



Research article

Victimization and adversity among children experiencing war-related parental absence or deployment in a nationally representative US sample



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ABSTRACT

This study compares children and youth who have experienced lifetime war-related parental absence or deployment with those having no such history on a variety of victimization types, non-victimization adversity, trauma symptoms, and delinquency; and assesses whether cumulative adversity and victimization help to explain elevated emotional and behavioral problems among children of parents who have experienced war-related absence or deployment. The National Surveys of Children's Exposure to Violence (NatSCEV) are comprised of three cross-sectional telephone surveys conducted in 2008, 2011, and 2014. Data were collected on the experiences of children aged one month to seventeen years. In each survey, interviews were conducted with youth 10–17 years old and with caregivers of children 0–9 years old. The analyses use pooled data from all three U.S. nationally-representative samples (total sample size of 13,052). Lifetime parental war-related absence or deployment was a marker for elevated childhood exposure to a wide array of victimization and adversity types. Cumulative past year exposure to multiple forms of victimization and adversity fully explained elevated trauma symptoms and delinquency in this population of children. Given the breadth of victimization and adversity risk, children with histories of parental war-related absence or deployment, as well as their families, represent important target groups for broad-based prevention and interventions to reduce exposure and ameliorate consequences when it does occur.

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The number of US military personnel that were deployed in Afghanistan and Iraq between 2001 and 2011 exceeded 2.3 million (Martinez & Bingham, 2016). This cohort of military have also experienced the longest, most frequent, and most cumulative number of deployments in U.S. history (Tanielian & Jaycox, 2008). Because almost one half the nation's military also have children under 18, this trend inevitably impacts them. In fact, nearly 1 million U.S. children had at least one parent deployed to either Afghanistan or Iraq (Card et al., 2011; U.S. Department of Veterans Affairs, 2016). Moreover, given the substantial number of civilians employed in war-zone contractor roles during this time periods (Isenberg, 2012), the potential for war-related parental absence is even greater.

Concern over the consequences of parental deployment for children can be seen in several kinds of studies. Some document increased internalizing and externalizing symptoms in children during deployment periods (Kelley et al., 2001; Rabenhorst et al., 2015); some show more symptoms in children of deployed parents relative to children in non-deployed

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military families (Cederbaum et al., 2013; Chandra et al., 2010; Chartrand, Frank, White, & Shope, 2008). Others show elevated symptoms in children of deployed parents compared to population norms of the same measures (Lester et al., 2010; Mustillo, Wadsworth, & Lester, 2015) and still others show greater problems among military-connected youth during war time (without specifically assessing deployment) relative to youth in non-military families within the same communities (Sullivan et al., 2015). At the same time, several studies also highlight the resilience and adaptability of children and youth from military families (Easterbrooks, Ginsburg, Lerner, 2013; Lucier-Greer et al., 2016). Although, taken as a whole, research suggests only moderately elevated emotional and behavioral problems among children of deployed parents (Card et al., 2011), there is less research addressing factors that explain their greater risk.

Adjustment problems among children of deployed parents likely stem from both the emotional difficulties and the practical challenges associated with an absent parent, both for the child and for the remaining parent (Card et al., 2011). Research finds, for example, that high levels of residential and school changes, as well as some aspects of school climate in military-connected schools, are important correlates of adjustment problems (De Pedro, Astor, Gilreath, Benbenishty, & Berkowitz, 2015; Esqueda, Astor, & De Pedro, 2012).

However, the literature also suggests a broader risk of adversity within families who have experienced deployment. Such risk is consistent with the concept of “stress proliferation” whereby exposure to one stressor, whether it is a stressful event or ongoing hardship, may lead to exposure to other “secondary stressors” over time (Pearlin, 1989). These secondary stressors in turn can exert additional independent effects on emotional and behavioral health. As Pearlin writes: “People’s lives can be caught up in a temporal proliferation of stressors, where repeatedly one or more stressors follow others through time (Pearlin, 2010; p. 213). In this way, children can experience strings and clusters of stressors, which can persist and contribute to cumulative adversity (Turner & Butler, 2003; Turner, Finkelhor, & Ormrod, 2006). Thus, emotional and behavior difficulties experienced by children who have experienced parental deployment likely arise from by a series of interrelated hardships and problematic experiences.

Deployment, traumatic combat experiences, social network disruptions, and difficulty reintegrating back into civilian society, all have the potential to create additional stressors that extend far beyond the deployment experience itself. For example, past studies suggest that veterans are more likely to be unemployed (Loughran, 2014), have elevated risk of physical illness, such as respiratory disease (Miller, 2013), have greater problems with drug and alcohol abuse (Fear et al., 2007; Jacobson et al., 2008), are more likely to experience homelessness (Fargo et al., 2011), and are at greater risk of suicide (Kaplan, McFarland, Huguette, & Newsom, 2012). Although each one of these events or conditions can negatively impact the well-being of children, the accumulation of such adversities can be especially damaging (Turner et al., 2006).

