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TRAIT MINDFULNESS AND ANGER IN THE FAMILY: A DYADIC ANALYSIS OF MALE SERVICE MEMBERS AND THEIR FEMALE PARTNERS

Na Zhang,

REACH Institute, Department of Psychology, Arizona State University, USA

Timothy F. Piehler,

Department of Family Social Science, University of Minnesota, USA

Abigail H. Gewirtz,

Department of Family Social Science and Institute of Child Development, University of Minnesota, USA

Osnat Zamir,

The Paul Baerwald School of Social Work and Social Welfare, Hebrew University of Jerusalem, Jerusalem, Israel

James J. Snyder

Department of Psychology, Wichita State University, USA.

Abstract

Anger-related problems have been documented among post-deployed service members who returned home, posing risks to their wellbeing and increasing distress in their families. Trait mindfulness (acting with awareness, nonjudging, and nonreactivity) has been associated with lower self-reported anger. Using actor partner interdependence models, we tested the association between trait mindfulness and parental anger observed in parent-child and couple interactions. The sample consisted of 155 dyads of male National Guard/Reserve members who had been recently deployed and returned, and their female non-deployed partners. Results showed that fathers' and mothers' nonreactivity was negatively associated with their own observed anger, indicating that parents who reported higher nonreactivity exhibited lower anger. Mothers' nonreactivity was also negatively associated with observed fathers' anger in the same family such that fathers exhibited lower anger when their female partner reported higher nonreactivity. Nonreactivity facilitates emotion regulation and its cultivation may reduce anger in post-deployed military families.

Keywords

Mindfulness; anger; military family; actor-partner interdependence model

Since 9/11, approximately 2.7 million U.S. service members have been deployed to war in Iraq and/or Afghanistan for Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF) and Operation New Dawn (OND) (Ramchand et al., 2015). National Guard/Reserve (NG/R) members, who had never been deployed overseas in large numbers before 9/11, have become a core element of the US Military's fighting force (Nagl & Sharp, 2010). It was estimated that the total number of NG/R personnel was over 1.1 million (vs. over 1.3 million Active Duty) (Department of Defense, 2016). Approximately half of all of the service members in the military have children (Department of Defense, 2016). Wartime deployments place unique stressors not only on these service members as individuals but also on their families. For example, Gewirtz, DeGarmo, and Zamir (2018a) provided empirical support for a military family stress model, showing that children of deployed parents may be at risk of emotional and behavioral problems associated with parents' psychopathology and/or impaired parenting practices. In addition, Mansfield et al. (2010) found that wives whose husbands were deployed attended more outpatient medical visits for mental health problems and sleep disorders.

Several studies have documented anger to be relatively common among deployed service members (Jakupcak et al., 2007; Milliken, Auchterlonie, & Hoge, 2007; Sayer et al., 2010). While anger is not always maladaptive, it has been linked to negative outcomes, such as hostility, aggression, and criminal offending among war veterans (Elbogen et al., 2012; Jakupcak et al., 2007; Taft, Street, Marshall, Dowdall, & Riggs, 2007). Service members exposed to combat trauma, especially those with a diagnosis of posttraumatic stress disorder (PTSD) often experience anger-related problems (MacManus et al., 2013). Koffel, Polusny, Arbisi, and Erbes (2012) documented greater increases in anger from pre- to post-deployment among those with a PTSD diagnosis relative to those without the diagnosis, suggesting that anger may be associated with the development of PTSD. In fact, irritability or aggression is a key symptom within the diagnostic criteria for PTSD (American Psychiatric Association, 2013).

Problematic anger also influences family relationships via negative family interactions, marriage discordance, and coercive parenting (Fernandez & Johnson, 2016; Jenkins, 2000). A qualitative study cited a wife describing her husband who returned from military deployments: "He had a lot of obvious anger... We argued a lot" (Faber et al., 2008, p.227). Evidence from civilian populations indicated that parental anger problems can be transmitted to children through aggressive or coercive parenting (Conger, Neppl, Kim, & Scaramella, 2003). Parental anger expression was a significant predictor of child abuse potential above and beyond parenting stress (Rodriguez & Green, 1997). Moreover, mother-reported anger-based marital conflict was strongly associated with children's aggression in school (Jenkins, 2000).

At the individual level, trait mindfulness may be relevant in understanding anger. Trait mindfulness is typically defined as one's general tendency to pay attention to the present moment nonjudgmentally in daily life (Brown & Ryan, 2003). While it can be enhanced through intense training, trait mindfulness is generally conceptualized as a set of stable qualities that differ inherently among people (Anicha, Ode, Moeller, & Robinson, 2012), and it has been inversely correlated with negative affect (for a meta-analysis, see Giluk, 2009). In

particular, Lindsay and Creswell (2017) posited that the acceptance aspect of mindfulness is particularly helpful in reducing negative affect, which involves being nonjudgmental and nonreactive to inner experiences (vs. simply paying attention to/monitoring them). High trait mindfulness may be associated with weakened anger responses because it enables viewing thoughts and feelings as transient events, reducing sensitivity to anger-triggering stimuli, and resulting in calm responses rather than aggressive reactions (Singh, Lancioni, & Winton, 2017). Empirical evidence has supported this. For example, Eisenlohr-Moul, Peters, Pond, and DeWall (2016) found inverse relationships between trait mindfulness and anger intensity, anger rumination, anger expression, as well as aggressiveness in college students at an individual/intrapersonal level. Bergman, Christopher, and Bowen (2016) implemented a mindfulness intervention in police officers, showing that changes in trait mindfulness were associated with reduced anger at post-test. Together, these findings shed light on the relationships between trait mindfulness and anger. However, less is known about whether trait mindfulness has a significant impact on anger at an *interpersonal* level (involving interactions between individuals).

