Is time spent on deployment a stronger predictor of insomnia than time spent in service?

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Introduction

- Post Deployment complaints about insomnia are very common among United States Armed Forces Servicemembers (Picchioni et al, 2010: Peterson et al, 2008: Wright et al, 2010: Robert et al, 2010: Wright et al, 2011).
- To date there have been no attempts to compare the effects of time spent in deployment to time spent in service as predictors of sleep disruption while controlling for combat exposure.
- While an estimated 30-40% of the adult population within the United States has some level of insomnia, studies have placed the prevalence of Insomnia among military personnel anywhere from 33% (Mclay et al 2010) to 75% (Peterson, A. L. et al 2008).
- Sleep deprivation causes serious impairments to cognitive functioning (Pilcher, Huffcutt, 1996) which can lead to decreased performance on both cognitive and motor tasks and a decrease in work performance (Write, K. M. et al 2011).
- Insomnia, once thought to be a symptom of other disorders, was found to be a strong predictor of later PTSD and depression among combat veterans, but PTSD and depression were not found to be a significant predictor of later insomnia (Wright et al, 2011: McLay et al, 2010).
- Combat exposure has been directly linked to the development of sleep disruptions and insomnia (Picchioni et al, 2010) which in turn can lead to the development of PTSD and depression.

Hypothesis: **time spent on deployment is a stronger predictor of insomnia than time spent in service.**

Methods

Participants:
The participants were 134 Air Force Special Operations Forces (SOF) personnel who completed self-report surveys either before or after a deployment

- Gender: 100% male
- Race: 88% Caucasian, 3% African American, 1.5% American Indian, 1.5% Asian, 1.5% Native Hawaiian and 3% other
- Ethnicity: 9.7% Hispanic
- Age: 21 to 48 (M=30.12 SD=6.029)
- Deployments: 0 to 7 (M=2.57, SD=1.715)

Measures:

- Insomnia Severity Index (ISI)
- Length of Deployment
- Length of Service
- Deployment Risk and Resilience Measure- Combat (DDRI-C)
- Deployment Risk and Resilience Measure-Aftermath of Battle (DDRI-AB)

Results

Data Analysis
To compare the effects of deployment time and time spent in service we used a generalized regression analysis for a Poisson distribution. The dependent variable was measured using the Insomnia Severity Index.
The following variables were used as possible predictors: Age, Years spent in service, Total deployment length, Combat exposure and Aftermath of battle exposure.

Descriptive Statistics
The average score on the Insomnia severity Index (M=4.53) falls within the norm. Insomnia did not correlate directly with any other variable.

Table 1.1

		1	2	3	4	5	6
1	Age	-					
2	Years in service	0.837**	-				
3	Total Dep. Length	0.518**	0.514**	-			
4	Insomnia severity	0.074	0.106	0.006	-		
5	Combat exposure	0.28	0.88	0.056	0.021	-	
6	Aftermath exposure	0.107	0.16	0.052	0.018	0.764**	-
M		30.31	9.19	9.48	4.53	1.51	2.08
SD		6.21	6.07	6.87	4.4	0.53	0.86

** indicates significance

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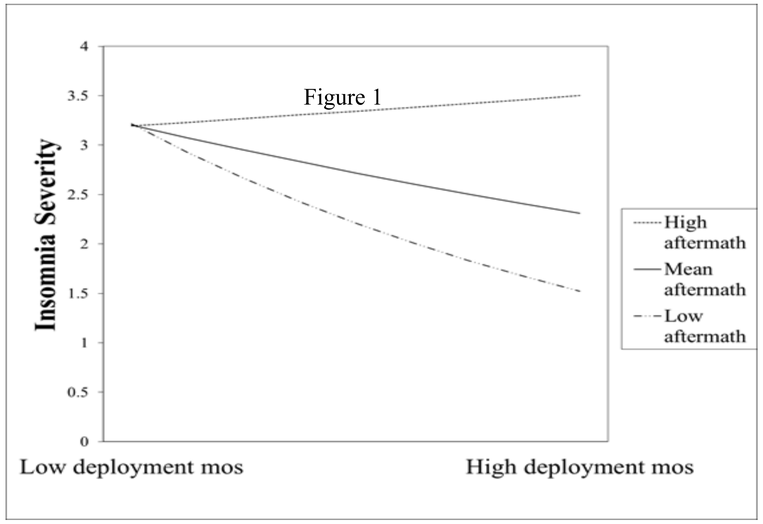
Table 1.2

	Parameter	B	Std. Error	
1	Years in Service	-0.25	0.0202	0.223
3	Total Dep. Length	-0.96	0.0292	0.001
4	Age	0.26	0.0203	0.208
5	Combat Exposure	-0.162	0.1728	0.349
6	Aftermath Exposure	-0.104	0.1531	0.496
7	Total Dep. Length X Aftermath Exposure	0.035	0.0119	0.003

Time spent on deployment showed a non-significant trend towards decreased insomnia (B=-.017 SE=.01 p=.094), but greater aftermath exposure was associated with significantly increased insomnia (B=.219, SE=.107 p=.04). These results lead us to consider a possible moderator effect of deployment length on aftermath exposure

We calculated the interaction of deployment length and aftermath exposure and added it to the regression model. Results are displayed in table 1.2. The interaction term was significant (B=-.035 SE=.012 p=.003) and is plotted in Figure 1. This suggests that levels of insomnia are dependent on levels of aftermath exposure amongst those who have been deployed longer.

Figure 1



Discussion

- The results indicate that longer deployment times predict a slightly lower insomnia severity. When we controlled for aftermath of battle exposure we found that in SOF with average and low aftermath exposure longer deployment predicted a significantly lower level of insomnia. SOF who ranked high in aftermath exposure tended to rank high in insomnia as well regardless of time spent in deployment.
- Length of total service did not predict insomnia
- Direct combat exposure was not a predictor of insomnia. The sample was composed of medical Special Operations Forces, however, and direct combat exposure was minimal in comparison to aftermath exposure. Hence the sample should not considered representative of the armed forces as a whole
- Greater aftermath exposure is associated with higher insomnia only among SOF personnel who have deployed for longer periods of time
- This possible buffering effect could be due to the stresses of everyday life on sleep disruption in general. Further studies could compare insomnia in populations of deployed military personnel to their civilian counterparts.

Limitations:

- Sample was comprised entirely of Air force SOF
- No follow-up data collection and/or non-military comparison group
- Mixed pre and post deployment data collection
- Self-Report measures

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