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Prevalence of Childhood Abuse among Army National Soldiers And Its Relationship to Adult Suicidal Behavior

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Abstract

The present study examined childhood abuse (namely, self-reported early childhood harsh punishment and physical abuse from parents) and its relationship to adult suicidal behavior among Army National Guard soldiers. Data were obtained from routinely administered surveys to soldiers, called the Unit Risk Inventory (N = 12,567 soldiers in 180 company-sized units). Due to the grouped nature of survey responses (soldiers within units), hierarchical logistic regression was used to estimate the prevalence of self-reported childhood abuse and its relationship to current suicide risk. Results showed prevalence rates of 16.0% for harsh punishment and 7.8% for physical abuse, generally consistent with those of past studies investigating childhood abuse among civilian and military populations. Soldiers who reported childhood abuse were 3 to 8 times more likely to report suicidal behavior (i.e., thought about suicide, made plans, or had attempted), with the highest likelihood of such behaviors for self-reported physical abuse. Level 2 or unit level effects were also evident: Harsh punishment and physical abuse were associated with suicidal behaviors, but the effects were less evident. Accordingly, individual self-reported experience of punishment and abuse were prominent risk factors for suicidal behavior.

Since 2004, suicides in the U.S. Army have risen, particularly in the Army National Guard (ARNG). Suicide rates for the Army climbed from about 13.7 per 100,000 in 2005 to 20.2 in 2008 (Army Health Promotion, Risk Reduction, and Suicide Prevention Report, 2010). The latter rate was higher than the most recently available suicide rate for the matched age civilian population, which was 19.2 per 100,000 (Centers for Disease Control and Prevention, 2011). Suicide rates for the ARNG increased starting in 2006 and, in 2010, exceeded that of the active component Army (31 per 100,000 vs. 25 per 100,000) and the Army Reserve (24 per 100,000) as well as the most recently available civilian age-adjusted rate of 20.3 per 100,000 (Army Health Promotion, 2010). These increases are especially disconcerting when considering that suicide rates for the military, historically, have been well below those of age-adjusted civilian rates (Cassimatis & Rothberg, 1997) and that suicide rates have been lowest during wars (Rothberg, Holloway, & Ursano, 1987). Consequently, Army leaders and researchers have sought to understand this increase and reverse the apparent trend.

Early hypotheses regarding the increased prevalence of suicide centered on stressors associated with combat exposure (Black, Gallaway, & Bell, 2011; Army Health Promotion, 2010). Indeed, initial suicide rates were highest among forces most involved in ground combat operations, namely, the Marine and Army personnel (Army Health Promotion, 2010). Studies since have shown little to no relationship of combat exposure to social behavior (Army 2020: Generating Health and Discipline in the Force, 2012; Griffith, 2012a), and for the ARNG, suicide rates have remained high even with fewer deployments. Thus, the question of what might explain the increased rate of suicides still remains largely unanswered. This study attempts to provide some answers concerning suicide in the military, specifically, in the ARNG, by examining childhood abuse and its association with suicidal behavior.

Perspectives on Suicide

The research literature contains several perspectives on suicide, each with somewhat different emphases on relevant explanatory variables for suicide, and thus, offers potentially multiple explanations for this recent increase in the ARNG. These perspectives (summarized in Griffith & Vaitkus, 2013) broadly described include: dispositional risk (Merrill, 2010; Klerman, 1987; Shaffer & Fisher, 1981)), stressor-strain (Army Health Promotion, 2010; Brent, 1995; Koeske & Koeske, 1993) and a combination of disposition and stressor (Ingram & Luxton, 2005), social cognitive (Joiner, Van Orden, Witte, & Rudd, 2009), and social cultural / institutional (Durkheim, 1951; Mastroianni & Scott, 2011; Stockard & O'Brien, 2002). The dispositional perspective is of interest here, as supporting evidence to date has accumulated. Analyses of 2007 through 2010 ARNG suicides have shown the primary factors associated with suicide are age (17 to 25 years old), gender (male), and race (white) (Griffith, 2012b). These factors represent fundamental attributes of the individual. There has been less evidence for suicide risk associated with immediate experiences related to military service, such as having been deployed and having had combat exposure. These findings are consistent with analyses of the active component Army suicides, in addition to having behavioral health conditions, which are largely not treated consistently or not at all (Black et al, 2011; Army 2020: Generating Health and Discipline in the Force, 2012; Army Health Promotion, 2010).

