



# Military Life Stressors, Family Communication and Satisfaction: Associations with Children’s Psychosocial Outcomes

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## Abstract

Families experience multiple stressors as a result of military service. The purpose of this study was to examine facets of military life and family factors that may impact child psychosocial and mental health functioning. Using baseline data from the Millennium Cohort Family Study, this study examined family demographics and composition (age, number of children), military life stressors (injury, family, and deployment stressors), family communication and satisfaction as assessed by the Family Adaptability and Cohesion Evaluation Scale-IV, parental social functioning assessed via the Short Form Health Survey-36, and child mental health and behavioral functioning (parental reports of clinician-diagnosed mental health conditions such as depression) and an adapted version of the Strengths and Difficulties Questionnaire. Injury- and family-related military stressors were significant indicators of heightened risk for child mental health conditions, whereas greater levels of parental social functioning and family satisfaction were associated with lower risk of child mental health conditions. Differential associations were found in child functioning when military-related variables (e.g., service component), sociodemographic, and family composition factors (number and age of the children in the home) were examined. These findings underscore the importance of examining the “whole child” within the broader ecological and military family context to understand factors associated with children’s mental and behavioral health. The results from the present study highlight the complex relationships that may be at play, which, in turn, have considerable implications for the development of policies to support children and families encountering multiple stressors related to a parent’s military service.

**Keywords** Parental deployment · Family functioning · Military families · Child and adolescent mental health outcomes

“Families serve too” is a phrase that has become part of the national vernacular, given the millions of U.S. service members, spouses, and children who have been affected by the conflicts in Iraq and Afghanistan. By the end of 2014, the military included over 1.3 million active duty personnel,

55% of whom were married and 42% of whom had children. During this same time period, nearly 45% of the 831,992 National Guard/Reserve members were married, and 42% had children (U.S. Department of Defense 2015). Many of these families experienced repeated deployments and some

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experienced a serious injury or death of their deployed service member. The number of service members that experienced serious injuries or hostile deaths while serving in action during Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), and Operation New Dawn (OND) was 52,341 and 6830 respectively (DeBruyne 2017). Although there are multiple stressors that impact military-involved families (e.g., frequent relocation), deployment is arguably one of the most challenging (Weins and Boss 2006). Ultimately, hundreds of thousands of military families have been affected at some level by the long and repeated pace of deployment cycles over the past decade (Sheppard et al. 2010; Sogomonyan and Cooper 2010). Therefore, it is important that we more fully understand how deployment and other military- and family-related stressors impact family functioning and child well-being.

Deployments can vary in terms of risk, duration, and purpose; however, for families, they always involve a cycle of separation, disrupting the stability of relationships and routines for children (Sheppard et al. 2010) and heightening the risk of a range of child behavioral and emotional difficulties during and subsequent to deployment (Chandra et al. 2011; Flake et al. 2009; Jaycox et al. 2016; Lester et al. 2010, 2011; Wilson et al. 2014). Wilson and colleagues (Wilson et al. 2014), for example, found greater child behavioral difficulties and fewer prosocial behaviors among military-involved youth after reunification with a deployed parent compared with a nationally representative sample of civilian children.

The relationship between deployment and child mental health functioning is complex and differs based on the child's age and developmental stage, in addition to deployment characteristics (Chandra et al. 2011; Flake et al. 2009; Lester et al. 2011). For example, information obtained from children and non-deployed caregivers in 1507 military families indicated that children who were female, older, or had a parent with lengthier deployments demonstrated more academic, peer, and mental health challenges during deployment and reintegration (Chandra et al. 2011). Additionally, in a study of young children's mental health functioning during deployment, 3- to 5-year-old children with a deployed parent had significantly more internalizing and externalizing difficulties than their military-connected peers without a deployed parent (Chartrand et al. 2008).

Probably the most important aspect of deployment that may influence adjustment outcomes for service personnel and their families is combat exposure. Personally engaging in combat or being immersed in an active combat zone is associated with heightened risk of depressed mood, suicidal thoughts, and reports of a lower quality of life among middle- and high-school-aged youth from military families compared with civilian children (Reed et al. 2011). Findings from the Millennium Cohort Family Study also have indicated that compared with military families that did not experience a

deployment, parental deployments with combat were more strongly associated with psychological distress among older children, including depression and other conditions such as attention deficit disorder/attention deficit hyperactivity disorder (ADD/ADHD; Fairbank et al. 2018). The effects of deployment on families' and children's psychological functioning may also differ based on military component (i.e., active duty vs. National Guard/Reserve) (Faber et al. 2008). Most studies have focused solely on a single military component (i.e., active duty) when assessing the impact of deployment on child and family functioning, with the untested assumption that results apply to other components. This approach may provide an incomplete understanding of family adjustment as it relates to other important groups, such as the U.S. National Guard/Reserve. Research on the families of National Guard/Reserve service members suggests that they may be at differential risk for an array of adverse family outcomes because National Guard/Reserve service members tend to be, on average, older and more likely to be married and parenting than regular active duty military personnel (Jaycox et al. 2016). Moreover, National Guard/Reserve families typically live in largely civilian environments with limited access to the support, structure, or routines that typically accompany life in communities with large numbers of active duty military families (Jaycox et al. 2016; Murphy and Fairbank 2013; Sheppard et al. 2010). This absence of a broad military social support network, paired with limited experience dealing with deployment and reintegration issues, may have exacerbated the toll that recent conflicts have had on National Guard/Reserve service members and their families. Thus, narrowly focusing on active duty families may leave the research field with a limited understanding of how family factors affect military deployment outcomes for children.

