Acute Posttraumatic Somatic and Psychological Symptoms are Interwoven and both Contribute to Acute Posttraumatic Dysfunction

Britt AM[1], Li Q[1], An X[2], Hudson VR[1], Lowery-Gionta E[3], Matson L[3], Ressler K[4], Stevens J[5], Jovanovic T[5], Neylan T[6], McLean SA[1]

From the [1]Institute for Trauma Recovery, Department of Psychiatry, University of North Carolina, Chapel Hill, NC; [2]Department of Anesthesiology, University of North Carolina, Chapel Hill, NC; [3]Center for Military Psychiatry and Neuroscience, Behavioral Biology Branch, Walter Reed Army Institute of Research, Silvery Spring, MD; [4]Department of Psychiatry, Harvard Medical School, Boston, MA; [5]Department of Psychiatry and Behavioral Neurosciences, Wayne State University, Detroit, MI; 6Departments of Psychiatry and Neurology, University of California San Francisco, San Francisco, CA

Introduction

- Acute neuropsychiatric symptoms in the early aftermath of traumatic stress cause suffering and dysfunction and predict chronic neuropsychiatric sequelae.
- Traditionally, studies of acute neuropsychiatric symptoms have focused solely on psychological symptoms.
- Contemporary evidence suggests that a broader evaluation of acute neuropsychiatric symptoms, including somatic symptoms, may more comprehensively reflect the survivor experience and evaluate symptoms that influence acute dysfunction.

Methods

- Trauma survivors (n=1,644, mean age 35, 67% female) presenting to 28 US emergency departments (EDs) after motor vehicle collision (MVC) were enrolled in a longitudinal study (Table 1).
- The incidence of and correlation between a range of somatic, psychological, and sleep-related symptoms were assessed in the early aftermath of trauma. Clustering of symptoms was explored, and the impact of different symptoms on posttraumatic dysfunction (Sheehan disability scale, SF-12) was evaluated.
- Symptoms were assessed in the ED in the hours after MVC, 0-5 days after MVC, and 7-19 days after MVC (Table 2).

Table 1: Participants' Characteristics.

Characteristic	
Number of Participants	1,644
Age, Mean (SD)	34.9 (12.6)
Female, n (%)	1099 (67)
Race, n (%)	
Non-Hispanic Black	860 (52)
Non-Hispanic White	502 (31)
Hispanic	212 (13)
Other	61 (4)
Marital Status, n (%)	
Married	336 (20)
Separated/Divorced/Willowed	270 (16)
Single	1029 (63)
Income, n (%)	
<=$19,000	457 (28)
$19,000-$35,000	465 (28)
$35,000-$50,000	202 (12)
$50,000-$75,000	133 (8)
$75,000-$100,000	89 (5)
>$100,000	93 (6)
Employment Status, n (%)	
Employed	1115 (68)
Retired/Homemaker/Student	170 (7)
Unemployed	225 (14)
Education Status, n (%)	
High school or less	620 (38)
Some college	692 (42)
College or more	332 (20)
Life Event Checklists, Mean (SD)	3.6 (3.1)
Childhood Abuse Total Score, Mean (SD)	9.5 (9.8)
Sheehan Disability Score*, Mean (SD)	
Disrupt Social Life	5.4 (3.3)
Disrupt Work and School	5.4 (3.5)
Disrupt Family and Home	5.2 (3.2)
SF-12 Physical Health*, Mean (SD)	34.8 (10.2)
SF-12 Mental Health*, Mean (SD)	40.4 (10.2)

** Week 2 timepoint was used for these characteristics.*

Table 2. Incidence of moderate or severe posttraumatic symptoms in the emergency department after MVC, 0-5 days after MVC, and 7-19 days after MVC (n=1,644).

Characteristic	Emergency Department [a]	Day 0-5 [b]	Day 7-19 [c]
Peri-traumatic dissociation (Ave MCEPS ≥3 on 0-5 scale)	27% (424/1574)		
Peri-traumatic distress (PDI ≥15 on 0-32 scale)	48% (747/1556)		
Moderate or Severe symptoms			
Pain*	88% (1439/1642)	88% (1268/1448)	70% (954/1370)
Headache*	56% (915/1644)	66% (938/1430)	59% (809/1372)
Fatigue*	42% (686/1643)	75% (1068/1430)	68% (927/1372)
Take Longer to Think*	42% 687/1642)	65% (936/1430)	62% (844/1372)
Restlessness**	36% (595/1637)		57% (825/1455)
Concentration difficulty*	34% (551/1642)	70% (996/1430)	65% (889/1372)
Light Sensitivity*	29% (469/1643)		37% (532/1456)
Dizziness*	25% (402/1641)	39% (555/1430)	37% (501/1372)
Trembling*	24% (392/1644)		30% (437/1451)
Noise Sensitivity*	20% (335/1642)		37% (540/1458)
Nausea*	19% (307/1644)	31% (442/1430)	30% (405/1372)
Blurred Vision*	15% (244/1640)		24% (351/1454)
Feeling Faint*	13% (221/1639)		23% (339/1453)
Ringing Ears*	12% (189/1642)		22% (323/1451)
Hyper-arousal**		63% (898/1417)	23% (327/1417)
Re-experiencing**		56% (792/1418)	19% (272/1418)
Avoidance**		48% (675/1418)	12% (170/1418)
Anxiety**		28% (393/1417)	26% (337/1339)
Depressive symptoms**		27% (384/1417)	27% (367/1339)
Nightmares**		19% (273/1423)	19% (260/1351)
Sleep disturbance**		48% (679/1423)	45% (605/1351)
Acute Stress Disorder			43% (633/1482)
Substantial depressive symptoms (Depression 8b T score ≥ 60 on 37.1 – 81.8 scale)			31% (458/1480)