With much of the current findings pointing to individual-level dispositional risk factors, an interest in both military and civilian research studies has been childhood trauma. Several studies have observed that having experienced childhood trauma increases the risk for suicide attempts and suicide later in adulthood. For example, Felitti, Anda, Nordenberg, Williamson, Spitz, et al. (1998) examined several childhood adversities: emotional abuse, physical abuse,

sexual abuse, substance abuse, criminal behavior of parents, and violent treatment of the mother. People reporting four or more of these past adversities were 4 to 12 times more likely to have attempted suicide than those who had no adversities. In another study, Dube, Anda, Felitti, Chapman, Williamson, and Giles (2001) reported that adult participants in the Adverse Childhood Experiences Study who reported childhood negative experiences were 2 to 5 times more likely to have attempted suicide than those adults without such experiences. Adverse experiences included emotional abuse, physical abuse, sexual abuse, substance abuse in the household, mental illness in the family, and parents separated or divorced. Brown, Cohen, Johnson, and Smailes (1999) observed adolescents and young adults who reported childhood abuse and neglect were 1.5 to 4.0 times more likely to have attempted suicide in adulthood than those who had not such experiences. Researchers also found that current financial hardship was associated with suicidal behavior. In more recent studies, Hardt et al. (2008) observed that early childhood experiences of violence, sexual abuse, and harsh physical punishment in particular, were associated with increased suicide attempts. Mironova et al. (2011) reviewed current studies that had reported findings on the relationship of childhood physical abuse and later suicide-related behaviors. They found an association between childhood physical abuse and suicidal behavior. Other studies have also reported associations between early childhood trauma and increased the risk for negative health outcomes, including suicide and suicide attempts, during later adulthood (Brodsky & Stanley, 2008; Gamefski & Diekstra, 1997; Read, Agar, Barker-Collo, Davies, & Moskowitz, 2001).

Research Gaps and Study Questions

Childhood abuse and its association with adulthood suicidal behavior is not new, but there are few, if any, studies examining this association in military samples, in particular, in the

current context of increased prevalence of suicide in the military. One recent exception is the study conducted by Perales, Gallaway, Forys-Donahue, Spiess, and Millikan (2012). They examined childhood abuse and its association with suicidal behavior. Ongoing routine data collections allowed deriving prevalence estimates of childhood trauma among active duty Army personnel (e.g., the Army Behavioral Health Integrated Data Environment (ABIDE) and the suicide surveillance database of the Behavioral and Social Health Program). Among suicides, the prevalence of childhood trauma (i.e., family problems and abuse) was 43.3%, and among attempters, was 64.7%. The sample, however, included only active duty Army personnel. Due to the part-time nature of reserve military services and legal complexities, such data are not routinely available, leading to limited data for examining suicide risk in the reserve component, in particular, childhood experiences. The result is that there have been few, if any, studies investigating the prevalence of childhood abuse among personnel in the reserve component, which includes the ARNG.

This topic is of particular interest due to the increased prevalence of suicide among ARNG personnel and the increased role reservists play in U.S. national defense. The U.S. Army reserve component consists of the ARNG (numbering about 360,000) and the Army Reserve (numbering about 200,000), and at times, comprised 30% to 40% of the ground forces in the Iraq and Afghanistan wars. Moreover, the ARNG has experienced the highest suicide rates among the military services. Clearly, there then is a strong need to examine childhood abuse among reservists and its association with suicidal behavior. This study responded to specific questions regarding childhood abuse and suicide among ARNG soldiers:

- What is the level of self-reported suicidal behavior (suicide thoughts, plans, and attempts)?

- To what extent is suicidal behavior related to self-reported harsh punishment and physical abuse by patents during childhood?