Many military families are resilient despite exposure to deployments and other military life challenges, so understanding the potentially buffering role of adaptive family functioning in the face of military operational stress has important implications for the development and dissemination of interventions that promote and support resilience. The impact of family communication and family relationship satisfaction are critical dimensions to explore, given that military families often endure changes in roles and leadership, periods with limited communication, physical separation, and a host of stressors related to the process of deployment and reintegration (Saltzman et al. 2011; Sheppard et al. 2010; Wilson et al. 2014). Lack of communication, for example, can lead to reduced cohesiveness within the family system and increase the risk of family dysfunction (Saltzman et al. 2011). Alternatively, healthy family communication, such as adaptively sharing thoughts and feelings, has been linked to greater family satisfaction and better child functioning post-reintegration (Wilson et al. 2014).

Ultimately, family dynamics could exacerbate or attenuate child behavioral and emotional difficulties in the face of deployment and reintegration. At its best, optimal family functioning (e.g., high levels of family satisfaction) could mitigate the relationship between stress and adversity and a range of behaviors that affect child behavioral outcomes (Wilson et al. 2014). At its worst, poor family functioning (e.g., high levels of conflict, low levels of satisfaction) may increase the likelihood of negative outcomes (Riggs and Riggs 2011). Furthermore, the functioning of the primary custodial parent may be particularly important. Studies have found that poor parental mental health (e.g., psychiatric symptoms or conditions) is associated with poorer child emotional and behavioral functioning during deployment and after reunification (Foran et al. 2017; Lester et al. 2010). Therefore, it is important to consider the extent to which the physical and mental health of the at-home spouse, in particular, may compromise their interpersonal adjustment (e.g., social functioning) and influence child outcomes. Collectively, these factors (i.e., deployment characteristics, family factors, and parental well-being and functioning) represent what some researchers have described as risk factor caravans. A risk factor caravan is a conceptual framework that depicts how different constellations of various risk factors tend to co-occur, accrue, and cascade forward in their harmful effects and “travel” with their host across development (Layne et al. 2014). To truly understand these complex relationships among military families and better assess risk, we must evaluate child functioning within the context of the family because deployment and other military life and family stressors affect the entire family system (Drummet et al. 2003; Lester et al. 2010).

## Study Aims

This study sought to assess how demographics and family composition characteristics, military stressors, and parental and family functioning are associated with child behavioral health outcomes across all military branches and components using data from the Millennium Cohort Family Study (Family Study). The Family Study is designed to evaluate the inter-related health and well-being of military family members and is well poised to explore the complex associations among potential military-related and familial risk factors that could impact child outcomes. Moreover, this probability-based study includes families from all branches and components of the military and addresses a major gap in the literature by incorporating dyadic demographic, parental, and family risk and protective factors associated with child psychosocial functioning.

The first aim of the present study was to explore how family demographic characteristics (e.g., number and age of oldest child in the home), deployment history and status,

military life stressors (injury-, family-, and deployment-related stressors), and parent and family functioning (family communication, family satisfaction, parental social functioning) were associated with children’s mental health conditions (depression/anxiety) and impairments in psychosocial functioning (behavioral/conduct problems and emotional symptoms). A second, related aim was to examine whether parental social and family functioning moderate risks associated with child mental health symptoms and conditions. We hypothesized that despite military life stressors, parental social and family functioning may attenuate some of the risks associated with child mental health symptoms and conditions. Based on findings from previous studies that explored deployment in the context of other family dimensions such as satisfaction and communication, we expected that better parental adjustment (less distress/better social functioning) and higher family functioning (i.e., greater satisfaction and higher levels of communication) would be significantly associated with fewer child psychiatric diagnoses and problematic psychosocial outcomes, even after accounting for family demographic characteristics, deployment, and other military-related stressors.

## Method

The Family Study is a 21-year prospective cohort study designed to evaluate the interrelated health and well-being effects of military service on families, including the service member, spouse, and children. The Family Study works in partnership with the Millennium Cohort Study, an ongoing, population-based, prospective examination of long-term health outcomes among active duty and National Guard/Reserve personnel across U.S. military branches (Ryan et al. 2007). The Family Study currently includes dyadic data from male and female spouses who completed the baseline Family Study questionnaire, as well as service members who enrolled in Panel 4 of the Millennium Cohort Study between 2011 and 2013. To be eligible for the Family Study, service members had to be married and have served for 2–5 years in the military. Married and female service members were oversampled to ensure that their spouses had adequate representation in the Family Study. To maximize response rates, the survey methods for the Family Study included both online and paper mail survey response options (Dillman et al. 2009; McMaster et al. 2017).

Informed consent was obtained from all participants. The Institutional Review Board (IRB) of the Naval Health Research Center reviewed and approved the research protocol (NHRC.2000.0007) and provided ongoing oversight. Exemptions for secondary data analysis were approved by the Duke University Health System Institutional Review Board (Pro00064951). Additional details about the Millennium Cohort Study and Family Study designs and

methods are described elsewhere (Crum-Cianflone 2013; Crum-Cianflone et al. 2014; Gray et al. 2002).

