

Synthesizing and Detailing the Nuanced Relationship between Deployment, Combat Exposure, and Suicide-Related Behaviors to Improve Suicide Prevention

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Acknowledgments & Disclaimer

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Note: The contents of this presentation do not represent the views of the U.S. Department of Veterans Affairs or the United States Government.

Purpose & Agenda

- Purpose:
 - To consolidate findings on the association between suicide (or suicide attempts), and U.S. deployment or combat exposure.
- Agenda:
 - Definition Challenges
 - Review of Literature
 - Theoretical Considerations
 - Conclusions

Diverse Experiences in OEF/OIF

Case Examples

Challenges in Defining “Deployment” or Combat Exposure

Deployment Considerations		Combat Considerations	
Access to mental health resources	Food	Witnessing vs. acting	Weapon involved
Access to personal support systems	Sleeping conditions	Gruesomeness	Relationship to wounded
Environmental changes	Downtime	Distance from target	Injuries
Quality of life	Communication with loved ones	Children, women, civilians	Self-report
Unit support	Geographic location	# of events	Retrospective
Leadership	Length	Length of exposure	Time since exposure
Combat	# of deployments	Personal reaction	

Deployment and Hazard of Suicide

Variable	No. Suicides	Rate Per 100,000	HR	99% CI
Any OEF/OIF deployment				
No	3879	17.78	Ref.	
Yes	1162	18.86	0.96	0.87, 1.05
No. OEF/OIF deployments				
1	895	18.57	0.94	0.85, 1.04
>1	267	19.92	1.03	0.87, 1.22

CI = Confidence interval

Adjusted for age, gender, race/ethnicity, component, service, rank, MOS

Reger et al, JAMA Psychiatry. 2015 Jun;72(6):561-9

Rates by Time in Service

Variable	No. suicides	Rate ^a	HR ^b	99% CI
Time in service at time of separation, years				
<1	495	48.04	Ref.	
1 – <2	258	44.16	0.98	0.80, 1.19
2 – <4	327	39.49	0.82	0.67, 0.99
4 – <8	345	21.66	0.55	0.44, 0.69
8 – <20	301	20.18	0.59	0.44, 0.77
≥20	209	11.01	0.31	0.20, 0.48
			p-trend <.001	

Note: HR = hazard ratio; CI = confidence interval;

^aRate per 100,000 person-years

^bAll HRs adjusted for baseline demographic and service covariates: age, sex, race/ethnicity, education, marital status, component, service branch, rank, and history of deployment.

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Deployment & Suicide

Lead Author	Method	Years	Finding
Leardmann, 2013	Prospective, longitudinal	2001-2008	No association with deployment or cumulative number of days deployed
Kang. 2014	Retrospective cohort	2001-2009	OEF/OIF Veterans had 24-25% lower mortality than U.S.; 41% (deployed) and 61% (non-deployed) higher risk of suicide than U.S.
Shen, 2016	Retrospective cohort	2001-2011	No association with deployment overall; elevated suicide rates for the first 4 years after OEF/OIF deployment compared to those who did not deploy
Schoenbaum, 2014	Retrospective cohort	2004-2009	Higher rate in soldiers currently or previously deployed compared to never deployed; rates also increased between the years of 2004-2009 for never deployed

Army STARRS: Differences in Risk within Deployment Groups

- Suicide risks for deployment status (Currently, Previously, Never Deployed) may differ by a host of characteristics
 - Example: Suicide rates higher in Never Deployed and Previously Deployed infantry and combat engineers in the Army as compared to Currently Deployed
 - All other soldiers had higher suicide rates when Currently Deployed or Previously Deployed compared to Never Deployed (Kessler et al., 2015)

