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RUNNING HEAD: Deployment and Child-Mother Relationships

Maternal Perspectives on Deployment and Child-Mother Relationships in Military Families

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Abstract

Using survey data from 292 mothers married to members of the U.S. military, this study examined relations among military deployment factors, quality of maternal care, and child attachment behavior with mother. Results revealed that maternal perceptions of quality of care, mothers' depressive symptoms, and fathers' involvement when not deployed were significantly associated with children's attachment behavior. In addition, fathers' combat exposure was negatively associated with children's attachment behavior. Mothers' quality of care partially mediated the association between fathers' involvement and children's attachment behavior as well as the association between mothers' depressive symptoms and children's attachment behavior. A notable finding of this study was that deployment-related factors were both directly and indirectly related to children's attachment.

Key Words: deployment, attachment behavior, maternal quality of care, father involvement, military families.

Maternal Perspectives on Deployment and Child-Mother Relationships in Military Families

With the onset of the conflicts in Iraq and Afghanistan, deployments and their associated challenges have become increasingly common for families serving in both the active and reserve components of the U.S. military (Cozza, Chun & Polo, 2005). For example, 43% of those who deployed did so multiple times (Institute of Medicine, IOM, 2013). Many studies have been conducted on the various effects of deployment on families, including attachment relationships in military couples (Basham, 2008); ambiguities associated with a serving person's family presence and absence (Faber, Willerton, Clymer, MacDermid & Weiss, 2008); and disruptions in adolescents' behavior and peer relationships (Lester et al., 2010). However, significant knowledge gaps remain regarding the implications of these experiences for young children in military families.

Of the more than two million U.S. children whose parent(s) experienced military wartime deployments to Iraq and Afghanistan, 40% were younger than five (Chartrand, Frank, White & Shope, 2008). Deployments can pose "developmental crises" for young children because these separations have the potential to disrupt parent-child relationships at a time when children's behaviors, beliefs and expectations about significant others are at a particularly sensitive time in the development of young children's behaviors (Paris, DeVoe, Ross & Acker, 2010). In order to learn to competently regulate their emotions and engage constructively in relationships with others, children need to consistently receive care that is responsive to their signals and communications (Berlin, Cassidy & Appleyard, 2008; Lieberman & Van Horn, 2013). Because early experiences in attachment relationships with principal caregivers become key organizers for children's 'working models' in later relationships, disruptions during childhood may have negative consequences for many years (Bowlby, 1982).

There are two pathways through which parental deployment could disrupt children's attachment relationships (Lieberman & Van Horn, 2013; Paris et al., 2010). First, deployments may challenge relationships directly by separating children from deployed parents for prolonged periods, which for most children is stressful. Second, deployments may challenge children's attachment relationships indirectly by producing stressful demands on at-home parents that in turn can interfere with the quality of their parenting by reducing their responsiveness and sensitivity to children (Flake, Davis, Johnson & Middleton, 2009). When the quality of parental caregiving declines, children may find it more difficult to trust that caregivers will be available and responsive, possibly affecting their attachment behavior and security (Posada, Kaloustian, Richmond & Moreno, 2007). We found one existing study that assessed attachment relationships between young children and caregivers in families experiencing military deployments. Using a sample of 57 Army families, Barker & Berry (2009) found direct associations between current or recent deployments and children's attachment behaviors (e.g., at reunion ignoring the returning parent or not letting him comfort him/her) and behavior problems (e.g., defiance, sleep problems, appetite changes), particularly when deployments had been longer or more numerous. In addition, children's behavior was positively related to deployment-related stressors experienced by parents, although connections to parenting quality were not tested. Our study extends Barker and Berry's investigation by using a substantially larger and more diverse military sample, including concurrent rather than retrospective data, and expanding the focus to explicitly consider not only parenting quality but also contextual factors that might influence it.

The Significance of Maternal Care

Attachment theory and research suggest that the quality of main caregivers' behavior, i.e.,

sensitivity, is a key influence on the development of secure relationships. The sensitivity-security link has been typically demonstrated in child-mother relationships, in part, because in most families mothers spend considerably more time with children than fathers and tend to perform the bulk of child care and child management tasks (e.g., Sayer, Bianchi & Robinson, 2004). For this reason and also because most military families with children are composed of a service member father and a civilian mother, we focus on deploying fathers and at-home mothers. As per attachment theory, when mothers respond promptly and appropriately to children's signals and communications, children are more likely to develop a sense of trust, expressed in the exploration and proximity-seeking balance characteristic of a securely attached child (Ainsworth, Blehar, Waters & Wall, 1978; Brown, McBride, Shin & Bost, 2007). In contrast, when mothers are uncooperative, inaccessible, rejecting, or insensitive to children's signals, children are more likely to become insecure about their mother's availability and responsiveness. Research on child development in the general population provides evidence of this relationship between the quality of maternal caregiving and the organization of preschool children's attachment behavior (Posada et al., 2007; Posada, 2013).

