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Growth trajectories of parental emotion socialization and child adjustment following a military parenting intervention: A randomized controlled trial

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Abstract

Children of combat deployed parents are at risk of behavioral problems. Parental emotion socialization (PES) has been theorized to influence children's behaviors; many studies lend support to this theory. However, longitudinal studies examining PES with experimental designs are sparse. In this study, we estimated PES growth trajectories following a parenting intervention and evaluated whether intervention induced improvements in PES predict child outcomes in post-deployed military families. National Guard/Reserve families with at least one deployed parent and a child aged 4–13 years were randomized into an intervention or control group. Data from all 255 two-parent married families, who were primarily Caucasian and middle-class, were analyzed. PES was indicated by self-reported non-supportive and supportive reactions to children's negative emotions (baseline, 1-year, and 2-year follow-up). Child behaviors were assessed through averaged mother-and father-reports (baseline and 2-year follow-up). Results of latent growth models showed that mothers and fathers assigned to the intervention condition reported greater improvements in non-supportive PES (steeper negative slopes) over 2 years relative to controls. Both mothers' and fathers' intervention-induced improvements in non-supportive PES were associated with decreased child internalizing behaviors. Mothers' intervention-induced improvements in non-supportive PES were associated with decreased child externalizing behaviors. No significant findings were detected for intervention effects on supportive PES growth trajectories. Our findings supported the indirect effects of the intervention on child behaviors

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through non-supportive PES over two years. PES is an important, malleable skill that can be targeted in parenting interventions for post-deployed military families.

Keywords

emotion socialization; emotion coaching; military family; parenting intervention; child behaviors; parent training program

The War on Terror has resulted in the deployment of nearly three million military service members to Iraq and/or Afghanistan. These include National Guard service members who had never been deployed overseas in large numbers before the 9/11 attacks. A familiar refrain within military communities is that "when one person serves, the whole family serves." Children of deployed parents face unique challenges in their lives, such as long and sometimes frequent separations from a parent and worrying about the deployed parent. While military children typically are as resilient as their civilian peers, exposure to parental wartime deployments can negatively impact mental health and wellbeing (Gewirtz & Zhang, 2018). In particular, extant literature suggests that children who were exposed to parental deployments exhibited elevated risk for both internalizing and externalizing behaviors (Chartrand, Frank, White, & Shope, 2008; Lester & Flake, 2013; Lester et al., 2010; Pexton, Farrants, & Yule, 2018).

Effective parenting promotes resilience to adversity in children, yet parenting can be compromised under stressful situations (Forgatch et al., 2016). During reintegration after deployment, families may undergo heightened stress related to the deployed parent's "psychological wounds" of war, including depression, anxiety, posttraumatic stress disorder (PTSD), and substance use (Eisen et al., 2012; Hoge, Auchterlonie, & Milliken, 2006). For example, in a sample of military families including both active duty and National Guard/Reserve (NG/R) members, Wadsworth et al. (2016) found that parental depression was a significant risk factor above and beyond military-specific risk factors (e.g., deployment) in explaining child maladjustment. Moreover, Gewirtz, DeGarmo, & Zamir (2018) showed that mothers' and fathers' PTSD symptoms were both associated with child behavioral problems in a sample of post-deployed NG/R military families; mothers' PTSD symptoms were associated with less effective parenting practices, which in turn were associated with poorer child outcomes. Thus, parenting practices are important intervention targets and parental mental health may also be addressed in preventive interventions.

Based on a social interaction learning perspective (Patterson, 1982), GenerationPMTO, previously known as the Parent Management Training Oregon Model (PMTO; Patterson, 2005; Forgatch & Gewirtz, 2017) was developed to prevent child behavioral problems by teaching parents to increase positive parenting thereby decreasing coercive parenting. Data from multiple randomized controlled trials/RCTs support its efficacy and effectiveness in enhancing parenting and preventing child behavioral problems. In a sample of divorced mothers, the intervention showed benefits to parenting at 1-year follow-up, which was positively associated with child adjustment (Forgatch & DeGarmo, 1999). Another study with recently married biological mothers and stepfathers also showed that GenerationPMTO was effective in improving parenting and marital satisfaction, which were associated with

decreased children's externalizing problems (Bullard et al., 2010). These studies suggested that improved parenting mediated the effects of parenting interventions on children's outcomes.

While the research on parenting emphasizes parent-child relationship and parental discipline, parental socialization of children's emotions also has been demonstrated an important dimension of parenting (Katz, Maliken, & Stettler, 2012; Morris, Criss, Silk, & Houltberg, 2017). Parental emotion socialization (PES) practices involves parenting behaviors that reflect parental beliefs, goals, and values in regard to children's experience, expression, and modulation of emotions; PES typically includes responses to children's emotions, parents' own emotion regulation, and discussions about emotions with children (Eisenberg, Cumberland, & Spinrad, 1998). Supportive PES behaviors are characterized by recognizing children's negative emotions, encouraging them to express their emotional experiences, and working with them to solve problems. Non-supportive PES behaviors include, for example, dismissing children's emotions, or punishing children for expressing negative emotions to avoid children's emotional experiences.

Eisenberg et al. (1998)'s PES model highlighted the pathways involved in children's emotional development (e.g., emotional expression, experience, and regulation) as well as social behavior and competence. PES (e.g., reactions to child's emotion) was proposed as a critical antecedent factor in this model. Empirical studies have supported this model by demonstrating the negative associations between PES and children's internalizing and externalizing behaviors. These studies include samples of Caucasian families (Cheung, Boise, Cummings, & Davies, 2018), African American families (Cunningham, Kliewer, & Garner, 2009) and Asian families (Raval, Li, Deo, & Hu, 2018). For example, Hastings and De (2008) found that mothers' and fathers' responses to children's emotions were associated with preschool children's behavioral adjustment, while this association was stronger for children with less parasympathetic regulation capacities. In a longitudinal study, Luebbe, Kiel, & Buss (2011) found that mothers' self-reported punishing and minimizing behaviors were positively associated with children's internalizing problems one year later, controlling for baseline levels.

Although existing studies have primarily focused on mothers' PES and its effects on child development, the literature suggests that fathers' PES also plays an important role (Eisenberg, Fabes, & Murphy, 1996; McDowell, Kim, O'Neil, & Parke, 2002; Wong, McElwain, & Halberstadt, 2009). For example, Baker, Fenning, & Crnic (2010) showed that a latent variable indexed by fathers' reactions to child emotions, family expressiveness, and fathers' emotion coaching behaviors was associated with children's social competence, and the same model was not evidenced in mothers. Lunkenheimer, Shields & Cortina (2007) found that both parents' emotion dismissing (one aspect of non-supportive PES) was positively associated with fathers' report of internalizing and externalizing behaviors of their 8–11-year-old children. These studies encourage additional attention to the impact of fathers' PES on child adjustment, particularly on internalizing and externalizing behaviors. Studies including both mothers and fathers are important to reveal the unique effects of each parent on children's behaviors while controlling for the other parent's effects.