A pervasive interest is whether increased saliency of suicide in itself may trigger subsequent suicidal ideation and behavior, often referred to as the "iatrogenic effect." Group-level effects on suicide risk have been rarely examined. Previously, a few studies have reported no iatrogenic effect (Gould, Marrocco, Kleinman, Thomas, Mostkoff, Cote, et al, 2005; Bryan, Dhillon-Davis, & Dhillon-Davis, 2009). In a more recent study, Kposowa (2013) reported statistically reliable relationships of state-level firearm ownership, political conservatism, and church membership to individual suicide risk. There was an interest in examining this possible effect, due to the particular "nesting" of soldiers in units and subsequent consequences. Soldiers are assigned to units, usually groups of 50 to 100 soldiers, and spend most of their time with other members of the unit and in the physical location of the unit. Consequently, soldiers' military service is defined by the confines of the unit and unit experiences (Griffith, 2002; Shils, 1951). Within the context of this study, it may be that unit members share information, world views, maladaptive coping strategies, and so forth, which somehow lead to increased risk of self-harm within the unit. In terms of the study variables, units with soldiers reporting higher levels of harsh punishment and physical abuse might be expected to have an iatrogenic effect on individual soldiers within that unit. That is, units having higher than self-reported average punishment and abuse relative to others units would confer associated risks to individual soldiers. Accordingly, an additional study question was, Is the relationship of punishment and abuse with suicidal behavior among soldiers associated with units to which they are assigned? To respond to this question, survey data obtained from a large-scale survey of ARNG personnel assigned to company-sized units in garrison or at home station were examined.

Method

This study was part of a series of studies initiated in fall 2010 at the request of the Army's Vice Chief of the Staff to the Director, Army National Guard, to perform in-depth analyses of suicides that occurred in the ARNG. Analyses were performed by research staff of the ARNG Directorate of Personnel, Soldier and Family Support Division. The study complied with both institutional review and protection of human subjects procedures of the Army National Guard Bureau, Surgeon's Office.

Data Source

The data source was ARNG soldiers' responses to a standardized questionnaire, called the Unit Risk Inventory (URI). This inventory was developed and was funded by the U.S. Army (Substance Abuse Program, 2013). It was used as an informal unit assessment of the health and well-being of soldiers. The URI consisted of about 80 questions about current home station experiences—not deployment or postdeployment experiences. Specific content of questions pertained to drug and alcohol substance abuse, suicidal thoughts, negative mood, stressors, perceived supports, and physically harming others, in addition early childhood trauma.

The calendar year 2010 responding sample consisted of 180 company-sized units with a total of 12,567 responding soldiers. Completion rates for soldiers in the units were high, with a mean unit response rate of 70.8% (Mdn = 69.4%) and a range from 36% to 100%. Unit (usually company-sized) leaders administered the survey once a year to assess behavioral health risk behaviors. Unit members voluntarily completed the inventory. To ensure anonymity of survey responses, no soldier background information was obtained. In addition, no personally identifying information was asked or recorded for cases in the data sets, including name, social security number, age, gender, race, rank, and so on. Soldier responses to the URI were optically

scanned into automated data files, which were identified only by unit, usually company-sized units. Due to the guarantees of anonymity made to soldiers, comparisons of demographic characteristics of responding soldiers could not be made to those of the ARNG overall. However, high completion rates by unit likely meant that responding soldiers adequately represented their units, and the distribution of unit types represented in the study sample were not statistically different from those in the ARNG overall ($\underline{X}^2$ (3) = 0.81, ns; combat arms, 47.5% to 45.2%; combat support, 20.2% to 23.0%; combat service support, 29.8% to 29.1%; and other, 2.4% to 2.6%).

Study Measures

There were two primary measures used in this study: childhood abuse and suicidal behavior. Childhood abuse included two questions. The first question asked soldiers, "By today's standards, do you think any of the punishment you received from your parents or guardians would be considered physically abusive,?" called Harsh punishment. And, the second question asked, "By your own standards, do you consider yourself to have been physically abused by your parents or guardians?," called Physical abuse. Suicidal behaviors included three questions, routinely used to assess suicide risk, including questions about having thoughts of suicide, having made a plan, and having attempted suicide (Clum & Curtin, 1993). Specifically, questions asked whether the soldier, "Within the last 12 months," … "Have you had any suicidal thoughts?" "Did you make a plan?," and "Have you attempted suicide?" Soldiers responded "yes" (coded as 1) or "no" (coded as 0) to each question.