Existing evidence connects deployment cycles to the quality of at-home parents' caregiving in military families. Gewirtz, Erbes, Polusny, Forgatch & DeGarmo (2011) argue that deployment-related stress can impair parenting practices including compromised problem-solving, reduced levels of encouragement and involvement, and increased levels of aversive behavior and coercion. Consistent with this view, child maltreatment (primarily neglect) in military families increases significantly during deployment (Gibbs, Martin, Kupper & Johnson, 2007; Rentz et al., 2007).

The Context of Child-mother Attachment Relationships in Military Families

Attachment theory and empirical evidence indicate that child-mother relationships are context-sensitive (Bowlby, 1988; Posada et al., 1999; Vaughn, Egeland, Sroufe & Waters, 1979). We examined the role of three contextual factors within the family with the potential to be related to the quality of caregiving and children's outcomes: deployment experiences, fathers' involvement, and mothers' depressive symptoms.

Deployment experiences. Although deployments vary widely in duration, frequency, and purpose (e.g., training, peacekeeping, natural disasters, armed conflict), all include phases of preparation, separation, and reintegration (Hill, 1949; Lieberman & Van Horn, 2013; Wilcox & Rank, 2013). Specifically regarding parenting and children, DeVoe and Ross (2012) identified potential impacts of each phase of deployment on families. In pre-deployment, anticipatory stress can include worries about parenting, decisions about how to say goodbye, and challenges balancing family needs with increased demands of military preparation and training. During deployment, at home caregivers have to respond to children's stress and anxiety, establish new routines, and cope with lack of respite. By the time of reintegration, as families come together again, there can be parenting clashes if at-home caregivers are reluctant to reduce their new roles, if children are resistant to change, or if a returning parent is insensitive to changes that occurred during their absence. To move on from the deployment, families need to acknowledge change and incorporate the deployment into their narrative. Awareness of phase-related parenting stressors such as those just outlined can help parents to buffer negative effects of deployment on children.

Existing studies of young children in military families have found elevated levels of internalizing and externalizing behavior problems both during and following deployment (Chartrand et al., 2008; U.S. Department of Defense, 2010). Direct effects of deployment,

though stronger when separations are lengthy, may be more modest overall than indirect effects that are mediated through parents' characteristics and behavior; the pre-deployment period is not exempt (Jordan et al., 1992; IOM, 2013; McCarthy et al., 2013; Thomsen et al., 2014).

Father involvement. From a family systems perspective, fathers influence other family's members and family subsystems (e.g., Belsky, 1981). Children whose fathers are more involved in their care display several positive consequences, including fewer behavior problems (Aldous & Mulligan, 2002), greater sociability (Lamb, Hwang, Frodi & Frodi, 1982), higher quality peer interactions (Parke, 2002), more positive school attitudes in adolescence (Flouri, Buchanan & Bream, 2002), and better mental health as adults (Wenk, Hardesty, Morgan & Sampson-Lee, 1994). In addition to these direct effects, father involvement also appears to affect children's outcomes indirectly through mothers. Positive father involvement also is related to the security of children's attachments, not only to their fathers (Caldera, 2004) but also to their mothers (Pudasainee-Kapri, 2013). Father involvement is thought to help mothers feel more supported and less stressed (Nomaguchi, Brown & Leyman, 2012), and mothers' sensitivity is positively related to the level of fathers' involvement in childcare and the range of childcare activities fathers perform (Feldman, 2000). Fathers' patterns of involvement may exert influence even during family separations. Nomaguchi et al. (2012) found that mothers felt more supported when fathers were more involved even when they did not live together, so long as they remained romantically involved.

