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Recent Stressful Experiences and Suicide Risk: Implications for Suicide Prevention and Intervention in U.S. Army Soldiers

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Abstract

Objectives. To identify the extent to which the presence of recent stressful events are risk factors for suicide among active-duty soldiers as reported by informants.

Methods. Next-of-kin (NOK) and supervisors (SUP) of active duty soldiers (*n* = 135) who died by suicide and two groups of living controls: propensity-matched *(n* = 128) and soldiers who reported suicidal ideation in the past year, but did not die (SI) (*n* = 108) provided data via structured interviews from the Study to Assess Risk and Resilience in Servicemembers (Army STARRS). Multivariate logistic regression analyses were used to create a risk score for suicide.

Results. The odds of suicide increased significantly for soldiers experiencing relationship problems, military punishment, and perceived failure or humiliation in the month prior to death. Suicide risk models with these risk factors predicted suicide death among those who reported SI in the past year (OR =5.9, [95% CI = 1.5, 24.0] χ^2= 6.24, *p* =.0125, AUC, .73 (0.7,0.8) NOK and (OR =8.5, [95% CI = 1.4, 51.5] χ^2= 5.49, *p* =.0191, AUC, .78 (0.7,0.8); SUP) suggesting the combination of these recent stressors may contribute to the transition from ideation to action.

Conclusions. Our findings suggest for the first time recent stressors distinguished suicide ideating controls from suicide decedents in the month prior to death as reported by informants. Implications for preventive intervention efforts for clinicians, supervisors and family members in identifying the transition from ideation to action are discussed.

Keywords: suicide; suicide prevention; stress, military psychiatry

Keypoints:

The study identifies several recent stressors that increased the odds of suicide and how these recent stressors contribute to suicide risk, especially the transition from ideation to completed suicide, after adjusting for lifetime mental disorders in service members. The identification of recent stressors and increased vulnerability to suicide is an actionable target for intervention for clinicians, family members and supervisors.

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Suicide is a leading cause of death in the U.S. and represents a serious public health concern particularly among service members and veterans (1). The Department of Defense (DoD) reported the suicide mortality rate for active duty soldiers statistically increased from 20.3 to 28.7 per 100,000 service members in 2015 to 2020, which translates to 580 service members who died by suicide in 2020 (2). Besides death-in-combat, suicide death has become the leading cause of mortality in the military, making suicidal behaviors a growing cause of concern to the Department of the Army (3, 4).

Among military service members, specific stressful life events (e.g., legal problems, victimization, major financial crises, betrayal by a loved one, and separation/divorce other breakup) have been associated with suicide attempts, after separation/deactivation from the military (5). The experience of both interpersonal violence and sexual assault or harassment, especially among female soldiers, may have a dose-response relationship with suicidal ideation and attempts (6, 7). In addition to interpersonal violence, relationship problems, major depression, posttraumatic stress disorder, and substance use disorder predicted suicide attempt in an active duty military population (8). For veterans, adverse socially-determined lifetime stressful experiences such as homelessness, healthcare access, unemployment, and violence are some of the main risk factors associated with suicide death (9).

The specialized forms of training and the exceptional environments service members operate in expose them to military/deployment-related stressors that their civilian counterparts are spared and may make them more vulnerable to family/social-related stressful events. Military/deployment-related stressful events include combat experience, combat injuries, conformity to rigorous unit requirements, and loss of colleagues during combat. Family/social-related stressors prevalent among service members include failed romantic relationships, suicide of a close relative or friend, long periods of separation from family, infidelity, and romantic distress (10-12), Service members may be at greater risk of exposure and/or individuals may be

more vulnerable to stressful events during deployment, and it may be useful to better understand the dynamics underlying the effects of adverse events in the 30 days leading up to suicide death, and to treat this period as a window of opportunity for intervention. This study may have important and timely policy implications for suicide prevention in military populations allowing for an opportunity to assess stressors immediately preceding suicide death.

The purpose of the current study is to identify the extent to which the presence of recent stressful events, lifetime traumatic stressors, and history of lifetime mental health disorders by administrative record are risk factors for suicide among active-duty U.S. Army Soldiers, as reported by informants. A better understanding of how and to what extent these risk factors are associated with increased risk of suicide death, may assist both supervisors and family members in identifying those most at risk to inform preventive interventions. Further, we will explore other factors that may differentiate those who report suicidal ideation, from those who died by suicide, to identify how one moves from a suicidal thoughts to action. We hypothesized that recent stressors such as interpersonal violence, legal problems, and family/social/relationship problems, after controlling for lifetime history of mental health disorders, and lifetime stressors would increase the risk of suicide death, and the combination of these factors may exacerbate symptoms of distress.

Method

Data are from a psychological autopsy component of the Army Study to Assess Risk and Resilience among Servicemembers (Army STARRS) (13). Recruitment and data collection procedures were approved by the Humans Subjects Committees of The University of Michigan, Ann Arbor, MI; the Uniformed Services University, Bethesda, MD; and all other collaborating organizations. Due to space constraints, please refer to study procedures published elsewhere **(Supplemental S1)** (13).

Sample

Cases. The suicide cases were U.S. Army Soldiers (n = 135) who died by suicide while on active duty between August 01, 2011-November 01, 2013. This sample excluded soldiers in the Army Reserve and National Guard and soldiers who died while deployed, as these soldiers were excluded from the pool of control soldiers by the design of the Army STARRS (14). The research team interviewed a next-of-kin (NOK) and/or first-line Army supervisor (SUP) for n = 135 suicides. The response rates for the NOK and SUP cases were 61.6% and 69.5% respectively

Controls. The controls were drawn from a large (N = 5,428) representative sample of living soldiers who participated in the Army STARRS All Army Study (AAS). Two groups of living controls were selected in two different manners. First, propensity-score matched (15) (PS) controls (n = 128) were matched to Army suicide decedents on 22 sociodemographic and military characteristics. The second group of controls reported suicidal ideation (SI) in the past year in the AAS survey (n =118). (16) Neither group of controls differed from eligible AAS respondents who did not participate on: sex, race/ethnicity, marital status, or age of entry into the Army. However, controls were slightly older, had more dependents, were higher rank, and had higher educational attainment; although these effects were small in magnitude (rs = 0.09–0.18). The response rates for the NOK and SUP propensity-matched (PS) and ideator (SI) controls were 66.7% and 56.7% respectively.

Measures

The psychological autopsy interview included 26 sections assessing a wide range of risk and protective factors for suicide. The development of the psychological autopsy interview is described elsewhere (13). Measures are provided in the supplemental materials **(Supplemental S2).**

Psychiatric Disorders. Classic mental health disorder is defined as a lifetime history of any of the following 22 diagnoses as indicated by administrative ICD-9 codes: ADHD,

adjustment disorder, alcohol, anxiety, bipolar, conduct/ODD, minor depression, MDD, eating disorders, non-affective psychosis, organic mental disorders, other disorders, other impulse-control disorders, personality disorders, sex disorders, sleep disorders, somatoform/dissociative disorders, traumatic stress, PTSD, drug-induced mental illness, drug abuse without dependence, or drug dependence.