The Family Study sample consisted of 9872 service member/military spouse dyads (for more information on the sampling design and survey nonresponse, see Corry et al. (2017). The sample for the current study included married couples with at least one child 3–17 years of age in the household ( $n = 3623$ ). Given this study's focus on associations among deployment experiences, military life stressors, and parent, family, and child functioning, cases with missing data for any of these variables ( $n = 22$ ) and those who were not married at the time of the Family Study survey ( $n = 43$ ) were excluded from the analysis. Ultimately, the sample size for this study included 3558 dyads.

## Measures

**Millennium Cohort Survey** The Cohort survey was administered to service members and assessed a variety of topics, including medical conditions, psychosocial well-being, substance use, and military-specific and occupational exposures. The Family Study Questionnaire was administered to spouses and contained approximately 100 stem questions, not inclusive of those items with multiple components and associated skip patterns. The specific questions within the survey were based on a conceptual model with four main domains: (1) spouse physical health, (2) spouse mental health and adjustment, (3) spouse reports of their children's mental/physical health and functioning, and (4) family functioning and protective and vulnerability factors (Crum-Cianflone et al. 2014). The present study focused on domains three and four and included the following as independent variables, dependent variables, and covariates designed to address the study aims and hypotheses:

**Demographic Variables** Demographic variables provided by spouses included gender, age, race/ethnicity, dual military status, marital duration, number of children, and age of oldest child in the home. Administrative data were used to assess military status (enlisted vs. officer), branch, and component.

**Deployment Status** Service members' deployment status since 2001 was determined using a computed variable based on administrative records from the Contingency Tracking System (CTS). CTS data include dates and locations for deployments in support of OEF, OIF, and OND since September 11, 2001. Combat experience was determined to have occurred if the service member endorsed any of the three combat exposure items on the Post-Deployment Health Assessment (i.e., encountering dead bodies or seeing people killed or wounded, engaging in direct combat and discharging weapon, feeling in great danger of being killed) or any of 18 items included on the Millennium Cohort survey (e.g., being

attacked or ambushed; receiving small arms fire; having a member of unit be seriously injured or killed; personally witnessing a person's death due to war, disaster, or tragic event; witnessing instances of physical abuse; seeing dead or decomposing bodies, maimed soldiers or civilians, or prisoners of war or refugees). Three categories were formed to describe deployment status: no deployment, noncombat deployment, and combat deployment (Hoge et al. 2006).

**Service Member Time Away from Home** The total number of months service members were away from home in the past year, inclusive of deployments, training, and temporary duty, was obtained from a single self-report item completed by spouses on the Family Study survey.

**Military Life Stressors** A project-developed measure of Military Life Stress that assessed both occurrence of the event and whether it was stressful was used in the present study. Spouses rated nine items reflecting military life experiences in the past 12 months using a Likert scale ranging from 0 (*not at all stressful*) to 3 (*very stressful*), if the item was experienced. Three items were related to deployment stress: combat-related deployment or duty assignment, non-combat-related deployment or duty assignment, and uncertainty about future deployments/duty assignments. Three items were related to injury stress: combat-related injury, noncombat injury, and caring for ill, injured, or disabled spouse; and three items were related to family stress: increased time spent away performing military duties, conflict over continued military involvement, and difficulty balancing demands of family life and military duties. For each of the military stress domains (i.e., deployment, injury, and family stress), the count variables were calculated and ranged from 0 to 3. To calculate a score, it was first determined whether or not the spouse experienced any of the events measured in the past 12 months. Then, the number of events experienced were summed to generate a count of the number of stressful events experienced for each of the stress domains. This strategy was selected to maximize the inclusion of all participants (i.e., those who had the experience and those who did not). For example, a spouse who did not experience any of the three deployment domain items would have a deployment stress count of 0, while a spouse who experienced all three deployment stress domain items would have a deployment stress count of 3.

**Global Indicator of Parental Social Functioning** Parental social functioning was based on two questions assessing the non-service-member parent's social limitations due to emotional or health problems. Specifically, two items from the RAND-developed 36-Item Short Form Health Survey (SF-36), a set of generic and easily administered quality-of-life measures, were used: "During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your



normal social activities with family, friends, neighbors, or groups?” and “During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives)?” These items were rated on a scale from 0 (*none of the time*) to 8 (*all of the time*) and recoded, with higher scores representing better social functioning.

**Family Communication and Satisfaction** The Family Adaptability and Cohesion Evaluation Scale IV (FACES IV) assesses cohesion and flexibility dimensions of the Circumplex Model of Marital and Family Systems (Olson 2000). Two specific dimensions of family interactions were assessed in the current study: family communication and satisfaction. Respondents rated 10 items for each dimension using a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Communication items represent a “facilitating dimension” because they address critical aspects of communication in a family system. Sample items included “family members are very good listeners” and “family members are able to ask each other for what they want.” Similarly, respondents rated the 10 items on the satisfaction dimension using a 5-point scale ranging from 1 (*very dissatisfied*) to 5 (*extremely satisfied*). This dimension assesses current satisfaction of family members with respect to family cohesion, flexibility, and communication. Sample items include satisfaction with respect to “your family’s ability to cope with stress” and “the degree of closeness between family members.” For each dimension, we created an aggregate score equal to the number of items endorsed as agree or strongly agree.