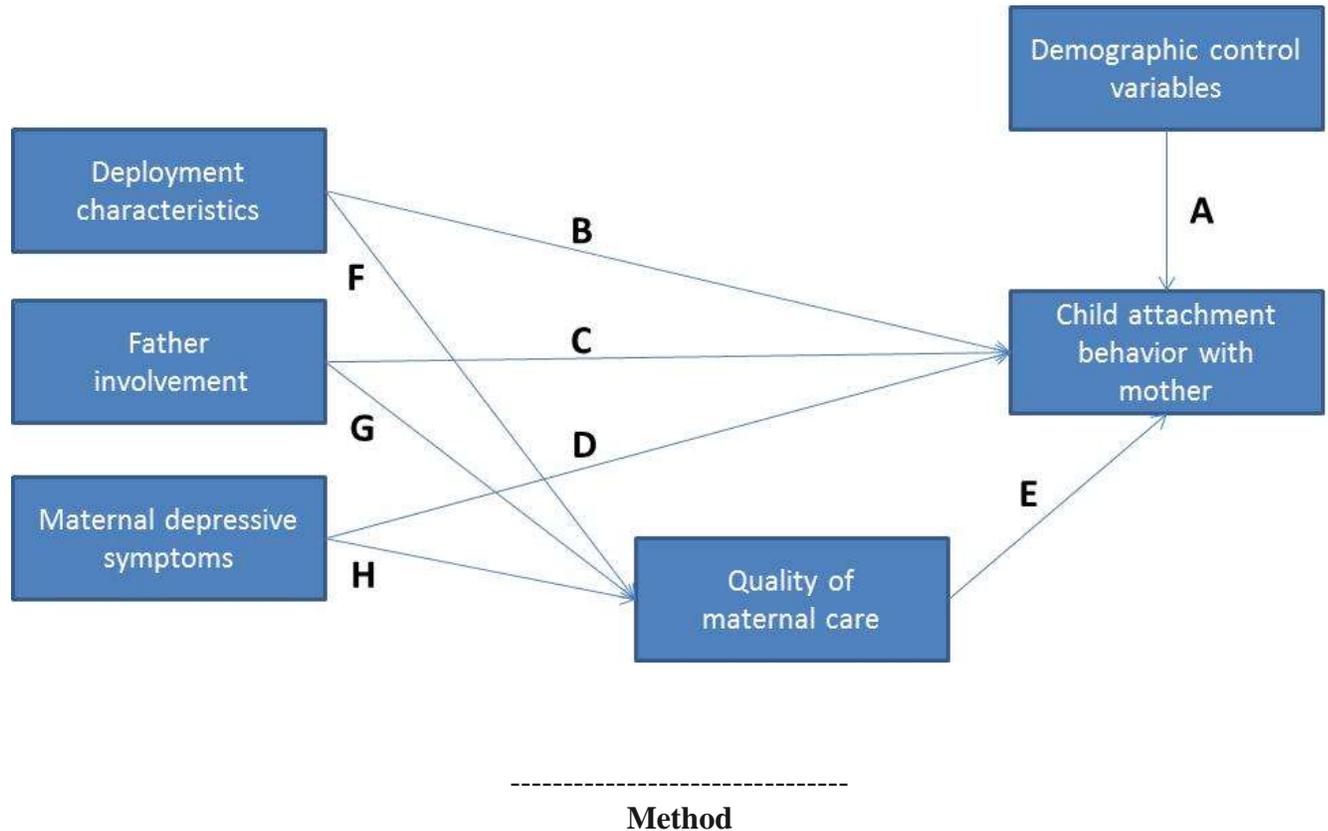
Mothers' depressive symptoms. Depressive symptoms are one of the most common indicators of distress among military spouses in association with deployment (IOM, 2013). In recent research by Mansfield et al. (2010), diagnoses of depression that were associated with deployments increased more among spouses than those diagnoses associated with substance use,

anxiety, sleep or stress disorders. In another study, depressive symptoms of the at-home parent were more strongly related to children's outcomes than duration of deployment or other psychological symptoms in all but one analysis (Lester et al., 2010). When mothers are depressed, both behavior problems and developmental delays are more common among their children (Child Trends, 2012). If mothers model depressive symptoms such as a general inability to cope, children can be directly affected by their mothers' depression. Children can also be affected if depression interferes with the quality of mothers' caregiving, reducing their responsiveness or increasing the likelihood that they will neglect, abuse or engage in conflict with their children (Child Trends, 2012; Lieberman & Van Horn, 2013).

Hypotheses

The hypotheses that guided our analyses are graphically represented in Figure 1. We predicted that the quality of maternal care would be significantly related to children's attachment behavior. In addition, we hypothesized that deployment characteristics, father involvement, and mothers' depression would be directly related to children's attachment behavior with their mothers (paths B, C, and D). These latter relationships, we further hypothesized, would be at least partially mediated by the quality of maternal caregiving (paths E, F, G, and H).

Figure 1 Diagram of Paths Analyzed



Data came from a larger study designed to evaluate a multi-media kit for use with pre-school children of junior enlisted service members (pay grades E-2 through E-6) in U.S. military families during pre-deployment, deployment, and post-deployment phases.

Procedures

Data were collected in 2006 from 292 mothers of pre-school aged children in families representing both the active and reserve components of the U.S. military. At interview time, all families had previously experienced at least one deployment, and were either preparing for a deployment in the next six months (28%), experiencing a deployment in progress (45%), or

readjusting following a deployment completed in the past three months (27%). Recruitment occurred by telephone using local research databases in 15 urban areas throughout the U.S. In families with multiple eligible children, mothers were asked to focus on the oldest child between three and five. Mothers' responses to a 15-to-30 minute telephone interview at the beginning of the larger study were used for the analyses reported here.