Interventions targeting PES could potentially improve children's internalizing and externalizing behaviors by enhancing PES. In a meta-analysis, Kaminski, Valle, Filene, & Boyle (2008) tested different components from parenting interventions and found that programs with a PES component (i.e., helping children to identify and express emotions) demonstrated larger intervention effects on parenting skills relative to those without this component. There are several intervention studies that target PES skills. One such program, known as Tuning in to Kids, teaches emotion-related parenting skills and addresses parents' own emotions, and was found in an RCT to reduce non-supportive PES and increase supportive PES, as well as to reduce preschoolers' behavioral problems at 7-month follow-up (Wilson, Havighurst, & Harley, 2012). An adapted version of this program for fathers (Dads Tuning in to Kids) was also found in an RCT to show benefits to improve PES, parenting satisfaction, and efficacy, as well as to reduce children's behavioral problems at 6-month follow-up (Havighurst, Wilson, Harley, & Kehoe, 2019).

After Deployment Adaptive Parenting Tools/ADAPT program is a web-enhanced, group-based parenting intervention developed for post-deployed NG/R families based on GenerationPMTO. This program retained the key GenerationPMTO behavioral parenting components such as discipline and problem solving. It also aimed to improve PES by teaching emotion coaching skills and to improve parental emotion regulation by teaching mindfulness. We previously reported the program's short-term effects on PES (Zhang, Zhang, Gewirtz, & Piehler, 2018). While no effects in fathers were detected at 6-months (i.e. immediately post-intervention), mothers who were randomly assigned to the program reported lower levels of nonsupportive PES relative to controls, and a subgroup of mothers (those with higher levels of experiential avoidance at program entry) reported higher supportive PES relative to their counterparts in the control condition. While these effects were informative, it is unknown whether the effects would be maintained over a longer period of time, and whether intervention-related changes in PES would be associated with child outcomes, in other words, whether improved PES may serve as an intervention mediator for child outcomes. Such testing is crucial to address the question of *how* a parenting intervention works, and more importantly, evidence about a mediator could further inform the development of a more targeted intervention program to optimize program outcomes.

The Current Study

To summarize, PES as an important aspect of parenting has been associated with children's adjustment including internalizing and externalizing behaviors (Cheung et al., 2018; Cunningham et al., 2009; Hastings & De, 2008; Raval et al., 2018), and one pathway through which parenting interventions can improve children's adjustment is by enhancing PES. This is especially relevant for at-risk children such as those exposed to wartime deployment of a parent. Prior intervention studies have documented promising effects to improve PES and child behaviors (Havighurst et al., 2019; Shaffer, Fitzgerald, Shipman, & Torres, 2019; Wilson et al., 2012; Zhang et al., 2018), yet, most of the studies have focused on mothers only and/or were short-term longitudinal studies. Little is known about the long-term effects of interventions on children's adjustment by enhancing mothers' and fathers' PES.

In the current study, examining a sample of two-parent post-deployed military families with a child aged 4–13 years, we extended prior work in two areas. First, we used latent growth models (LGMs) to study long-term changes in PES over 2-years with three waves of data (baseline, 1-year, and 2-year). Second, we tested whether changes in PES constituted an intervention-related mediator that would in turn be associated with child internalizing and externalizing behaviors. Drawing from existing evidence, we formulated the following hypotheses: 1) Mothers and fathers who were randomized into the ADAPT program would show greater improvements in supportive PES (i.e., steeper positive slopes) and greater reductions in non-supportive PES (i.e., steeper negative slopes) over 2 years relative to controls; 2) Program induced changes in mothers' and fathers' PES would be associated with changes in children's internalizing and externalizing behaviors at 2-year follow-up after controlling for baseline (indirect effects). Specifically, more positive slopes of supportive PES and more negative slopes of non-supportive PES, induced by the intervention, would be associated with lower levels of child externalizing and internalizing behavioral problems.

Methods

Participants

Drawn from the full RCT sample of 336 families, all the married two-parent families' data (N=255) were analyzed in the current study. Families had at least one child aged 4–13 years living in the same household and at least one parent who had been deployed to recent conflicts in Iraq and/or Afghanistan. Most families (n = 225, 88.24%) had a deployed father and a non-deployed mother; and 20 families (7.84%) had two deployed parents while 10 families (3.92%) had a non-deployed father and a deployed mother. The fathers were, on average, 37.59 years old (SD = 6.44; range 23.74–58.33), predominately Caucasian (85.49%); a small percentage were African American (5.10%), Pacific Islander (0.39%), Asian American (2.35%), and multiracial (2.35%). The mothers were on average 35.93 years old (SD = 5.79; range 23.08–51.15), predominately Caucasian (92.16%), with a small percentage African American (1.96%), Pacific Islander (0.39%), Native American (0.39%), Asian American (1.18%), and multiracial (1.18%). Most families were middle class (40% of families reported annual household income between $40,000 and $79,999 and 32% between $80,000 and $119,999). Approximately half of the parents had completed at least a bachelor's degree (47.06% fathers and 53.33% mothers). On average, couples were married for 9.66 years (SD = 5.32). Most families had 2 children (M = 2.42, SD = .91). Children (56% girls) were on average 8.45 years old (SD = 2.50) at baseline and 10.69 years at 2-year follow-up. These sample characteristics are somewhat representative of the NG/R parent population with school-aged children in the Midwest.

Procedures

All procedures were approved by the Institutional Review Board at the University of Minnesota (study title: "Effectiveness of a web-enhanced parenting program for military families"; IRB number: 1005S82692). Participants were recruited through multiple strategies such as presentations at reintegration events for NG/R families, social media, mailing from the local Veterans Affairs Medical Center, flyers, and word of mouth. Interested parents were asked to complete an online screener and consented to participate in

the study if they were eligible. Eligible families had at least one child aged 4–13 years living in the same households and at least one parent who had been deployed to Iraq and/or Afghanistan and recently returned. Following completion of an online survey and in-home assessment at baseline (pre-intervention), families were randomly assigned into either an intervention (60%) or control group (40%). The randomization was generated by a computer. Control families were provided with services as usual, including "tip sheets" and online resources. Intervention families were invited to participate in a 14-session web-enhanced parenting intervention, consisting of weekly face-to-face group sessions located in a nearby school, church, or community center and online intervention resources. All families completed one baseline and three follow-up assessments: 6-month (*not analyzed in this study*), 1-year, and 2-year.

A CONSORT diagram is shown in Figure 1. The full sample consisted of 336 families (294 fathers and 314 mothers). Because we sought to simultaneously model intervention-related changes in both mothers and fathers, the current study excluded some families from the larger sample: 1) a single family with two same-sex parents; 2) families with only one parent participating in the study (n = 64); and 3) families in which parents reported being separated or divorced, or never married (n = 16).