**Child Mental Health Conditions** Children’s mental health and well-being were assessed by obtaining the spouse’s reports of mental health conditions that had been diagnosed by clinical providers. We examined three common mental health conditions based on items taken from the National Survey of Children’s Health (NSCH; U.S. Department of Health and Human Services 2007). These conditions were assessed in response to the NSCH survey question, “Has a doctor or health professional ever told you that your child has any of the following conditions: (1) behavioral or conduct problems, (2) depression, (3) anxiety problems or other emotional problems, or (4) ADD/ADHD?” The unit of observation for mental health conditions diagnosed by clinical providers included *all* children in the family using one composite item, as required by the NHRC IRB to enhance protection of the identity and privacy of individual children in the family. Moreover, given the likelihood of co-occurrence, we collapsed endorsements for depression and anxiety and other emotional problems into one construct that reflects emotional concerns.

**Strengths and Difficulties Questionnaire** An adaptation of the parent report version of the Strengths and

Difficulties Questionnaire (SDQ; Goodman 1997), a questionnaire for behavioral screening of children and adolescents aged 3 through 17 years, was administered to spouses. The original version of the SDQ includes 25 questions that are divided into 5 subscales. The spouse survey included 15 items representing 3 of the subscales: emotional symptoms, conduct problems, and hyperactivity/inattention. To minimize respondent burden and confusion and enhance the consistency of response categories across survey measures, the survey used a checklist-type format that was recoded into dichotomous response options (yes/no) rather than the 3-point scale from the full SDQ. This change in response options limited our ability to use the original scoring guidelines. Applying the developer’s directions for reverse scoring of positively worded items, we summed responses to the items to create subscale count scores for emotional problems, conduct problems, and hyperactivity/inattention, and summed all items to create a total scale count, in which higher scores represented the presence of more symptoms. Scores were calculated at the family level (i.e., scores were reported and aggregated across all children when multiple children lived in the household), consistent with the metrics used for spouse reports of children’s mental health conditions diagnosed by clinical providers.

## Data Analysis

All analyses were adjusted to account for the probability of selection, as well as service member and spouse nonresponse, using a combination of response propensity modeling and raking-ratio estimates to known population totals (Corry et al. 2017). Estimates derived using these weights are generalizable to the Family Study target population of married spouses and military service members on active rosters with 2–5 years of military service as determined by the Defense Manpower Data Center in October 2010. To ensure survey weighting recommendations were appropriate for this subsample, we conducted additional validation analyses using SAS software, version 9.3 (SAS Institute Inc., Cary, NC). Missing data were handled via list-wise deletion and were considered no different from “missing at random” data since there were relatively few cases of missing data and no significant differences were found on covariates of interest.

To address the study aims, descriptive analyses, chi-square tests, and regression analyses were conducted. Given the exploratory nature of the questions posed in the present study, general linear regression models with backward selection were used to test the relationships between the number and type of stressors (i.e., deployment, family, injury) and both child mental health symptoms (assessed via the SDQ total and subscale counts) and clinical diagnoses (SAS 9.3 PROC GLMSELECT). Models also adjusted for spouse and child

demographic characteristics, family composition, service member deployment status, time away from home in the past year, parental social functioning, and family satisfaction and communication. All analyses were conducted using SAS 9.3, with significance levels set at  $p < 0.05$ .

## Results

The sample for the current study included 3558 married dyads with at least one child in the household between 3 and 17 years of age. Sample characteristics overall and by military component (National Guard/Reserve and active duty) are presented in Table 1. Most of the spouse respondents were female (87.3%) and the majority were White (66.8%), with approximately 10.7% Black (Non-Hispanic) and 13.2% Hispanic. Nearly half (46.7%) of

the families had two children in the home, and a quarter (25.0%) had only one child in the home. Over half (57.4%) of the respondents reported being married for less than 6 years, while a third (34.0%) reported being married between 6 and 10 years. Significant differences between National Guard/Reserve and active duty families for spouse age, spouse gender, age of oldest child living in the household, length of marriage, branch of military service, and percentage of dual military families were noted.

## Military Life Stress

Regardless of service component, many of the families surveyed reported experiencing military life stressors (Table 2). Most of the families experienced at least one deployment-related (87.4%) or family-related (86.4%) stressor, while less than half (39.4%) experienced an injury-related stressor.

**Table 1** Spouse and child demographic characteristics by service component and overall

	Service component		
	National Guard/Reserve <i>N</i> = 935	Active duty <i>N</i> = 2623	Total <i>N</i> = 3558
Spouse age, <i>M</i> ( <i>SD</i> )*	30.7 (6.1)	29.0 (5.2)	29.4 (5.5)
Spouse gender (female), <i>N</i> (%)*	683 (81.7%)	2457 (89.0%)	3141 (87.3%)
Spouse race/ethnicity			
Asian/Pacific Islander	33 (4.0%)	110 (4.0%)	143 (4.0%)
Black, non-Hispanic	80 (9.6%)	304 (11.1%)	384 (10.7%)
White, non-Hispanic	581 (70.0%)	1809 (65.9%)	2391 (66.8%)
Hispanic	108 (13.1%)	364 (13.3%)	473 (13.2%)
Other	28 (3.3%)	159 (5.8%)	187 (5.2%)
Number of children			
1	214 (25.6%)	682 (24.8%)	895 (25.0%)
2	366 (43.8%)	1311 (47.6%)	1677 (46.7%)
3+	256 (30.6%)	761 (27.6%)	1016 (28.4%)
Age of oldest child, <i>M</i> ( <i>SD</i> )*	8.1 (4.4)	6.8 (4.1)	7.1 (4.3)
Length of marriage, years*			
<6	459 (54.9%)	1606 (58.1%)	2064 (57.4%)
6–10	253 (30.2%)	971 (35.6%)	1224 (34.0%)
11+	125 (14.9%)	186 (6.7%)	310 (8.6%)
Branch of military*			
Army	690 (82.6%)	1324 (47.9%)	2015 (56.0%)
Navy	33 (3.9%)	470 (17.0%)	503 (14.0%)
Marine Corps	32 (3.9%)	411 (14.9%)	443 (12.3%)
Air Force	73 (8.7%)	484 (17.5%)	556 (15.5%)
Coast Guard	8 (0.9%)	74 (2.7%)	82 (2.3%)
Military status			
Enlisted	795 (95.1%)	2590 (93.8%)	3385 (94.1%)
Officer	41 (4.9%)	173 (6.3%)	213 (5.9%)
Dual military family (current)*	83 (10.0%)	167 (6.1%)	251 (7.0%)