Analysis Approach

Of interest were suicidal behaviors (thoughts, plans, and attempts) and how these behaviors were related to self-reported childhood harsh punishment and physical abuse. These

variables were examined both at the individual (soldier) level and group (unit) level. This interest in combination with the "nesting" of soldiers in units required hierarchical linear modeling (Raudenbush, Bryk, Cheong, Congdon, & Toit, 2011). Specifically, the HLM non-linear model with the logit link function was used, as each criterion variable (thoughts, plans, and attempts) were dichotomously coded. The HLM sample size was 11,524 soldiers (listwise deletion across study variables) nested in 180 company-sized units with a mean number of 70 soldiers per unit (Mdn N = 63). At Level 1 (soldier), self-reported thoughts, plans, and attempts were predicted, first, by self-reported Harsh punishment and, second, by self-reported Physical abuse. The predictor variable was group-centered (see Hofman & Gavin, 1998). At level 2 (unit), unit mean punishment or physical abuse was used to predict (1) unit mean self-reported suicidal behavior (whether thoughts, plans, or attempts) and (2) unit variation in the relationship of self-reported suicidal behavior and punishment or physical abuse. The predictor variable was grand mean-centered (see Hofman & Gavin, 1998).

Results

Table 1 displays the prevalence of punishment and physical abuse as reported by the soldiers. Approximately 7.8% (SE = 0.24) of the soldiers reported physical abuse from parents or guardians by the soldiers' own standards. About twice (16.0%; SE = 0.33) as many soldiers reported harsh punishment from parents and guardians relative to today's standards regarding punishment. Overall, suicide risk was low. About 5.9% (SE = 0.21) soldiers reported having thought about suicide in the last 12 months, and about one-half as many having planned suicide (2.2%; SE = 0.13), and one-half of those reported having attempted suicide (0.8%; SE = 0.08).

Insert Table 1 about here

To examine the relationship of self-reported childhood Harsh punishment and Physical abuse by parents to adulthood suicidal behavior, HLM was conducted. HLM is particularly suited when data are grouped (i.e., soldiers in units) and when examining not only individual (soldier) effects but also group (unit) effects. The first step in HLM is to determine whether variance in the criterion variables is related to group or unit membership. Three unconditional models were conducted, one each for suicide thoughts, plans, and attempts. An unconditional model is when only the criterion variable is entered as an outcome. For each of the criterion variables, there was statistically significant variation across the units, respectively, for suicide thoughts, plans, and attempts, $\underline{X}^2$ (179) = 308.31, 231.72, and 212.18, $\underline{p} < .001$. Variance accounted by unit membership was, however, very small, 1.1%, 0.4%, and 0.3%, respectively for thoughts, plans, and attempts. Next, three pairs of conditional models were conducted, one for each criterion variable (suicide thoughts, plans, or attempts). For each pair, predictor variables were either self-reported Harsh punishment or Physical abuse and presented in one table.

Suicidal Thoughts

Table 2 reports results HLM results for the prediction of suicidal thoughts by self-reported punishment and then physical abuse.

Insert Table 2 about here

At Level 1 or the soldier level, both self-reported Harsh punishment and Physical abuse were associated with increased risk of suicide thoughts. Harsh punishment increased the odds of suicidal thoughts by 2.40, and Physical abuse increased the odds of suicidal thoughts by 4.03. There also was evidence of a unit cross-level interaction. At Level 2 or the group level, units having higher than average punishment and abuse were significantly more likely to have soldiers who reported suicidal thoughts, respectively, Odds Ratio = 6.27 and 159.74. In addition, the relationship of Physical abuse to suicidal thoughts varied by unit. Specifically, as Physical abuse increased in units, the strength of the association between abuse and suicidal thoughts weakened, although the effect size was very small. Noteworthy is that Level 1 or soldier effects were statistically significant even with the Level 2 or unit effects were considered. Thus, punishment and abuse were still important predictors of suicidal ideation despite group or unit effects -- that is, individuals' self-reported experiences of punishment and abuse and their association with suicidal thoughts are important even when controlling for group effects.

