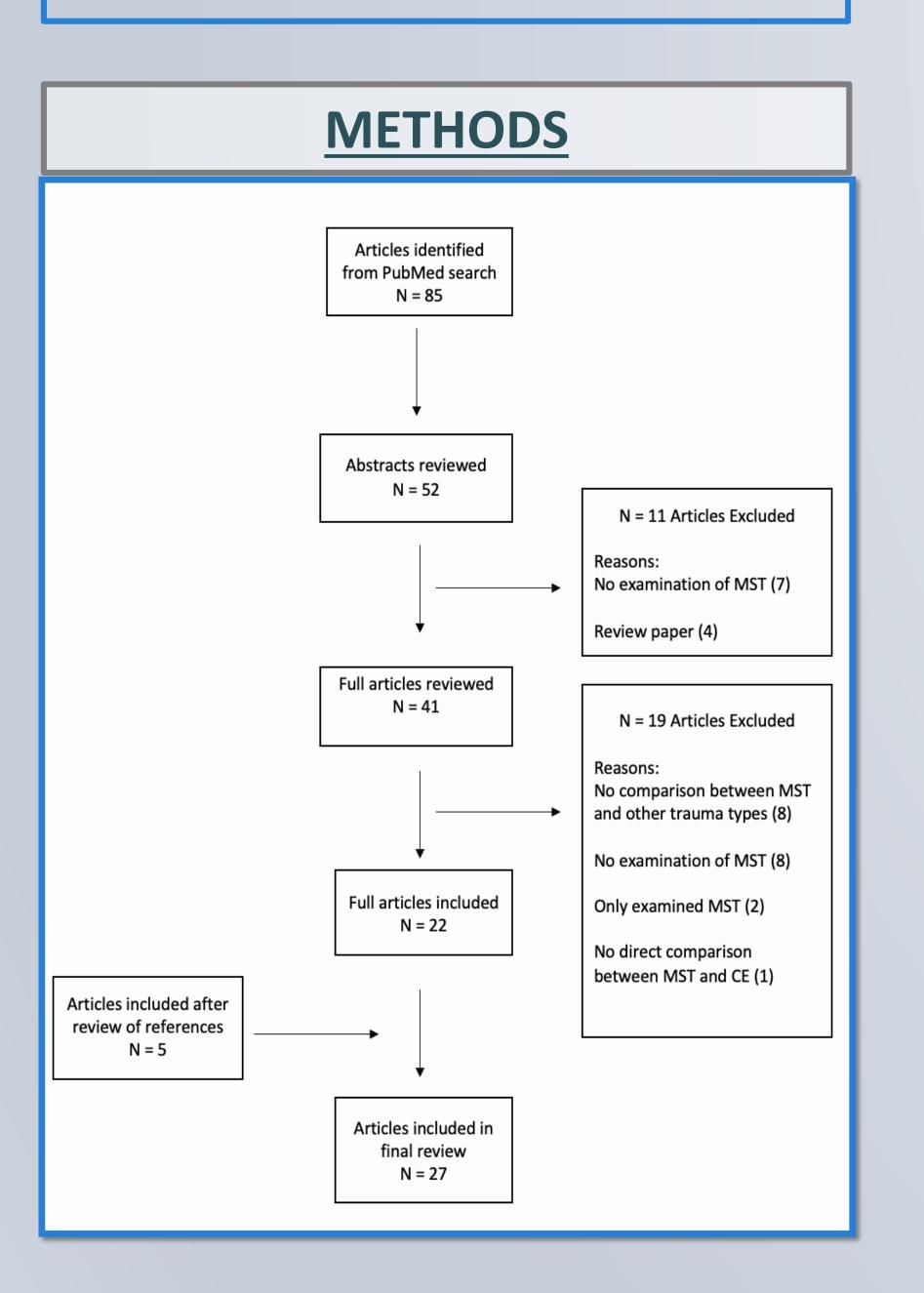
## Military Sexual Trauma and Combat Exposure: A Review of Mental Health and Related Outcomes

## INTRODUCTION

- Military sexual trauma (MST) has been defined as: "psychological trauma, which...resulted from a physical assault of a sexual nature, battery of a sexual nature, or sexual harassment which occurred while the Veteran was serving on active duty, active duty for training, or inactive duty training" (U.S. Code § 1720D).
- Prevalence of MST is estimated at 20-45% (Allard 2011, Suris & Lind 2008) • In 2004, the US Department of Defense established a task force dedicated to instituting sexual assault policy and prevention strategies, which led to the creation of the Sexual Assault Prevention and Response Office (SAPRO). SAPRO recently updated its Preventative Plan of Action, which outlines strategies to reduce incidents of sexual assault in the military (United States Department of Defense Sexual Assault Prevention and Response).
- MST has been associated with post-traumatic stress disorder (PTSD), depression, and suicidal ideation (SI), as well as poor psychosocial functioning and worse physical health outcomes (Suris & Lind 2008, Lofgreen 2017)
- Fewer studies are available on MST compared to other military-related traumatic experiences such as combat exposure (CE)