Karremans, Schellekens, and Kappen (2015) proposed a theoretical model to explain how trait mindfulness of one partner in a dyad might affect *both* partners' relationship satisfaction through psychological processes such as behavioral, affective, and/or cognitive responses. For instance, Barnes, Brown, Krusemark, Campbell, and Rogge (2007) showed that people with higher trait mindfulness reported less anger-hostility prior to a conflict discussion with their partners, which led to less anger-hostility afterwards. And they also found that female partners' trait mindfulness was inversely associated with male partners' feelings of anger and hostility after the conflict discussion. In this study, trait mindfulness was assessed using a unidimensional construct, leaving open the question of whether higher levels of distinct mindfulness facets would be differentially associated with less anger. Of note, while in Barnes et al. (2007) there was only one partner effect of female partners' mindfulness on male partners' self-reported anger-hostility, other researchers found no gender differences in the effects of trait mindfulness on partners' marital adjustment (Pakenham & Samios, 2013) or physiological reactivity during couple conflict discussions (Kimmes, May, Seibert, Jaurequi, & Fincham, 2018).

Trait mindfulness is regarded as a multidimensional construct. One of the most commonly used instruments for assessing trait mindfulness is the Five Facet Mindfulness Questionnaire (FFMQ) (Baer et al., 2006). The FFMQ consists of five subscales: 1) Observing, which refers to noticing experiences such as sensations, cognition, and emotion; 2) Describing, which refers to labeling inner experiences with words; 3) Acting with awareness, which refers to bringing attention to one's experiences and activities; 4) Nonjudging, which refers to taking a nonevaluative stance towards one's feelings and thoughts; and 5) Nonreactivity, which refers to allowing thoughts and feelings to come and go without getting caught up or being carried away. In previous studies, higher levels of acting with awareness, nonjudging, and nonreactivity were found to be uniquely associated with lower anger (Bergman et al., 2016; Eisenlohr-Moul et al., 2016; Peters et al., 2015; Karyadi, VanderVeen, & Cyders, 2014).

The Current Study

The goal of this paper is to examine the associations between trait mindfulness and anger expressed in family interactions among a sample of previously deployed male NG/R members and their female partners. Instead of focusing on couple relationships alone, we measured anger in family interactions involving the father, mother, and child, since anger problems are relevant to both the marital and parent-child relationships. We used observational methods to assess anger during naturalistic family interactions at family homes for several reasons: first, anger is an emotional response that often occurs when other people are involved (Kashdan, Goodman, Mallard, & Dewart, 2015) and is more likely to impair one's interpersonal relationships than other kinds of emotion (DiGiuseppe & Tafrate, 2007, p. 46). Second, displays of anger are important for determining whether the exhibited anger is maladaptive (Fernandez & Johnson, 2016). Third, observation in a naturalistic setting precludes social desirability response bias associated with self-report methods for assessing anger (Van de Mortel, 2008).

Actor-partner interdependence models (APIMs) are appropriate for simultaneously testing whether trait mindfulness is associated with both actor (i.e. one's own) and partner (i.e. one's partner's) anger. Using APIMs, we tested whether higher levels of acting with awareness, nonjudging, and nonreactivity would be associated with lower anger in post-deployed fathers and their non-deployed partners during family interactions. We chose to test these mindfulness facets to inform specific skills that are needed to cultivate to reduce anger problems. These three mindfulness facets (vs. observing and describing) have been associated with anger in previous studies and have shown to have incremental validity in predicting psychological symptoms (Baer et al., 2006). Observing and describing mindfulness skills are closely related to skills learned through meditation and thus are considered less applicable in non-meditating populations.

We formulated two primary hypotheses:

1. Nonjudging and nonreactivity aspects of mindfulness reported by one parent will be inversely associated with that parent's observed anger during family interactions. As mentioned above, nonjudging and nonreactivity are theorized to be linked to reduced negative affect, and acting with awareness alone may not be associated with reduced negative affect (see Lindsay & Creswell, 2017).
2. Nonjudging and nonreactivity aspects of mindfulness reported by one parent will be inversely associated with the other parent's observed anger during family interactions. This is consistent with theory (Karremans et al., 2015) and existing evidence for the partner effects of trait mindfulness (Kimmes et al., 2018; Pakenham & Samios, 2013).