Past research also suggests that children with histories of parental deployment are at elevated risk for maltreatment. Several studies found that rates of child abuse and neglect increased substantially during the periods of deployment (Finkelhor, Ormrod, & Turner, 2007; McCarroll et al., 2010; Monson, Taft, & Fredman, 2009; Turner et al., 2006), pointing to maltreatment as another potential, and especially impactful, source of stress for children of deployed parents. Other forms of victimization could also be higher in this population. Intimate partner violence (IPV), for example, has been found to be elevated among soldiers who have been in combat, likely due to linkages between post-traumatic stress symptoms and IPV (McCarroll et al., 2010; Monson et al., 2009). Thus, children of deployed parents may be at increased risk for witnessing intimate partner violence. Heightened victimization risk could also extend beyond the family context. Several studies have documented substantial co-occurrence of victimization across different types and contexts (for example, maltreatment at home and bullying at school), and demonstrate that experiencing multiple forms of victimization is especially traumatic for children and youth (Finkelhor et al., 2007; Turner, Finkelhor, & Ormrod, 2010).

Most studies addressing risk among children with deployed parents have used samples drawn from US military bases or through lists of active duty personnel, often relying on small and/or convenience samples (Card et al., 2011). Although some studies have utilized population-based samples (e.g. Cederbaum et al., 2013; Sullivan et al., 2015), they are limited to a single geographic area. Such studies do not allow direct comparisons of children who have experienced war-related parental absence or deployment with those who have not, within the US population as a whole. In addition, most studies have focused on the effects of current deployment and/or short-term re-integration post-deployment. However, as discussed above, there is reason to believe that parental deployment may often result in a proliferation of family stressors that can have long-term effects beyond the reintegration period.

The current study uses a large nationally representative sample to: 1) compare children and youth who have experienced war-related parental absence or deployment with those having no such history on a variety of victimization types and non-victimization adversity, and 2) determine the extent to which cumulative past year adversity and multiple victimization might explain elevated trauma symptoms and delinquency among children with lifetime histories of war-related parental absence or deployment.

1. Methods

1.1. Participants

The National Surveys of Children’s Exposure to Violence (NatSCEV) are comprised of three cross-sectional studies conducted in 2008, 2011, and 2014 assessing the experiences of children aged one month to seventeen years. A short interview was conducted with an adult caregiver (usually a parent) in each household to obtain family demographic information. One

child was randomly selected from all eligible children living in a household by selecting the child with the most recent birthday. If the selected child was 10–17 years old, the main telephone interview was conducted with the child. If the selected child was under ten, proxy interviews were conducted by the caregiver ‘who was most familiar with the everyday experiences of the child’.

1.2. Sample

The 2008 sample was obtained from a nationwide sampling frame of residential telephone numbers from which a sample of households was drawn by random digit dialing (RDD), including an over-sampling of U.S. telephone exchanges that had a population of 70% or more of African American, Hispanic, or low-income households. For the 2011 and the 2014 years of data collection, a sampling frame was constructed using 4 sources: (1) an address-based sample (ABS) of households from which cell phone and residential numbers could be dialed, (2) a prescreened sample of households with children from recent national random-digit-dialed surveys, (3) a listed landline sample (with a known child in the household based on commercial lists), and (4) cell phone numbers drawn from a targeted random-digit-dialed sample frame. This multi-step frame construction helped to assure representativeness of the samples and also worked to recruit households with children and cell phone-only households.

Response rates were 50.7% in 2008, 44.6% in 2011, and 29.4% in 2014 (RR4 per AAPOR Guidelines [The American Association for Public Opinion Research, 2016](#)), the variation due in part to a nation-wide decline in telephone response rates but also to the increasing complexity of the NatSCEV sample design in an effort to construct a frame inclusive of children from economically-disadvantaged backgrounds ([AAPOR Cell Phone Task Force, 2010](#); [Blumberg, Luke, Ganesh, Davern, & Boudreaux, 2012](#); [Fahimi, Kulp, & Malarek, 2013](#)). Sample weights were applied to adjust for differential probability of selection due to: a) study design, b) demographic variations in non-response, and c) variations in within household eligibility.

The analysis presented here uses pooled data from these three nationally-representative samples (total sample size of 13,052) in order to have adequate statistical power to study the role of parental deployment in shaping outcomes for children.

1.3. Recruitment

Those sampled by address received a pre-notification letter with a household screening form enclosed. Eligible households who returned the screener received a \$5 check, with the promise of an additional \$20 after the full telephone interview was completed. Households sampled by phone were recruited only when reached by phone and also received the \$20 incentive for completing the interview. Interviews averaged about 50 min in length and were conducted in English or Spanish. Respondents who disclosed a situation of serious threat or ongoing victimization were re-contacted by a clinical member of the research team, trained in telephone crisis counseling, whose responsibility was to stay in contact with the respondent until the situation was appropriately addressed locally. All study materials have been reviewed and approved by the University of New Hampshire’s Institutional Review Board.

1.4. Measurement

1.4.1. Parental deployment. The primary independent variable in this study was whether or not children had any history of parental war-related absence or deployment. Parental deployment was assessed by asking “*Did a parent or someone who takes care of (your child/you) ever have to leave the country to fight in a war, when he or she had to be away for several months or longer?*” Just under 7% of children had a parent who was deployed abroad in their lifetimes.