## **OBJECTIVES**

- 1. Compare the effects of MST and CE on the development of psychiatric disorders and symptom severity
- 2. Examine the utilization of Veterans Health Administration (VHA) services in veterans with a history of MST and CE
- 3. Explore potential mechanisms underlying MST and CE



								RES	ULI	۲ <u>S</u>							
		-			with PTSD diagnosis	Diagnostic		Poult					nd combat exposure (		Diagnostic	[]	
Author MST>CE	Gender	Age (x ± sd)	Era	Branch of Military	Setting	Diagnostic tool	Trauma type	Results	Author MST>CE	Gender	Age (x ± sd)	Era	Branch of Military	Setting	Diagnostic tool	Trauma type	Results
Fontana and Rosenheck, 1998	327 women	39.5±9.4	WWII 0.6 % Korea 2.5% between Korea – Vietnam 7% Vietnam 24.2%, between Vietnam - Persian Gulf War 52.6%	Army 50% Air Force 21.7% Navy 17.4% Marines 9.3% Coast Guard 1.6%	PTSD program from 4 VAMCs across the country	PCL DSM-IV	MSH 63% MSA 43%	MST 3.5 x more influential than duty-related stress for PTSD development	Vogt 2011	340 women 252 men	N/A	Iraq/Afghanistan (OEF/OIF)	Active Duty 50% National Guard 25% Reserve Forces 25%	random sample from the Defense Manpower Data Center (DMDC) roster	BASIS-24	MST, CE prevalence was not reported, only scores	Women MSH (r=.42, p<.05) CE (r=.36, p,.05) Men CE (r=.35, p,.05) MST (ß =3.3, 95% CI: 1.39, 5.7, p<0.005)
Kang et al. 2005	2131 women 9310 men	38.1-40.4 (SD not reported)	Persian Gulf era 11.6% Gulf War era	Army Marines Navy Air Force, Reserve	National Health Survey of Gulf War Era Veterans and Their Families	PCL DSM- IIIR	Women: MSH 24% MSA 3.3% Men: MSH 0.6 %	aOR for PTSD Sexual assault: 5.41 in women (95% CI: 3.19–9.17) 6.21 in men (95% CI: 2.26–17.04) High CE: 4.03 in women (95% CI: 1.97–8.23), 4.45 in men	Maguen et al. 2012	554 women 6697 men	25.7±6.1	Iraq/Afghanistan	Army	Pre & post-deployment screening at large Army medical treatment facility	PHQ-9	Exposure to death 64% MSH 65% MSA 33%	Injured (β =1.68, 95% CI: 1.36, 2.00, p<0.0001) Witnessing Killing (β =0.54, 95% CI: 0.24, 0.83, p<0.005) Exposure to death (β =0.69, 95% CI: 0.44, 0.94, p<0.0001) Killing (β =0.27, 95% CI: -0.00, 0.57, ns)
Yaeger et al. 2006	196 women	47.8±14.5	N/A	National Guard most were in the Army	West Los Angeles VAMC	PSS-I	MSA 0.2% CE not reported 41% with MST CE not reported	(95% CI: 3.54–5.60) Stronger association of MST (Wald $\chi^2$ =20.3, p=.0001) than Other trauma (Wald $\chi^2$ =5.4, p=.02) with PTSD	Goldstein et al. 2017	403 women	49.3 ± 13	N/A	Air Force 21.7% Army 44.7% Marines 5.6% Navy 24.1% Coast Guard/Other 4%	San Francisco VA & associated outpatient clinics	PHQ-9	43% Feel in danger of being killed 36% Witnessed someone else killed or injured	PTSD severity: Only MSA and MSH were significant MSA (β =0.176, p=0.002) MSH (β =0.129, p=0.02)
Gross et al. 2018	330 women	N/A	OEF/OIF	N/A	4 VAMC sites in North Carolina and Virginia	SCID-IV DTS CES	MSA 12.7% CE 55%	MST (OR=6.46, 95% CI [3.01, 13.86]) > CE (OR=1.51, 95% CI [1.18, 1.95]) association with current PTSD diagnosis no significant MST x CE interaction	Sexton et al. 2017	68 women 495 men		Vietnam/Gulf War (ODS/OEF/OIF/OND)	N/A	Ann Arbor VAMC PTSD clinic	PHQ-9	17% MST 12.8% CE 87.2%	Depression severity MST > CE (F=7.19, p=.008)