METHOD

Participants

The sample included 155 families with a NG/R father who had returned from a deployment to the conflicts in Middle East since 2001, and a non-deployed mother. These families are a

subsample of a larger prevention study designed for military families ($N = 336$ families; see Gewirtz, DeGarmo, & Zamir, 2018b for details about the larger research project). The current sample was drawn from a secondary data analytic study, which involved observational coding of family members' affective behaviors for a subsample of 184 two-parent families out of the 336 families. These were heterosexual couples with deployed fathers and non-deployed mothers. For the current study we excluded families with a deployed mother ($n = 16$) or families who did not complete a father-mother conflict interaction task ($n = 13$).

Most fathers (82.5%) had been deployed 1–3 times for a cumulative deployment length of less than 12 months (31.1%), 13–24 months (33.1%), 25–36 months (27.9%), or more than 37 months (7.8%). A little over half (61.7%) of the fathers were Army National Guard, followed by 11.7% Army Reserve, 9.7% Air National Guard, 3.2% Air Reserve, 2.6% Navy Reserve, and other military branches. Fathers and mothers ranged in age from 23 to 58 years ($M = 37.60$, $SD = 6.46$; $M = 36.12$, $SD = 5.74$, respectively). All couples were co-parenting at least one target child aged 4–13 years old. On average, couples had two children ($SD = 0.88$, range: 1–5). The majority were married (92.9%) to their current partner. The sample was mostly White (87.1% of fathers; 93.5% of mothers), with a small number of African-Americans (5.2% of fathers; 1.3% of mothers), Asian American (3.2% of fathers; 0.6% of mothers), Native American (0.6% of fathers), Native Hawaiian/Pacific Islander (0.6% of fathers, 0.6% of mothers), and Multiracial (0.6% of fathers; 1.3% of mothers). Over 93.4% had completed college or some higher education. Median annual household income was between \$60,000 – 99,999.

Procedures

All study procedures were approved by the Institutional Review Board at the University of Minnesota. A randomized clinical trial (RCT) of a parent training program designed for military families following deployments was conducted (Gewirtz et al., 2018b), and the current study used the baseline data prior to the intervention. Families were eligible to participate in the RCT if at least one parent had been recently deployed to Afghanistan and/or Iraq since 2001 and returned, and at least one child was 4–13 years old. Several cohorts of families were recruited using multiple strategies including presentations at events for military families, targeted mailings from the local Veterans Affairs Medical Center, social media, flyers or prints, and word of mouth. Interested families completed an online survey to screen for eligibility and consent to participate. For the first few cohorts, families with two or more children in the target age range were instructed to select the oldest child in the family as the target child in the study. In later cohorts of recruited families, to prevent oversampling older vs. younger children, the youngest child was selected to be the target child. In a few cases when the oldest or youngest child was not willing or able to participate, parents made their own choice in selecting a target child. Consented and enrolled parents completed online questionnaires before being randomly assigned to an intervention or control group. Each parent was compensated with \$25 for online survey completion and the family was compensated \$50 for completing a home assessment.

During the home-based assessment, families completed a total of 11 structured family interaction tasks (each task took about 4–5 minutes): a reading task, two parent-child conflict resolution tasks (one with the father and one with the mother), a parents-only conflict resolution task, a triadic conflict resolution task, two parent-child deployment discussion tasks (one with the father and one with the mother), a play task with toys, a puzzle teaching task, a monitoring task, and a fun family activity task. In the current study, four conflict resolution tasks were selected for analyses, completed by mother-child, father-child, mother-father-child, and father-mother. Hence each parent completed three tasks in total. These tasks were selected because anger was not a predominant emotion in other tasks. Tasks that involved the target child were included for the measurement of anger given the conceptualization of anger as affecting all family relationships.

Conflict resolution tasks—Prior to the tasks, each family member was presented with a list of parenting-related conflict issues (e.g., making too much noise at home, helping out around the house, talking back and arguing with parents) and was asked to rate the degree to which each issue had been a “hot topic” in the family in the past two weeks (0 = Irrelevant, 1 = Not at all “hot”, 2 = “Hot”, 3 = “Boiling hot”). An assessment technician selected the four topics that were rated as most likely to generate conflict for the four conflict resolution tasks. While the family members were seated by a kitchen table facing a recording camera, the technician read out a topic and instructed the family to discuss the problem and try to solve it, and if they finished discussing the issue, they were free to talk about anything but other conflict issues they had selected. After assuring that the family understood the instructions, the assessment technician left the room and came back after five minutes. Each parent participated in the conflict resolution tasks in the same order: with the child, with the child and the partner, and with the partner. When a family member was not needed for a task, he or she was placed in another room.

Measures

Variables that were likely associated with parental anger during family interactions were included as controls; these were: child age, child behavioral problems, deployment-related variables (combat exposure and time since return from the most recent deployment), and parental PTSD symptoms. Outcome variables were father’s and mother’s observed anger; predictor variables were mindfulness facets.