Participants

Participants included 292 mothers, 54% of whom described themselves as Caucasian, 27% as Hispanic, 17% as African American, and 2% as Asian American. Most mothers were high school graduates (40%) or had some college education (39%). While a small number did not complete high school (6%), 15% had a college degree. More than two thirds of the participants were below 35 years of age (68%) with 20% of them being below 25 and only 5% being above 44 years of age. While about a third of the mothers had only one child (34%), 44% had two children and 22% had three or more. The employment status of the mothers varied with 32% of them being employed full-time, 26% being employed part-time and 42% not being employed.

Participating families had an annual household income of \$30,000 or below.

All branches of service were represented, with Army and Navy families slightly under-represented relative to the overall military population (Army: 45% vs. 48%; Navy: 13% vs. 17%) (DoD, 2010). Air Force and Marine Corps personnel each made up 19%, and 4% were in the Coast Guard. The sample included members of both the active (68%) and reserve (32%) components. The service members' total numbers of deployments since the oldest preschooler was born varied between one (47%), two (33%), and three or more (20%). One fifth of the service members were away on deployment for less than a month during the past year while 14% were gone for 31 to 60 days, 14% were gone between 61 and 90 days, 8% were gone for 91 to

120 days, 15% were gone for 121 to 180 days, 16% were gone for 181 to 270 days, and 13% were gone for 271 days or more. The nature of the service members' most recent, current, or planned deployment was combat for 34% of the sample.

Measures

Index of child's attachment behavior. Although a strength of the sample, the geographic dispersion of the families across the country posed challenges, as did resource constraints that limited us to brief telephone interviews. Given that it was not possible to administer lengthy measures or collect data in person, we followed Barker and Berry's lead to construct a measurement instrument. We selected already-developed items from the Attachment Q-Set, a well-established measure of children's security (Waters, 1995). The AQS is considered a valid measure of child's security as indexed by the organization of a child's secure base behavior around a specific caregiver (van IJzendoorn, Vereijken, Bakermans-Kranenburg & Riksen-Walraven, 2004) and has been used with children six and younger in a variety of ways and contexts. We selected five items to represent different behavioral characteristics of children in secure attachment relationships. Items were slightly revised to allow mothers to provide a brief characterization of children's behavior during their interactions in the past four weeks -- in each case the first word of the item was revised to 'my' from 'the.' The items were: (a) My child keeps track of my location when he/she plays around the house. (b) My child easily becomes irritated or angry with me. (c) My child readily shares with me or let me hold things if I ask to. (d) My child enjoys relaxing in my lap. (e) My child is demanding and impatient with me; he/she fusses and persists unless I do what he/she wants right away. Mothers were asked to use a Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) to respond to the five items. Items were reversed when appropriate and averaged so that higher scores reflected a behavioral index

corresponding to that of a securely attached child. A confirmatory factor analysis was conducted to assess the factor structure of the items. Results indicated good fit to the data: a non-significant chi-square value (10.62, $p=0.06$), a Root Mean Square Error of Approximation (RMSEA) of 0.06, and Goodness of Fit (GFI) and Comparative Fit Indices (CFI) exceeding .95 (.99 and .96 respectively; Hooper, Coughlan & Mullen, 2008).

Index of mothers' quality of care. A brief index of mothers' quality of care over the past four weeks was constructed by using five items that we judged most representative of the Maternal Behavior with Preschooler Q-Sort (MBPQS), as per its criterion (Posada et al., 2007). The MBPQS has been successfully used to assess mothers' sensitivity and ability to provide secure base support to their children (e.g., Posada, 2013). The items used were: (a) I think I have been over-controlling or intrusive with my child. (b) It has been hard to provide my child with the physical contact he/she needs. (c) I feel uncomfortable when my child expresses negative emotions (e.g., when he/she cries or is annoyed). (d) I have been frequently irritated by my child's behavior; and (e) when my child is disappointed, upset, or crying, it is difficult for me to calm him/her down. Mothers used a Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) to rate the items. The items were slightly revised to accommodate mothers rather than observers as reporters (e.g., the original wording of the first item above was 'Is over-controlling, intrusive in interactions with child'). Items were reversed and averaged such that higher scores reflected a behavioral index corresponding to that of a sensitive mother. The resulting composite was used in analyses as an index of maternal perceptions of quality of care. A confirmatory factor analysis yielded a non-significant chi-square value (6.36, $p=0.27$), a RMSEA of 0.03, and GFI (0.99) and CFI (0.99) exceeding .95, all indicating good fit to the data.

Deployment variables. Several variables were created to reflect deployment experiences.