Lifetime stressors. The SLE items were adapted from the Life Event Questionnaire (17) and the Department of Defense Health Survey of Health Related Behaviors among Active Duty Military Personnel.(18) Informants reported number of times the suicide decedent experienced 14 lifetime traumatic SLEs, and 15 deployment related SLEs. Informants then asked how many times in the suicide decedent's life an event occurred, and if the event occurred in the past 12 months. Items were dichotomized for subsequent analyses (yes/no).

Recent stressors. To capture whether SLEs occurred in the past week, past month, past year or more than a year, informants were asked whether the suicide decedent experienced 17 stressful experiences in the past week, month, year or more than a year before the decedent's death. Items were dichotomized (yes/no) for absence of presence of a recent SLE.

Statistical analyses

Sample weights. Post-stratification weights were developed based on the analysis of the Historical Administrative Data Study (HADS)[1] Army sample, using predictors of suicide found in administrative records and known population information gathered from the Army snapshot data set (14, 16, 19). Item-level missing data were handled in a process described in the Army STARRS study design and methodology publication (14).

[1] HADS is an integrated administrative data file containing key elements from 38 different Army and DOD data systems for over 1.6 million soldiers (Regular Army, Army Reserve, and National Guard) on active duty during calendar years 2004-2009.

Univariable models. Logistic regression models tested the significance of each item comparing suicide deaths (cases) to the controls (PS and SI controls), while adjusting for significant demographics. Coefficients were exponentiated in logistic models to create ORs with 95% CIs and $\chi 2$ tests were performed when fitting each of the logistic regression models. To correct for multiple comparisons, we used the false discovery rate, (20) within each sample (NOK and SUP) for PS controls and SI controls comparisons, separately. The false discovery rate was conducted using the p.adjust function in R, version 3.4.2 (21). Models whose calculation involved cells with $n < 5$ were corrected with Firth's penalized likelihood method to help address small sample size bias. All tests were 2-sided and considered significant at $p <. 05$. All other analyses were conducted using SAS, version 9.4 (22).

Risk Scores. To construct risk score regression models for suicide death, we identified lifetime SLEs, recent SLEs, lifetime survey mood disorder or lifetime class mental health disorder statistically significant at $p <. 05$ after FDR adjustment in the univariate analyses. The risk score variable was constructed by giving a point for each item the NOK and SUP endorsed in the past month. Standardized Chronbach Coefficient Alphas and Pearson Correlations were obtained for the NOK and SUP risk scores to check for internal consistency. After creating the risk score construct, a logistic regression model was fit using this score construct variable as an independent variable while adjusting for significant demographics. For the logistic regression, we examined this variable both as a continuous variable and as categorical variable (1+ score vs. 0) and constructed models for each. A receiver operating characteristic curve (AUC) and 95% CI was calculated to evaluate model fit.

Multivariable models. To explore predictors of suicide death we examined lifetime and recent SLEs in multivariable models adjusting for significant demographics and history of classic mental health disorders. Step-wise model selection approach identified the most parsimonious model. In the NOK and SUP multivariable models, the independent variables

included those significant in the univariate analyses after FDR adjustment with a p-value <. 05. Interactions were assessed using multivariable models containing each variable of interest and a multiplicative interaction term. Those interactions whose models had sufficient cell sizes for model convergence and a p-value < 0.05 were considered significant. Population attributable risk (PAR) was calculated using Levin's Formula [% $PAR = (P_e \times (RR - 1))/(P_e \times (RR - 1) + 1) \times 100$] to estimate the proportion of cases in the population that can be attributed to a specific risk factor.(23) PARP calculations are reported for lifetime SLEs significant after FDR adjustment in the univariable models. [2]

Results

Comparisons of cases and controls on sociodemographic and Army history variables revealed few differences for the NOK and SUP informant samples. **(Supplemental S3).**

Univariable Models.

Psychiatric Disorders. NOK reported suicide descedents were five times more likely than PS controls to have a history of lifetime classic mental health disorder from the administrative record NOK (OR = 5.0 [95% CI = 2.3, 10.8] χ^2= 16.83, p <.0001) and for similarly for SUP (OR = 5.8 [95% CI = 3.2, 10.5] χ^2= 33.40, p <.0001).

Lifetime Stressors. NOK reported suicide decedents were four times more likely to have a lifetime history of interpersonal violence (e.g., sexual assault or rape) (OR = 4.2 [95% CI = 1.5, 11.5] χ^2 = 7.54, p = .0420) compared to PS controls and three times as likely to have experienced the suicide of a close friend or relative (OR = 3.0 [95% CI =1.5, 6.3] χ^2 = 8.87,p =.0406), but not SUP. Interestingly, NOK reported the protective effects of experiencing a disaster (OR = 0.2 [95% CI =0.1, 0.9] χ^2= 4.29, p = 0.1792).

Recent Stressors.[3] NOK reported suicide decedents were more likely to experience the

[2] Levin's Formula is only applicable for binary variables; therefore, PARP could only be calculated on the lifetime stressors.

[3] Due to space constraints only the recent stressors significant in past month compared to never were included in the text and not those stressors significant in the soldier's lifetime, but not in the past month.

following recent SLEs compared to PS controls: 1) spouse or partner left him/her (OR = 10.4 [95% CI = 3.5, 30.9] χ^2= 18.01, p = .0009); 2) serious betrayal by someone else close to him/her (OR= 5.3 [95% CI =1.5, 18.0] χ^2= 8.25, p = 0.0365); 3) serious argument/break up with a close friend or family member (OR= 5.9 [95% CI =2.4, 14.5] χ^2= 15.01, p = 0.0027); 4) he/she caused an accident where someone else was hurt or property was damaged (OR= 3.0 [95% CI =1.2, 7.8] χ^2= 5.33, p = 0.1255); 5) didn't get promoted (OR= 4.3 [95% CI =1.3, 14.1] χ^2= 7.81, p = 0.0402); 6) received military punishment (e.g. Court Martial, Article 15, Captain's Mast, Office Hours, Letter of Reprimand) (OR = 56.4 [95% CI =7.2, 439.8] χ^2= 14.84, p = 0.0027); 7) trouble with the police (OR =3.7 [95% CI = 1.5, 8.9] χ^2= 8.25, p=.0162); 8) arrested for an incident not related to driving (OR = 1.8 [95% CI = 0.8,4.0] χ^2= 8.25, p =.0365); 9) some type of perceived failure or humiliation (OR = 24.4 [95% CI = 9.2, 64.5] χ^2= 42.34, p <.0001) and 10) any other very stressful event (OR = 4.7 [95% CI = 2.0, 11.1] χ^2= 13.20, p=.0050).