Predictor variables

Trait mindfulness facets—The Five Facets Mindfulness Questionnaire (FFMQ; Baer et al., 2006) was used to measure acting with awareness (8 items, e.g., “when I do things, my mind wanders off and I’m easily distracted”), nonjudging (8 items, e.g., “I tell myself I shouldn’t be feeling the way I’m feeling”), and nonreactivity (7 items, e.g., “when I have distressing thoughts or images, I just notice them and let them go”). Items are anchored on a 5-point scale (1=never or very rarely true, 5 = very often or always true). Composite subscale scores were calculated such that higher scores indicate higher trait mindfulness. The subscales showed acceptable reliability in the current sample for fathers ($\alpha > .79$) and mothers ($\alpha > .75$).

Outcome variables

Observed anger—Videos of family interaction tasks were coded using the Noldus Observer XT software, based on the Relationship Affect Coding System (RACS; Peterson, Winter, Jabson, & Dishion, 2010; Dishion et al., 2017). The RACS is a second-by-second micro-level coding system for observing the real-time onset and offset of verbal, physical and affective behaviors simultaneously. Specifically, affective codes measured several emotional behaviors following a hierarchical order: 1) anger, 2) distress, 3) validation, 4) positive affect, 5) ignore, and 6) no affect. They were designed to be mutually exclusive and they collectively cover all possible affective states during interactions. Anger was observed from a holistic view of facial expressions, vocal quality, and body postures and/or orientation, for example, when the person raised his/her voice, showed irritation, or spoke in a staccato rhythm. Anger took priority over other codes and once it was observed, other affect codes were no longer considered for portion of the recording when anger was present. A technical report documenting details of the RACS micro-coding processes and results was prepared by the last author and is available upon request from the corresponding author. The reliability of this coding system in military families was reported by Snyder et al. (2016). Four observers were trained and reached an acceptable inter-coder agreement ($\kappa > .70$) before coding for the study. Reliability meetings were conducted biweekly during the coding. Finally, among the videos coded for the study, 25% were selected for assessing reliability and yielded an inter-coder agreement $\kappa > .90$. A value of rate per minute (RPM) was extracted for each task and an average score was computed such that a higher anger RPM indicated more frequent displays of anger for the parent across all of conflict resolution tasks.

Control variables

Child behavioral problems—Both parents reported child externalizing behaviors using the Behavior Assessment System for Children (2nd Edition) – Parent Rating Scale (BASC-2-PRS; Reynolds & Kamphaus, 2004). Two versions of the BASC-2-PRS were administered: the child (normed for age 5–11) and the adolescent form (normed for ages 12–21; about 10% of the families in our sample were given the adolescent form). All items were rated on a scale of 1 (*never*) to 4 (*almost always*). A composite score was created by summing three subscales: conduct problems, hyperactivity, and aggression. Age-specific normative scores were calculated using a large, nationally representative sample in the form of T-scores with a mean of 50 and a standard deviation of 10. Three out of the 155 families had 4-year-olds who were evaluated using 5-year-old norms. Mother- and father-reported T-scores were averaged. The BASC-2-PRS showed acceptable reliability in the current sample for fathers ($\alpha = .90$) and mothers ($\alpha = .92$).

Time since the most recent deployment—Parents reported the military father's return date from the most recent deployment, which was used to calculate the time interval (in years) between the most recent return from deployment and participation in the study.

Combat exposure—The Deployment Risk and Resilience Inventory (DRRI; Vogt, Proctor, King, King, & Vasterling, 2008) was used to assess combat exposure in fathers. This scale has shown good internal consistency and validity (Polusny et al., 2011). It has two

subscales of 15 items each. The first subscale assesses combat exposure (e.g., “I went on combat patrols or missions”; “I was wounded or injured in combat”). The second subscale is about aftermath of battle experience (e.g., “I saw the bodies of dead civilians after battle”; “I saw refugees who had lost their homes and belonging as a result of battle”). The two subscales showed acceptable reliability in the current sample of fathers (combat experience $\alpha = .88$; aftermath of battle experience $\alpha = .91$). Composite scores were computed such that higher scores indicate greater degrees of combat trauma experiences.

PTSD symptoms—PTSD symptoms were controlled because anger is an element of PTSD. The Post-Traumatic Stress Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993), the most widely used measure of PTSD, was used to assess symptoms. Fathers completed the military version which assesses symptoms in response to stressful military experiences. Mothers completed the civilian version which assesses symptoms in response to stressful life experiences. Items were rated on a 5-point scale ranging from 1 (not at all) to 5 (extremely). A composite score indicated symptom severity such that higher scores indicate greater symptoms. The PCL showed acceptable reliability in our sample for fathers ($\alpha = .94$) and mothers ($\alpha = .89$).

Data Analysis

Data was analyzed at the family level in Mplus 7 (Muthén & Muthén 1998–2012). Correlations and descriptive statistics were computed for all study variables. A *t*-test was used to examine whether fathers showed greater rates of anger during family interactions relative to mothers within families.