Phase of deployment was dummy-coded into two variables using *currently deployed* as the reference category (i.e., one variable was coded (1) for families *preparing for deployment in the next six months* and the other was coded (1) for families in which the father had *returned from deployment in the past three months*). *Total number of deployments since oldest preschooler was born* was represented by a 5-point scale: (1) one; (2) two; (3) three; (4) four; and (5) five or more. *Number of days the father spent away on deployment in the past year* was reported using 8 categories: (0) none; (1) 1 to 30; (2) 31 to 60; (3) 61 to 90; (4) 91 to 120; (5) 121 to 180; (6) 181 to 270; (7) 271 to 365. The nature of the father's most recent, current, or upcoming deployment was measured by a dummy variable labeled *Combat exposure*, coded 1 if the mothers reported that the father's deployment involved combat and 0 if it did not.

Father's involvement when not deployed. An index of father involvement was generated by calculating the mean value of two items indicating mothers' perceptions of fathers' engagement and participation in caregiving when not deployed: (a) my spouse/partner exerts a lot of effort to maintain a close relationship with our preschooler; and (b) my spouse/partner regularly participates in our preschooler's daily routines (e.g., bedtime, bath time, meals he/she needs). Mothers used a Likert scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Items were averaged such that higher scores reflected more father involvement in the child's life (Cronbach's alpha = .63). A confirmatory factor analysis on these two items yielded factor loadings of .88 ($p < 0.01$) and .78 ($p < 0.01$), respectively.

Mother's depressive symptoms. The Patient Health Questionnaire (PHQ-2), a widely used screening tool, was used to assess mothers' symptoms of depression in the past month (Kroenke, Spitzer & Williams, 2003). An average score was created based on mothers' responses to two items: (a) bothered by little interest or pleasure in doing things, (b) bothered by feeling down,

depressed or hopeless. Responses were indicated using a Likert scale that ranged from 1 (*not at all*) to 4 (*nearly every day*). Items were averaged such that higher scores reflected more frequent symptoms during the past month (Cronbach's alpha = .82). A confirmatory factor analysis on these two items yielded factor loadings of .64 ($p < 0.01$) and .71 ($p < 0.01$), respectively.

Results

Common Method Variance Analysis

Because all data were obtained from self-reports at a single time point, there was a risk of systematic measurement error due to common method variance (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). We evaluated this potential problem using Harman's one-factor test, in which all the variables were entered into exploratory factor analyses using SAS software (version 9.2). The basic assumption of Harman's test is that strong evidence of common method bias exists if a single factor explaining a significant amount of the variance in the data emerges from the factor analyses. None of the analyses suggested that a general factor was apparent for mothers' data – the percentage of variance accounted for by the first factor extracted was only 19% with five Eigenvalues exceeding 1. Next, we conducted a one-factor confirmatory factor analysis, which revealed a high chi-square ($\chi^2(54, n = 297) = 240$), a high RMSEA (.11), and a low CFI (.77), all indicating poor fit to the data. Based on these results, we concluded that there was little evidence of systematic measurement error due to common method variance.

Descriptive Statistics

Means, standard deviations, and ranges of the analysis variables are presented in Table 1. All variables but one were distributed normally; a square root transformation of scores for mother's depressive symptoms normalized their positive skew. Three demographic variables were significantly associated with the substantive variables (see Table 1). Specifically, mothers

who reported higher annual household incomes or whose husbands served in the Army reported higher levels of father involvement than other mothers. In addition, Caucasian mothers reported lower levels of depressive symptoms than mothers from other groups. As a result, we controlled for income, ethnicity and military branch in subsequent analyses. We did not include military component, i.e., active vs. reserve, as a control variable as there were no significant associations with the central variables

Examination of intercorrelations among the substantive variables revealed that children's attachment behavior was significantly correlated with mothers' quality of care, fathers' exposure to combat, fathers' involvement, and mothers' depressive symptoms in the expected directions. As expected, mothers' depressive symptoms and fathers' involvement were significantly related to mothers' quality of care, and significantly and negatively correlated with one another. Contrary to expectations, the deployment variables were not significantly correlated with mothers' quality of care, mothers' depressive symptoms, or fathers' involvement.

Table 1

Continued

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Mean	3.6	0.8	0.5	0.5	0.3	0.3	1.9	3.8	0.3	4.3	1.7	3.4
STD	0.6	0.4	0.5	0.5	0.5	0.4	1.1	2.2	0.5	0.6	0.8	1.0
Range	1 - 5	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	1 - 5	0 - 7	0 - 1	2 - 5	1 - 4	1 - 5

^aIncome: 0 = *less than \$20,000*, 1 = *\$20,000 to \$30,000*. ^bEthnicity: 0 = *other*, 1 = *white*. ^cMilitary branches: 0 = *other*, 1 = *army*.

^dPreparing for deployment: 0 = *no*, 1 = *yes*. ^eReturned from deployment: 0 = *no*, 1 = *yes*. ^fCombat exposure: 0 = *no*, 1 = *yes*.