Blais & Monteith 2019 MST <ce< td=""><td>311 women</td><td>32.3±6.7</td><td>N/A</td><td>N/A</td><td>Recruited from Facebook and electronic listservs</td><td>PCL-5</td><td>MST 100% CE not reported</td><td>71.7% identified MST vs. 18.6% identified CE as the source of their PTSD</td><td>Blais &amp; Monteith 2019</td><td>311 women</td><td>32.3±6.7</td><td>N/A</td><td>N/A</td><td>Recruited from Facebook and electronic listservs</td><td></td><td>100% WILLI WIST</td><td>Probable depression diagnosis (aOR=<math>3.05</math>, 95% CI = <math>1.22-7.62</math>) and depression severity (aOR=<math>3.1</math>, 95% CI = <math>1.17-8.22</math>) for those who identified MST compared with CE as the source of PTSD</td></ce<>	311 women	32.3±6.7	N/A	N/A	Recruited from Facebook and electronic listservs	PCL-5	MST 100% CE not reported	71.7% identified MST vs. 18.6% identified CE as the source of their PTSD	Blais & Monteith 2019	311 women	32.3±6.7	N/A	N/A	Recruited from Facebook and electronic listservs		100% WILLI WIST	Probable depression diagnosis (aOR= $3.05$ , 95% CI = $1.22-7.62$ ) and depression severity (aOR= $3.1$ , 95% CI = $1.17-8.22$ ) for those who identified MST compared with CE as the source of PTSD
Polusny et al. 2014	712 men, 89 women	men 31±9.1 women 27.2± 8.1	OEF/OIF	National Guard	Survey of National Guard troops	PCL-M	MST not reported CE Women 75.3% Men 86.3%		Calhoun 2016	185 women	35.84±9.33	Iraq/Afghanistan	Air Force 16.2% Army 48.6% Coast guard 0.5% Marines 4.3% Navy 28.1%	Respondents to OEF/OIF Veterans Health and Needs Study North Carolina, Virginia, and West Virginia	PHQ2	MSA 2.7%	Association with PTSD severity MST (β =0.2, p=.006) CE (β =0.19, p=.016)
Association of trat	ima source	with PTSD s	ymptom severity	,		ł			MST=CE	1			Army 15.8%	1			
MST>CE Vogt et al. 2011	592 (340 female)	N/A	Iraq/Afghanistan (OEF/OIF)	Active Duty 50% National Gua 25% Reserve Forces 25%	rd Random sample from the Defense Manpower Data Center (DMDC) roster	PTSS	MST, CE prevalence was not reported, only scores	PTSD symptom severity Women MSH (r=.49, p<.05) CE (r=.49, p<.05) Men	Godfrey et al. 2015 MST <ce< td=""><td>202 women 1092 men</td><td>31 ± 8.58</td><td>Iraq/Afghanistan</td><td>Air Force 3.4% Marines 29.1% National Guard 2.2% Navy 48.2%</td><td>San Diego VAMC</td><td></td><td>MST 6.2% CE 59.9%</td><td>Depression symptom severity MST (ß =2.7, p&lt;0.001) CE (ß =3.4, p&lt;0.001) interaction MST x CE (ns)</td></ce<>	202 women 1092 men	31 ± 8.58	Iraq/Afghanistan	Air Force 3.4% Marines 29.1% National Guard 2.2% Navy 48.2%	San Diego VAMC		MST 6.2% CE 59.9%	Depression symptom severity MST (ß =2.7, p<0.001) CE (ß =3.4, p<0.001) interaction MST x CE (ns)
		25.7±6.1	Iraq/Afghanistan	Army	Pre & post-deployment screening at large Army medical treatment facility	I PC-PTSD	MST 1% Exposure to death 64%	MST (ß =0.58, 95% CI: 0.07, 1.09, p<0.05)	Ryan 2015			Iraq/Afghanistan (OEF/OIF/OND)	N/A	New England Veterans recruited by letter	CES-D	CE 65%	Only CE associated with depression severity in combined regression model CE (β =0.33, p=0.02) > MST (β =0.1, p=0.35)
Maguen et al. 2012	554 women 6697 men								Operation Desert Storm (ODS), Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), Operation New Dawn (OND), VA (Veteran Affairs), Veterans Administration Medical Center (VAMC), Behavior and Symptom Identification Scale (BASIS-24), Patient Health Questionnaire-9 (PHQ-9), Mini International Neuropsychiatric Interview (MINI), PTSD Checklist for DSM-5 (PCL-5), Centers for Epidemiological Studies-Depression scale (CES-D), two-item Patient Health Questionnaire (PHQ-2), Adjusted Odds Ratio (aOR), Confidence Interval (CI), Post Traumatic Stress Disorder (PTSD), Military Sexual Harassment (MSH), Military Sexual Assault (MSA)								
									Table 4. Author	Association o	f military sex Age (x ± sd)	cual trauma (MST) a Era		CE) with alcohol abuse ar Setting	Diagnostic		Results
																	MST (ß =0.28, 95 % Cl: -1.20, 2.6, ns)