Actor-partner interdependence models (APIMs; Kenny, Kashy & Cook, 2006) were computed to test our primary hypotheses within a structural equation modeling (SEM) framework, which is appropriate when two members of a dyad share similarities in their psychological presentations to the extent that their data are non-independent. APIM estimates two actor effects (the effects of each person’s mindfulness on his/her own anger) and two partner effects (the effects of each person’s mindfulness on his/her partner’s anger) simultaneously while accounting for the shared couple-level context. We computed three models to examine the two actor effects (a_1 for fathers and a_2 for mothers) and two partner effects (p_1 for fathers and p_2 for mothers) of each mindfulness facet in associations with anger. We followed the steps suggested by Kenny and Ledermann (2010) and Fitzpatrick, Gareau, Lafontaine, and Gaudreau (2016). First, we tested a basic APIM model (Figure 1), which is a saturated model ($df = 0$) and does not allow the evaluation of model fit indices. If the basic APIM model provided evidence for significant actor (or partner) effects, we then computed *k* parameters. In the cases of a significant a_1 , for example, k_1 is defined as the ratio of the partner to actor effect ($k_1 = p_1 / a_1$). Kenny and Ledermann (2010) posited several advantages to estimating *k* parameters through phantom variables. For example, it provides a quantitative (vs. qualitative) index of the relative size of the partner effect. It also allows the computation of confidence intervals (CIs) for *k*. Finally, it allows the testing whether *k* can take a particular value (e.g., 0, 1 or -1) and thus helps detect any distinct dyadic patterns (including actor-only pattern, partner-only pattern, couple pattern, or contrast pattern). Specifically, *k* can be directly estimated within SEM through phantom

variables (i.e., auxiliary variables with no substantive meaning and no disturbance to model estimation). CIs for k_1 and k_2 can inform to constrain these parameters to particular values (0, 1 or -1) which result in an over-identified APIM ($df = 2$) that allows evaluating model fit.

The following control variables were included: child age, time since return, child behavioral problems, father combat exposure, and both parents' PTSD symptoms. Because our anger data were not normally distributed, we utilized robust maximum likelihood estimation to verify our results. *Mplus 7* was used for model estimation. We evaluated model fit using the criteria including a χ^2 minimization p value above .05, a comparative fit index (CFI) above .95, a root-mean-square error of approximation (RMSEA) below .08, and a standardized root mean square residual (SRMR) value below 0.06 (McDonald & Ho, 2002). Missing data was less than 2.6% on any variable. Full information maximum likelihood (FIML) was used in *Mplus 7*.

RESULTS

The descriptive statistics and bivariate correlation coefficients among the study variables are shown in Table 1. The assumption of non-independence was supported by the significant correlation between fathers' and mothers' observed anger within-dyads, $r = .63$, $p < .001$, indicating that father's rates of observed anger were strongly correlated with mother's during family interactions within the same families. Acting with awareness and nonjudging were reliably correlated within-person, but nonreactivity was only weakly correlated with acting with awareness and nonjudging. This means that the subscales of acting with awareness and nonjudging might measure related constructs in this sample, while nonreactivity appears to be a rather distinct construct. PTSD symptoms were negatively correlated with acting with awareness and nonjudging mindfulness facets but less so with nonreactivity. Results of the t -test showed that mothers had a significantly higher rate of anger than fathers during family interactions, $t(152) = 4.04$, $p < .001$. On average, mothers showed anger about once every other minute, and fathers showed anger about once every three minutes.

The effects of acting with awareness, nonjudging, and nonreactivity on observed anger were tested in separate APIMs while controlling for child age, time since return, child behavioral problems, father combat exposure, and both parents' PTSD symptoms. In the model with acting with awareness, neither actor nor partner effects were significant. Thus, data indicated that acting with awareness was not associated with anger at intrapersonal or interpersonal levels (Table 2).

Nonjudging was marginally and inversely associated with observed anger in terms of father actor effect (a_1) and mother partner effect (p_2), $ps < .10$ (Table 2). A model for nonjudging with phantom variables was then computed to estimate the CIs for both k_1 (p_1/a_1) and k_2 (a_2/p_2 , because of a marginally significant p_2 vs. a_2). The model indicated that both k parameters were not significantly different than 0, with 95% CIs $(-0.17, 4.85)$ and $(-0.14, 5.62)$ for k_1 and k_2 , respectively. This suggested that both k parameters should take a value of 0. Thus, there was no evidence supporting the father partner effect (p_1) or mother actor

effect (a_2). Subsequently, a model with k parameters equal to 0 was computed which demonstrated marginally acceptable fit indices, $\chi^2(2) = 5.27$, $p = .07$, CFI = .96, RMSEA = .10, SRMR = .02. While this model potentially has more power to detect dyadic patterns than a saturated APIM, no evidence was found for significant actor or partner associations between nonjudging and anger, $ps > .05$.