1.4.2. Adversity. Individual adversities were assessed covering a range of hardships experienced by the child and people close to the child (see [Table 2](#) for complete list). Children aged 10 and older (and caretakers on behalf of younger children) were first asked whether they/the child had ever experienced each type of adversity. Those who responded affirmatively were then asked “*Did this happen in the last year?*” We also created a summary count (ranging from 0 to up to a theoretical maximum of 14 possible adversities) of the total number of these adversities experienced in the past year in order to assess the cumulative effect of having multiple types of adversities. We examine the prevalence of these prior year adversities by parental deployment status individually in [Table 2](#) and then collectively in [Table 3](#) by examining the summary count of prior year adversities in our models.

1.4.3. Victimization. Exposure to victimization was assessed using the Juvenile Victimization Questionnaire (JVQ) ([Hamby, Finkelhor, Ormrod, & Turner, 2004](#)). Six categories of victimization were constructed from the JVQ items to represent any past year exposure to each of the following: peer victimization; sibling victimization (any occurrence on at least one of 10 items, the former in which a peer is the perpetrator, the latter in which a sibling is the perpetrator); maltreatment (4 items); property crime (3 items); sexual victimization (6 items); and witnessing intimate partner violence (4 items). We also constructed a variable of total number of victimization types to which children were exposed in the past year (recorded range from 0 to 14 types).

Table 1
Socio-demographic characteristics of children by lifetime parental deployment status^a.

	War-related Parental Absence/Deployment (n = 786)	No War-Related Parental Absence/Deployment (n = 12,266)	Total (n = 13,052)
Child's age, mean (SE) ^{***}	9.8 (0.28)	8.5 (0.08)	8.6 (0.08)
SES, mean (SE)	−0.08 (0.05)	−0.07 (0.01)	−0.07 (0.01)
Child's gender, %			
Female	45.3	49.1	48.8
Male	54.7	50.9	51.2
Child's race, %			
White	61.9	56.4	56.8
Black	16.2	14.4	14.5
Other	5.2	8.0	7.8
Hispanic	16.3	20.9	20.6

^a Percentages and means are weighted, N's are unweighted.

^{***} F-test comparing differences between means indicate $p < 0.001$.

1.4.4. Demographic characteristics. Measures for each child's gender, age, race/ethnicity (coded into four categories: White non-Hispanic, Black non-Hispanic, Hispanic of any race, and other) are also included in the analysis. In addition, we include a measure of household socio-economic status (SES) which is a composite of two indicators: household income and parental education. The highest parent education attained and the annual household income (both categorical measures) were converted to a standardized scale, summed, and then re-centered to a standardized continuous value. For the 6% of cases with missing data on one of the indicators, the standardized value of the remaining indicator was used to determine SES.

1.4.5. Outcomes. We examined the effect of war-related parental absence on two outcome measures: **delinquency** and **trauma symptoms**. A total delinquency score was tabulated by summing the number of specific types of delinquent acts self-reported by juveniles aged 10 and older in the past year. Delinquency items include: destroying property; physical fights with peers; physical fights with adults; taking property from others; taking money from others; shoplifting; cheating; skipping school; vandalism; carrying a weapon; skipping out on bills; smoking tobacco; smoking marijuana; doing other drugs; and hurting someone else badly. The trauma measure incorporates responses from both the Trauma Symptom Checklist for Children (TSCC; self-reports for children aged 10–17) and the Trauma Symptom Checklist for Young Children (TSCYC; caregiver reports on behalf of children aged 2–9) (Briere, 1996; Briere et al., 2001). The specific measures used in each checklist differ by age group; therefore, trauma symptom scores were initially constructed separately for younger (under age 10) and older (10–17 years) children. The items have consistently been shown to have high reliability when evaluated within each checklist. In this pooled file, the alpha coefficient is 0.93 for the TSCC and 0.86 for the TSCYC. These response distributions were then standardized and merged together in order to create a single measure for all youth aged 2 and older, and represent average level symptomatology experienced in the past month.

1.5. Analysis

All analyses were performed using the statistical software package Stata (v.14.1).

Chi-square analyses and F-tests are reported in Table 1 to examine demographic differences between children of deployed and non-deployed parents. Table 2 displays the percentage of children experiencing each type of adversity and victimization and average number of total adversities and victimizations separately for children of deployed and non-deployed parents, as well as a relative risk ratio showing the effect of parental deployment on the risk of facing each type of adversity or victimization. Relative risk ratios were computed using log-binomial models by utilizing the GLM command in Stata and controlling for age, given that age increases the “opportunity” for lifetime exposure. For the summary counts of prior year adversities and victimizations, incidence rate ratios indicate the ratio of the predicted value for children of deployed parents to the predicted value for non-deployed parents, again controlling for age.

Two types of regression analyses are presented in Table 3: 1) an ordinary least squares (OLS) (i.e multiple linear regression) distribution is used to predict the trauma symptoms among children age 2 and older, and 2) a negative binomial distribution is used to predict the count of number of delinquent acts reported among youth age 10–17. This latter distribution was used because the count measure (delinquent acts) was “over-distributed”, with a weighted mean of 0.99 and a standard deviation of 2.95. Negative binomial is best suited for count measures with these characteristics (Long & Freese, 2006).