\*Indicates the differences between National Guard/Reserve and active duty components were significant at the  $p < 0.05$  level

**Table 2** Military life stressors, family functioning, and child outcomes by service component and overall

	Service component		
	Guard/Reserve <i>N</i> = 935	Active Duty <i>N</i> = 2623	Total <i>N</i> = 3558
Military life stressors, <i>M</i> ( <i>SD</i> )			
Deployment related	1.9 (0.97)	1.9 (1.07)	1.9 (1.04)
Injury related	0.8 (1.09)	0.9 (1.18)	0.9 (1.16)
Family related*	2.1 (1.10)	2.3 (1.07)	2.2 (1.08)
Family functioning, <i>M</i> ( <i>SD</i> )			
FACES family satisfaction items	8.5 (2.37)	8.7 (2.46)	8.7 (2.43)
FACES family communication items	8.7 (2.13)	8.9 (2.19)	8.9 (2.17)
Parental social functioning, <i>M</i> ( <i>SD</i> )	6.6 (2.0)	6.6 (2.0)	6.6 (2.0)
SDQ aggregate scores, <i>M</i> ( <i>SD</i> )			
Conduct problems	0.75 (1.00)	0.70 (0.96)	0.72 (0.97)
Emotional symptoms	0.96 (1.37)	0.85 (1.25)	0.88 (1.28)
Hyperactivity/inattention	1.90 (1.32)	1.89 (1.31)	1.90 (1.31)
Total	3.73 (3.01)	3.76 (2.85)	3.76 (2.89)
Child diagnoses			
Depression or anxiety	59 (7.0%)	199 (7.2%)	258 (7.2%)
Behavioral or conduct problems	23 (2.8%)	114 (4.1%)	137 (3.8%)

FACES = Family Adaptability and Cohesiveness Evaluation Scale IV; SDQ = Strengths and Difficulties Questionnaire

\*Indicates the differences between National Guard/Reserve and active duty components were significant at the  $p < 0.05$  level

Families experienced an average of approximately two deployment-related stressors ( $M = 1.9, SD = 1.04$ ). Active duty families, however, experienced slightly more family-related stressors ( $M = 2.3, SD = 1.07$ ) than National Guard/Reserve families ( $M = 2.1, SD = 1.10$ ).

### Family and Child Functioning

Table 2 includes frequencies for family functioning based on the FACES IV satisfaction and communication subscales. As shown in Table 2, there were no significant differences in the level of satisfaction or communication reported between the National Guard/Reserve and active duty groups. Similarly, there were no significant differences for either group in SDQ scores or in the reports of depression or anxiety diagnoses, behavioral or conduct diagnoses, or attention deficit/hyperactivity diagnoses.

### Regression Models: Strengths and Difficulties Questionnaire

To examine our aims, regression models predicting child conduct problems, emotional symptoms, hyperactivity/inattention, and total (aggregate) problems as measured by the SDQ are presented in Table 3. For each outcome, there were differential patterns of predictors. In the model predicting

child conduct problems, a greater number of reported injury-related stressors ( $b = 0.049, SE = 0.014$ ) was associated with more child conduct problems. Higher levels of family satisfaction ( $b = -0.056, SE = 0.007$ ) and parental social functioning ( $b = -0.084, SE = 0.008$ ) were associated with fewer child conduct problems. With regard to covariates, the number of months in the past year that the service members were away from home ( $b = 0.013, SE = 0.004$ ) was associated with more child conduct problems. The number ( $b = 0.221, SE = 0.017$ ) and ages of children ( $b = 0.019, SE = 0.004$ ) in the home were positively associated with conduct problems (i.e., more children and older ages were associated with more conduct problems), while being a female spouse was negatively associated with conduct problems ( $b = -0.138, SE = 0.047$ ; i.e., female spouses reported fewer child conduct problems).

For child emotional symptoms, experiencing more deployment-related military stressors was predictive of more emotional symptoms ( $b = 0.076, SE = 0.019$ ), whereas higher levels of family satisfaction ( $b = -0.082, SE = 0.008$ ) and parental social functioning ( $b = -0.147, SE = 0.010$ ) were associated with fewer child emotional problems. Covariates associated with more emotional symptoms included having more children in the home ( $b = 0.288, SE = 0.022$ ) and older child age ( $b = 0.047, SE = 0.005$ ). Similarly, experiencing more family-related military stressors was predictive of higher levels of child hyperactivity/inattention ( $b = 0.062, SE =$