Jakob et al. 2017	250 women 2213 men	46.8±16	WWII 0.8% Korean War 1.2% Vietnam War 37.4% Post-Vietnam 9 % Desert Storm 4.8% OEF/OIF/OND 35%	N/A	Midwest VA outpatient PTSD clinic	CAPS LEC CES	CE 54% MST and non-MST 6.2%	PTSD more severe in MST than CE Both MST and CE more associated with PTSD than other trauma	Maguen et al. 2012	554 women 6697 men	25.7±6.1	Iraq/Afghanistan	Army	Pre & post-deployment screening at large Army medical treatment facility		MST 1% Exposure to death 64%	Injured (β =-0.03 95 % CI: -0.30, 0.26, ns) Witnessing Killing (β =0.40, 95% CI: 0.14, 0.66, p<0.0001) Exposure to death (β =0.65, 95% CI: 0.44, 0.88, p<0.0001) Killing (β =0.42, 95% CI: 0.17, 0.68, p<0.005)
									Ryan 2015	133 women		Iraq/Afghanistan (OEF/OIF/OND)	N/A	New England Veterans recruited by letter		MST 33.3%	Both CE and MST associated with alcohol abuse in combined regression model CE (ß =0.3, p=.03) MST (ß =0.25, p=.03)
Goldstein et al. 2017	403 women	49.3±13	N/A	Air Force 21.7% Army 44.7% Marines 5.6% Navy 24.1% Coast Guard/ Other 4 %	San Francisco VA & associated outpatient clinics	PCL-5	MSH 65% MSA 33% Wounded or injured 43% Feel in danger of being killed 36% Witnessed	PTSD severity: MSA (β =0.295, p=0.000) Feel in danger of being killed (β =0.235, p=0.000) MSH (β =0.146, p=0.003) Witness someone killed/injured (β =0.110, p=0.044)	Hahn et al 2015	31 women 59 men	28.9±5.6	Iraq/Afghanistan (OIF/OEF)	Army 71% Air Force 14% Marines 8% Navy 7%	South Dakota VAMC and surrounding area	DDQ-M DrInC	MST 26% MSH 26% MSA 17% MSC 13% CE 97%	Correlation with alcohol use MST (r= 0.30, p<0.01) CE (r= 0.04, pns) Correlation with alcohol problems MST (r=0.28, p<0.01) CE (r=0.35, p<0.01)
						SCID-IV	someone else killed or injured 17%	MST (ß =0.28, p<0.001) > CE (ß = .42, p<0.001) association	Godfrey et al. 2015	202 women 1092 men	31 ± 8.58	Iraq/Afghanistan	Army 15.8% Air Force 3.4% Marines 29.1% National Guard 2.2% Navy 48.2%	San Diego VAMC	AUDIT-C	MST 6.2% CE 59.9%	CE (ß =0.75, p<.001) MST (ß =-0.19, P=.954)
Gross et al. 2018	330 women	N/A	OEF/OIF	N/A Air Force 6.5% Army 67.5%	4 VAMC sites in North Carolina and Virginia	DTS CES	MSA 12.7% CE 55% MST 22.1%	with lifetime PTSD diagnosis no significant MST x CE interaction	Sexton et al. 2017	68 women 495 men	46.9±16	Vietnam/Gulf War (ODS/OEF/OIF/OND)	N/A	Ann Arbor VAMC PTSD clinic	DES MINI	MST 12.8% CE 87.2%	Severity of dissociative symptoms MST>CE (F=4.845, p=0.028) Anxiety Disorder (Non PTSD) Prevalence MST>CE (36.1% vs 18.8%, p =0.006) Psychotic/thought disorder
Rauch et al. 2020 MST=CE	54 men 23 women	41.2 (SD not reported)	Iraq/Afghanistan (OIF/OND/OEF)	Coast Guard 1.3% Marines 13% Navy 7.8% Multiple branches 2.6% Unknown 1.3%	Atlanta VAMC, referred from multiple sources	MINI, CAPS- 5, PCL-5	CE 72.7% Wounded 43% Feel danger of being killed 36%	MST > CE baseline PTSD severity, no difference in symptom reduction following 2-week treatment	Breland et al. 2018	407 women	49 ± 13	N/A	Air Force 22% Army 44% Marines 6% Navy 24% Other 4%	San Francisco VAMC		MST 66%	MST>CE (6.7% vs 1.3%. p=0.019) MST associated (OR=2.03, CI: 1.03-3.98) with an eating disorder. CE ns association
Sexton et al. 2017	68 women 495 men	46.9 ± 16	Vietnam/Gulf War (ODS/OEF/OIF/OND)	N/A	Ann Arbor VAMC PTSD clinic	PCL-C MINI	MST 12.8% CE 87.2%	PTSD symptom severity Non-significant difference MST vs CE	Sexton et al. 2017	68 women 495 men	46.9 ± 16	Vietnam/Gulf War (ODS/OEF/OIF/OND)	Missing 2%	Ann Arbor VAMC PTSD clinic	DES MINI	MST 12.8% CE 87.2%	Dissociative symptom severity MST > CE (F=4.85, p=.01)