SUP reported suicide decedents were more likely to experience a number of SLEs compared to PS controls: 1) spouse or partner left him/her (OR = 16.4 [95% CI = 4.4,61.4] χ^2= 19.93, p = .0001); 2) serious ongoing arguments with a close friend or family member (OR= 10.4 [95% CI =2.5, 43.8] χ^2= 10.42, p = 0.0165); 3) trouble with the police (civilian or military) (OR= 7.9 [95% CI =2.2, 28.4] χ^2= 11.00, p = 0.0090); 4) arrested for an incident not related to driving (OR=8.8 [95% CI =1.6, 47.2] χ^2= 8.48, p = 0.0370); 5) experienced some type of perceived failure or humiliation (OR = 18.3 [95% CI = 5.6, 60.1] χ^2= 25.00, p <.0001) and 6) any other very stressful event (OR = 5.3 [95% CI = 2.2, 12.3] χ^2= 16.09, p=.0030). **(Table 1a-1b).**

Population attributable risk. The population attributable risk percent for suicide death associated with lifetime exposure to sexual assault or rape and lifetime exposure to the death of a

close friend or relative by suicide was estimated to be 12.95% and 17.37% respectively (NOK) and 5.87% for lifetime exposure to sexual assault or rape (SUP).

Multivariable Models

The final NOK model predicting suicide death: spouse or partner leaving them (OR = 8.5 [95% CI = 2.0, 35.8] χ^2= 9.79, p <.0075), military punishment [4](OR = 25.3 [95% CI = 3.1, 206.2] χ^2= 14.67, p<.0007), trouble with the police (OR = 6.3 [95% CI = 1.8, 22.0] χ^2= 8.93, p <.0115), some type of perceived failure or humiliation (OR = 9.3 [95% CI = 2.4, 35.1] χ^2= 10.97, p<.0041),

The final SUP model predicting suicide death: spouse or partner leaving them (OR = 14.5[95% CI = 2.9, 72.26] χ^2= 14.39, p <.0008); received lower score than expected on performance report (OR = .03 [95% CI = .01, .14)] χ^2= 19.10, p<.0001), experienced perceived failure/humiliation (OR = 15.10 [95% CI = 4.07, 56.08] χ^2= 20.38, p <.0001), any other stressful event (OR = 3.89 [95% CI = 1.44, 10.54] χ^2= 7.15, p <.028), and history of lifetime classic mental health disorder from the administrative record (OR =4.5 [95% CI = 2.2, 9.)] χ^2= 16.76, p <.0001). **(Table 2a-2b).**

Risk Score. The recent SLEs statistically significant at p <. 05 after FDR adjustment in the univariable analyses used to create the risk score construct for NOK included: (1) spouse or partner left them; (2) serious betrayal by someone else close to him/her; (3) serious argument/breakup with close friend or family; (4) caused accident where someone else was hurt/property damaged; (5) didn't get promoted when they thought they should have been; (6) received military punishment; (7) had trouble with police; (8) arrested for non-driving violation; (9) experienced perceived failure/humiliation; and (10) any other stressful event. Items used to create the risk score construct for SUP included: (1) spouse or partner left them; (2) received

[4] Due to space constraints only the significant past month recent stressors were included in the text and not those stressors that happened, but not in the past month.

lower score than expected on performance report; (3) had trouble with police; (4) arrested for non-driving violation; (5) experienced perceived failure/humiliation; and (6) other stressful event.

For NOK and SUP, standardized Chronbach Alpha = .809392 and .59307, respectively suggesting the items are measuring one dimension. NOK and SUP models predicting suicide death among PS controls were high (OR =8.3, [95% CI = 4.4, 15.8] χ^2= 42.04, p < 0.0001, AUC,.74 (0.7, 0.8) NOK) and (OR = 13.0 [95% CI = 6.7, 25.3] χ^2= 57.13, p <.0001, AUC, .76 (0.7, 0.8); SUP) and slightly higher among those who reported SI in the past year, suggesting a strong model fit (OR =5.9, [95% CI = 1.5, 24.0] χ^2= 6.24, p = 0.0125, AUC, .73 (0.7,0.8); NOK) and (OR =8.6, [95% CI = 1.4, 51.5] χ^2= 5.49, p =.0191, AUC, .78 (0.7,0.8); SUP). **(Table 3a-3b)** and **(Fig. 1a-1b).**

Discussion

There are two significant findings to emerge from this study. First, the combination of significant recent stressors predicted suicide death in those who reported suicide ideation in the past year. To our knowledge, this is the first time this finding has been reported and the evidence from this study suggests the combination of these recent stressors (e.g., relationship problems, military punishment, and the experience of perceived humiliation or failure) may contribute to the transition from ideation to action. Second, soldiers who experienced military punishment, spouse/relationship problems or perceived humiliation and failure in the month prior to death had significantly increased odds of suicide death. These findings persisted even after controlling for lifetime stressful events and mental health disorders. Each will be described below.

Our risk score models predict suicide death with accuracy and suggest the importance of a combination of stressful life events in the month prior to death. These findings were observed for both types of controls and, importantly, for controls who reported SI in the past year, suggesting that the combination of these recent events may contribute to the transition from

ideation to action. Ideation-to-action theories of suicide emphasize the dynamic nature of suicidal behaviors and focus on the temporal dynamics of suicide risk. The fluid-vulnerability theory -- a diathesis-stress model provides a framework for examining suicidal behaviors as a dynamic construct and may serve as a framework for the development of interventions for suicide prevention and aid clinicians in predicting one at high risk for a suicide. (24, 25) In the model, predisposition or baseline risk (e.g., prior suicide attempts, adverse childhood experiences, and genetic vulnerabilities) are exacerbated by environmental triggers (e.g., relationship problems, trauma, death of a loved one, financial stress, job loss) which leads to "the suicidal mode", which consists of cognitive, behavioral, emotional and physiological domains that are actionable targets for intervention.

Our findings support our hypotheses and confirm the importance of relationship problems in the month prior to death even after controlling for a lifetime history of classic mental health disorders. The fact that NOK and SUP both reported spousal/significant other relationship problems suggests the importance of family/couple interventions as a target for suicide intervention and is consistent with our hypothesis and recent research highlighting the association between marital distress and suicidal ideation in active-duty soldiers (26).

NOK reported receiving military punishment in the month prior to the soldier's death as a significant stressor, even after controlling for lifetime history of classic mental health disorder from the administrative record. SUP were not asked specifically about military punishment and thus could not collaborate this finding, but did point to the potential importance of poor work performance and suicidal behaviors. Prior research has reported the association between demotion and failure to be promoted and suicide death, but our knowledge, this is the first time military punishment has been observed as a significant predictor of suicide death, as reported by informants. Recent research reported strong association between discharge characterization (e.g., honorable, "bad paper" or other than honorable, bad conduct, dishonorable, and uncharacterized)

and homelessness among those separated from service (27). The importance of context and enhancing one's quality of life is emphasized Bryan's Cusp Catastrophe Model of suicide prevention, where multiple environmental stressors (e.g., homelessness, economic insecurity, low minimum wage, no access to health insurance) may lead to suicide and the role of our environment plays an important role in our well-being (28).

Perceived humiliation and failure predicted suicide death as reported by informants, after controlling for lifetime history of classic mental health disorders from the administrative record. Humiliation, perceived burdensomeness, social defeat, and thwarted belongingness mediated the relationship between suicide crisis syndrome and past month suicide attempt and ideations in high risk psychiatric outpatients(29). Humiliation hypothesized as a state characteristic may interact with trait characteristics of increased vulnerability and lead to suicidal ideation, plan and attempts(30).