Suicide Plans

Table 3 reports results HLM results for the prediction of suicide plans by self-reported punishment and then physical abuse.

Insert Table 3 about here

At Level 1 or the soldier level, both self-reported Harsh punishment and Physical abuse were associated with increased risk of suicide plans, increased odds of 2.76 and 3.77, respectively. There was also a unit level effect. Units having higher than average Physical abuse were significantly more likely to have soldiers who reported suicide plans, Odds Ratio = 47.51.

Relationships of punishment and physical abuse to suicide plans did not vary significantly by unit. As observed for suicidal thoughts, Level 1 or soldier effects were statistically significant even with the Level 2 or unit effects included. Thus, punishment and abuse were prominent predictors of suicide plans at the individual level even when considering group or unit effects.

Suicide Attempts

Table 4 reports results HLM results for the prediction of suicide attempts by self-reported punishment and the physical abuse.

Insert Table 4 about here

At Level 1 or the soldier level, both self-reported Harsh punishment and Physical abuse were associated with increased risk of suicide attempts, increased odds of 3.19 and 7.59, respectively. There was no evidence of a unit cross-level interaction.

To summarize results of the HLM analyses, associations between self-reported harsh punishment and physical abuse were most evident at Level 1 or the soldier level. Level 2 or unit level effects were also evident. Harsh punishment and physical abuse were associated with suicidal behaviors, but the effects were less evident. Even so, Level 1 or soldier effects remained prominent predictors of suicidal behavior, even when the Level 2 or unit effects were considered. Accordingly, individuals' self-reported experience of punishment and abuse were prominent risk factors for suicidal behavior.

Discussion

The purpose of this study was to examine childhood abuse among ARNG soldiers and its association with adulthood suicidal behavior. Using survey data obtained from the URI

administered to garrison units (12,567 responding soldiers in 180 company-sized units) during calendar year 2010, 16.0% of the soldiers reported harsh punishment from parents during childhood. A smaller percentage reported physical abuse by parents, 7.8%. These estimates fall within a range of those reported earlier. Dube et al. (2001), for example, reported a prevalence estimate of 7.8% physical abuse among a large sample of outpatients having routine health screening, the Adverse Childhood Experiences Study. Perales et al. (2012) reported a prevalence rate of 14.2% of physical, sexual, or emotional abuse among active U.S. Army soldiers who either attempted suicides or committed suicide from 2005 through 2010. In the recent Department of Defense Health-related Behaviors Survey, Barlas, Higgins, Pflieger, and Diecker (2013) reported 17.1% of active duty personnel reported abuse (though lifetime rather than childhood). Future studies should continue scientific sampling of service members, measurements of early childhood adversities, and associations between such adversities and current physical and behavioral health, in particular, for ARNG soldiers given recent increased suicide rates among these service members.

Childhood Abuse and Adult Suicide Risk

Findings reported here suggest that early family environment may play an important role in later suicidal behavior. Adulthood suicide risk was related to both harsh punishment and physical abuse, as recalled by soldiers as having experienced in childhood. Physical abuse especially was associated with suicide risk. Those soldiers who recalled such abuse were 7.5 times more likely to have attempted suicide than those soldiers who had not. Other researchers have also observed associations between childhood adversities and suicidal behaviors in civilian populations (Afifi et al., 2008; Brodsky et al., 2001; Brodsky & Stanley, 2008; Brown et al., 1999; Dube et al., 2001; Felitti et al., 1998; Fergusson, Horwood, & Woodward, 2000; Gamefski