Intervention

The ADAPT program is a web-enhanced, face-to-face group intervention program developed for post-deployed military families based on GenerationPMTO (Patterson, 2005; Forgatch & Gewirtz, 2017). The program focuses on six domains of parenting skills: skill encouragement, positive involvement, problem solving, monitoring, effective discipline, and PES. Five of the six domains were adopted from GenerationPMTO, with a PES component being one of the major adaptations. The adaptations were low dose mindfulness practices, emotion coaching skills, education about unique stressors related to the military family context (e.g. family separations, worries about deployed family members), as well as online resources to enhance engagement. Each face-to-face group session is about 2 hours long, delivered by 2–3 certified trained facilitators with a group of 6 to 15 parents. Parents learn and practice parenting skills in the group through observation, role-play, and discussions, and were given access to a website which provided supplemental resources (tip sheets, video/audio files, and home assignments).

In the current sample, the majority of participants (71.7% of the fathers and 76.3% of the mothers) attended at least one face-to-face group session; half of the parents (49.3% of the fathers and 57.2% of the mothers) attended seven or more out of the 14 sessions. Previous studies have reported more details on participants' responsiveness to the intervention (Doty, Rudi, Pinna, Hanson, & Gewirtz, 2016).

Measures

Group assignment was dummy-coded as 1 = intervention, 0 = control. An intent-to-treat (ITT) approach was used such that all families were analyzed after randomization even though some intervention families did not attend the intervention at all.

Parental emotion socialization (PES) was measured at three assessment points with mothers' and fathers' self-reports using the Coping with Children's Negative Emotions Scale (CCNES; Fabes, Eisenberg, & Bernzweig, 1990). The CCNES is a widely administered scale with adequate consistency and reliability (Fabes, Poulin, Eisenberg, & Madden-Derdich, 2002). Parents were asked to identify their responses to 12 scenarios in which children may experience negative emotions, such as fear, anger, and sadness. Due to a technical problem, one scenario was not administered to a considerable proportion of the sample at baseline[1]. To ensure measurement consistency, this scenario was excluded at all time points. The CCNES consists of six subscales: emotion-focused reaction (EF; e.g., "try to make my child happy by talking about the fun things we can do with our friends"), problem-focused reaction (PF; e.g., "tell my child that the present can be exchanged for something the child wants"), expressive encouragement (EE; e.g., "encourage my child to talk about his/her fears"), minimization reaction (MR; e.g., "tell my child to quit over-reacting and being a baby"), punitive reaction (PR; e.g., "tell my child to straighten up or we'll go home right away"), and distress reaction (DR; e.g., "get upset with him/her for being so careless and then crying about it"). Parents responded how likely they would be to react to their children with each kind of behavior based on a 7-point scale (1 = very unlikely; 7 = very likely). In the current sample, the internal consistency reliability for each subscale was generally adequate at each time point (between .70 to .95) with the exception of mothers' DR (.68 at both follow-ups) and PR at baseline (.67). Other researchers have also reported lower internal consistency for the DR and PR subscales (Fabes et al., 2002; McElwain, Halberstadt, & Volling, 2007). No subscales were dropped. According to Fabes et al. (2002), three of the six scales are considered to measure supportive PES (EF, PF, and EE) and the other three to measure non-supportive PES (MR, PR, and DR). Composite scores at each time point were calculated by averaging the three subscales of each PES construct.

Child internalizing and externalizing behaviors were measured at baseline and 2-year follow-up with both parents' reports using the Behavioral Assessment Scale for Children–Parent Rating Scale (BASC-2-PRS; Reynolds & Kamphaus, 2004). The BASC-2 is a widely used instrument with high internal consistency and test-retest reliability. Parents were asked to rate on a 4-point scale the frequency of their child's behaviors (0 = never; 3 = almost always). Depression (e.g., "cries easily"), anxiety (e.g., "worries"), and somatization (e.g., "complains of pain") subscales were used to create a composite score for internalizing problems. Fathers' and mothers' reports demonstrated good reliability for internalizing symptoms, α = .84/.83 at baseline, α = .87/.80 at 2-year follow-up. Hyperactivity (e.g., "acts out of control"), aggression (e.g., "bullies others"), and conduct problems (e.g., "breaks the rules") subscales were used to create a composite score for externalizing behavioral problems. Fathers'/mothers' reports had good reliability for externalizing behaviors, α = .69/.73 at baseline, α = .75/.77 at 2-year follow-up. Because different versions of the BASC-2 were used for children aged between 6–11 years and those older than 12 years, T-scores were calculated for each subscale based on national norms. The T-scores were then

[1]The excluded vignette was: "if my child is participating in some group activity with his/her friends and proceeds to make a mistake and then looks embarrassed and on the verge of tears, I would…". At baseline, 37.65% of the 255 families (96 mothers and 96 fathers) did not answer this vignette of the CCNES due to a technical problem.

divided by 10 in order to reduce the variance of the scale. This transformation does not alter that true variance of the scale, but the smaller scale of variance of the outcome measure promotes model convergence in Mplus 8 (Muthén & Muthén, 1998 – 2017, *p*.147). The correlations between mother-and father-reports of child internalizing and externalizing problems were moderate (*r*s = .46 ~ .52 at baseline and 2-year follow-up). Mothers' and fathers' scores were averaged for each family.

Control variables were child sex (0 = girl, 1 = boy), child age at baseline (in years), family annual household income (coded in $10,000 increments ranging from 1 to 16; averaged between mothers' and fathers' reports when there was discrepancy, also divided by 10 to reduce the scale of the variance for assisting model convergence), mothers' deployment status (0 = nondeployed, 1 = deployed), and fathers' cumulative length of deployments (ranging from 0 = no deployment, 1 = 6 months or less, … 7 = 37 months or more).

Analytic Strategy

We computed LGMs with a structural equation modeling (SEM) approach using Mplus 8 (Muthén & Muthén, 1998 – 2017) to investigate changes in mothers' and fathers' PES simultaneously, which allows the testing of correlations between mothers' changes and fathers' changes, and also to investigate the relationship between one parent's PES and child outcomes while controlling for the other parent's PES. LGM is appropriate for testing trajectories of growth over time by estimating unobserved latent intercepts and slopes. The two annual follow-up assessments were selected for modeling longitudinal change over equally spaced intervals. Using three assessment points, LGM can simultaneously examine the initial levels and changes of PES by creating latent intercept and slope factors. To specify the slopes in LGMs, we used factor loadings of 0 for baseline assessment (as a reference point), 1.16 for 1-year follow-up, and 2.24 for 2-year follow-up. These loadings were calculated using average times for when the assessments were completed in the sample, because there was some variability in the time intervals of participants' follow-up assessments.