Our findings may be interpreted considering several limitations. Psychological autopsy studies are limited by bias related to the informant's knowledge of the status of cases and controls. Despite widely held preconceptions about the informant method of research, including recall bias, studies have shown informant data to be valid and reliable (31). The relatively small sample size limited the power to examine interactions. Stressful life events measures are associated with recall bias and intracategory variability (32). The response rates were low compared to surveys conducted in the general population, but they were high for multi-informant interviews conducted in a military population (33, 34). We were not able to examine gender differences and with the high rates of interpersonal violence in females, this may account for our lack of significant findings of lifetime interpersonal violence as a predictor of suicide death. Despite these limitations, our results may help inform suicide prevention and intervention efforts which target unique stressors that may significantly increase risk of suicide

in the month prior to death, such as relationship problems, military punishment and perceived failure and humiliation.

Future studies need to be replicated in larger samples where gender differences can be examined, as recent research suggests gender differences in exposure to longstanding and severe life problems are associated with suicide risk (35). Furthermore, replication in a prospective cohort to predict suicide death, will minimize recall bias and inform prevention efforts in this population. It will also be important for future research to examine the association of different types of military punishment (e.g., Article 15s, Court Marshall, Captain's Mass, Office Hours, Letter of reprimand) in service members to identify targets for intervention and suicide prevention for supervisors, so they can provide resources and access to support the accused.

Implications. The study identifies several recent stressors that increased the odds of suicide and how these recent stressors contribute to suicide risk, especially the transition from ideation to completed suicide, after adjusting for lifetime mental disorders. The dynamic and heterogeneous nature of suicide necessitate the need to tailor treatment to the individual. New smartphone applications with just-in-time interventions that are adaptive to internal states and external contexts are recommended (36). Commonalties of treatment that work for suicidal thoughts and behaviors that can easily be adapted in clinical contexts are also warranted (37).

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Plain Language Summary:

The authors used data collected from a psychological autopsy study, the Soldiers Health Outcome Study (SHOS-B) from the Army STARRS to identify risk factors of suicide death in active duty service members. As reported by informants, soldiers who experienced relationship problems, perceived failure and humiliation, and military punishment in the month prior to death had higher odds of suicide death compared to controls. These factors were statistically significant even after accounting for the effects of lifetime interpersonal violence, and lifetime history of mental health disorders. These risk factors also predicted suicide death among the controls who reported suicidal ideation in the past year, suggesting these factors may lead one from ideation to action. The identification of relationship problems, military punishment and perceived humiliation and failure in the month prior to death point toward important areas to intervene for clinicians, family members and supervisors.

Table 1a: Next-of-Kin Reported Lifetime and Recent Stressful Events Univariable Models

Characteristics	Next of Kin						
	Cases	Controls (Propensity)			Controls (12-month ideation)		
	(*n* = 61)	(n= 128)			(n = 108)		
	%	%	OR[ab]	(95% CI)	%	OR[ab]	(95% CI)
I. Lifetime Trauma Stressors (Ever)							
a. Serious physical assault (for example, mugging)							
Yes vs. No	20.97	11.35	2.1	(1.0,4.6)	19.02	1.0	(0.2,5.3)
χ^2, p_{fdr} [c]				3.53, 0.2111			<.01, 0.9732
b. Sexual assault or rape							
Yes vs. No	17.07	4.65	**4.2**	**(1.5,11.5)**	7.48	2.5	(0.2,26.4)
χ^2, p_{fdr} [c]				**7.54, 0.0420**			0.58, 0.9732
c. Serious assault happened to a close friend or relative							
Yes vs. No	28.69	21.47	1.3	(0.7,2.7)	21.64	1.3	(0.3,6.3)
χ^2, p_{fdr} [c]				0.76, 0.5377			0.09, 0.9732
d. Murder of a close friend or relative							
Yes vs. No	10.08	11.38	1.0	(0.4,2.6)	11.73	0.8	(0.1,6.2)
χ^2, p_{fdr} [c]				<.01, 0.9480			0.05, 0.9732
e. Suicide of a close friend or relative							
Yes vs. No	28.22	10.36	**3.0**	**(1.5,6.3)**	13.21	2.6	(0.4,15.9)
χ^2, p_{fdr} [c]				**8.87, 0.0406**			1.12, 0.9732
f. Attempted suicide of a close friend or relative							
Yes vs. No	14.71	16.05	1.0	(0.4,2.2)	14.29	1.0	(0.2,6.2)
χ^2, p_{fdr} [c]				0.01, 0.9480			<.01, 0.9732
g. Combat death of a close friend or relative							
Yes vs. No	34.06	37.77	0.9	(0.5,1.7)	34.91	0.8	(0.2,3.4)
χ^2, p_{fdr} [c]				0.16, 0.8113			0.05, 0.9732
h. Accidental death of a close friend or relative							
Yes vs. No	36.56	26.10	1.6	(0.8,2.9)	25.62	1.5	(0.4,6.5)
χ^2, p_{fdr} [c]				1.86, 0.3462			0.35, 0.9732
i. He/She witnessed someone being seriously injured or killed							
Yes vs. No	36.34	28.25	1.6	(0.8,3.1)	39.24	0.8	(0.2,3.5)
χ^2, p_{fdr} [c]				2.08, 0.3462			0.05, 0.9732
j. He/She discovered or handled a dead body							
Yes vs. No	16.99	25.54	0.6	(0.3,1.3)	33.87	0.4	(0.1,1.6)
χ^2, p_{fdr} [c]				1.58, 0.3654			1.74, 0.9732
k. He/She had a life-threatening illness or injury							
Yes vs. No	10.08	8.37	1.2	(0.4,3.4)	8.12	1.2	(0.1,12.0)
χ^2, p_{fdr} [c]				0.15, 0.8113			0.01, 0.9732