2. Results

As seen in Table 1 there were no significant gender, race, or socioeconomic status differences between children and youth who experienced war-related parental absence or deployment in their lifetimes and those that did not. As would

Table 2
Children's prior year adversities and victimizations by lifetime parental deployment status^a.

Type of prior year adversity	War-related Parental Absence or Deployment (n = 786)	No War-Related Parental Absence or Deployment (n = 12,266)	Total (n = 13,052) ^b
	Percentage (95% CI)	Percentage (95% CI)	Risk Ratio (95% CI) ^c
Disaster (fire/flood/other)	3.8 (1.5–6.1)	1.9 (1.5–2.3)	1.94 (1.00–3.76) [*]
Bad accident, hospitalized	2.5 (–0.4 to 5.3)	1.5 (1.2–1.8)	1.53 (0.50–4.72)
Bad illness, hospitalized	5.8 (3.8–7.8)	4.1 (3.4–4.8)	1.46 (0.99–2.17)
Close friend or family member in bad accident	15.2 (11.2–19.2)	9.2 (8.2–10.3)	1.50 (1.13–2.00) ^{**}
Close friend or family member serious illness	22.9 (18.3–27.5)	16.4 (15.3–17.6)	1.32 (1.06–1.63) [*]
Homelessness	0.1 (–0.03 to 0.28)	0.6 (0.4–0.8)	0.21 (0.06–0.74) [*]
Repeated year of school	2.2 (0.67–3.7)	1.3 (0.9–1.7)	1.51 (0.72–3.16)
Parent unemployment	11.4 (8.1–14.7)	11.8 (10.9–12.8)	0.99 (0.73–1.34)
Child sent or taken away from home	2.3 (0.6–4.0)	0.7 (0.4–1.1)	2.99 (1.22–7.34) [*]
Parent in prison	4.7 (2.1–7.2)	2.3 (1.9–2.8)	1.98 (1.09–3.59) [*]
Family member drug use	6.8 (4.4–9.3)	4.6 (4.0–5.2)	1.41 (0.97–2.06)
Parents always argue/angry	10.7 (6.9–14.5)	6.2 (5.5–6.9)	1.62 (1.12–2.36) [*]
Close friend or family member attempted suicide	4.0 (2.2–5.8)	3.0 (2.5–3.6)	1.13 (0.71–1.82)
Close friend or family member death	18.6 (14.6–22.5)	10.1 (9.3–10.9)	1.71 (1.36–2.14) ^{***}
Type of prior year victimization, %			
Peer assault	25.7 (20.9–30.6)	16.8 (15.7–17.9)	1.42 (1.17–1.73) ^{***}
Sibling assault	28.0 (22.6–33.3)	22.9 (21.6–24.1)	1.24 (1.02–1.51) [*]
Sexual victimization	9.4 (6.9–11.9)	5.3 (4.7–5.9)	1.51 (1.12–2.03) [*]
Maltreatment	16.0 (11.1–20.8)	10.6 (9.6–11.6)	1.38 (1.01–1.89) [*]
Property crime	38.8 (32.8–44.7)	25.5 (24.1–26.9)	1.51 (1.28–1.78) ^{***}
Witness intimate partner violence	32.2 (26.7–37.8)	23.8 (22.5–25.1)	1.23 (1.03–1.47) [*]
Summary Counts from Prior Year	Mean (95%CI)	Mean (95%CI)	Incidence Rate Ratio (95%CI) ^c
Total adversities	1.11 (0.96–1.26)	0.74 (0.71–0.77)	1.42 (1.24–1.64) ^{***}
Total victimizations	1.47 (1.21–1.73)	0.83 (0.79–0.88)	1.65 (1.37–1.97) ^{***}

^a Statistics are weighted, N's are unweighted.

^b p-values: * p < 0.05; ** p < 0.01; *** p < 0.001.

^c Risk Ratios and Incidence Rate Ratios control for age and show effect of lifetime war-related parental absence or deployment.

be expected, those with lifetime parental deployment were significantly older (mean age 9.8), than children without any parental deployment history (mean age 8.5).

Table 2 shows the percentage of children and youth exposed to each of the individual past year non-victimization adversity and victimization type, as well as the mean number of adversities and victimization type, among those with lifetime histories of parental deployment (column 1) versus those with no parental deployment history (column 2). Since there were significant age differences between the two groups (see Table 1), the third column of Table 2 presents risk and incident rate ratios that adjust for age.