We first estimated two basic dual LGMs (i.e., both mothers' and fathers' growth were modeled simultaneously in the same model) for non-supportive and supportive PES, respectively, without including intervention group assignment, child behaviors, and covariates. Then, we specified four dual LGMs (see Figure 2) including group assignment as a predictor and child behavior as a dependent variable to test our two hypotheses. Specifically, the four dual LGMs were to test intervention effects on 1) non-supportive PES growth and child externalizing behaviors, 2) non-supportive PES growth and child internalizing behaviors, 3) supportive PES growth and child externalizing behaviors, and 4) supportive PES growth and child internalizing behaviors. In all models, covariates were child sex/age, annual household income, fathers' deployment length, mothers' deployment status, and baseline child behavior (externalizing or internalizing problems depending on the model).

We used the joint significance test for mediation (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) to evaluate whether a latent growth slope factor was the mediator for the intervention effect on child behavior. Specifically, a mediation effect is considered

significant if there is evidence suggesting that the intervention significantly predicts the latent slope factor of PES growth (paths a1 and a2, Figure 2), *and* that the latent slope factor of PES growth is significantly associated with child behavior (paths b1 and b2, Figure 2). The joint significance test for mediation has the best balance of Type I error and statistical power compared to other approaches (MacKinnon et al., 2002), and it is preferred when a hypothesis test is of interest (Taylor, MacKinnon, & Tein, 2008). One limitation of the joint significance test is that it does not provide confidence intervals (CIs) for the indirect effects (a1*b1 and a2*b2), so we also used the bias-corrected bootstrap method to calculate 95% CIs to obtain an estimated range of the indirect effects which is a more conservative method than the joint significance test (MacKinnon et al., 2002; (Taylor et al., 2008). Of note, the evaluation of indirect effects does *not* require a direct statistical pathway between the independent variable (intervention) and the dependent variable (child outcomes). (For example, the requirement of a direct effect excludes the possibility that the indirect effect and direct effect can have opposite signs and may cancel out; see MacKinnon et al., 2002). Because the ADAPT intervention was exclusively parenting focused, we anticipated that intervention-related changes in parenting practices would fully explain intervention-related changes in child outcomes. Thus, after we evaluated the direct effect from intervention to child outcomes (often referred to as the c' path) and found out that it was not statistically significant, we omitted it from our final models (Figure 2), which resulted in more parsimonious models.

Given the complexity of the estimated models, some non-significant correlations between variables (i.e., intervention status, child outcomes, and covariates) within the full dual LGMs were constrained at zero to assist with model convergence. As a result, in all models, three non-significant correlations, including those between fathers' slope and mothers' slopes, fathers' intercept and slope, and mothers' intercept and slope, were constrained at zero. In supportive PES models, the correlation between mothers' intercept and fathers' intercept was also constrained at zero.

To evaluate the absolute and parsimonious goodness-of-fit indices, we used the Confirmatory Fit Index (CFI), Root Mean Squared Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR): if the CFI is higher than .90, RMSEA is lower than .06 and the SRMR is lower than .08, the specified model is acceptable (Hu & Bentler, 1999). We used unstandardized parameter estimates in reporting results. Effect sizes of intervention effects were calculated following Feingold (2009)'s calculation that is equivalent to Cohen's *d.*

Missing data

In the mother sample, the percentages of missing data for PES variables were 1.2% at baseline, 39.6% at 1-year follow-up, and 22.4% at 2-year follow-up. In the father sample, the percentages of missing data for PES variables were 3.1% at baseline, 25.9% at 1-year follow-up, and 26.7% at 2-year follow-up. Little's missing completely at random (MCAR) test was conducted on all variables included in the model, and no variables were found to be associated with missingness, $\chi^2(372) = 413.59$, $p > .05$. Therefore, we used full information maximum likelihood (FIML) to account for missing data in our analyses.

Results

Preliminary results

Descriptive statistics and zero-order correlation matrix of key variables are shown in Table 1. PES and child behavioral problem variables appeared to be normally distributed (Skewness = −0.48 ~ 0.79; Kurtosis = −0.44 ~ 1.61), except for child externalizing behaviors at baseline, Skewness = 0.98, Kurtosis = 2.18, which was considered not an extreme violation of the normal distribution.

T-tests were computed to detect whether there were baseline differences in key variables across the intervention and control group. The randomization yielded two similar groups; no differences were found in parent education, years of marriage, deployment-related variables, number of children in the family, child age/sex at baseline, child behavioral problems, and PES variables. There was a significant difference in mothers' supportive PES at baseline: mothers in the intervention group (M = 5.62, SD = 0.63) reported higher levels of supportive PES at baseline than those in the control group (M = 5.42, SD = 0.61), t (250) = 2.49, p < .05.

As a preliminary step, LGM models were estimated without covariates in order to demonstrate convergence, model fit, and reliable estimation of model parameters. Two dual LGMs including latent intercept and slope factors of both parents were estimated, one model depicting non-supportive PES and the other depicting supportive PES. Intervention group assignment, child outcomes, and covariates were *not* included during this first step to test the structural models of PES LGMs. The results of this step are described below.

Preliminary model estimation: Non-supportive PES LGMs.—The non-supportive PES dual LGM showed a good fit to the data, $\chi^2(7) = 6.136$, p =.524, CFI=1.00, RMSEA=.00, SRMR=.037. The results showed that mothers' and fathers' intercepts were significantly correlated, r = .201, p< .01, meaning that the more non-supportive PES mothers reported at baseline, the more non-supportive PES their husbands also reported at baseline. Parents' intercepts were not associated with their own slopes, meaning their initial levels of non-supportive PES were not associated with their subsequent rate of change. Mothers' slope was not significantly associated with fathers' slope, meaning that their growth rates in non-supportive PES were not correlated. Finally, both parents' non-supportive PES slopes were not statistically significant, ps > .05, meaning that *in the full sample* there was no significant growth in mothers' or fathers' non-supportive PES detected.

Preliminary model estimation: Supportive PES LGMs.—The supportive PES dual LGM showed a good fit to the data, $\chi^2(7) = 7.817$, p = .349, CFI = .998, RMSEA = .021, SRMR = .026. Results showed that mothers' and fathers' slopes were not correlated, and neither were their intercepts, ps > .05. Furthermore, parents' intercepts were not associated with their own slopes. Both parents' supportive PES slopes were not statistically significant, ps > .05, meaning that *in the full sample* there was no significant growth in mothers' or fathers' supportive PES detected.