l. He/She was in a disaster (for example, hurricane, fire, flood, earthquake) where he/she could have died							
Yes vs. No	4.44	13.22	**0.2**	**(0.1,0.9)**	19.04	0.2	(0.0,1.3)
χ^2, p_{fdr} [c]				**4.29, 0.1792**			2.80, 0.9732
II. Psychiatric Disorders							
Lifetime Classic Mental Health Disorder (Admin)	78.02	39.78	**5.0**	**(2.3,10.8)**	61.45	2.0	(0.5,8.3)
Yes vs No				**16.83, <0.0001**			0.83, 0.3862
χ^2, p_{fdr} [c]							
III. Recent Stressful Life Events							
a. A serious financial problem							
Past month vs. Never	25.94	17.78	2.0	(0.9,4.4)	8.39	4.5	(0.5,41.7)
Lifetime vs. Never	35.21	30.30	1.4	(0.7,2.9)	32.61	1.5	(0.4,6.1)
χ^2, p_{fdr} [c]				3.18, 0.2829			1.84, 0.7696
b. Spouse or partner left him/her							
Past month vs. Never	21.51	2.52	**10.4**	**(3.5,30.9)**	2.70	9.4	(0.3,345.3)
Lifetime vs. Never	22.59	27.25	1.1	(0.5,2.3)	30.85	0.9	(0.2,4.0)
χ^2, p_{fdr} [c]				**18.01, 0.0009**			1.54, 0.7696
c. He/She went through a divorce							
Past month vs. Never	3.09	3.17	1.2	(0.2,7.0)	5.10	0.4	(0.0,8.7)
Lifetime vs. Never	13.71	15.98	0.8	(0.3,1.9)	26.84	0.4	(0.1,2.0)
χ^2, p_{fdr} [c]				0.36, 0.8833			1.50, 0.7696
d. Spouse or partner cheated on him/her							
Past month vs. Never	5.98	0.00	-	-	1.06	5.9	(0.0,-)
Lifetime vs. Never	19.69	24.73	0.9	(0.4,1.8)	30.67	0.6	(0.1,2.6)
χ^2, p_{fdr} [c]				0.12, 0.9396			0.92, 0.7696
e. Serious betrayal by someone else close to him/her							
Past month vs. Never	11.62	2.41	**5.3**	**(1.5,18.0)**	1.18	11.2	(0.1,-)
Lifetime vs. Never	23.25	16.68	1.7	(0.8,3.6)	21.55	1.2	(0.2,6.0)
χ^2, p_{fdr} [c]				**8.25, 0.0365**			0.81, 0.7696
f. Serious ongoing arguments or break-up with some other close friend or family member							
Past month vs. Never	25.60	4.87	**5.9**	**(2.4,14.5)**	5.14	5.8	(0.4,89.6)
Lifetime vs. Never	22.24	25.08	1.4	(0.6,2.9)	28.08	1.0	(0.2,4.8)
χ^2, p_{fdr} [c]				**15.01, 0.0027**			1.66, 0.7696
h. He/She caused an accident where someone else was hurt or property was damaged							
Past month vs. Never	10.89	0.00	-	-	0.59	20.9	(0.0,-)
Lifetime vs. Never	14.71	6.24	**3.0**	**(1.2,7.8)**	9.61	1.7	(0.2,14.3)
χ^2, p_{fdr} [c]				**5.33, 0.1255**			0.85, 0.7696

i. He/She didn't get promoted when he/she thought he/she should have been							
Past month vs. Never	12.24	2.64	**4.3**	**(1.3,14.1)**	2.32	4.7	(0.1,234.7)
Lifetime vs. Never	16.99	25.34	0.6	(0.3,1.4)	28.68	0.5	(0.1,2.6)
χ^2, p_{fdr} [c]			**7.81, 0.0402**			1.39, 0.7696	
j. He/She got a lower score than he/she expected on his/her efficiency report or performance rating							
Past month vs. Never	6.99	4.14	1.2	(0.3,4.4)	1.06	6.3	(0.0,-)
Lifetime vs. Never	12.36	20.72	0.5	(0.2,1.3)	21.57	0.5	(0.1,2.9)
χ^2, p_{fdr} [c]			2.29, 0.3765			1.10, 0.7696	
k. He/She received military punishment (for example, Court Martial, Article 15, Captain's Mast, Office Hours, Letter of Reprimand, other)							
Past month vs. Never	21.31	0.46	**56.4**	**(7.2,439.8)**	2.70	9.5	(0.3,342.8)
Lifetime vs. Never	13.90	16.50	1.1	(0.4,2.5)	15.76	1.0	(0.2,6.1)
χ^2, p_{fdr} [c]			**14.84, 0.0027**			1.53, 0.7696	
l. He/She had trouble with the police (civilian or military)							
Past month vs. Never	20.23	0.00	-	-	0.59	72.3	(0.0,-)
Lifetime vs. Never	23.98	6.17	**3.7**	**(1.5,8.9)**	9.70	4.1	(0.5,31.3)
χ^2, p_{fdr} [c]			**8.25, 0.0162**			2.90, 0.7696	
n. He/She was arrested for an incident not related to driving							
Past month vs. Never	7.80	0.00	-	-	0.00	-	-
Lifetime vs. Never	17.80	11.90	**1.8**	**(0.8,4.0)**	5.41	4.2	(0.3,56.9)
χ^2, p_{fdr} [c]			**8.25, 0.0365**			1.14, 0.7696	
q. He/She experienced some type of perceived failure or humiliation, such as letting down those around him/her in some way							
Past month vs. Never	39.92	3.21	**24.4**	**(9.2,64.5)**	5.02	**16.1**	**(1.1,242.7)**
Lifetime vs. Never	20.89	15.71	**3.0**	**(1.3,6.9)**	15.33	2.8	(0.5,15.9)
χ^2, p_{fdr} [c]			**42.34, <0.0001**			4.79, 0.7696	
r. Any other very stressful event							
Past month vs. Never	22.32	6.35	**4.7**	**(2.0,11.1)**	7.61	4.3	(0.4,44.0)
Lifetime vs. Never	24.72	17.98	2.0	(1.0,4.2)	13.50	3.0	(0.4,20.7)
χ^2, p_{fdr} [c]			**13.20, 0.0050**			2.33, 0.7696	

Bold values are statistically significant at p-value <0.05.

Abbreviations: FDR, false discovery rate; OR. odds ratio

[a] ORs statistics obtained from separate multivariate logistic regression models testing differences between cases and each control group.

[b] Each predictor was adjusted for deployment status (never, previously) and number of years of active service, but not each other.

[c] p values have been corrected using false discovery rate (fdr).

Table abbreviated due to space constraints. Results for excluded variables available upon request.

Table 1b: Supervisor Reported Lifetime and Recent Stressful Events Univariable Models

Characteristics	Supervisor						
	Cases	Controls (Propensity)			Controls (12-month ideation)		
	(*n* = 107)	(n= 80)			(n = 73)		
	%	%	OR[ab]	(95% CI)	%	OR[ab]	(95% CI)
I. Lifetime Trauma Stressors (Ever)							
a. Serious physical assault (for example, mugging)							
Yes vs. No	4.83	1.95	3.0	(0.7,13.4)	5.44	0.9	(0.0,23.3)
χ^2, p_{fdr} [c]			2.00, 0.5455			<0.01, 0.9774	
b. Sexual assault or rape							
Yes vs. No	7.86	0.80	8.6	(1.1,65.3)	0.00	-	-
χ^2, p_{fdr} [c]			4.29, 0.2681			-	
c. Serious assault happened to a close friend or relative							
Yes vs. No	9.90	5.26	1.9	(0.7,5.0)	7.97	1.2	(0.1,17.3)
χ^2, p_{fdr} [c]			1.49, 0.5455			0.02, 0.9774	
d. Murder of a close friend or relative							
Yes vs. No	3.29	4.57	0.8	(0.2,3.1)	6.46	0.5	(0.0,11.0)
χ^2, p_{fdr} [c]			0.09, 0.8252			0.17, 0.9774	
e. Suicide of a close friend or relative							
Yes vs. No	12.44	5.91	2.2	(0.9,5.4)	7.12	1.8	(0.1,28.6)
χ^2, p_{fdr} [c]			2.65, 0.4821			0.17, 0.9774	
f. Attempted suicide of a close friend or relative							
Yes vs. No	6.18	3.00	2.0	(0.6,7.1)	5.86	1.0	(0.0,22.3)
χ^2, p_{fdr} [c]			1.13, 0.5754			<0.01, 0.9774	
g. Combat death of a close friend or relative							
Yes vs. No	19.33	23.55	0.9	(0.5,1.7)	31.26	0.5	(0.1,2.7)
χ^2, p_{fdr} [c]			0.13, 0.8252			0.55, 0.9774	
h. Accidental death of a close friend or relative							
Yes vs. No	9.51	11.72	0.7	(0.3,1.6)	9.54	0.9	(0.1,11.2)
χ^2, p_{fdr} [c]			0.66, 0.6997			0.01, 0.9774	
i. He/She witnessed someone being seriously injured or killed							
Yes vs. No	22.90	19.74	1.5	(0.8,2.8)	22.64	1.1	(0.2,6.7)
χ^2, p_{fdr} [c]			1.42, 0.5455			0.02, 0.9774	
j. He/She discovered or handled a dead body							
Yes vs. No	15.22	19.94	0.8	(0.4,1.6)	22.71	0.6	(0.1,3.6)