Children and youth who had experienced war-related parental absence or deployment in their lifetimes had almost twice the risk of experiencing a national disaster or fire (Risk Ratio (RR) = 1.94), 1.3 times the risk of having someone close experience a serious illness and 1.5 times the risk of having someone close experience a serious accident in the past year, than were those with no history of parental deployment. They were also almost 3 times more likely to have been “sent away or taken away from their home”, almost 2 times the risk of having a parent go to prison, and 1.7 times the risk of experiencing

Table 3Coefficients (and 95% confidence intervals) showing Effect of Lifetime Parental Deployment, Prior Year Adversities and Victimizations on Delinquent Behavior and Child Trauma Symptoms^a

	ages 10+		ages 2+	
	Delinquent Count (Prior Year)		Trauma Measure (Prior Year)	
	Model 1 ^c	Model 2	Model 1	Model 2
Child's age ^b	0.28 (0.25–0.31)***	0.25 (0.22–0.28)***	0.01 (0.00–0.02)**	–0.005 (–0.01 to 0.00)
Child's sex (ref = male)	–0.42 (–0.56 to –0.29)***	–0.46 (–0.58 to –0.34)***	0.07 (0.00–0.13)*	0.09 (0.03–0.15)**
Family SES	–0.05 (–0.13 to 0.03)	0.04 (–0.03 to 0.11)	–0.09 (–0.13 to –0.05)***	–0.05 (–0.09 to –0.02)**
Race (ref = White)				
Black	0.14 (–0.05 to 0.34)	–0.03 (–0.22 to 0.15)	–0.09 (–0.18 to 0.00)	–0.14 (–0.22 to –0.06)**
Other	0.19 (–0.19 to 0.58)	0.07 (–0.20 to 0.34)	–0.09 (–0.19 to 0.01)	–0.08 (–0.16 to 0.01)
Hispanic	0.12 (–0.07 to 0.31)	0.06 (–0.11 to 0.22)	–0.09 (–0.19 to 0.00)	–0.11 (–0.19 to –0.02)*
Parent war-related absence or deployment during child's life	0.57 (0.20–0.93)**	0.15 (–0.18 to 0.48)	0.24 (0.07–0.40)**	–0.03 (–0.21 to 0.14)
Number of adversities in prior year	–	0.20 (0.16–0.25)***	–	0.11 (0.08–0.14)***
Number of victimizations in prior year	–	0.28 (0.24–0.31)***	–	0.27 (0.24–0.29)***
Number of cases	6340	6340	11848	11848
Model R ²	0.045	0.113	0.012	0.224

Abbreviations: ref = referent category; SES = socio-economic status.

^a Statistics are weighted, N's are unweighted.^b p-values: * p < 0.05; ** p < 0.01; *** p < 0.001.^c Coefficients displayed are for Negative Binomial regression for delinquent behavior count and for Ordinary Least Squares for trauma measure.

the death of a close family member or friend in the past year, than were other children. Children of deployed parents were also 1.6 times more likely to report that their “parents argued and were angry at one another all the time” in the past year. Finally, although the likelihood of having experienced homelessness was understandably small in this community based sample, it was significantly *lower* among children of deployed parents (RR = 0.21), suggesting that the military may provide a safety net with respect to housing.

Past year victimization exposure was also consistently elevated among children with histories of war-related parental absence or deployment. Specifically, children with parental deployment had 1.4 times the risk of experiencing some form of maltreatment and 1.5 times the risk of being exposed to sexual victimization in the past year. They also had 1.4 times greater risk of having been assaulted by a peer, and over 1.2 times the risk of having been assaulted by a sibling in the past year, relative to children and with no parental deployment history. Children of deployed parents were also over 1.2 times more likely to have witnessed intimate partner violence and had 1.5 times risk of experiencing property crimes against them. Summary measures of the number of different victimization types and the number of non-victimization adversities to which children were exposed in the past year, were also significantly different between the two groups. On average, children with lifetime parental deployment reported almost 1.5 victimization types (out of a possible 6 types) and 1.1 adversities in the past year, while other children reported an average of 0.8 and 0.7 types respectively. This translates into a past year adversity rate that is 1.4 time higher for children of deployed parents relative to other children, and a past year victimization rate that is almost 1.7 times greater, controlling for age.

Next, we wanted to determine whether elevated emotional and behavioral problems (trauma symptoms and delinquency) among children with histories of war-related parental absence or deployment were evident and, if so, whether their greater exposure to adversity and victimization accounted for these differences. As seen in each Model 1 of Table 3, both outcome measures were significantly associated with lifetime parental deployment with demographics controlled. However, when cumulative past year exposure to non-victimization adversity and victimization were entered into the equation (Model 2), the effect of parental deployment became no longer significant. Thus, adversity and victimization appear to fully explain the associations between parental deployment and negative emotional and behavioral outcomes.

To confirm these observations with a formal test of mediation, a post-hoc analysis (Sobel-Goodman test) was also conducted to examine the role of prior year adversities and prior year victimizations as mediators where parental deployment is the main effect (Sobel, 1982). For both delinquency count and trauma, these measures are statistically significant (p < 0.001)

mediators. Prior year adversities are responsible for 56.8% and 45.2% of the total effect of parental deployment on delinquency and trauma, respectively. Prior year victimizations are responsible for 80.9% and 69.7% of the total effect of parental deployment on delinquency and trauma, respectively. It is noteworthy that parental deployment, while significant in Model 1, explained little of the total variance in the outcome measures; in contrast, total past year adversity and multiple victimization explain much more of the variance in delinquency and particularly in trauma symptoms.

Finally, males and older children reported significantly more delinquency, while females, lower SES children, and white youth reported more trauma symptoms, with adversity and victimization controlled.