* = $p \leq .05$. ** = $p \leq .01$. *** = $p \leq .001$.

Regression Analyses

We conducted blockwise regression analyses using SPSS software (version 20) to analyze children's attachment behavior. In Model 1, we estimated a simple random intercept model (ANOVA) of attachment behavior including only the control variables as independent variables, which accounted for 1% of the variance (see Table 2). None of the regression coefficients for any individual variable were significant in this or subsequent models, eliminating Path A in Figure 1 from consideration.

Table 2: Regression models for child's attachment behavior ($N = 292$)

Variable	Model 1			Model 2			Model 3		
	B	SE B	β	B	SE B	β	B	SE B	β
Income	0.07	0.08	0.05	0.03	0.08	0.02	0.02	0.08	0.02
Ethnicity	0.11	0.07	0.09	0.07	0.07	0.06	0.07	0.06	0.06
Military branches	0.08	0.07	0.07	0.05	0.07	0.04	0.05	0.06	0.04
Preparing for deployment				-0.03	0.09	-0.20	-0.06	0.08	-0.04
Returned from deployment				0.15	0.08	0.11	0.12	0.08	0.10
Number of deployments				-0.05	0.03	-0.09	-0.05	0.03	-0.09
Days father spent away				-0.01	0.02	-0.03	-0.01	0.02	-0.03
Combat exposure				-0.16	0.07	-0.13*	-0.15	0.07	-0.12*
Father's involvement				0.15	0.06	0.16**	0.13	0.05	0.14*
Mother's depression				-0.49	0.11	-0.25***	-0.24	0.12	-0.12*
Mother's quality of care							0.18	0.04	0.30***
Adjusted R^2		0.01			0.13***			0.20***	
F for change in R^2		1.67			6.84			25.79	
Effect Size attributable to the addition of predictors					0.17			0.09	

* = $p \leq .05$. ** = $p \leq .01$. *** = $p \leq .001$.

In model 2 we added the family context variables (i.e., deployment characteristics, fathers' involvement, and mothers' depressive symptoms). This set of variables accounted for an additional 12% of the variance in children's attachment behavior. Children's attachment behavior was significantly and negatively related to fathers' combat exposure (Path B), significantly and positively related to fathers' involvement (Path C), and significantly and negatively related to mothers' depressive symptoms (Path D). The effect size attributable to the addition of these contextual variables was in the medium range (Cohen, 1988).

In model 3 we added mother's quality of care as a predictor of child attachment behavior to the model (Path E). Consistent with our expectations, quality of maternal care significantly predicted child attachment behavior, accounting for an additional 7% of the variance. Together, all of the predictors included in model 3 accounted for 20% of the variance in children's attachment behavior. The effect size attributable to the addition of mother's quality of care was in the medium range (Cohen, 1988).

Finally, analyses were conducted to determine whether mothers' quality of care mediated the associations between children's attachment behavior and the family context variables. We conducted regression analysis using family contextual factors as predictors, mothers' quality of care as a mediator, and child attachment behavior as the outcome. Mediation analyses were conducted for only two family context factors -- father involvement and mothers' depressive symptoms -- because the deployment variables were not associated with maternal quality of care, thereby failing to meet the conditions stipulated by Baron and Kenny for testing mediation (Baron & Kenny, 1986; Preacher & Leonardelli, 2004).

Regression analyses (see model 2, table 2) showed that the coefficient for the direct effect of father involvement on child attachment behavior, controlling for the other contextual factors

and the control variables, was significant ($c = .154$; $t(290) = 2.73$, $p < .01$). When maternal quality of care was controlled, the estimated effect was also significant ($c' = .133$, $t(290) = 2.44$, $p < .05$; model 3 of table 2). Partitioning the total effect of father involvement on child attachment behavior yielded a mediated or indirect effect of .02. To test whether this indirect effect differed significantly from zero, we conducted a mediation analysis using a bootstrapping procedure (Preacher & Hayes, 2008) yielding a 95% confidence interval that excluded zero (.02 - .11). Findings thus indicated that the contribution of father involvement to the prediction of attachment behavior was significantly reduced by including maternal quality of care in the model, and thus that mothers' quality of care partially mediated the association between father involvement and child attachment behavior (see paths E & G).

Model 2 of table 2 showed that the direct effect of maternal depressive symptoms on child attachment behavior, controlling for the other contextual factors and the control variables, was statistically significant ($c = -.49$; $t(290) = -4.37$, $p = .000$). Controlling for maternal quality of care, the estimated effect was also statistically significant ($c' = -.24$, $t(290) = -2.00$, $p < .05$; model 3 of table 2). Partitioning the total effect of maternal depressive symptoms on child attachment behavior yielded a mediated or indirect effect of -0.25. We used the bootstrapping procedure to test for the significance of this indirect effect, which showed that the confidence intervals obtained did not include zero (CI = -.40 to -.15). Thus, maternal quality of care partially mediated the relationship between maternal depressive symptoms and child attachment behavior (see paths E and H).