χ^2, p_{fdr} [c]			0.36, 0.6997			0.27, 0.9774	
k. He/She had a life-threatening illness or injury							
Yes vs. No	3.29	3.71	0.9	(0.2,3.5)	0.54	6.8	(0.0,-)
χ^2, p_{fdr} [c]			0.05, 0.8306			0.16, 0.9774	
l. He/She was in a disaster (for example, hurricane, fire, flood, earthquake) where he/she could have died							
Yes vs. No	2.46	15.16	0.2	(0.0,0.6)	7.25	0.3	(0.0,6.7)
χ^2, p_{fdr} [c]			7.50, 0.0868			0.50, 0.9774	
II. Psychiatric Disorders							
Classic Mental Health Disorder (Admin)							
Yes vs No	77.13	38.6	**5.8**	**(3.2,10.5)**	62.59	1.9	(0.4,8.8)
χ^2, p_{fdr} [c]			**33.40, <0.0001**			0.75, 0.3862	
II. Recent Stressful Events							
a. A serious financial problem							
Past month vs. Never	17.29	7.72	2.6	(1.1,5.8)	11.02	1.5	(0.1,15.4)
Lifetime vs. Never	21.23	21.79	1.0	(0.5,1.9)	30.00	0.6	(0.1,3.3)
χ^2, p_{fdr} [c]			5.11, 0.1418			0.57, 0.9767	
b. Spouse or partner left him/her							
Past month vs. Never	22.24	1.94	**16.4**	**(4.4,61.4)**	5.59	4.7	(0.2,104.0)
Lifetime vs. Never	23.94	17.62	**2.0**	**(1.1,3.9)**	30.25	1.0	(0.2,4.7)
χ^2, p_{fdr} [c]			**19.93, <0.0001**			1.01, 0.9767	
c. He/She went through a divorce							
Past month vs. Never	2.36	2.74	0.6	(0.1,3.4)	0.88	2.8	(0.0,-)
Lifetime vs. Never	18.40	15.12	1.4	(0.7,2.8)	15.42	1.3	(0.2,9.7)
χ^2, p_{fdr} [c]			1.16, 0.6716			0.14, 0.9767	
d. Spouse or partner cheated on him/her							
Past month vs. Never	6.65	0.00	-	-	1.57	4.6	(0.0,-)
Lifetime vs. Never	18.87	8.93	2.5	(1.2,5.5)	17.15	1.2	(0.2,7.9)
χ^2, p_{fdr} [c]			5.46, 0.1418			0.30, 0.9767	
e. Serious betrayal by someone else close to him/her							
Past month vs. Never	5.54	0.00	-	-	0.00	-	-
Lifetime vs. Never	12.26	13.85	0.9	(0.4,2.0)	10.29	1.3	(0.1,13.8)
χ^2, p_{fdr} [c]			0.03, 0.9969			0.05,0.9767	
f. Serious ongoing arguments or break-up with some other close friend or family member							
Past month vs. Never	13.76	1.66	**10.4**	**(2.5,43.8)**	0.00	-	-
Lifetime vs. Never	13.62	11.20	1.4	(0.6,3.0)	12.14	1.3	(0.1,11.8)
χ^2, p_{fdr} [c]			**10.42, 0.0165**			0.05, 0.9767	
h. He/She caused an accident where someone else was hurt or property was damaged							
Past month vs. Never	4.83	1.70	2.6	(0.5,12.9)	3.14	1.7	(0.0,99.5)

Lifetime vs. Never	5.93	7.95	0.9	(0.3,2.4)	3.32	2.0	(0.0,109.2)
χ^2, p_{fdr} [c]			1.45, 0.6016				0.18, 0.9767
i. He/She didn't get promoted when he/she thought he/she should have been							
Past month vs. Never	0.82	0.68	1.2	(0.1,23.2)	4.02	0.2	(0.0,12.1)
Lifetime vs. Never	14.72	24.47	0.5	(0.2,0.9)	22.25	0.6	(0.1,3.3)
χ^2, p_{fdr} [c]			5.08, 0.1418				0.92, 0.9767
j. He/She got a lower score than he/she expected on his/her efficiency report or performance rating							
Past month vs. Never	4.00	2.19	1.4	(0.3,6.7)	4.41	0.6	(0.0,22.6)
Lifetime vs. Never	4.11	20.11	**0.1**	**(0.0,0.4)**	29.85	0.1	(0.0,0.6)
χ^2, p_{fdr} [c]			**12.67, 0.0081**				6.01, 0.8910
k. He/She received military punishment (for example, Court Martial, Article 15, Captain's Mast, Office Hours, Letter of Reprimand, other)							
Past month vs. Never	16.65	0.00	-	-	0.88	21.6	(0.0,-)
Lifetime vs. Never	13.18	15.88	1.0	(0.5,2.2)	23.19	0.6	(0.1,3.7)
χ^2, p_{fdr} [c]			0.01, 0.9969				0.93, 0.9767
l. He/She had trouble with the police (civilian or military)							
Past month vs. Never	16.54	2.19	**7.9**	**(2.2,28.4)**	2.56	8.1	(0.1,674.8)
Lifetime vs. Never	11.54	17.45	0.7	(0.3,1.4)	7.00	2.1	(0.1,34.9)
χ^2, p_{fdr} [c]			**11.00, 0.0090**				1.10, 0.9767
n. He/She was arrested for an incident not related to driving							
Past month vs. Never	9.79	1.21	**8.8**	**(1.6,47.2)**	0.00	-	-
Lifetime vs. Never	9.08	4.11	2.4	(0.8,7.0)	2.98	3.7	(0.1,229.7)
χ^2, p_{fdr} [c]			**8.48, 0.0370**				0.38, 0.9767
q. He/She experienced some type of perceived failure or humiliation, such as letting down those around him/her in some way							
Past month vs. Never	29.24	2.41	**18.3**	**(5.6,60.1)**	3.44	11.3	(0.2,530.6)
Lifetime vs. Never	13.47	9.93	2.2	(1.0,5.1)	20.21	0.9	(0.1,5.7)
χ^2, p_{fdr} [c]			**25.00, <0.0001**				1.58, 0.9767
r. Any other very stressful event							
Past month vs. Never	24.38	6.02	**5.3**	**(2.2,12.3)**	2.56	11.4	(0.1,952.4)
Lifetime vs. Never	9.47	10.94	0.9	(0.4,2.1)	19.75	0.6	(0.1,3.7)
χ^2, p_{fdr} [c]			**16.09, 0.0030**				1.62, 0.9767

Bold values are statistically significant at p-value <0.05.
Abbreviations: FDR, false discovery rate; OR. odds ratio
[a] ORs statistics obtained from separate multivariate logistic regression models testing differences between cases and each control group.
[b] Each predictor was adjusted for deployment status (never, previously) but not for each other.
[c] *p* values have been corrected using false discovery rate (fdr).
Table abbreviated due to space constraints. Results for excluded variables available upon request.