**Table 3** Final models for Strengths and Difficulties Questionnaire (SDQ) subscales and total scores

	Modeled outcome							
	Conduct problems		Emotional symptoms		Hyperactivity/Inattention		Total	
	<i>b</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Demographics								
Female spouse	−0.138	0.047						
Age of oldest child	0.019	0.004	0.047	0.005	0.037	0.005	0.043	0.011
No. of children in home	0.221	0.017	0.288	0.022	0.306	0.024	0.578	0.050
Military life stressors								
Family related					0.062	0.020		
Injury related	0.049	0.014					0.170	0.039
Deployment related			0.076	0.019				
Protective factors								
FACES family satisfaction	−0.056	0.007	−0.082	0.008			−0.200	0.019
Parental social functioning	−0.084	0.008	−0.147	0.010	−0.111	0.011	−0.406	0.023
Other military/life factors								
Months away on assignment	0.013	0.004						

FACES = Family Adaptability and Cohesiveness Evaluation Scale IV. Significant predictors are presented in the table above. Variables in the model included deployment-, injury-, and family-related stressors, military component (National Guard/Reserve vs. active duty), deployment history (combat, noncombat), military status, family functioning subscales from the FACES (family satisfaction and communication), parental social functioning, spouse gender, duration of marriage, number of children, age of oldest child, months spent away on duty (out of last 12), and service branch

0.020), while higher parental social functioning was associated with fewer problems with child hyperactivity/inattention ( $b = -0.111$ ,  $SE = 0.011$ ). Covariates associated with higher levels of hyperactivity/inattention included a greater number of children in the home ( $b = 0.306$ ,  $SE = 0.024$ ) and older child age ( $b = 0.037$ ,  $SE = 0.005$ ).

When considering any type of child problem reported on the SDQ (conduct, emotional, or hyperactivity/inattention), experiencing injury-related military stressors was associated with more child problems endorsed on the SDQ ( $b = 0.170$ ,  $SE = 0.039$ ). Higher family satisfaction ( $b = -0.200$ ,  $SE = 0.019$ ) and higher parental social functioning ( $b = -0.406$ ,  $SE = 0.023$ ) were associated with fewer child problems. Consistent with previous models, the covariates significantly associated with overall child problems included the number of children in the household ( $b = 0.578$ ,  $SE = 0.050$ ) and age of oldest child in the home ( $b = 0.043$ ,  $SE = 0.011$ ).

Across models, the only consistently significant predictors included family composition (age and number of children) and parental social functioning. Conversely, deployment history, military component (i.e., National Guard/Reserve vs. active duty), service branch, officer versus enlisted status, and family communication were not significantly associated with any of the child outcomes measured on the SDQ subscales. Models were also tested to

examine whether injury- and family-related stressors were moderated by family satisfaction. Interactions terms for each of the four modeled outcomes were not significant.

### Logistic Regression Models: Child Mental Health Conditions

To further examine our aims, logistic regression models were analyzed for depression and anxiety, behavioral or conduct problems, and ADD/ADHD outcomes. The fully adjusted model results are presented in Table 4. With regard to having a child in the home diagnosed by a provider as having depression or anxiety, each family-related stressor reported increased the odds of this diagnosis by 23% (odds ratio [OR] = 1.23, 95% confidence interval [CI] [1.05, 1.44]). Each family communication item endorsed reduced the likelihood of these odds (OR = 0.92, 95% CI [0.87, 0.97]), as did higher levels of parental social functioning (OR = 0.76, 95% CI [0.72, 0.80]). Active duty families had significantly higher odds of having a child in the home with a diagnosis of depression or anxiety (OR = 1.50, 95% CI [1.06, 2.11]) compared with National Guard/Reserve families, but officers' families had reduced odds (OR = 0.76, 95% CI [0.72, 0.80]). Marine families had lower odds of having a child with a diagnosis of depression or anxiety (OR = 0.49, 95% CI [0.26, 0.92]) compared with



**Table 4** Final logistic regression models predicting child mental health diagnoses

	Modeled outcome					
	Diagnosis of depression or anxiety		Diagnosis of behavioral or conduct problems		Diagnosis of attention deficit/hyperactivity	
	OR	95% CI	OR	95% CI	OR	95% CI
<b>Demographics</b>						
No. of children in home	1.36	[1.19, 1.55]	1.58	[1.34, 1.87]	1.49	[1.34, 1.67]
Age of oldest child	1.21	[1.17, 1.24]	1.15	[1.11, 1.20]	1.20	[1.17, 1.23]
<b>Military life stressor</b>						
Family related	1.23	[1.05, 1.44]				
Injury related			1.18	[1.02, 1.37]		
Deployment related						
<b>Protective factors</b>						
FACES family communication	0.92	[0.87, 0.97]	0.87	[0.82, 0.93]	–	–
Parental social functioning	0.76	[0.72, 0.80]	0.72	[0.68, 0.78]	0.80	[0.77, 0.84]
<b>Other military/life factors</b>						
Active duty	1.50	[1.06, 2.11]	2.27	[1.38, 3.74]	1.39	[1.05, 1.83]
Combat deployment vs. none					1.65	[1.15, 2.36]
Air Force vs. Army						
Coast Guard vs. Army						
Marine Corps vs. Army	0.49	[0.26, 0.92]				
Navy vs. Army						
Enlisted vs. officer	0.76	[0.72, 0.80]	0.72	[0.68, 0.78]	0.80	[0.77, 0.84]

CI, confidence interval; FACES, Family Adaptability and Cohesiveness Evaluation Scale IV; OR, odds ratio. Significant predictors are presented in the table above. Variables in the model included deployment-, injury-, and family-related stressors, military component (National Guard/Reserve vs. active duty), deployment history (combat, noncombat), military status, family functioning subscales from the FACES (family satisfaction and communication), parental social functioning, spouse gender, duration of marriage, number of children, age of oldest child, months spent away on duty (out of last 12), and service branch

Army families. Both the number of children in the home (OR = 1.36, 95% CI [1.19, 1.55]) and the age of the oldest child (OR = 1.21, 95% CI [1.17, 1.24]) also increased the odds of a diagnosis of either child depression or anxiety.