Nonreactivity was inversely associated with observed anger through two significant actor effects for both fathers and mothers, as well as a marginally significant partner effect on father anger (Table 2). After phantom variables were included in the model, results showed that k_1 [95% CI: 0.01 – 2.96] was significantly different than zero while k_2 [95% CI: –1.05 – 2.25] was not significantly different than zero. This evidence indicated a plausible k_1 being 1, possibly a couple pattern with both actor and partner effects, and a plausible k_2 being 0, possibly an actor-only pattern. After constraining these k parameters, the model showed a good fit to the data, $\chi^2(2) = 0.19$, $p = .91$, CFI = 1.00, RMSEA = .00, SRMR = .01 (Figure 2). The results revealed two significant actor effects: fathers' nonreactivity was inversely associated with their own anger, $B = -0.022$, $\beta = -.190$, $p < .001$; and mothers' nonreactivity were inversely associated with their own anger, $B = -0.039$, $\beta = -.211$, $p < .01$. Moreover, mothers' nonreactivity was found to be significantly and inversely associated with fathers' anger but not vice versa, $B = -0.022$, $\beta = -.181$, $p < .001$.

Although not part of our primary hypotheses, there were some significant paths linking control variables to other study variables in the nonreactivity model. A positive association between child behavioral problems and fathers' anger was detected, $B = 0.013$, $\beta = .175$, $p < .05$, showing that fathers of children with more behavioral problems expressed more anger during family interactions. Fathers' nonreactivity was inversely correlated with fathers' PTSD symptoms, $r = -.260$, $p = .001$, and child behavioral problems, $r = -.186$, $p < .05$. In other words, fathers with more severe PTSD symptoms reported being more reactive to their inner experiences, and fathers who reported more behavioral problems in their child reported more reactive to their inner experiences. Both fathers' ($r = .196$, $p < .05$) and mothers' PTSD symptoms ($r = .189$, $p < .05$) were positively correlated with their reports of child behavioral problems, suggesting that child behavioral problems and parental psychopathology were correlated in the family, and/or that shared method variance might account for these findings.

DISCUSSION

This study is the first to test actor and partner effects of specific trait mindfulness facets on parental anger expressed in the family among a sample of combat deployed male NG/R members (fathers) and their non-deployed female partners (mothers) after deployments. Our results revealed several intrapersonal- and interpersonal-level associations. First of all, one parent's nonreactivity was inversely associated with that parent's own anger, and this was the case for both mothers and fathers (i.e., two actor effects). Second, in the same family, mothers' nonreactivity was inversely associated with fathers' anger but not vice versa (i.e., one partner effect). Interestingly, acting with awareness and nonjudging mindfulness were not found to be significantly associated with parental observed anger during family interactions.

Both the mindfulness and combat trauma literature have recognized the importance of studies conducted at an interpersonal level, yet a vast majority of prior studies have focused on the intrapersonal benefits of mindfulness (either dispositional or trained through interventions) (Brown & Ryan, 2003; Giluk, 2009), with little data elucidating how mindfulness is associated with a significant other's health outcomes (Creswell, 2017; Karremans et al., 2015). However, most deployed personnel return to a family, and understanding their reintegration experiences in the family is critical to inform preventive and therapeutic practices. Furthermore, research indicates that civilian spouses of war veterans may experience emotional struggles and increased risk of mental health challenges as they navigate different family roles in the context of deployment (e.g., wife and mother) (Doncaster, Hiskey, McPherson, & Andrews, 2018). Hence, this population warrants scholarly attention.

In our sample, mothers expressed anger more frequently than fathers. This might be due to the fact that the conflict topics were about parenting instead of marriage; mothers might express more anger and frustration than fathers because they are often the primary caregivers, particularly during the long separations of deployment. Yet mothers and fathers with higher levels of nonreactivity were found to show less anger during their parenting discussions. This resonates with previous general findings that parental trait mindfulness was positively associated with effective parenting and child mental health (Parent, McKee, Rough, & Forehand, 2016).

According to Karremans et al. (2015)'s model, a person's trait mindfulness influences his/her cognitive and affective responses in close relationships. Our findings revealed that nonreactivity was inversely associated with observed anger during family interactions. Nonreactivity is perhaps the central aspect of trait mindfulness. Anicha et al. (2012) noted that nonreactivity allows one to maintain control over stressful situations, finding that individuals with higher levels of nonreactivity demonstrated better performance during incongruent trials of a color-word Stroop task, in which participants were presented with mismatched words (e.g., "green" in red color) and asked to choose between green and red based on word color instead of word meaning. Therefore, the authors concluded that nonreactivity was linked to cognitive flexibility (Anicha et al., 2012). Such cognitive flexibility has important implications for anger in close relationships. When facing an interpersonal threat, cognitive flexibility allows individuals to inhibit a habituated behavioral tendency (in this case, anger) and choose a more adaptive response. They may re-examine the situation and not over-identify with their feelings or thoughts. As a result, anger expressions are reduced.