Hypotheses testing: Intervention effects on non-supportive PES growth and child outcomes—We next evaluated 1) intervention effects on non-supportive PES growth in mothers and fathers and 2) the effects of non-supportive PES growth on child outcomes. Using the nonsupportive dual LGM model estimated in the preliminary step above, we added intervention condition and child outcomes to the model. Separate models were estimated for the two child outcomes: externalizing and internalizing behaviors (Model 1 and Model 2, respectively). As mentioned before, in each of these models we initially included a direct pathway between intervention condition and child outcomes (i.e., c' path). However, the direct effect was statistically non-significant in both of the models and did not significantly improve model fit when compared to models without the c' path. Therefore, the c' path was omitted. Table 2 shows results of mediation testing in the final non-supportive PES models (Model 1 and Model 2).

In Model 1 with *externalizing* behaviors as an outcome variable, the model showed a good fit to the data, $\chi^2(44) = 49.141$, $p > .05$, CFI = .992, RMSEA = .021, SRMR = .039. Results showed that intervention group assignment significantly predicted latent slope factors in mothers (B = −0.084, $p < .01$) and in fathers (B = −0.090, $p < .05$), suggesting that parents who were randomized into the intervention showed greater declines (steeper negative slopes) in non-supportive PES over 2 years in comparison to control parents. The effect sizes of the intervention effects were calculated and found to be small to moderate for mothers (d = −.36) and fathers (d = − .29). Moreover, mothers' non-supportive PES slope significantly predicted child externalizing behaviors at 2-year follow-up when controlling for baseline behavior, B = 2.035,$p < .05$, meaning that lower growth rates in mothers' non-supportive PES predicted decreases in child externalizing behaviors. In evaluating the presence of mediation, the mothers' findings are consistent with a significant joint significance test for the mediated effect (indirect effect = − 0.174, 95% CIs: [−0.407, −0.015]), i.e., non-supportive PES in mothers mediated the effects of the intervention on child externalizing behaviors. On the other hand, fathers' non-supportive PES slope marginally predicted child externalizing behaviors at 2-year follow-up when controlling for baseline, B = 0.805, p = .08. Thus, while not achieving full significance, fathers demonstrated a mediational trend that intervention-related lower growth rates in non-supportive PES predicted decreases in child externalizing behaviors.

In Model 2 with *internalizing* problems as an outcome variable, the model also showed a good fit to the data, $\chi^2(44) = 42.624$, $p > .05$, CFI = 1.00, RMSEA = .00, SRMR = .037. Both parents' slopes of non-supportive PES significantly predicted child internalizing at 2-year follow-up controlling for baseline internalizing (mothers: B=1.351, $p < .05$; fathers: B = 0.790,$p < .05$). Lower growth rates in maternal and paternal non-supportive emotion socialization were associated with reductions in child internalizing problems. These results are consistent with significant mediation effects for both mothers and fathers using the test of joint significance. Change in non-supportive PES mediated the impact of the intervention on child internalizing for both mothers (indirect effect = −0.124, 95% CIs: [−0.272, 0.008]) and fathers (indirect effect = − 0.065, 95% CIs: [−0.356, −0.007]). (The bootstrapped CIs suggested that the mediation effect for mothers' non-supportive PES was marginally significant).

Hypotheses testing: Intervention effects on supportive PES growth and child outcomes—We next examined 1) intervention effects on *supportive* PES growth in mothers and fathers and 2) the effects of *supportive* PES growth on child outcomes. Similar to the non-supportive models, we added intervention condition and child outcomes to the supportive dual LGM model estimated in the preliminary step above. Separate supportive models were again estimated for the two child outcomes: externalizing and internalizing (Model 3 and Model 4, respectively). As with the above findings, the direct effect was statistically non-significant in both models and did not significantly improve model fit when compared to models without the c' path. Therefore, the c' path was omitted in the models. Table 2 shows the results of mediation testing in the final supportive PES models (Model 3 and Model 4).

In Model 3 with *externalizing* behaviors as an outcome variable, the overall model demonstrated good fit, $\chi^2(45) = 50.675$, $p > .05$, CFI = .991, RMSEA = .022, SRMR = .051. The results showed that intervention group assignment did not significantly predict changes in supportive PES of either mothers or fathers, *ps* > .05. Neither mothers' or fathers' slopes of supportive PES were predictive of child externalizing behaviors at 2-year follow-up when controlling for baseline behaviors, *p*s > .05.

In Model 4, with *internalizing* problems as an outcome variable, the overall model showed a good fit to the data, χ^2 (45) = 45.842, $p > .05$, CFI= .999, RMSEA = .009, SRMR = .050, with no intervention effects on growth rates in supportive PES, *ps* > .05. Parents' slopes were not associated with changes in child internalizing at the 2-year follow-up when controlling for baseline, *p*s > .05. Therefore, no mediation effects were found in the supportive PES dual LGM models.

Discussion

Among a sample of post-deployed military families, the current study investigated the effects of a parenting intervention on growth in parental emotion socialization (PES), specifically, parents' reactions to children's negative emotions, as well as indirect effects of the intervention on child internalizing and externalizing problems at 2-year follow-up through improved PES. While the ADAPT program did not solely target PES, it was considered an important intervention component because children of deployed parents have been found to experience elevated emotional problems (Lester et al., 2010). Our major findings supported the hypothesized indirect effects of the ADAPT on fewer child behavioral problems, which were mediated through greater declines in mothers' and fathers' non-supportive PES over the two years (i.e., more negative slopes) relative to controls. Specifically, compared to the controls, fathers and mothers who were randomly assigned to the intervention showed greater improvements in non-supportive PES, which were in turn associated with lower child internalizing problems at 2-year follow-up, controlling for baseline child internalizing problems. In addition, relative to controls, mothers (but not fathers) who were randomly assigned to the intervention showed greater improvements in non-supportive PES were associated with lower levels of child externalizing behaviors at 2-year follow-up, controlling for baseline.

Our first study aim was to test the effects of the ADAPT program on mothers' and fathers' PES growth trajectories over two years. The results indicated that the intervention was effective in reducing the growth of non-supportive PES in both mothers and fathers, meaning that the program was helpful in teaching both mothers and fathers to avoid using negative, dismissing, and punitive strategies when their children expressed negative emotions. Such negative parenting practices could be related to contextual stressors, as studies have shown that various stressors appear to disrupt parenting practices by causing some parents to be more reactive, critical, and punitive (e.g., Webster-Stratton, 1990). Military families reintegrating after the deployment of a parent to war undergo multiple stressors including family role re-negotiation and mental health problems of the deployed parent. If left unattended, not only could negative PES practices lead to increased child behavioral problems, but they could also worsen parent-child relationships (Eisenberg et al., 1998; Morris, Silk, Steinberg, Myers, & Robinson, 2007). It is worth noting that the ADAPT program effects on non-supportive PES were small to moderate. Such effect sizes were perhaps due to limited intervention dosage in the program; while the program had a focus on positive parenting, emotion coaching in particular was introduced and practiced in only a few sessions. In these sessions, parents watched role-played different scenarios with group facilitators and other parents and discussed the importance of PES. Other programs that focus on PES more than the ADAPT program (e.g., more sessions on PES) have demonstrated larger effects on PES (Havighurst, Wilson, Harley, Prior, & Kehoe, 2010; Havighurst et al., 2019; Shaffer et al., 2019). Our study builds on the extant literature and provides evidence from a uniquely stressful family context (i.e. deployment) on effective strategies to modify PES.