With regard to having a child with a diagnosis related to behavioral or conduct problems, these odds increased with each injury-related stressor reported by 18% (OR = 1.18, 95% CI [1.02, 1.37]). Active duty families had significantly higher odds of a child in the home having a diagnosis of behavioral or conduct problems (OR = 2.27, 95% CI [1.38, 3.74]), while families of officers odds were reduced (OR = 0.72, 95% CI [0.68, 0.78]). The number of family communication items endorsed was associated with lower odds of a diagnosis (OR = 0.87, 95% CI [0.82, 0.93]), as were higher levels of parental social functioning (OR = 0.72, 95% CI [0.68, 0.78]). The number of children in the home (OR = 1.58, 95% CI [1.34, 1.87]) and the age of the oldest child (OR = 1.15, 95% CI [1.11, 1.20]) increased the odds of a diagnosis of child behavioral or conduct problems.

None of the military-related stressors were significantly associated with diagnoses of child ADD/ADHD in the final

models. However, a history of deployment with combat was significant compared to those with no deployment history (OR = 1.65, 95% CI [1.15, 2.36]). Active duty families had significantly higher odds of having a child with ADD/ADHD (OR = 1.39, 95% CI [1.05, 1.83]), while officers families once again were less likely (OR = 0.80, 95% CI [0.77, 0.84]). Higher parental social functioning reduced these odds (OR = 0.80, 95% CI [0.77, 0.84]). The number of children in the home (OR = 1.49, 95% CI [1.34, 1.67]) and age of the oldest child (OR = 1.20, 95% CI [1.17, 1.23]) increased the odds of a diagnosis of child ADD/ADHD.

Overall, family satisfaction, gender, length of marriage, deployment-related stressors, as well as the service member’s time (months) away from home were not significant predictors for any of the diagnoses assessed, while family composition (ages and number of children), parental functioning, and both active duty and officer status were significant for all three models. Additional models testing potential interaction effects between family communication and military life stressors (e.g., deployment, injury, and family) were not significant.

## Discussion

This study sought to explore potential family demographic and contextual factors that may explain differences in child functioning based on military component and to explore how family demographic characteristics, deployment characteristics, military life stressors, and parent and family functioning were associated with children's mental health conditions and impairments in psychosocial functioning. National Guard/Reserve families did not differ greatly from active duty families in the overall number of military-related stressors spouses reported. Active duty families, however, reported slightly higher numbers of family-related stressors. Higher endorsement of family-related stressors among active duty respondents is consistent with the demands for greater geographic mobility and rapid deployment responsiveness that the military expects of active duty families (e.g., Clever and Segal 2013). For both active duty and National Guard/Reserve families, military-related family stressors (e.g., difficulty balancing demands, conflict over whether spouse should remain in the military) were associated with higher SDQ hyperactivity/inattention scores and depression/anxiety diagnoses, while injury-related stressors (e.g., combat and non-combat injuries, caring for injured spouse) were associated with higher child conduct problems and diagnoses and overall child functioning on the SDQ. These findings may reflect the increased family demands on spouses that are associated with multiple deployments or caring for an injured spouse. These results also demonstrate the complex and multifaceted impact of family-, military-, and combat-related stressors on child functioning, with outcomes differing based on the type of stressor being analyzed. These variable effects may be associated with an array of developmental (age of child) and measurement factors, including the prevalence of some of these mental health symptoms versus diagnoses of these disorders among children and adolescents.

Conversely, higher levels of parental social functioning were consistently associated with fewer child problems (conduct problems, emotional problems, hyperactivity/inattention), as well as with lower odds of each child diagnosis. This finding is consistent with the literature noting parental distress and poor functioning is associated with higher levels of mental health problems in children (Foran et al. 2017). In addition to parental social functioning, lower family satisfaction was a significant predictor of SDQ conduct problems, emotional symptoms, and total SDQ scores. This finding is consistent with prior studies that have reported that satisfaction with family life promotes prosocial behavior and a sense of self-worth in youth, whereas family dissatisfaction is associated with behavioral and emotional problems in children and adolescents (Gilman 2001; Valois et al. 2001).

Family communication was only associated with depression/anxiety and conduct diagnoses in the fully adjusted

models, and not the other diagnoses or domains assessed in the present study. This was a somewhat surprising finding given that effective communication is generally viewed as contributing substantially to youth's positive development within families (Bandura et al. 2011). This may be due to the nature of the information shared increasing the likelihood of sadness, grief or anxiety. Alternatively, it may be due in part to a potential overlap in the dimensions between the constructs of satisfaction and communication as measured by the FACES IV subscales. Another potential explanation for this finding is that the Family Study sample includes a preponderance of families with young children. Effective family communication may be comparatively more important for families with older, adolescent youth who are confronting the challenging developmental tasks of individuation and separation and making decisions that affect themselves and their families (Jackson et al. 1998). As such, we may find that family communication becomes significantly associated with SDQ scores at subsequent waves of the longitudinal study, when more adolescents are represented in the Family Study. The field can also benefit from further exploration of the communication and satisfaction dimensions of FACES IV as intervention and prevention efforts focus on sequelae associated with different developmental epochs.