3. Discussion

This research expanded on past studies by examining risk among children of deployed parents in a nationally representative sample of US children and by investigating exposure to much wider array of victimization types and non-victimization adversities. Consistent with a variety of other investigations, children and youth who had experienced parental deployment or war related absence in their lifetimes displayed significantly higher levels of trauma symptoms and reported more delinquent behaviors than other children and youth. These elevated emotional and behaviors problems were importantly linked to a variety of stressors. Indeed, the current study found that lifetime war-related parental absence or deployment was a strong marker for elevated childhood exposure to victimization and adversity, well beyond the immediate experience of parental absence/deployment.

Study results are consistent with the process of “stress proliferation”, whereby one form of stress increases risk for subsequent different forms of stress, each of which can lead to other adversities and have additional independent effects on well-being. A history of war-related parental absence or deployment was associated with elevated risk of every form of victimization – not just family perpetrated victimizations like maltreatment, witnessing intimate partner violence and sibling assault, but also peer assault, property crime, and sexual victimization. As a result, their cumulative victimization exposure was also significantly greater than that of other children. War-related parental absence/deployment also increased risk for a number of other major adversities, including accidents, illnesses and deaths of among close family and friends, exposure to disasters, chronic parental arguing, and parental imprisonment, suggesting a broad risk of adversity exposure that emerges over time. Even victimizations and adversities that would not seem to be directly linked to parental deployment, such as property crimes, accidents, or exposure to disasters, become part of string of adversities that can arise from subsequent stressful conditions and events that proliferate out from the initial condition.

Importantly, our findings show that, although lifetime parental absence/deployment was associated with increased delinquency and trauma symptoms, past year multiple victimization exposure and total number of adversities substantially mediated the associations. War-related parental absence or deployment was not significantly associated with these outcomes once past-year victimization and adversity exposure were added to the model, indicating that the effects of parental deployment on emotional and behavioral problems operated indirectly through cumulative stress exposure. In other words, it was not parental deployment in and of itself that created increased risk, it was the proliferation of stressors associated with this experience that was damaging to child well-being. Consistent with past research (Appleyard, Egeland, van Dulmen, & Sroufe, 2005; Rutter, 1981; Turner & Butler, 2003; Turner et al., 2010, 2006), cumulative exposure to victimization and other forms of adversity has particularly damaging effects on the well-being and functioning of all children.

3.1. Limitations

Although it is unlikely that child victimization and family adversity would “cause” war-related absence or deployment, we are not able to fully establish causal ordering of variables because lifetime parental deployment can include children who experienced very recent or even current parental deployment. Ambiguous temporal ordering is most problematic in the link between victimization and delinquency, as both are past-year assessments and the causal influence is likely to be bi-directional. It is also possible that the findings reflect elevated adversity, victimization and emotional/behavioral problems among children in military families more generally, rather than risks that are specific to parental deployment. We are unable to make this distinction with our data.

Specific details concerning the events and conditions assessed in our survey are quite limited. First, we cannot distinguish between children with histories of parental military deployment from children of civilian parents who experienced war-related absences. Although civilian contractors were common in Iraq and Afghanistan during this time, there are no data available on what proportion of these workers had children at home. If both military families and civilian contractor families are represented in the sample, we have no way of accounting for potential differences between them. Second, we have no data on specific characteristics of the deployment or war-related absence, such as the length of time deployed or away from home, or the number of deployments experienced, both of which have been found to influence their impact on children (Chandra, Burns, Tanielian, Jaycox, & Scott, 2008; Lester et al., 2010). We also do not know whether the child’s mother, father, or both were deployed, which might also affect its consequences. Similarly, we do not have specific information about who was involved in adversities that happened to “someone close” to the child. Indeed, the greater frequency of injury, illness and death of someone close among the children of deployed parents, may reflect events specific to the absent parent’s combat experiences, but we are unable to determine this with our data.

4. Conclusions

Findings indicate that war-related parental deployment represents a marker for a variety of sources of risk among children and youth. On average, such youth report more delinquency and trauma symptoms than other youth in the general population. However, parental deployment in and of itself is not responsible for emotional and behavior difficulties, but rather it is linked to stress exposure in the form of violence and victimization, both within and outside of the home, and non-victimization adversities that arise over time.

Given the breadth of victimization and adversity risks, children with histories of war-related parental absence or deployment represent a target group for broad-based interventions that include developing social and interpersonal skills for self-protection, as well as treatment approaches to address emotional difficulties and externalizing behaviors. Importantly, helping kids will also require support, training, and treatment for deployed parents and their spouses who themselves experience considerable adversity and distress which, in turn, impacts parenting skills and the child's home environment. Intervention strategies directed at both the children and adults in these families should not be solely concentrated on times during deployment or shortly after, but should acknowledge that problems that arise from war-related absence or deployment play out over time and likely require sustained efforts. Given the tremendous contribution that U.S. military and other personnel deployed to war-zones make to our nation's safety, we owe it to them and their children to reduce the risks associated with war-related deployment.