Godfrey et al. 2015	202 women 1092 men	31 ± 8.6	Iraq/Afghanistan	Army 15.8% Air Force 3.4% Marines 29.1%	San Diego VAMC	PCL-C	MST 6.2% CE 59.9%	PTSD symptom severity MST (β =7.17, p<.001) CE (β =11.24, p<.001)						l IF), Operation New Dawn (OND), Veterans Ai DIT-C), Dissociative Experiences Scale (DES),			se Disorders Identification Test (AUDIT), Modified Daily Drinking IINI), Confidence Interval (CI)
MST <ce< td=""><td></td><td></td><td></td><td>National Guard 2.2% Navy 48.2%</td><td></td><td></td><td></td><td>MST x CE interaction (ns)</td><td>Table 5. A</td><td>Association of</td><td>military sexu</td><td>ıal trauma (MST) an</td><td>d combat exposure (CE)</td><td>with utilization of VHA se</td><td>ervices and e</td><td>examination of po</td><td>otential mechanisms.</td></ce<>				National Guard 2.2% Navy 48.2%				MST x CE interaction (ns)	Table 5. A	Association of	military sexu	ıal trauma (MST) an	d combat exposure (CE)	with utilization of VHA se	ervices and e	examination of po	otential mechanisms.
				Army 68.2% Air Force 18.5%	Invitation letters sent to Veterans within 300 miles from		MST 49.4% MSA 14.7%	PTSD symptom severity CE score (ß=0.34, p<.001)	Utilizatio	on of VHA ser		Т		1			
Cobb et al. 2014	365 women	32.2±10.5	Iraq/Afghanistan (OEF/C	IF) Navy 9.1% Marines 3.9% Coast Guard 0.3%	Now England and Indianan	PCL-M	MSH 34.8% CE no reported	MST ( $\beta$ =0.27, p<.001) significant interaction MST x CE ( $\beta$ = .14, p=.03)	Author	Gender	Age (x ± sd)		Branch of Military	Setting	Trauma type MSA 19%	Results	
Wilson et al. 2015	181 men	40.1±10.2	Iraq/Afghanistan Iraq/Afghanistan	Army 86.2%	Durham VAMC	IES-R	MST 12.2% CE not reported MST 33.3%	PTSD symptom severity MST (β =0.06, ns) CE (β =0.52, p<.001) Only CE associated with PTSD severity in combined	Kelly et al. 2008	1496 females	43.6 ± 15.0)	pre-Vietnam, Vietnam, and post-Vietnam cohorts	N/A Army 59-63%	National Registry of Women Veterans			se VHA vs those without MSA (p=.004) nt between CE and non-CE
Ryan 2015	133 women 31 women	37.1±8.7 28.9±5.6	(OEF/OIF/OND)	N/A Army 71% Air Force 14%	by letter South Dakota VAMC and	PCL PCL-Military	MST 26% MST 26% MSA 17%	regression model CE (ß =0.4, p=0.002) > MST (ß =0.08, p=0.44) PTSD severity MST (r= .15, p<.05)	DiLeone 2013	Women 535 Men 505	Women 34±8.9 Men 35±9.5	Iraq/Afghanistan (OEF/OIF)	Air Force 11-17% Marines 6-18% National Guard 04% Navy 12-14%	Drawn from the VA Environmental Epidemiology Service's roster of all OEF/OIF Veterans	MST and CE not reported	MST associated with CI 1.01-1.13), ns asso	higher use of VA mental health care among women only (aOR=1.07, ciation with CE
Hahn et al 2015	59 men	28.9±5.0	Iraq/Afghanistan (OIF/O	Air Force 16.2%	surrounding area	DDRI	MSC 13% CE 97%	CE (r= .46, p<.001)	Ryan et al. 2015	133 women	37.11±8.7	Iraq/Afghanistan (OEF/OIF/OND)	N/A	New England Veterans recruited by letter		PTSD (Exp(B) CI=1.01 predicted utilization	-1.10), but not MST (Exp(B) CI=0.91-1.41) or CE (Exp(B) CI=0.92-1.07) of VHA services
Calhoun 2016	185 women	35.8± 9.3	Iraq/Afghanistan	Army 48.6% Coast guard 0.5% Marines 4.3% Navy 28.1%	Respondents to OEF/OIF Veterans Health and Needs Study North Carolina, Virginia, and West Virginia	PCL	MST 15.7% MSA 2.7% MSH 15.1% CE 70%	Association with PTSD severity MST (ß =0.16, p=.01) CE (ß =0.44, p<.0001)	Calhoun 2016	185 women	35.84±9.33	Iraq/Afghanistan	Air Force 16.2% Army 48.6% Coast guard 0.5% Marines 4.3% Navy 28.1%	Respondents to OEF/OIF Veterans Health and Needs Study North Carolina, Virginia, and West Virginia	MST 15.7% MSA 2.7% MSH 15.1% CE 70%	NS difference in MST	vs non-MST in use of VHA services