& Diekstra, 1997; Hardt et al., 2008; Mironova et al., 2011; Read et al, 2001; Sarchiapone et al., 2009). Some have reported this risk is greater for men than for women (Spokas, Wenzel, Stirman, Brown, & Beck, 2009). There, too, have been several recent studies reporting on these associations in military populations. For example, Gradus, Shipherd, Suvak, Giasson, and Miller (2012) studied risk factors for suicide among current and former Marines 10 years following recruit training. Stressful and traumatic life events, including childhood physical, sexual, and emotional abuse, showed strong associations with post-recruit training attempts and completed suicide. Lemaire and Graham (2011) reported that among Operation Enduring Freedom (OEF) / Operation Iraqi Freedom (OIF) veterans, prior exposure to physical or sexual abuse and prior suicide attempts were associated with current suicide ideation, as were current depressive or PTSD disorders. Similarly, Belik, Stein, Asmundson, and Sareen (2009) examined associations between lifetime trauma and suicide attempts in a large cross-sectional sample of Canadian military personnel. In that study, suicide attempts showed greater association with past sexual and interpersonal trauma (e.g., sexual assault, spousal abuse, child abuse) than with more recent deployment and combat experiences. Unfortunately, in the present study, gender and age were not asked of soldiers in the URI due to its guarantees of anonymity, and thus, could not be used in analyses.

Possible Explanatory Mechanisms

How can these associations be explained in terms of underlying mechanisms of childhood maltreatment by parents? Having experienced childhood harsh punishment and physical abuse likely relates to later adulthood experience of stressful circumstances and ways in which the individual copes with such circumstances. Having experienced abuse early in life in the home environment may develop a tendency to perceive and experience stressful as being catastrophic

and insurmountable (Fetzner, McMillan, Sareen, & Asmundson, 2011; Lochner, Seedat, Allqulander, Kidd, Stein, & Gerdner, 2010). It may also be that having experienced abuse provides little opportunity for the child to effectively cope when stressed, due to having habitually experienced adversities in a powerless position, having little recourse – "learned helplessness" (Peterson & Selgiman, 1983) and may lead to reduced ability to handle future stressful circumstances (Hardt et al., 2008; Min, Farkas, Minnes, & Singer, 2007). Too, having experienced physical abuse may develop violence, in particular to the self, as a way of coping when personally distressed (Hardt et al., 2008; Rajalin, Hirvikoski, & Jokinen, 2012). Finally, a very recent explanation of childhood abuse's relationship to later adult behaviors is object relations theory, summarily described by Bedi, Muller, and Thornback (2013). Accordingly, those who experience childhood abuse internalize experiences of abusive interactions, particularly, those involving parents and significant others. These then result in maladaptive representations of self and others, influencing how the individual thinks about and makes meaning of interpersonal relationships (Lovett, 2007; McCluskey, 2010), often resulting in dissatisfaction in intimate relationships and difficulty trusting others throughout the individual's life (Browne & Finkelhor, 1986; Colman & Widom, 2004; Kealy et al., 2011). Though speculative, these interpretations deserve further examination in future research studies. Findings here do suggest screening prospective recruits and current soldiers not only current behavioral health condition but also early childhood experiences which might make them more at risk for suicide and other negative health behaviors (Gradus et al., 2010; Warner, Appenzeller, Parker, Warner, & Hoge, 2011). Those screened positive can be referred for further examination and preventive measures.

A word must be said about the associations of unit membership with reported childhood abuse and suicidal behavior. Unit level effects may be an artifact of way the ARNG recruits its members. National Guard units draw their members from local communities. Relationships between the unit membership and negative health behaviors may then relate to regional characteristics, such as socioeconomic conditions, which in turn may relate to the study variables. That is, children in low socioeconomic conditions may experience more harsh childhood conditions and on having matured to young adulthood are recruited into local units.

Study Limitations

Several limitations of the present study should be mentioned. One obvious limitation has to do with the data set not designed explicitly for the purposes of the present study. Data for study variables, both childhood abuse and self-harm, were obtained from single survey items. Data quality relied on the extent to which the respondent could recall and accurately report past experiences, in particular, childhood events. Available data do not take into account lifetime engagement of suicidal behavior and its relationship to childhood abuse, in addition to other developmental experiences that contribute to suicide risk, including poor family communication, loss of caregiver due to separation or death, and psychopathology among primary family members (Wagner, 1997). Questions asked about the soldier's experience of childhood abuse included language subject to the individual soldier's interpretation, i.e., "by your own standards." Although those soldiers who responded to perceived abuse probably were abused, subjective understanding of the question wording likely introduced some error. That is, some participants may have been physically abused but do not perceive this experience as abusive. Lastly, the survey's guarantee of anonymity prevented collection of key information, such as age, gender, and race, for consideration in analyses and in determining the representativeness of the sample.