A third-wave cognitive behavioral approach helps to understand the way nonreactivity may help with anger modulation. Specifically, in the FFMQ scale, nonreactivity assesses the capacity to allow thoughts and feelings to occur without having to react to them. Consider the concept of cognitive defusion, which refers to defusing/disrupting the rationally conditioned functions of thoughts (see Blackledge, 2007). Within the context of Acceptance and Commitment Therapy and its theoretical foundation, Relational Frame Theory, cognitive defusion can be induced or practiced through techniques such as simply repeating a self-relevant negative thought. Cognitive defusion has been found to reduce the discomfort and

believability related to self-relevant thoughts, more effectively than using distraction or thought control strategies (Masuda, Feinstein, Wendell, & Sheehan, 2010). While nonreactivity and cognitive defusion are two distinct constructs termed differently, cognitive defusion may support nonreactivity. That is, cognitive defusion provides an example of how nonreactivity may occur and be helpful for reducing negative emotions. To further illustrate this with an example of anger modulation, a person may have a thought “I am being treated unfairly”, but if he or she can see the thought as just a thought that comes and goes, this thought will then be disrupted, and he or she will not react with an anger response. In summary, it is possible that individuals with higher levels of nonreactivity are less likely to treat their thoughts and feelings as facts, which may explain the inverse relationship between nonreactivity and negative emotions like anger.

Partner effects reflect interdependence in close relationships. In this study, mothers’ nonreactivity was inversely associated with fathers’ anger but not vice versa. The finding is consistent with Barnes et al. (2007)’s data showing that women’s mindfulness was inversely associated with men’s feelings of anger and hostility after a joint conflict discussion task. Deployment status and gender were confounded in our sample because all fathers were deployed and all mothers were non-deployed, thus it is hard to know whether this partner effect reflects gender or deployment differences (or both). We speculate that because in this sample in particular, mothers were often the primary caregivers for children, it may be that mothers were the family’s “temperature gauge.” That is, mothers set the emotional tone for the family. For military families in which fathers return with symptoms of PTSD, mothers may be under even more pressure to support family members’ emotional wellbeing. Notably, the direction of partner effects (i.e., whose trait mindfulness has an influence on partner’s outcome) appear to differ depending on outcome variables. Kimmes et al. (2018) showed that mindfulness partner effects were significant for both wives and husbands with respect to cardiovascular reactivity during a conflict discussion task. Our previous findings also showed that trait mindfulness was positively associated with both actor and partner marital satisfaction regardless of gender (Zamir, Gewirtz, & Zhang, 2017). It is possible that only a partner effect on fathers was evident in the current study due to the conflict topics being parenting-related. Thus, therapists and clinicians who work with families on parenting-related issues in this family context should pay attention to the potential influences of mothers on fathers in the parenting realm.

Contrary to prior studies (Bergman et al., 2015; Eisenlohr-Moul et al., 2016), neither acting with awareness nor nonjudging was associated with anger in this study. Prior studies used questionnaire data, while we used observational data to capture a specific interpersonal situation. In other words, the expression and regulation of anger measured in this study were influenced by how parents interacted with the context, whereas self-reports of anger in prior studies were not necessarily context-specific. Alternatively, there is also a way to measure state mindfulness instead of trait mindfulness (although these mindfulness constructs are merely conceptually distinguishable). The former assesses individuals’ mindfulness levels in the moment, whereas the latter assesses mindfulness levels in everyday life. If we had assessed state mindfulness (acting with awareness or nonjudging) during interaction tasks, we might have observed their associations with anger. Indeed, data from Barnes et al. (2007)’s study lent some support for this possibility. Their results showed that state

mindfulness awareness during conflict tasks was inversely associated with observed verbal aggression and negativity.

LIMITATIONS AND FUTURE DIRECTIONS

A number of limitations should be noted. First, the code for anger in the RACS coding system also included disgust (Peterson et al., 2010). While some affect coded as anger could have reflected disgust, we recognize that it is difficult to distinguish these two emotions in a microsocial coding system during family interactions, and in fact, disgust rarely occurs. Second, this is a cross-sectional, nonexperimental study, and thus no causal relationships can be drawn. Finally, the sample in this study was homogeneous in terms of their socioeconomic status and family structures (i.e., deployed NG/R fathers and non-deployed mothers). Our findings may not be generalizable to other family backgrounds.

Future research could assess both physiological and behavioral responses simultaneously during family interactions. It is possible that trait mindfulness may be associated with anger at a physiological level. In addition, an experience sampling approach may be useful because intensive longitudinal data allows researchers to examine real-world behaviors in real time. Researchers have used this approach and found that mindfulness interventions may show promise for enhancing emotion differentiation skills (Van der Gucht et al., 2018). Finally, more research is needed to uncover the role of distinct mindfulness facets, comparing the differential effects of interventions with different foci, using experimental designs (e.g., RCT). Such evidence will be useful for developing more effective and efficient mindfulness training programs for reducing anger problems in military and civilian families.

CLINICAL IMPLICATIONS

While experimental data is sparse, several scholars have proposed that mindfulness training can be effective for anger problems (Bergman et al., 2016; Borders et al., 2010; Singh et al., 2017; Wright, Day, & Howells, 2009), and our findings indicate that nonreactivity may be a core skill for this purpose, not only at an intrapersonal level, but also at a family level. Given the increased risk for maladaptive family processes faced by families who have experienced military deployment, training in nonreactivity skills may reduce the likelihood of coercion or other family processes associated with negative outcomes (Faber et al., 2008; Patterson, 1982). Nonreactivity can be cultivated through training that focuses on openness to experiences and accepting them as they are. A number of exercises such as those described in the Mindfulness-Based Cognitive Therapy (Williams, Teasdale, Segal, & Kabat-Zinn, 2007) are practical, including the “tapes of mind” exercise (p.177), which teaches befriending with thoughts and feelings, and the “Breathing Space” exercise (p.183), which facilitates skillful actions in difficult situations. It helps to use breathing as anchor in bringing awareness and kindness to any feelings or thoughts that may be linked to blame onto another person, especially when the feelings or thoughts are intense, and to remove oneself from the interpersonal situations mindfully when it is necessary. Future experimental intervention research will be important in extending our knowledge of both the individual and family benefits of these mindfulness techniques.