World War II (WWII), Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), Post Traumatic Stress Disorder (PTSD), Military Sexual Harassment (MSH), Military Sexual Assault (MSA), Odds Ratio (OR), Adjusted Odds Ratio (aOR), Confidence Interval (CI), PTSD Checklist (PCL), Diagnostic and Statistical Manual of Mental Disorders 4 (DSM–IV), Diagnostic and Statistical Manual of Mental Disorders 3 - Revised (DSM–IIIR), PTSD Symptom Scale-Interview (PSS-I), Structured Clinical Interview for DSM Disorders 4 (SCID IV), Davidson Trauma Scale (DTS), Combat Exposure Scale (CES), PTSD Checklist for DSM-5 (PCL-5), PTSD Checklist - Military Version (PCL-M), Posttraumatic stress symptomatology (PTSS), Primary Care PTSD Screen (PC-PTSD), Clinician-Administered PTSD Scale (CAPS), Life Events Checklist (LEC), Mini International Neuropsychiatric Interview (MINI), Clinical Administered PTSD Scale-5 (CAPS-5), PTSD Checklist—Civilian Version (PCL-C), Impact of Event Scale-Revised (IES-R), Deployment Risk and Resilience Inventory-1 (DDRI) Table 2. Association of military sexual trauma (MST) and combat exposure (CE) with suicidal ideation.									Mechani	SMS Gender	Age	Era	Branch of Military	Setting	Diagnostic tool	Trauma type	Results
Table 2. Association       Author     Gender	Age (x ± sd)	/ sexual trai		ombat exposure (CE) of Military Settin		gnostic Trai	uma type Re	esults	Author	Gender	(x ± sd)						
Gradus et 1139 men al. 2013 1209 women Monteith 28 women 1	women 34 ± 8.9 men 37 ± 10.1	Iraq/Afgha (OEF/OIF) Iraq/Afgha	Reserve Army 6	7.8% Marines 23.6% Air	nal roster of Veterans SBQ	-SF prev repo	valence not .0. orted M	omen: only MST adjusted association with SI (β = .087, p < 5) en: no significant adjusted associations ST (β =0.18, p<0.05)	Frankfurt e al. 2018	t 74 women 235 men	40.7 ± 8.6	Iraq/Afghanistan	Army 90.3%	Waco VAMC	PCL-5 PHQ-9	MST 42.3%	Betrayal accounted for the association between MST and PTSD-depression ( $\beta = 0.10$ , CI = 0.04 –0.20). Perpetration accounted for the association between CE and PTSD-depression ( $\beta = 0.07$ , CI = 0.02 – 0.14). Shame accounted for the association between combat and PTSD-depression ( $\beta = 0.16$ , CI = 0.07 – 0.28)
et al. 2015 men Blais & Monteith 2019 311 women	71     32.5 ± 7.4       32.3±6.7	N/A		-5% VAM	C BSS	CE r	T 100%	aOR=3.78 (95% CI=1.54–9.30, p $\leq$ .001)for those who entified MST compared with CE as the source of PTSD	Portnoy et al. 2018	367 women 298 men	33.4 ± 10.6	Iraq/Afghanistan	Army 65.2% Air Force 17.0% Navy 10.0% Marines 7.5% Coast Guard 0.2%	Defense Manpower Data Center's (DMDC) Contingency Tracking System database and CT VAMC, Indianapolis VAMC, ME, VT,	CD-RISC 10	MST women 57.7% men 5.8% CE reported as score	Only CE was significantly predictive of lower resilience (t=- 2.96, p<.01)
Khan et al. 2019 383 women	49 ±13	N/A	Air Ford Army 4 Marine Navy 23	3.5% San F s 5.7% assoc 3.8% output	rancisco VAMC and iated community-based PHC atient clinics	Q-9 item 9 Wor		SH (OR=2.7, 95% CI = 1.2, 5.8, p = .01) crceived life threat (OR=2.2, 95% CI = 1.2, 4.1, p = .01)	Shipherd et al. 2016	U Women 143 Men 1372	28.5 ± 6.7	Iraq/Afghanistan	Civilian employee 0.2%	MA, NC, NH DI CA healthcare systems Recruited from Fort Drum, NY in post- deployment health assessment	EIS	MST 1.2%	Intrusive cognitions about CE (B=0.33, p<.05) and MST (B=0.07, p<.01) associated with distress
Other 3.7% Missing 1.7%       Other 3.7% Missing 1.7%       Other 3.7% Missing 1.7%       Other 3.7% Missing 1.7%       Image: Contract of the contrecont of the contract of the contract of the contenee c										n (OIF), Operation New Dawn (ONI	D), VA (Veteran Affairs), Veterans Admin	sessions stration Medical Center (VAMC), Veterans H			Only MST (B=0.06, p<.05) associated with PTSD symptoms GA), Military Sexual Harassment (MSH), Adjusted Odds Ratio (aOR),		