The current study builds on our previous findings which showed that mothers' (but not fathers') non-supportive PES was improved at 6-month following the ADAPT program (Zhang et al., 2018), by demonstrating that the short-term effect for maternal non-supportive PES was maintained over 2-years, and that fathers may need more time to consolidate the skills to avoid non-supportive PES practices. One possibility is that fathers might be more likely to use non-supportive PES than mothers (Gottman, Katz, & Hooven, 1996; Wong et al., 2009), and thus it is harder to change fathers' non-supportive PES practices. We also caution readers to consider the uniqueness of our sample: most fathers were deployed military service members. Military culture, especially in war contexts, likely values minimizing negative emotions such as fear or sadness. Furthermore, a significant minority of these fathers are at risk for mental health problems such as depression, anxiety, and PTSD symptoms (Gewirtz & Zhang, 2018), which may also compromise their PES (Breaux, Harvey, & Lugo-Candelas, 2016; Morris et al., 2007). The findings that fathers' improvements in non-supportive PES emerged over two years (instead of 6 months) following the ADAPT program may reflect not only fathers' different parenting roles but also the process of going through family reintegration after deployment.

No intervention effects on mothers' or fathers' growth in supportive PES were detected in this study. Because there is insufficient knowledge on what works to improve supportive PES, more research is needed to demonstrate ways to engage parents to learn and consolidate supportive PES skills. Most recently, Shaffer et al. (2019) developed an emotion-focused parenting intervention for school-aged children with emphases on caregivers'

knowledge, emotion communication skills, and caregivers' own social-emotional competence. We speculate that parents' own emotional competence is perhaps an important area to be addressed when interventions are designed to improve supportive PES, especially if parents are at risk for emotional problems. In the ADAPT program, mindfulness practice was integrated to improve parents' emotion regulation, but exercises were small dose and at least half of the parents did not practice these skills between group sessions (Zhang, Rudi, Gewirtz, & Zamir, 2018). Alternatively, the current dosage on emotion coaching in the ADAPT program may be insufficient for both mothers and fathers from stressful family contexts.

Our second study aim was to examine indirect effects: whether program induced improvements in PES were associated with child internalizing and externalizing behaviors at 2-year follow-up, controlling for baseline. We found that mothers' and fathers' greater improvements in non-supportive PES growth, induced by the intervention, were associated with lower levels of child *internalizing* problems. Note that a more conservative method using bootstrapped CIs suggested that the indirect effects of the intervention on lowered child internalizing behaviors through mothers' improvements non-supportive PES growth were statistically marginal (95% CIs: [0.272, 0.008]). Moreover, evidence supported the indirect effects of the intervention on reduced child *externalizing* behaviors, mediated through mothers' but not fathers' improvements in non-supportive PES. Our findings resonate with some previous studies (e.g., Eisenberg et al., 2001) that support the PES conceptual model proposed by Eisenberg et al. (1998), which linked PES to child behavioral outcomes. Mothers are expected to be emotionally nurturing whereas fathers may spend less time in parenting and when they do, their non-supportive PES may be normalized given their stereotypical gender role (Havighurst et al., 2019). This type of social norm might influence how children react to their mothers and fathers differently. A previous cross-sectional study also suggested that in post-deployed military families, mothers' parenting had more direct influence on children's behaviors than did fathers' parenting (Gewirtz et al., 2018). One may assume that fathers' PES is simply not associated with child externalizing problems in this family context, though some prior studies from other family contexts contradicted this (e.g., Engle & McElwain, 2011; Lunkenheimer et al. 2007). Indeed, our prior findings showed that fathers' observed reactive/coercive parenting during father-child interactions (characterized by anger and contempt) was associated with children's internalizing and externalizing behaviors. We speculate that fathers' influence may be detectable if researchers use a more nuanced measure of PES. For example, in the current study, we did not assess parental reactions to distinct children's emotions, but there may be unique effects of mothers' or fathers' reactions to distinct emotions expressed by their children, such as the findings by Hastings and De (2008) showing that fathers' reactions to children's anger, and mothers' reactions to children's sadness and fear, were associated with child internalizing and externalizing problems.

No associations were detected between parents' growth in supportive PES and changes in children's internalizing or externalizing problems over the study period, in addition to the null findings of intervention effects on supportive PES. Supportive practices may influence other domains of child functioning such as academic and social competence. For instance, Nelson et al., (2013) found that mothers' problem-focused reactions to young children's

negative emotions were positively associated with children's school and social-emotional competence among European-American families but non-supportive PES was not associated with these child outcomes. Similarly, Lunkenheimer et al. (2007) found that emotion dismissing (non-supportive PES) was associated with children's emotional and behavioral outcomes, but emotion coaching (supportive PES) was not associated with these outcomes. In the current study we focused on adjustment behaviors and thus did not test social or academic competence in children.

Our study contributed to the literature by providing causal evidence on the importance of intervening on non-supportive PES processes to prevent child behavioral problems in military families during reintegration after wartime deployment of a parent. This resonates with a body of literature that emphasizes the importance of strengthening specific parenting behaviors as a way to improve the wellbeing of at-risk children (Luthar & Eisenberg, 2017). Indeed, many researchers have discussed the need to develop interventions for minimizing harsh, insensitive parenting and fostering nurturing parent-child relationships, for example, in families of a depressed mother (Goodman & Garber, 2017) and families in poverty (Morris et al., 2017). To improve the wellbeing of families in stressful contexts, reducing non-supportive PES is a critical pathway to enhancing children's self-regulation and promoting behavioral adjustment over the long term (Eisenberg et al., 1998).

Several limitations should be noted. First, only parent-report questionnaire data were used. In particular, parents' reports of child's behaviors may reflect parents' perceived change in their child's behaviors as a result of the intervention. Further investigations may use more objective measures to assess PES as well as use older children's self-report for internalizing behaviors (in the current sample, just 29.0% of the children were older than 10 years). Second, the two-parent, NG/R post-deployed family context in this sample is somewhat unique, and thus the findings may not be generalizable to active duty military, civilian families or single-parent families. Third, as we mentioned above, we did not measure positive child outcomes such as academic or social competence which are suggested by the PES model (Eisenberg et al., 1998). We also did not examine other child outcomes beyond internalizing and externalizing behaviors such as child self-control and executive functioning. It is possible that these self-regulatory skills may represent more proximal outcomes of improved parental PES that contribute to reductions in internalizing and externalizing behaviors. Including distinct independent measure of child self-regulation in future studies may further elucidate the indirect effects of PES on child behavior. Finally, our sample size was suboptimal for the complexity of the estimated dual LGM models for testing mediation effects and our study may have been slightly underpowered to detect small effect sizes.