Table 2a. Next of Kin Multivariable Logistic Regression Model of Suicide With Lifetime Mental Health and Recent Stressors

Characteristics	Next of Kin			
	Controls (Propensity) N=128		Controls (12-month ideation) N=108	
	OR	(95% CI)	OR	(95% CI)
I. Demographics				
Deployment				
Never vs. Previous	0.68	(0.21, 2.25)	0.85	(0.13, 5.67)
Wald χ^2, P-value	0.3899, 0.5323		0.0294, 0.864	
Years Active				
5-8' vs. 1-4'	0.69	(0.21, 2.24)	0.99	(0.16,5.94)
9+ vs. 1-4'	0.55	(0.17,1.81)	1.0	(0.16,6.25)
Wald χ^2, P-value	0.9825, 0.6119		0.0003, 0.9999	
II. Recent Stressful Events				
Spouse or partner left them				
Past Month vs. Never Happened	**8.45**	**(2.0,35.78)**	2.62	(0.27,25.62)
Happened, but not in past month vs. Never Happened	0.63	(0.25,1.6)	0.8	(0.18,3.64)
Wald χ^2, P-value	**9.788, 0.0075**		0.8803 0.6439	
He/She received military punishment (e.g., Court Marshall, Article 15, Captain's Mass, Office Hours, Letter of Reprimand, other)				
Past Month vs. Never Happened	**25.32**	**(3.11,206.16)**	2.7	(0.28,26.57)
Happened, but not in past month vs. Never Happened	**0.22**	(**0.06**,**0.78**)	0.46	(0.06,3.5)
Wald χ^2, P-value	**14.6682, 0.0007**		1.4245, 0.4906	
He/She had trouble with police				
Past Month vs. Never Happened	5.11	(0.15,169.56)	1.01	(0.03,36.79)
Happened, but not in past month vs. Never Happened	**6.3**	**(1.8,22.03)**	2.58	(0.39,16.91)
Wald χ^2, P-value	**8.9306, 0.0115**		0.9844,0.6113	
He/She experienced some type of perceived failure or humiliation, such as letting down those around him/her in some way				
Past Month vs. Never Happened	**9.25**	**(2.44,35.10)**	3.61	(0.38,34.57)
Happened, but not in past month vs. Never Happened	2.07	(0.78,5.51)	1.75	(0.32,9.61)
Wald χ^2, P-value	**10.9739, 0.0041**		1.3702, 0.504	
III. Psychiatric Disorder				
Lifetime Classic Mental Health Disorder (Admin)				
Yes vs. no	**3.84**	**(1.46,10.12)**	1.6	(0.32,8.07)
Wald χ^2, P-value	**7.3933, 0.0065**		0.3231, 0.5697	

Bold values are statistically significant at p-value <0.05.

Abbreviations: OR. Odds Ratio; CI. Confidence Interval

Multivariable Logistic regression model was constructed using predictors still significant at $p \leq 0.05$ after FDR adjustment. The model was corrected with Firth's penalized likelihood method to help address small sample size bias.

Table 2b. Supervisor Multivariable Logistic Regression Model of Suicide with Lifetime Mental Health and Recent Stressors

Characteristics	Supervisor			
	Controls (Propensity) N=80		Controls (12-month ideation) N=73	
	OR	(95% CI)	OR	(95% CI)
I. Demographics				
Deployment				
Never vs. Previous	2.13	(0.87,5.22)	0.77	(0.15,3.92)
Wald χ^2, P-value	2.723, 0.0989		0.0956, 0.7571	
II. Recent Stressful Events				
Spouse or partner left them				
Past Month vs. Never Happened	**14.48**	**(2.9, 72.26)**	4.26	(0.38,47.32)
Happened, but not in past month vs. Never Happened	**3.39**	**(1.39, 8.24)**	1.31	(0.27,6.29)
Wald χ^2, P-value	**14.3883, 0.0008**		1.39, 0.4991	
Received lower score than expected on performance report				
Past Month vs. Never Happened	1.27	(0.15,10.57)	0.23	(0.01,3.67)
Happened, but not in past month vs. Never Happened	**0.03**	**(0.01,0.14)**	**0.08**	**(0.01,0.68)**
Wald χ^2, P-value	**19.1003, <0.0001**		**6.0036, 0.0497**	
Experienced perceived failure/humiliation				
Past Month vs. Never Happened	**15.10**	**(4.07,56.08)**	3.42	(0.43,26.89)
Happened, but not in past month vs. Never Happened	**5.84**	**(1.65,20.61)**	1.33	(0.21,8.51)
Wald χ^2, P-value	**20.376, <0.0001**		1.3809, 0.5013	
Any other stressful event				
Past Month vs. Never Happened	**3.89**	**(1.44,10.54)**	4.42	(0.41,47.57)
Happened, but not in past month vs. Never Happened	1.26	(0.38,4.21)	0.57	(0.09,3.65)
Wald χ^2, P-value	**7.1521, 0.028**		1.9503, 0.3771	
III. Psychiatric Disorder				
Lifetime Classic Mental Health Disorder (Admin)				
Yes vs. no	**4.47**	**(2.18,9.15)**	2.51	(0.58,10.81)
Wald χ^2, P-value	**16.7647, <0.0001**		1.5251, 0.2169	

Bold values are statistically significant at p-value <0.05.
Abbreviations: OR. Odds Ratio; CI. Confidence Interval
Multivariate Logistic regression model was constructed using predictors still significant at $p \leq 0.05$ after FDR adjustment. The model was corrected with Firth's penalized likelihood method to help address small sample size bias.