# York Teng MD, Jason Wong BS, Ricardo Cáceda MD, PhD

Stony Brook University, Department of Psychiatry and Behavioral Science

### **DISCUSSION/CONCLUSIONS**

- The results of our review suggest that MST as compared to CE was associated with worse mental health outcomes with respect to:
- PTSD Diagnosis and Symptom Severity
- Depression severity
- Suicidal Ideation
- Other psychopathologies: eating disorder, alcohol abuse, dissociative symptoms, non-PTSD anxiety disorder, psychotic disorder
- There was no significant difference in utilization of VHA services
- Potential mechanisms underlying each trauma type:
- Betrayal based vs perpetration based moral injury
- Resilience was associated with CE only
- Intrusive cognitions about MST and CE were correlated with distress following deployment

## LIMITATIONS

- Data included in the review were retrospective and subject to recall bias
- Varying definitions of MST in different studies
- Varying types of CE in different studies
- Non-homogenous sampling of study subjects

## REFERENCES

38 U.S. Code § 1720D - Counseling and treatment for sexual trauma. Retrieved October 28, 2020, from https://www.law.cornell.edu/uscode/text/38/1720D Allard, C. B., Nunnink, S., Gregory, A. M., Klest, B., & Platt, M. (2011). Military sexual trauma research: a proposed agenda. J Trauma Dissociation, 12(3), 324-345. https://doi.org/10.1080/15299732.2011.542609 Blais, R. K., & Monteith, L. L. (2019). Suicide Ideation in Female Survivors of Military Sexual Trauma: The Trauma Source Matters. Suicide Life Threat Behav, 49(3), 643-652. https://doi.org/10.1111/sltb.12464 Breland, J. Y., Donalson, R., Li, Y., Hebenstreit, C. L., Goldstein, L. A., & Maguen, S. (2018). Military sexual trauma is associated with eating disorders, while combat exposure is not. Psychol Trauma, 10(3), 276-281. https://doi.org/10.1037/tra0000276 Calhoun, P. S., Schry, A. R., Dennis, P. A., Wagner, H. R., Kimbrel, N. A., Bastian, L. A., . . . Straits-Tr^ster, K. (2018). The Association Between Military Sexual Trauma and Use of VA and Non-VA Health Care Services Among Female Veterans With Military Service in Iraq or Afghanistan. J Interpers Violence, 33(15), 2439-2464. https://doi.org/10.1177/0886260515625909 Cobb Scott, J., Pietrzak, R. H., Southwick, S. M., Jordan, J., Silliker, N., Brandt, C. A., & Haskell, S. G. (2014). Military sexual trauma interacts with combat exposure to increase risk for posttraumatic stress symptomatology in female Iraq and Afghanistan veterans. J Clin Psychiatry, 75(6), 637-643. https://doi.org/10.4088/JCP.13m08808 Di Leone, B. A., Vogt, D., Gradus, J. L., Street, A. E., Giasson, H. L., & Resick, P. A. (2013). Predictors of mental health care use among male and female veterans deployed in support of the wars in Afghanistan and Iraq. Psychol Serv, 10(2), 145-151. https://doi.org/10.1037/a0032088 Fontana, A., & Rosenheck, R. (1998). Duty-related and sexual stress in the etiology of PTSD among women veterans who seek treatment. Psychiatr Serv, 49(5), 658-662. https://doi.org/10.1176/ps.49.5.658 Frankfurt, S. B., DeBeer, B. B., Morissette, S. B., Kimbrel, N. A., La Bash, H., & Meyer, E. C. (2018). Mechanisms of Moral Injury Following Military Sexual Trauma and Combat in Post-9/11 U.S. War Veterans. Front Psychiatry, 9, 520. https://doi.org/10.3389/fpsyt.2018.00520 Godfrey, K. M., Mostoufi, S., Rodgers, C., Backhaus, A., Floto, E., Pittman, J., & Afari, N. (2015). Associations of military sexual trauma, combat exposure, and number of deployments with physical and mental health indicators in Iraq and Afghanistan veterans. Psychol Serv, 12(4), 366-377. https://doi.org/10.1037/ser0000059 Goldstein, L. A., Dinh, J., Donalson, R., Hebenstreit, C. L., & Maguen, S. (2017). Impact of military trauma exposures on posttraumatic stress and depression in female veterans. Psychiatry Res, 249, 281-285. https://doi.org/10.1016/j.psychres.2017.01.009 Gradus, J. L., Street, A. E., Suvak, M. K., & Resick, P. A. (2013). Predictors of suicidal ideation in a gender-stratified sample of OEF/OIF veterans. Suicide Life Threat

Behav, 43(5), 574-588. https://doi.org/10.1111/sltb.12040 Gross, G. M., Cunningham, K. C., Moore, D. A., Naylor, J. C., Brancu, M., Wagner, H. R., . . . Kimbrel, N. A. (2018). Does Deployment-Related Military Sexual Assault Interact with Combat Exposure to Predict Posttraumatic Stress Disorder in Female Veterans? Traumatology (Tallahass Fla), May 2018. Hahn, A. M., Tirabassi, C. K., Simons, R. M., & Simons, J. S. (2015). Military sexual trauma, combat exposure, and negative urgency as independent predictors of PTSD and subsequent alcohol problems among OEF/OIF veterans. Psychol Serv, 12(4), 378-383. https://doi.org/10.1037/ser0000060 Jakob, J. M., Lamp, K., Rauch, S. A., Smith, E. R., & Buchholz, K. R. (2017). The impact of trauma type or number of traumatic events on PTSD diagnosis and symptom severity in treatment seeking veterans. The Journal of nervous and mental disease, 205(2), 83-86. Kang, H., Dalager, N., Mahan, C., & Ishii, E. (2005). The role of sexual assault on the risk of PTSD among Gulf War veterans. Ann Epidemiol, 15(3), 191-195. https://doi.org/10.1016/j.annepidem.2004.05.009