References

- AAPOR Cell Phone Task Force. (2010). *New considerations for survey researchers when planning and conducting RDD telephone surveys in the US with respondents reached via cell phone numbers*. Deerfield, IL: American Association for Public Opinion Research.
- Appleyard, K., Egeland, B., van Dulmen, M. H. M., & Sroufe, L. A. (2005). When more is not better: The role of cumulative risk in child behavior outcomes. *Journal of Child Psychology & Psychiatry*, *46*(3), 235–245.
- Blumberg, S. J., Luke, J. V., Ganesh, N., Davern, M. E., & Boudreaux, M. H. (2012). Wireless substitution: State-level estimates from the national health interview survey, 2010–2011. *National Health Statistics Reports*, *61*, 1–16.
- Briere, J., Johnson, K., Bissada, A., Damon, L., Crouch, J., Gil, E., & Ernst, V. (2001). The Trauma Symptom Checklist for Young Children (TSCYC): Reliability and association with abuse exposure in a multi-site study. *Child Abuse & Neglect*, *25*(8), 1001–1014.
- Briere, J. (1996). *Trauma symptoms checklist for children (TSCC): Professional manual*. Odessa, FL: Psychological Assessment Resources.
- Card, N. A., Bosch, L., Casper, D. M., Wiggs, C. B., Hawkins, S. A., Schlomer, G. L., & Borden, L. M. (2011). A meta-analytic review of internalizing, externalizing, and academic adjustment among children of deployed military service members. *Journal of Family Psychology*, *25*(4), 508.
- Cederbaum, J., Gilreath, T., Benbenishty, R., Astor, R., Pineda, D., De Pedro, K., & Atuel, H. (2013). Wellbeing and suicidal ideation of public middle/high school students by military-connectedness. *Journal of Adolescent Health*, *54*(6), 672–677.
- Chandra, A., Burns, R. M., Tanielian, T., Jaycox, L. H., & Scott, M. M. (2008). *Understanding the impact of deployment on children and families: Findings from a pilot study of Operation Purple Camp participants*. Santa Monica, CA: RAND Corporation. Retrieved from http://www.rand.org/pubs/working_papers/WR566.html
- Chandra, A., Lara-Cinisomo, S., Jaycox, L. H., Tanielian, T., Burns, R. M., Ruder, T., & Han, B. (2010). Children on the homefront: The experience of children from military families. *Pediatrics*, *125*(1), 16–25.
- Chartrand, M. M., Frank, D. A., White, L. F., & Shope, T. R. (2008). Effect of parents' wartime deployment on the behavior of young children in military families. *Archives of Pediatrics & Adolescent Medicine*, *162*(11), 1009–1014.
- De Pedro, K. T., Astor, R. A., Gilreath, T. D., & Benbenishty, R. (2015). School climate, deployment, and mental health among students in military-connected schools. *Youth & Society*, *0044118X15592296*.
- Easterbrooks, M. A., Ginsburg, K., & Lerner, R. M. (2013). Resilience among military youth. *The Future of Children*, *23*(2), 99–120. <http://dx.doi.org/10.1353/foc.2013.0014>
- Esqueda, M. C., Astor, R. A., & De Pedro, K. M. T. (2012). A call to duty educational policy and school reform addressing the needs of children from military families. *Educational Researcher*, *41*(2), 65–70.
- Fahimi, M., Kulp, D., & Malarek, D. (2013). Topology of the landline telephone sampling frame. *Survey Practice*, *2*(9). Available at: <http://www.surveyppractice.org/index.php/SurveyPractice/article/view/204>
- Fargo, J., Metraux, S., Byrne, T., Munley, E., Montgomery, A. E., Jones, H., & Culhane, D. P. (2011). *Prevalence and risk of homelessness among US veterans: A multisite investigation*. Philadelphia, PA: National Center on Homelessness among Veterans. Retrieved from http://www.va.gov/homeless/docs/center/prevalence_final.pdf
- Fear, N. T., Iversen, A., Meltzer, H., Workman, L., Hull, L., Greenberg, N., & Horn, O. (2007). Patterns of drinking in the UK armed forces. *Addiction*, *102*(11), 1749–1759.
- Finkelhor, D., Ormrod, R. K., & Turner, H. A. (2007). Poly-victimization: A neglected component in child victimization. *Child Abuse & Neglect*, *31*(1), 7–26. <http://dx.doi.org/10.1016/j.chiabu.2006.06.008>
- Hamby, S. L., Finkelhor, D., Ormrod, R. K., & Turner, H. A. (2004). *The juvenile victimization questionnaire (JVQ): Administration and scoring manual*. Durham, NH: Crimes against Children Research Center.
- Isenberg, D. (2012). Contractors in war zones: Not exactly contracting. *Time*. Retrieved from <http://nation.time.com/2012/10/09/contractors-in-war-zones-not-exactly-contracting/> (2012, October 9)
- Jacobson, I. G., Ryan, M. A., Hooper, T. I., Smith, T. C., Amoroso, P. J., Boyko, E. J., . . . & Bell, N. S. (2008). Alcohol use and alcohol-related problems before and after military combat deployment. *JAMA*, *300*(6), 663–675.
- Kaplan, M. S., McFarland, B. H., Huguet, N., & Newsom, J. T. (2012). Estimating the risk of suicide among US veterans: How should we proceed from here? *American Journal of Public Health*, *102*(S1), S21–S23.
- Kelley, M. L., Hock, E., Smith, K. M., Jarvis, M. S., Bonney, J. F., & Gaffney, M. A. (2001). Internalizing and externalizing behavior of children with enlisted Navy mothers experiencing military-induced separation. *Journal of the American Academy of Child & Adolescent Psychiatry*, *40*(4), 464–471.
- Lester, P., Peterson, K., Reeves, J., Knauss, L., Glover, D., Mogil, C., . . . & Wilt, K. (2010). The long war and parental combat deployment: Effects on military children and at-home spouses. *Journal of the American Academy of Child & Adolescent Psychiatry*, *49*(4), 310–320.
- Long, J. S., & Freese, J. (2006). *Regression models for categorical dependent variables using Stata*. College Station, Texas: Stata press.
- Loughran, D. S. (2014). *Why is veteran unemployment so high?* Santa Monica, CA: Rand Corporation. Retrieved from http://www.rand.org/pubs/research_reports/RR284.html
- Lucier-Greer, M., Arnold, A. L., Grimsley, R. N., Ford, J. L., Bryant, C., & Mancini, J. A. (2016). Parental military service and adolescent well-being: Mental health, social connections and coping among youth in the usa. *Child & Family Social Work*, *21*(4), 421–432.