Noteworthy is that completion rates for soldiers in the participating units were high, and therefore, likely represented the units to which soldiers were assigned, and units in the study sample did show a similar distribution of unit types (i.e., combat arms, combat support, combat service support, and other) as that observed in the ARNG. Future research studies might seek improvements in each of these areas.

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Table 1

Prevalence Rates for Self-reported Childhood Physical Abuse and Harsh Punishment

Childhood abuse	Prevalence estimate	SE	Total N for estimate
Harsh punishment by parents	16.0%	0.33	12,561
Physically abused by parents	7.8%	0.24	12,567

Table 2

HLM Logistic Regression Analyses: Prediction of Suicidal Thoughts by Soldier Self-reported Harsh Punishment and Physical Abuse by Parents

		Criterion: Suicide thoughts		
Predictor				
Level 1 (soldier)	Coefficient	SE	Odds-Ratio	p-level
Intercept	-2.856	0.052	0.057	.001
Punishment	0.875	0.085	2.398	.001
Level 2 (unit)		Criterion: Unit mean for thoughts		
Punishment	1.835	0.784	6.267	.020
		Criterion: Unit mean r between punishment and thoughts		
Punishment	-0.246	1.300	0.782	.850

		Criterion: Suicide thoughts		
Predictor				
Level 1 (soldier)	Coefficient	SE	Odds-Ratio	p-level
Intercept	-2.890	0.052	0.056	.001
Physical abuse	1.394	0.101	4.033	.001
Level 2 (unit)		Criterion: Unit mean for thoughts		
Physical abuse	5.074	1.254	159.735	.001
		Criterion: Unit mean for r between physical abuse and thoughts		
Physical abuse	-6.397	2.371	0.002	.010

Note. N = 180 company-sized units, 11,524 soldiers.

Table 3

HLM Logistic Regression Analyses: Prediction of Suicide Plans by Soldier Self-reported Harsh Punishment and Physical Abuse by Parents

		Criterion: Suicide plans		
Predictor				
Level 1 (soldier)	Coefficient	SE	Odds-Ratio	p-level
Intercept	-3.911	0.073	0.020	.001
Punishment	1.015	0.141	2.760	.001
Level 2 (unit)		Criterion: Unit mean for plans		
Punishment	1.237	1.09	3.446	.260
	Criterion: Unit mean for r between punishment and plans			
Punishment	-1.675	1.994	0.187	.401

		Criterion: Suicide plans		
Predictor				
Level 1 (soldier)	Coefficient	SE	Odds-Ratio	p-level
Intercept	-3.923	0.070	0.020	.001
Physical abuse	1.328	0.159	3.772	.009
Level 2 (unit)		Criterion: Unit mean for plans		
Physical abuse	3.861	1.461	47.505	.001
	Criterion: Unit mean for r between physical abuse and plans			
Physical abuse	-4.021	3.577	0.018	.261

Note. N = 180 company-sized units, 11,524 soldiers.

Table 4

HLM Logistic Regression Analyses: Prediction of Suicide Attempts by Soldier Self-reported Harsh Punishment and Physical Abuse by Parents

		Criterion: Suicide attempts		
Predictor				
Level 1 (soldier)	Coefficient	SE	Odds-Ratio	p-level
Intercept	-4.912	0.098	0.007	.001
Punishment	1.159	0.196	3.187	.001
Level 2 (unit)		Criterion: Unit mean for attempts		
Punishment	-0.286	1.507	0.751	.850
	Criterion: Unit mean for r between punishment and attempts			
Punishment	-1.893	3.022	0.151	.531

		Criterion: Suicide attempts		
Predictor				
Level 1 (soldier)	Coefficient	SE	Odds-Ratio	p-level
Intercept	-5.031	0.099	0.007	.001
Physical abuse	2.027	0.209	7.591	.001
Level 2 (unit)		Criterion: Unit mean for attempts		
Physical abuse	0.984	2.419	2.676	.685
	Criterion: Unit mean for r between physical abuse and attempts			
Childhood abuse	-3.834	6.049	0.022	.526

Note. N = 180 company-sized units, 11,524 soldiers.