It is worth noting that we found some differences in mothers' supportive PES at baseline between the intervention and the control group. Because the randomization was computer-generated and the assignment procedure was guarded, this difference was not caused by deviation from randomization. We speculate that this difference may have occurred simply by chance due to sampling variability (Altman & Doré, 1990). Indeed, the difference was small and might not reflect true differences between the two groups. In the current study, we

dealt with this pre-intervention difference by accounting for the baseline scores in LGMs when assessing intervention effect.

Taken together, our findings extend the literature showing how parenting interventions may best support PES practices. Our study fits the Eisenberg et al. (1998) model by supporting the causal relationship between parental emotion socialization and child behavioral outcomes through an RCT design. While the original model had a focus on mothers' PES, our study is one that demonstrate the important role of fathers' PES in post-deployed military families. It is clear that both parents' emotion socialization practices benefit children in different critical domains over the long term, yet we know less about how to specifically support different types of PES skills. It will be important to continue developing and refining intervention strategies that may equally improve parents' supportive emotion socialization practices and decrease parents' reliance on unsupportive practices.

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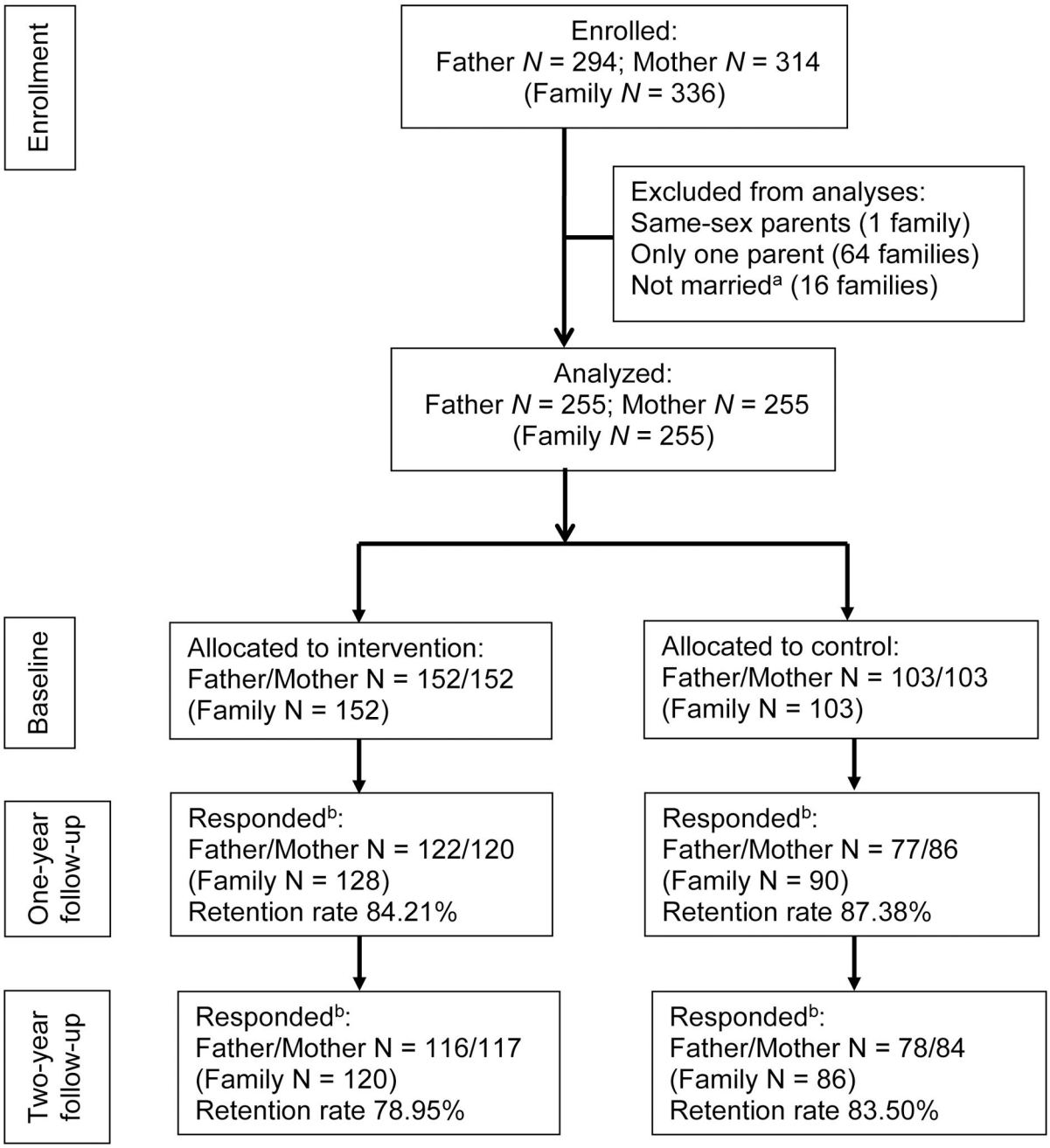

Figure 1.

Participant flow of the current study.

Note: [a] If one of the two parents reported "divorced" or "separated", or both parents reported "never married", then the families were considered "not married"; [b] If parents responded to any part of the online assessment in the larger project, they were considered as "responded".