Contrary to the prediction that National Guard/Reserve families faced more challenges with family functioning and child well-being, military component was unrelated to any of the SDQ subscales. Even more unexpectedly, active duty status was a significant risk factor for all of the child diagnoses we considered. Since this difference was only noted for diagnostic history and not parent-reported perceptions of children's functioning, it may be confounded by better access to health care or a greater openness to help-seeking. It would be helpful for future research to evaluate this possibility.

Interestingly, deployment-related military stressors (e.g., uncertainty about future deployments) and deployment status and history (i.e., combat deployment, noncombat deployment, no deployment) were each only significant in predicting emotional problems and ADD/ADHD, respectively. Again, this may be due in part to the potential overlap in constructs (though the correlations were modest), including the shared contribution that deployment and deployment-related military stressors may make via total family-related military stressors (i.e., increased time spent away performing military duties, conflict over continued military involvement, and difficulty balancing demands of family life and military duties), as well as the stress of caring for an injured partner (including combat injuries). But it is also likely that the combined influence of multiple military life stressors may be more important than any individual stressor by itself, even if it is combat deployment.

Alternatively, our findings may highlight what Haley (1998) and others have described as the "healthy warrior

effect,” because those service members who deploy are somewhat better adjusted on average at the outset compared with military members who do not deploy. Furthermore, those who deploy more than once have demonstrated resilience through their ongoing eligibility for subsequent combat deployments (Larson et al. 2008). Service members with significant challenges are less likely either to deploy initially or to be redeployed. Thus, by virtue of this selection bias, deployment status alone may appear to have less of an impact on service member and family functioning. Finally, much of the influence of deployment and other military life stressors is likely mediated via spouse, service member, and family functioning rather than having a direct effect. Future studies from this program of research will build on these findings and specifically examine the extent to which parental and family functioning may mediate the relationship between military-related stressors and child outcomes among Family Study participants.

Across outcomes, having more children at home and older children were associated with higher odds of child difficulties and mental health/behavioral diagnoses. This finding is consistent with current literature suggesting that older children may demonstrate more difficulties and younger children (i.e., 1.5- to 3-year-olds) may demonstrate fewer problems during times of deployment and reintegration (Chandra et al. 2011; Chartrand et al. 2008). More research needs to be conducted to fully understand the developmental implications of this finding; however, one possible interpretation is that older children may have a better understanding and be more impacted by military-related stressors (e.g., frequent relocations). Additionally, having more children in the home may place additional strain on parents, especially during times of deployment when there is a sole caregiver in the home. One practical implication of this finding is for targeted intervention and prevention programs to increase awareness of larger families and families with older children as they try to systematically identify and reduce the impact of military-related stressors on child functioning.

Several methodological limitations warrant consideration. The present study was cross-sectional in nature and relied on a single respondent (i.e., the spouse) to report on child functioning. In addition to the potential introduction of response bias from the parent, we were not able to examine the reliability of reports across respondents (e.g., service members/other caregivers, mental health professionals, teachers). Similarly, children’s psychiatric diagnoses were based on spouse reports rather than medical records from the diagnosing provider. Psychosocial functioning was assessed on the family level, that is, across all children in the home rather than a randomly identified child. Symptom measures also relied on an abbreviated and modified version of the SDQ, which has not been validated relative to the full measure, so findings are not directly comparable to analyses using the full SDQ. Moreover,

the SDQ subscales were focused at the symptom level, while the other set of outcomes at the diagnostic level. These differences in foci may have contributed to different results for the same construct (e.g., family-related military stressors were associated with higher SDQ hyperactivity/inattention scale scores, but not a diagnosis of ADHD). Although group differences were significant, low base rates and modest effects restricted our ability to infer clinical significance and the extent to which findings may guide mental health treatment. Lastly, potential overlap in the dimensionality of some of the constructs tested as well as shared variance may have hindered our ability to detect underlying mechanisms that undergird these complex relationships.

Despite these limitations, an important strength of the Family Study that differentiates it from much of the earlier research on the mental health of children in military families is that it is composed of a large, population-based cohort that includes female and male service members. The Family Study respondents represent all branches and components of the U.S. military, including active duty and National Guard/Reserve service members. This study also improves on the design and methods of earlier military family research by recruiting a probability-based sample of military spouses; thus, the findings are applicable to a broader population of military families.

## Conclusion

This study sought to explore how family demographic characteristics, deployment history and status, military life stressors, and parent and family functioning were associated with children’s mental health conditions and impairments in psychosocial functioning. The pattern of results highlights the need to allocate resources, especially when they are limited, to those families grappling with injury-related stressors, those with more and older children, and those managing the burdens associated with multiple deployments of longer length. Moreover, programs, interventions, and support services that foster healthy parental social and family functioning, positive interactions and resiliency are critical to minimizing the impact of operational stress on both the workforce and the family members that support them. The results of this study underscore the need for future investigations to explore these relationships longitudinally, delineate mechanisms and pathways that support child and family well-being, and enhance our understanding of other developmental and contextual factors that impact child outcomes. Finally, the findings of this study are relevant to a number of military family support programs and can be disseminated through educational materials, webinars, and newsletters, as well as, be used to justify the development of new services, interventions, and policies to address some of the unmet needs of military families as reported in this research.

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## Compliance with Ethical Standards

**Conflict of Interest** On behalf of all authors, the corresponding author states that there is no conflict of interest.

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