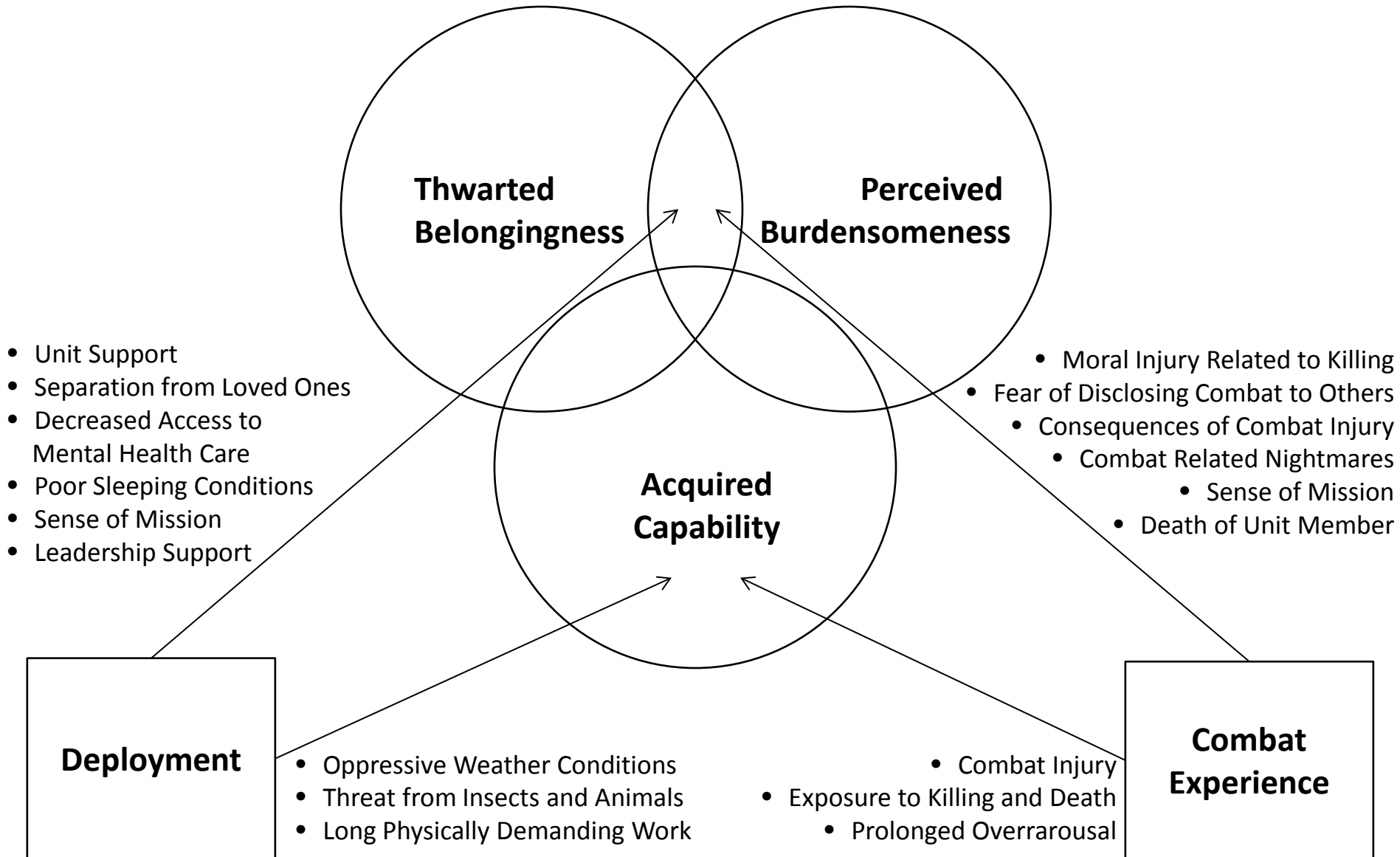
Methodological Challenges

- Non-deployable conditions = higher suicide rates; Deployed cohort is healthier
- After separation, service members cannot deploy; comparison to deployed cohort violates the principle of exchangeability
- Separation due to serious medical conditions, legal problems, substance use means service members were non-deployable for some (or all) of their active duty time – deployment eligibility issue

Combat & Suicide Behaviors

- Only one OEF/OIF study with suicide as the outcome – no association between any combat exposure and suicide (Leardmann et al., 2013)
- Suicide Attempt and Any Combat Exposure:
 - Mixed results for Vietnam Veterans (Fontana et al, 1992; Maguen et al 2012)
 - Mixed results for OEF/OIF Veterans (Bryan et al., 2013a; Bryan et al, 2013b)
- Suicide Attempt and Killing
 - Several studies reported small associations (Griffith et al., 2013; Fontana et al., 1992) while others did not (McLean et al., 2012; Maguen et al., 2012)
 - Recent meta-analysis reported small average effect size ($r=.11$)

Deployment, Combat Experience, and the Interpersonal Theory of Suicide



Conclusions

- Limitations in definitions, measurement, and methodologies are significant
- Deployment, overall, does not provide a simple explanation for the significant rise in U.S. military suicide rates
- There may be increased rates shortly after deployment and for some Currently, Previously, Never Deployed subgroups
- Additional research is warranted for killing during combat
- Deployment/combat may represent significant stressors for individuals
- Prevention is indicated for both deployed and non-deployed
- Leaders can shape data collection efforts to improve research in this area