
Table 2
Cognitive Fatigue Items

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Times per Week</th>
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<tbody>
<tr>
<td>After exerting mental concentration on an academic task do you find that you become tired and unable to focus (that is feeling mentally drained)?</td>
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<tr>
<td>After exerting mental concentration on an academic task do you experience a severe headache?</td>
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<td>Are you often irritable and short-tempered after having had to exert mental concentration on an academic task?</td>
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<tr>
<td>Does expending all this energy wear you out physically?</td>
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<td>Do you find that you concentrate harder because you are already having a hard time concentrating?</td>
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<tr>
<td>Are you light sensitive?</td>
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<tr>
<td>Do you become easily frustrated if you are expecting to do one thing and it suddenly gets changed or something new is added?</td>
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<tr>
<td>Have you failed classes related to these problems?</td>
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</table>
Results
Demographics

Gender

- Male: 75%
- Female: 25%
Demographic

Diagnosis

TBI & PTSD
31%
SURVEY RESULTS

SELF-REPORTED SYMPTOMS

- Light Sensitivity/Not Associated w/CE
- Physically "Worn Out/Drained"
- Irritability/Short Temper
- Severe Headache

SELF-REPORTED SYMPTOMS
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.
Experiential
Dan Smee, MSW, OIF Combat Vet
VIDEO

• SHOW VIDEO
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)
Humvee after IED blast
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
In one blast crater
Understanding the War Zone

• Combat troops bond together out of the experience of reliance upon others for safety and protection, experiencing similar war-related stressors.

• Having a common, transcendent goal—a purpose larger than themselves that motivates them.
Post-deployment Losses

• Civilian life can be unsettling and driven by losses:
  – Camaraderie of those who understand: civilian life has no platoon.
  – The adrenaline charged intensity associated with dangerous missions.
  – Loss of a meaningful purpose
And Loss of

Those who understand you without having to explain
What is returning to civilian life soldier’s perspective?
Other Aggravating Issues

• Post-deployment survivor guilt another hidden wound of war
• Feel different from other college students, even if they are your age
• Feel even more different if you are an older returning combat soldier-cannot relate to other older students
Misconceptions

• Educators should be careful in terms of making value judgments that the combat soldier did something wrong.

• Combat is an abnormal situation where you are called upon to act in ways to protect others in your platoon and to forward the mission that is foreign to civilian mores.

• Does not make the soldier a war-criminal or a war-monger.
Soldier’s Perspective

• Conflict in civilian values versus military action, e.g., like love thy brother, but you can’t live by those values facing enemy combatants

• Conflicts between fear and military value of courage (e.g., freezing during gunfire with enemy)

• Conflict between impulse of self-preservation versus bravery and risking self for others (e.g., not running into harms way)
What does this feel like?

• Feels like you are empty inside
• Feels turbulent: anger, sadness, guilt
• Feel isolated from others, because you don’t fit in anymore
• Resentment and cynicism towards God, society
• Feeling betrayed by leaders you trusted
Additional Issues in Combat Vets with PTSD/TBI

• Dealing with unresolved issues about warzone activity: something that you definitely wouldn’t participate as a normal person in America, but you are doing in defense for your country

• Feeling judged by others, like you’re damaged goods, not trustworthy
How not to start the conversation with a Combat Veteran

• How many people did you kill?
• Do you feel guilty that you killed others?
• It’s not your fault that you had to go to war..(giving the impression that you did something wrong by serving)
• I support the troops but not the war…
• Was it worth it to be in Iraq/Afghanistan..
• The impression that people in the military go around randomly killing innocent civilians and burning down their villages.
ARMY 2020
Generating Health & Discipline in the Force
Ahead of the Strategic Reset
REPORT 2012
Rates of Domestic Violence and Child Abuse

• Army reported a dramatic increase between FY2008 and 2011 in domestic violence (50% from 4,827 to 7,228) and child abuse (62% from 3,172 to 5,149) referrals (United States Army, 2012).

• May reflect financial strain, emotional alienation as an impact of multiple deployments
Army 2020: Family Abuse statistics

• Dramatic increase in domestic violence/child abuse referrals to Family Advocacy Program (FAP)

• Domestic Violence increased 50% 4,827 to 7,228

• Child Abuse referrals increased by 62% 3,172 to 5,149

• Army stated, “This large increase in referrals may be one of the leading indicators of stress on the force” (p.145).
Domestic Violence and Child Abuse

(Thomas, et al., p.145, 2010)
Domestic Violence and Child Abuse

(Thomas, et al., p.145, 2010)
Obstacle to Standard Student Services

Obstacle: why am I going to tell you when you weren’t in combat about what I’m going through? You won’t relate to it, why bother explaining? (recognize that there may be cynicism by the veteran about the whole process)
Approaches

• Be direct, people who served in the military don’t like to have you beat around the bush.

• If you have a question, ask it. “Do you have any positive or negative experiences that you’d like to talk about?

• If they say no, doesn’t mean forever, but may be right now.
Adapting College Disability Programs for Veterans
Reframe: Accommodations are Resilience Builders
The strength to plan, execute, and persevere through challenges
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 Perspectrive
• 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
In Memory of Sgt. Ottolini, KIA 2004, Balad, Iraq
Application: Veteran-Friendly
Sandra Buenrostro, M.A. CRC
Combat to College: Cognitive Fatigue as a Challenge in Iraq and Afghanistan War Veterans with Traumatic Brain Injury: Pilot Study Survey Results

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SURVEY RESULTS

COLLEGE SUCCESS

DROPPED OUT
PREVIOUSLY D/T
SYMPTOMS 25%
SURVEY RESULTS

MOST DIFFICULT SUBJECT

MATH  86%
ENGLISH  13%
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
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.
Cognitive Fatigue Syndrome, Accommodations and College Success

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"

Standard College Disability Model

Disability Services Marketed to Iraq/Afghanistan Veterans

Veteran avoids seeking services due to stigma

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
Stakeholders

Veterans

Family Members

Veteran Groups
Using Military Camaraderie
Working Toward Mastery

- Get Started
- Utilize Resources
- Achieve Mastery

Progress – Student Success

Time Spent
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”
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
Assistive Technology
High Tech/Low Tech

SMART Pen (pulse pen), Assistive Technology /APPS

Note Sharing, Extended Time for Test Taking,
What’s on Campus?
University Resources

UCSD Tritons

UC Merced Bobcats

LATTC Veterans' Center

Cal Bears

UC Irvine

UCLA Bruins

University of California Berkeley Veteran's Group

UC Santa Cruz Slugs

UCSB
Other Resources and Partnerships

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)

• Apply to study skills: read, review, re-write notes.
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!