Kelly, M. M., Vogt, D. S., Scheiderer, E. M., Ouimette, P., Daley, J., & Wolfe, J. (2008). Effects of military trauma exposure on women veterans' use and perceptions of Veterans Health Administration care. J Gen Intern Med, 23(6), 741-747. https://doi.org/10.1007/s11606-008-0589-x Khan, A. J., Li, Y., Dinh, J. V., Donalson, R., Hebenstreit, C. L., & Maguen, S. (2019). Examining the impact of different types of military trauma on suicidality in women veterans. Psychiatry Res, 274, 7-11. https://doi.org/10.1016/j.psychres.2019.02.025 Lofgreen, A. M., Carroll, K. K., Dugan, S. A., & Karnik, N. S. (2017). An Overview of Sexual Trauma in the U.S. Military. Focus (Am Psychiatr Publ), 15(4), 411-419. https://doi.org/10.1176/appi.focus.20170024 Maguen, S., Luxton, D. D., Skopp, N. A., & Madden, E. (2012). Gender differences in traumatic experiences and mental health in active duty soldiers redeployed from Iraq and Afghanistan. J Psychiatr Res, 46(3), 311-316. https://doi.org/10.1016/j.jpsychires.2011.11.007

Monteith, L. L., Menefee, D. S., Forster, J. E., Wanner, J. L., & Bahraini, N. H. (2015). Sexual Trauma and Combat During Deployment: Associations With Suicidal Ideation Among OEF/OIF/OND Veterans. J Trauma Stress, 28(4), 283-288. https://doi.org/10.1002/jts.22018 Polusny, M. A., Kumpula, M. J., Meis, L. A., Erbes, C. R., Arbisi, P. A., Murdoch, M., . . . Johnson, A. K. (2014), Gender differences in the effects of deployment-related stressors and pre-deployment risk factors on the development of PTSD symptoms in National Guard Soldiers deployed to Iraq and Afghanistan. J Psychiatr Res, 49, 1-9. https://doi.org/10.1016/j.jpsychires.2013.09.016 Portnoy, G. A., Relyea, M. R., Decker, S., Shamaskin-Garroway, A., Driscoll, M., Brandt, C. A., & Haskell, S. G. (2018). Understanding Gender Differences in Resilience Among Veterans: Trauma History and Social Ecology. J Trauma Stress, 31(6), 845-855. https://doi.org/10.1002/jts.22341

Rauch, S. A. M., Yasinski, C. W., Post, L. M., Jovanovic, T., Norrholm, S., Sherrill, A. M., . . . Rothbaum, B. O. (2020). An intensive outpatient program with prolonged exposure for veterans with posttraumatic stress disorder: Retention, predictors, and patterns of change. Psychol Serv. https://doi.org/10.1037/ser0000422 Ryan, E. T., McGrath, A. C., Creech, S. K., & Borsari, B. (2015). Predicting utilization of healthcare services in the veterans health administration by returning women veterans: The role of trauma exposure and symptoms of posttraumatic stress. Psychol Serv, 12(4), 412-419. https://doi.org/10.1037/ser0000057 Sexton, M. B., Raggio, G. A., McSweeney, L. B., Authier, C. C., & Rauch, S. A. M. (2017). Contrasting Gender and Combat Versus Military Sexual Traumas: Psychiatric Symptom Severity and Morbidities in Treatment-Seeking Veterans. J Womens Health (Larchmt), 26(9), 933-940. https://doi.org/10.1089/jwh.2016.6080 Shipherd, J. C., Salters-Pedneault, K., & Matza, A. (2016). Intrusive Cognitive Content and Postdeployment Distress. J Trauma Stress, 29(4), 301-308. https://doi.org/10.1002/jts.22113

Suris, A., & Lind, L. (2008). Military sexual trauma: a review of prevalence and associated health consequences in veterans. Trauma Violence Abuse, 9(4), 250-269. https://doi.org/10.1177/1524838008324419 United States Department of Defense Sexual Assault Prevention and Response. Retrieved October 28, 2020, from https://www.sapr.mil/mission-history Vogt, D., Vaughn, R., Glickman, M. E., Schultz, M., Drainoni, M. L., Elwy, R., & Eisen, S. (2011). Gender differences in combat-related stressors and their association with

postdeployment mental health in a nationally representative sample of U.S. OEF/OIF veterans. J Abnorm Psychol, 120(4), 797-806. https://doi.org/10.1037/a0023452 Wilson, L. C., Simmons, B. L., Leheney, E. K., Ballman, A. D., Meyer, E. C., DeBeer, B. B., . . . Kimbrel, N. A. (2015). Does military sexual trauma moderate the impact of critical warzone experiences? Psychiatry Res, 229(1-2), 596-598. https://doi.org/10.1016/j.psychres.2015.07.023 Yaeger, D., Himmelfarb, N., Cammack, A., & Mintz, J. (2006). DSM-IV diagnosed posttraumatic stress disorder in women veterans with and without military sexual trauma. J Gen Intern Med, 21 Suppl 3, S65-69. https://doi.org/10.1111/j.1525-1497.2006.00377.x