Discussion

This is one of the first studies to examine some of the mechanisms through which parental deployment might be related to young children's attachment behavior with mother.

Consistent with our predictions and existing literature, mothers who, in the context of their partners' wartime deployment, reported good quality of care in their interactions with their children also were more likely to report that their children exhibited behaviors consistent with those of securely attached children (Ainsworth et al., 1978; Posada et al., 2007). In addition, children's attachment behavior as reported by the mother was significantly related to fathers' exposure to combat, father involvement, and mothers' symptoms of depression. These results highlight the importance of real life conditions and experiences, and the sensitivity to context of child-mother relationships. Further, mothers' quality of care partially mediated the relationships of children's attachment behavior with mothers' depressive symptoms and fathers' involvement, suggesting that these family context factors impact the child-mother relationship via the quality of care mothers provide in these military families.

Deployment and Children's Attachment

Of all the aspects of deployment that we examined, only fathers' exposure to combat was associated with mothers' reports of children's attachment behavior. We did not find significant associations between attachment behavior and the cumulative frequency of paternal deployments or the number of days fathers spent away in the past year. These results are partially consistent with previous studies, which generally have not found significant effects for cumulative frequency, but have found significant relationships between cumulative duration of deployment and children's outcomes (Chandra et al., 2010; Lester et al., 2010). It is possible that our focus on days deployed during only the past year, which was designed to maximize the precision of parents' reports, attenuated our results.

We also expected but did not find differences in children's attachment behavior as a function of phase in the deployment cycle. The lack of differences across deployment phases in

this study may suggest that, consistent with the predictions by DeVoe and Ross (2012), each phase poses stressful challenges for children that might differ in content but not difficulty.

Further investigation, ideally longitudinal and with comparison groups, is needed.

Findings regarding combat exposure were consistent with results from previous research. For example, McLean and Elder (2007), based on reviewing studies of the consequences of military service during the 20th century, concluded that combat exposure generates the most consistent and negative consequences of military service. In addition, the IOM recently (2013) concluded that deployment to a war zone is positively related to a variety of negative outcomes including psychological and substance use disorders, family conflict, and accidental death and suicide. As child-mother attachment is concerned, it is likely that child security is impacted when family interaction dynamics are altered by the negative effect of combat on the exposed spouse. Thus, for example, research illustrates that marital conflict (reported as one of the negative effects of combat exposure), has been found to be associated with negative child outcomes, and particularly with negative child mother interactions (Margolin, Gordis & Oliver, 2004) and anxious attachment (Laurent, Kim & Capaldi, 2008).

Other Aspects of the Family Context of Maternal Quality of Care

Consistent with our expectations and previous research, children's attachment behavior toward mothers was significantly related to fathers' involvement when not deployed as well as mothers' depressive symptoms. Father involvement and mothers' depressive symptoms also were significantly and negatively associated with one another. Although not surprising given existing research in the general population (Caldera, 2004), our results highlight the relevance of father involvement on the child-mother family subsystem. By participating in the child's daily routines and being active in their efforts to be close to their children, fathers may also contribute

to the development of secure child-mother relationships (see below). The relationship between father involvement and children's attachment reported here is notable because studies of military children do not routinely consider positive father involvement.

Children's attachment behavior was significantly and negatively related to mothers' depressive symptoms. This is in line with studies in non-military families, which indicate that maternal depression is significantly and negatively related to child security (Teti, Gelfand, Messinger & Isabella, 1995). It is likely that (depressed) mothers' behavior in interactions is a mechanism that accounts for this association. A possible limitation of our results here is that mothers' depression has been hypothesized to distort their perceptions of their children's behavior (Richters & Pellegrini, 1989). To check for such distortions, we re-ran our common method variance analyses including only mothers' reports of depression, quality of care, and children's attachment behavior. Fit to the data remained poor, minimizing concerns about distortion. In addition, multiple studies have found that mothers' depressive symptoms were positively not negatively correlated with the accuracy of their reports of children's behavior problems (Conrad & Hammen, 1989; Querido, Eyberg & Boggs, 2001). Regardless, studies that gather information employing independent sources of information provide more clear-cut results.

The Role of Mothers' Quality of Caregiving

Consistent with our predictions, we found evidence of mothers' quality of care as a mediating variable in the relation between children's attachment behavior with mother and both fathers' involvement and mothers' depressive symptoms. Fathers' involvement was both directly and indirectly related to children's attachment behavior. The indirect relationship is consistent with the notion in attachment theory that fathers' involvement contributes to a positive context that supports mothers' provision of sensitive care (Cox et al., 1992). It also draws

attention to the importance of fathers' involvement for the quality of military children's experiences through its relationship to mothers' quality of care.