** Moderate/Severe is defined by ≥ 4 on 0 – 10 scale. ** Moderate/severe is defined by ≥ 2 on 0 – 4 scale.*
[a] Questions taken at ED. [b] Questions taken between 0 – 5 days after trauma. [c] Questions taken between 7 – 19 days after trauma.

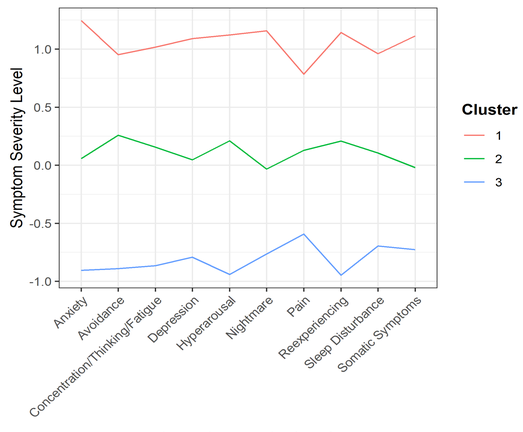

Figure 1. K-means clustering analysis of symptoms demonstrate that clustering based on symptom severity generally occurs across somatic and psychological symptoms (example data from days 7-19 post-trauma.

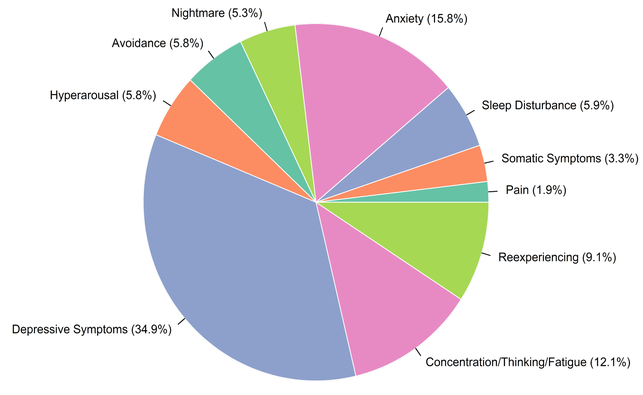

Figure 2. Both somatic and psychological symptoms contribute to post-traumatic mental health (association of different symptoms with general mental health (SF-12 MCS), example data from days 7-19 post-trauma).

Results

- Both moderate or severe acute somatic and psychological symptoms were common in the first weeks after trauma (Table 2) .
- Somatic and psychological symptoms (Table 3) showed generally moderate or greater correlations across timepoints (Table 3).
- In k-means cluster analyses, individuals clustered across, rather than between, somatic and psychological symptoms (Figure 1).
- Both somatic and psychological symptoms contributed to posttraumatic disability.
- Both somatic and psychological symptoms contributed general mental health (Figure 2).

Conclusions

- Somatic and psychological symptoms are common and covary in the acute aftermath of traumatic stress. Both contribute to acute posttraumatic dysfunction.

Table 3. Correlation Table for Acute Symptoms at Day 0 – 5

	Pain	Hyperarousal	Reexperiencing	Avoidance	Anxiety	Depression	Sleep Disturbance	Nightmare	Fatigue	Concentration	Longer Thinking	Headache	Dizziness	Nausea
Pain	1													
Hyperarousal	0.32	1												
Reexperiencing	0.33	0.70	1											
Avoidance	0.24	0.53	0.66	1										
Anxiety	0.32	0.72	0.70	0.54	1									
Depression	0.26	0.57	0.59	0.48	0.73	1								
Sleep Disturbance	0.37	0.44	0.47	0.38	0.52	0.49	1							
Nightmare	0.31	0.58	0.63	0.49	0.66	0.56	0.54	1						
Fatigue	0.37	0.35	0.34	0.28	0.38	0.37	0.38	0.35	1					
Concentration	0.37	0.46	0.42	0.33	0.49	0.45	0.44	0.44	0.62	1				
Longer Thinking	0.33	0.45	0.42	0.32	0.48	0.44	0.41	0.44	0.55	0.83	1			
Headache	0.43	0.35	0.32	0.26	0.34	0.26	0.33	0.35	0.44	0.50	0.51	1		
Dizziness	0.37	0.38	0.38	0.30	0.39	0.35	0.32	0.44	0.45	0.55	0.55	0.62	1	
Nausea	0.31	0.34	0.32	0.26	0.36	0.31	0.31	0.38	0.39	0.45	0.45	0.49	0.63	1

All P-values < 0.001.

Funding

This project was supported by NIMH under U01MH110925, the US Army MRMC, The Mayday Fund, MTEC, and WRAIR. The content is solely the responsibility of the authors and does not necessarily represent the official views of any funders.