- Martinez, L., & Bingham, A. (2016). *U.S. Veterans: By the Numbers: As the Country celebrates Veterans day, Here's a look at those who've served.* Retrieved from <http://abcnews.go.com/Politics/us-veterans-numbers/print?id=14928136>
- McCarroll, J. E., Ursano, R. J., Liu, X., Thayer, L. E., Newby, J. H., Norwood, A. E., & Fullerton, C. S. (2010). Deployment and the probability of spousal aggression by US Army soldiers. *Military Medicine*, *175*(5), 352–356.
- Miller, R. (2013). *Respiratory disorders following service in Iraq*. Nashville, TN: Vanderbilt University, Vanderbilt Medical Center.
- Monson, C. M., Taft, C. T., & Fredman, S. J. (2009). Military-related PTSD and intimate relationships: From description to theory-driven research and intervention development. *Clinical Psychology Review*, *29*(8), 707–714.
- Mustillo, S., Wadsworth, S. M., & Lester, P. (2015). Parental deployment and well-being in children results from a new study of military families. *Journal of Emotional and Behavioral Disorders*, 1063426615598766.
- Pearlin, L. I. (1989). The sociological study of stress. *Journal of Health and Social Behavior*, *30*, 241–256.
- Pearlin, L. I. (2010). The life course and the stress process: Some conceptual comparisons. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *65*(2), 207–215. <http://dx.doi.org/10.1093/geronb/gbp106>
- Rabenhorst, M. M., McCarthy, R. J., Thomsen, C. J., Milner, J. S., Travis, W. J., & Colasanti, M. P. (2015). Child maltreatment among US Air Force parents deployed in support of operation Iraqi freedom/operation enduring freedom. *Child Maltreatment*, *20*(1), 61–71.
- Rutter, M. (1981). Stress, coping, and development: Some issues and some questions. *Journal of Child Psychology and Psychiatry*, *22*(4), 323–356. <http://dx.doi.org/10.1111/j.1469-7610.1981.tb00560.x>
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology*, *13*(1982), 290–312.
- Sullivan, K., Capp, G., Gilreath, T. D., Benbenishty, R., Roziner, I., & Astor, R. A. (2015). Substance abuse and other adverse outcomes for military-connected youth in California: Results from a large-scale normative population survey. *JAMA Pediatrics*, *169*(10), 922–928.
- Tanielian, T. L., & Jaycox, L. (2008). *Invisible wounds of war: Psychological and cognitive injuries, their consequences, and services to assist recovery*. Santa Monica, CA: Rand Corporation.
- The American Association for Public Opinion Research. (2016). *Standard definitions: Final disposition of case codes and outcome rates for surveys* (9th ed.). AAPOR.
- Turner, H. A., & Butler, M. J. (2003). Direct and indirect effects of childhood adversity on depressive symptoms in young adults. *Journal of Youth and Adolescence*, *32*(2), 89–103. <http://dx.doi.org/10.1023/A:1021853600645>
- Turner, H. A., Finkelhor, D., & Ormrod, R. K. (2006). The effect of lifetime victimization on the mental health of children and adolescents. *Social Science & Medicine*, *62*(1), 13–27. <http://dx.doi.org/10.1016/j.socscimed.2005.05.030>
- Turner, H. A., Finkelhor, D., & Ormrod, R. (2010). Poly-victimization in a national sample of children and youth. *American Journal of Preventive Medicine*, *38*(3), 323–330. <http://dx.doi.org/10.1016/j.amepre.2009.11.012>
- U.S. Department of Veterans Affairs. (2016). Children of deployed parents at increased risk for behavioral, psychological problems. In *VA research currents: Research news from the U.S. Department of Veterans Affairs*. U.S. Department of Veterans Affairs. Retrieved from <http://www.research.va.gov/currents/winter2013-14/winter2013-14-28.cfm>