Mothers' depressive symptoms were also both directly and indirectly related to children's attachment behavior. Depressive symptoms may negatively impact a mother's ability to provide good quality of care and contribute to smooth interactions with her child. This, in turn, is likely to impact a child's ability to use his or her mother as a secure base (Posada et al., 1999; Vaughn et al., 1979). Indeed, research with depressed women indicate that their maternal behavior is less responsive and active, more helpless, hostile, critical, intrusive, and overall less competent than that of non-depressed women (Gelfand & Teti, 1990). It is then probable that depression interferes with a parent's ability to provide sensitive care, which in turn impacts a child's security.

Surprisingly, mothers' quality of care was not significantly related to the deployment variables assessed in this study. Fathers' combat exposure was directly related to children's attachment behavior, and was not mediated by mothers' quality of care. Thus, although positive associations with mothers' quality of care may have offset to some degree the negative associations with combat exposure, our results were not consistent with a model of quality of care as an intervening variable in our sample.

Limitations and Strengths

The most serious limitation of this investigation is that all data were reported by mothers at a single point in time. Although analyses showed that it was unlikely that our findings can simply be interpreted as the product of common method variance, longitudinal studies with multiple independent informants will be needed to move beyond these preliminary results, particularly given that mothers were responsible for reporting about both themselves and their

children. Observations of child-parent interactions, if demanding, would add key information necessary to elucidate the relations amongst the variables. Another important limitation is that due to resource and access constraints, several of the measures used in this study were adapted from longer measures, although all of the items used were drawn from well-validated instruments. Studies with full measures that allow a more comprehensive assessment of the variables are necessary to draw firm conclusions. Finally, the results reported are a first step that needs not only to be replicated, but also expanded to military families with children of different ages to evaluate their generalizability. Parenting challenges vary depending on children's age, and providing sensitive care may be impacted differently by the circumstances surrounding military deployments at different developmental points. Also, we note that more nuanced analyses, as military branches are concerned, would have been desirable, as the demands imposed on each branch are different and may have different implications. Statistical power issues prevented us from doing so. Strengths of the study include a diverse sample distributed across much of the U.S., reliance on concurrent rather than retrospective data, and consideration of not only mothers' quality of care but also contextual factors that may influence it.

Implications

The results of this study point to the importance of investigating characteristics of the contexts (combat exposure, father involvement, and maternal depressive symptoms) in which child-mother relationships develop. The findings presented provide a preliminary step in the inquiry of how life experiences in military families are related to the quality of child-mother relationships. How those diverse experiences interact to impact child attachment behavior with mother and father in military families will be an important topic for future research.

If replicated, the results have implications for military family support and mental health professionals, as well as primary care providers and educators in both military and civilian communities. The findings indicate that combat exposure may be a risk factor (for children) that is not completely mediated by other factors, underscoring the need for support programs that aim to minimize its effects. On the other hand, the findings also emphasize that there are multiple factors that may at least partially offset these effects. In this study, deployments accounted for less variance in child-mother attachment behavior than mothers' quality of care or depressive symptoms, and about the same amount of variance as fathers' involvement. Children who continue to receive sensitive and responsive parenting are most likely to be protected from challenges their families are facing. Although this study focused only on at-home mothers, from an attachment perspective, children benefit from sensitive parenting provided by either or both mothers and fathers (Bowlby, 1988).

Military family support professionals are responsible for preparing service members and their families for marital and parenting challenges that deployments might pose. One lesson from this study is that service members' parenting behavior when home may significantly influence both their partners and their children while they are away. Programs that help service members to understand their seminal importance in children's lives, and to fully participate as parents – not just as 'helpers' -- can aid their partners to feel more supported, enabling them to be more sensitive and responsive to children during separations (Faber et al., 2008). Helping both service members and their partners to provide sensitive and responsive parenting that promotes the development of secure relationships will equip both children and parents for a variety of family challenges.

Primary and behavioral health care providers, both inside and outside the military, may be called upon to care for at-home parents who develop mental health problems. Given the importance in this study of mothers' depressive symptoms for children's development, providers may need to ask questions about mothers' family circumstances and consider interventions that will do everything possible to support their ability to function as parents. This is particularly important given evidence that child maltreatment rises in association with deployments (IOM, 2013).

Many military spouses and children also turn to community-based primary care physicians, behavioral health providers, school counselors and educators for assistance when confronting challenges (Flittner et al., in press). Families may be better served when these providers have made themselves familiar with military-specific challenges and recent evidence about helpful supports (RAND, 2014). The findings of this study reinforce the potential risks of developmental disruptions for children that may be posed by parental deployment, but they also make clear that there is much that parents and professionals can do to minimize these effects.

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