Table 3a. Next of Kin Risk Score Logistic Regression Model for Suicide

	Next of Kin			
	Controls (Propensity)		Controls (12-month ideation)	
	n	Weighted %	n	Weighted %
Risk Score: # of at risk events				
0	106	84.25	88	81.41
1	16	11.41	13	12.65
2	5	2.38	4	3.79
3	1	1.96	3	2.14
4	-	-	0	0.00
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
Mean	0.23		0.28	
Median	0		0	
Mode	0		0	
Q1	0		0	
Q3	0		0	
Minimum				
Maximum				
Std	0.55		0.67	
Logistic model with Risk Score + Deployment + Years Active				
	OR	**(95% CI)**	**OR**	**(95% CI)**
Score construct (continuous var)	**2.739**	**(1.9, 3.9)**	2.216	(1.0, 4.5)
χ^2,p-value	**31.4322, <0.0001**		3.78, 0.0517	
AUC	0.7545 (0.7,0.8)		0.7484 (0.7,0.8)	
Score Construct (Categorical var) 1+ vs. 0	**8.339**	**(4.4, 15.8)**	**5.923**	**(1.5, 24.0)**
χ^2,p-value	**42.0359, <0.0001**		**6.237, 0.0125**	
AUC	0.7382 (0.7,0.8)		0.7267(0.7,0.8)	

Bold values are statistically significant at p-value <0.05.
Abbreviations: OR. Odds Ratio; CI. Confidence Interval; AUC. Area under the receiver operator characteristic curve.
Variables for constructing risk score construct included whether the soldier experienced (1) Spouse or partner left them, (2) Serious betrayal of someone close, (3) Serious argument/breakup with close friend or family member, (4) Caused accident where someone else was hurt/property damaged, (5) Didn't get promoted when they thought they should have been, (6) Received military punishment, (7) Had trouble with police, (8) Arrested for driving violations, (9) Experienced perceived failure/humiliation, (10) Any other stressful event within the past month.
Deployment status (never, previously) and Years Active (1-4', 5-8', 9+) were controlled for in the model. The model was corrected with Firth's penalized likelihood method to help address small sample size bias.

Table 3b. Supervisor Risk Score Logistic Regression Model for Suicide

	Supervisor			
	Controls (Propensity)		Controls (12-month ideation)	
	n	Weighted %	n	Weighted %
Risk Score: # of at risk events				
0	71	89.39	66	88.41
1	4	6.11	6	9.03
2	5	4.49	1	2.56
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
Mean	0.18		0.11	
Median	0		0	
Mode	0		0	
Q1	0		0	
Q3	0		0	
Minimum				
Maximum				
Std	0.52		0.36	
Logistic Model with Risk Score + Deployment				
	OR	**(95% CI)**	**OR**	**(95% CI)**
Score construct (continuous var)	**4.7**	**(2.9, 7.4)**	**3.9**	**(1.7, 14.0)**
χ^2,p-value	**42.12, <0.0001**		**4.23, 0.0395**	
AUC	0.7610 (0.7,0.8)		0.7754 (0.7,0.8)	
Score Construct (Categorical var) 1+ vs. 0	**13.0**	**(6.7, 25.3)**	**8.6**	**(1.4, 51.5)**
χ^2, p-value	**57.13, <0.0001**		**5.49, 0.0191**	
AUC	0.7571 (0.7, 0.8)		0.7825 (0.7,0.8)	

Bold values are statistically significant at p-value <0.05.

Abbreviations: OR. Odds Ratio; CI. Confidence Interval; AUC. Area under the receiver operator characteristic curve.

Variables for constructing risk score construct included whether the soldier experienced (1) Spouse or partner left them, (2) Serious argument/ breakup with other close friend or family member, (3) Had trouble with the police, (4) Arrested for non-driving violation, (5) Experienced perceived failure/humiliation, (6) Any other stressful event within the past month. Deployment status (never, previously) was controlled for in the model. The model was corrected with Firth's penalized likelihood method to help address small sample size bias.

Figure 1a. Stressful Life Events and Suicide Risk Next of Kin

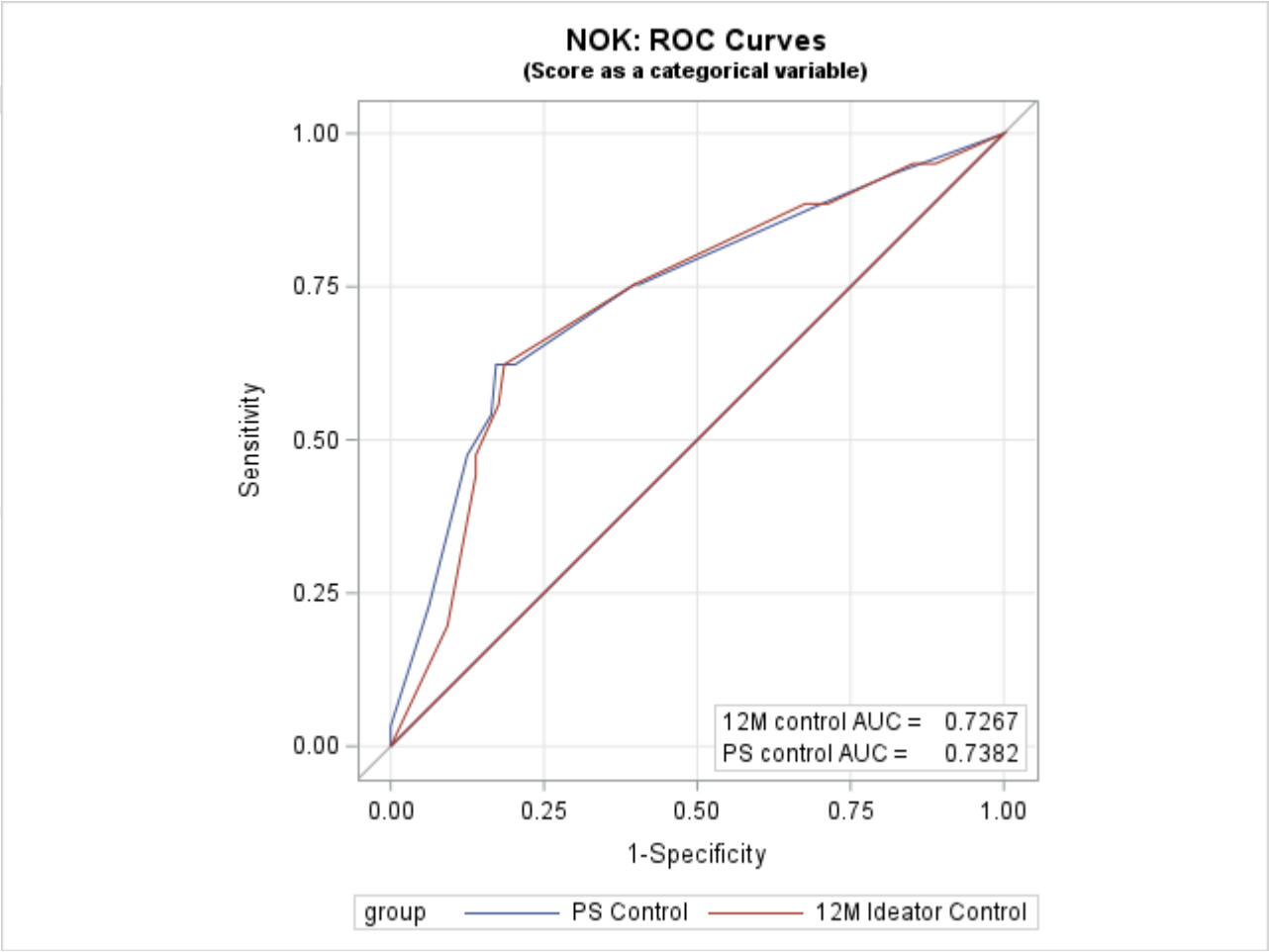

Figure 1b. Stressful Life Events and Suicide Risk Supervisor