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Figure 1.

The basic APIM vs. the APIM with k parameters

Note: a_1 = Father actor effect; a_2 = Mother actor effect; p_1 = Father partner effect; p_2 = Mother partner effect; Ph_1 = Phantom variable for father observed anger; Ph_2 = Phantom variable for mother observed anger; k_1 is equal to the ratio of p_1 to a_1 ; k_2 is equal to the ratio of p_2 to a_2 . With evidence of actor effects drawn from the basic APIM (the top model), k parameters can be estimated through phantom variables (the bottom model) and subsequently constrained to 1, 0 or -1 to indicate distinct dyadic patterns. Readers can refer to Kenny and Ledermann (2010) for more details about this approach.

Figure 2.

Re-estimated actor partner interdependence model with phantom variables

Note: $**p < .01$; $***p < .001$. Dotted lines indicate nonsignificant paths and solid lines indicate significant paths. Unstandardized estimates are shown. Standard errors are presented in parentheses. Control variables are not presented.

Table 1.

Descriptive statistics and bivariate correlation matrix of study variables.

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Father anger	-													
2 Mother anger	.63***	-												
3 Father AWA	.03	.10	-											
4. Mother AWA	-.10	-.11	.08	-										
5. Father NJ	-.15	-.12	.60***	-.00	-									
6. Mother NJ	-.16*	-.13	.10	.48***	.11	-								
7 Father NRT	-.21*	-.02	.19*	-.02	.15	.01	-							
8 Mother NRT	-.16*	-.19*	-.02	.04	.12	.15	.04	-						
9 Child age	.09	.12	.16*	.03	.15	.14	.07	.04	-					
10 Time since deployment	-.03	-.02	-.00	-.05	.18*	.18*	.12	.11	.10	-				
11 Child behavioral problems	.18*	.10	-.16*	-.19*	-.17*	-.18*	-.18*	.04	-.21**	.07	-			
12 Father combat exposure	-.01	.06	-.10	-.12	-.11	.01	.12	.13	.05	.27**	.13	-		
13 Father PTSD symptom	.05	.05	-.43**	-.04	-.47***	-.03	-.27**	-.03	.08	.16	.20*	.42**	-	
14 Mother PTSD symptom	.13	.11	-.02	-.42**	-.11	-.43***	-.06	-.14	-.06	.05	.19*	.04	.05	-
N	153	154	151	154	151	154	151	154	155	151	154	154	155	155
M	.31	.51	28.01	28.42	29.15	30.31	23.45	22.19	8.45	2.32	16.01	8.33	28.61	26.77
SD	.53	.79	5.78	6.19	6.18	6.00	4.50	4.29	2.44	2.32	6.93	7.50	11.14	8.41
MIN	0	0	14.00	11.00	12.00	11.00	10.00	8.00	4.15	0.11	2.50	0	17.00	17.00
MAX	2.85	4.41	40.00	40.00	40.00	40.00	33.00	33.00	13.72	12.16	36.05	29.00	71.00	59.00

Note: AWA = acting with awareness; NJ = nonjudging; NRT = nonreactivity; PTSD = posttraumatic stress disorder

*
p < .05**
p < .01***
p < .001

Table 2.

Actor and partner effects of mindfulness on anger from basic actor partner interdependence models.

Models	Estimate	SE	<i>p</i>	Standardized Estimate
Model 1: Acting with awareness				
Father actor effect (a_1)	0.006	0.009	.511	.062
Father partner effect (p_1)	−0.004	0.008	.584	−.048
Mother actor effect (a_2)	−0.009	0.011	.409	−.073
Mother partner effect (p_2)	0.018	0.012	.149	.130
Model 2: Nonjudging				
Father actor effect (a_1)	−0.016	0.008	0.059	−0.182
Father partner effect (p_1)	−0.012	0.008	0.113	−0.138
Mother actor effect (a_2)	−0.015	0.012	0.206	−0.112
Mother partner effect (p_2)	−0.020	0.012	0.093	−0.156
Model 3: Nonreactivity				
Father actor effect (a_1)	−0.026	0.010	0.007	−0.222
Father partner effect (p_1)	−0.018	0.010	0.061	−0.146
Mother actor effect (a_2)	−0.034	0.015	0.021	−0.183
Mother partner effect (p_2)	−0.003	0.014	0.827	−0.018

Note: Control variables were included in the models: child behavioral problems, time since the most recent deployment, combat exposure, and both parents' PTSD symptoms.