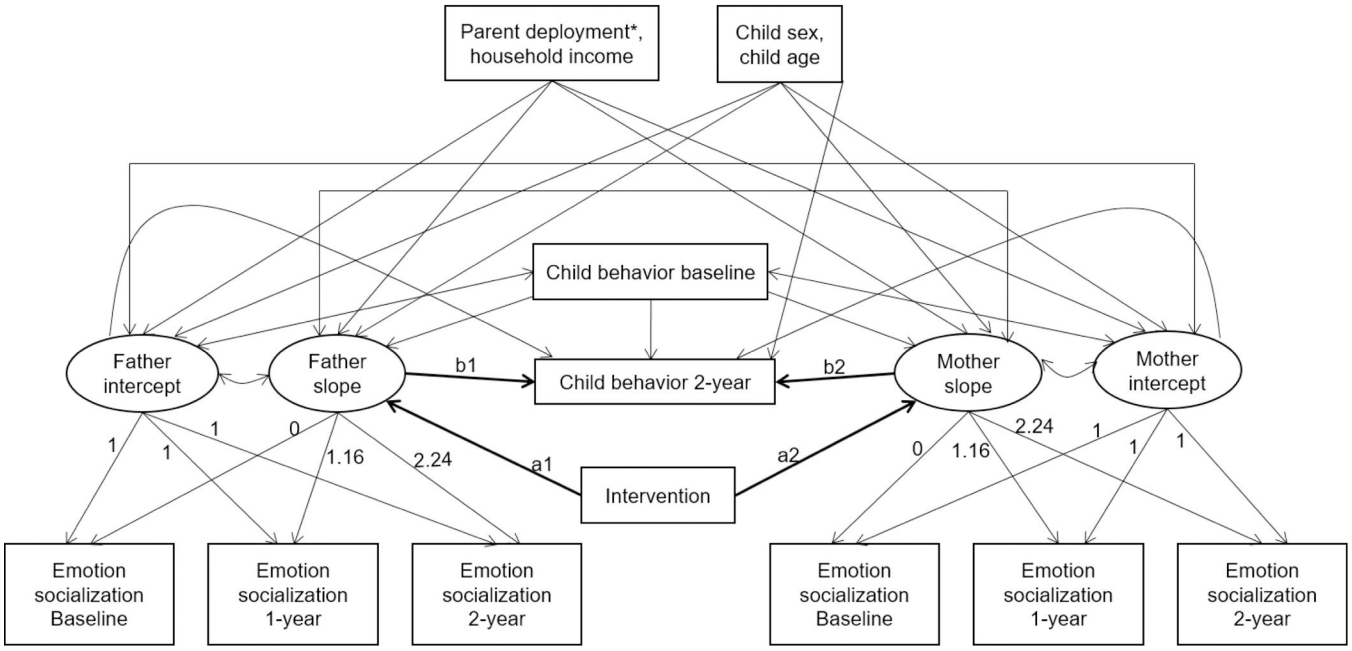

Figure 2.

A conceptual dual latent growth model.

Note: Parent deployment is either fathers' deployment length or mothers' deployment status. Four dual latent growth models: 1) non-supportive emotion socialization and externalizing behaviors, 2) non-supportive emotion socialization growth and internalizing behaviors, 3) supportive emotion socialization with externalizing behaviors, and 4) supportive emotion socialization and internalizing behaviors.

Table 1.

Descriptive statistics and zero-order correlations among key variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Group	1																					
2. Child sex	−.01	1																				
3. Child age	−.08	.01	1																			
4. Annual income	.03	.06	.10	1																		
5. F_deployment	.08	.01	.05	−.07	1																	
6. M_deployment	.04	.04	.01	**−.14**	**.31**	1																
7. BL_F_NON	.03	−.03	.06	.01	.08	**.16**	1															
8. 1Y_F_NON	−.05	−.07	.01	**-.16**	**.15**	.09	**.61**	1														
9. 2Y_F_NON	−.12	−.05	−.05	−.11	.14	.08	**.57**	**.75**	1													
10. BL_F_SUP	−.02	−.00	−.10	.01	−.07	−.06	**−.37**	**−.33**	**−.27**	1												
11. 1Y_F_SUP	.05	.04	−.10	.00	**−.15**	−.04	**−.29**	**−.37**	**−.24**	**.70**	1											
12. 2Y_F_SUP	.05	.14	−.11	.05	**−.16**	−.09	**−.33**	**−.30**	**−.32**	**.67**	**.75**	1										
13. BL_M_NON	.07	−.11	.09	.01	−.00	.01	**.18**	−.07	.02	**−.15**	−.07	**−.16**	1									
14. 1Y_M_NON	−.13	−.15	−.00	−.06	−.07	.05	.03	−.00	.02	−.11	−.08	−.11	**.67**	1								
15. 2Y_M_NON	−.13	−.01	−.05	−.07	−.03	.05	**.16**	.05	**.18**	−.10	−.08	**−.16**	**.65**	**.69**	1							
16. BL_M_SUP	**.16**	−.02	**−.22**	−.06	−.01	.05	−.06	−.02	−.05	.11	.07	.08	**−.24**	**−.17**	**−.18**	1						
17. 1Y_M_SUP	.12	.03	−.13	.01	−.02	.01	−.11	−.10	−.03	.04	.02	−.02	−.13	−.14	−.07	**.64**	1					
18. 2Y_M_SUP	**.17**	.11	−.09	.01	−.06	−.02	**−.17**	−.07	−.09	.04	.14	.14	**−.18**	−.08	**−.15**	**.57**	**.69**	1				
19. BL_Int	−.06	**−.20**	−.01	−.03	−.01	.05	**.13**	.02	.05	−.07	−.02	−.05	**.19**	.07	.11	.06	−.03	−.07	1			
20. 2Y_Int	−.10	**−.17**	−.05	−.13	.04	.03	.05	.11	**.16**	−.08	−.05	−.11	**.18**	**.19**	**.28**	.04	.02	−.00	**.64**	1		
21. BL_Ext	−.11	**.21**	−.07	−.12	.10	.12	**.20**	.08	.04	**−.20**	**−.16**	−.12	**.13**	.03	.08	−.06	−.04	−.12	**.35**	**.28**	1	
22. 2Y_Ext	−.12	**.20**	−.10	**−.20**	**.15**	**.14**	.11	.14	**.15**	**−.21**	**−.17**	**−.16**	−.00	−.04	**.18**	.03	−.02	−.03	**.21**	**.43**	**.70**	1
M	0.60	0.44	8.45	8.48	3.67	0.12	2.94	2.92	2.86	5.07	5.05	5.12	2.60	2.59	2.59	5.54	5.53	5.50	49.93	48.71	56.08	54.91
SD	0.49	0.50	2.50	3.43	1.93	0.32	0.73	0.79	0.73	0.77	0.77	0.83	0.58	0.59	0.61	0.63	0.64	0.67	8.41	8.11	11.29	11.89
Min	0.00	0.00	4.06	2.00	0.00	0.00	1.33	1.45	1.37	1.97	3.00	2.30	1.27	1.42	1.33	3.39	3.85	3.64	34.88	34.85	33.22	29.68
Max	1.00	1.00	13.86	16.00	7.00	1.00	4.91	6.64	5.21	7.00	6.84	6.82	4.03	4.24	5.09	6.76	6.82	6.82	81.23	77.46	107.75	97.61
N	255	255	255	254	254	255	247	189	187	247	189	187	252	154	198	252	154	198	251	203	251	203

Note: BL = baseline; 1Y = 1-year follow-up; 2Y = 2-year follow-up; F = father; M = mother; NON = non-supportive parental emotion socialization; SUP = supportive parental emotion socialization; Int = internalizing behaviors; Ext = externalizing behaviors. Annual income: 1= less than $10k, 2 = $10k~20k, 3 = $20k~30k, …15 = $140k~150k, and 16 = more than $150k. Father deployment: 0 = no deployment, 1 = 0~6 months, 2 = 7~12 months, 3 = 13~18 months, … 6 = 31~36 months, and 7 = 37 months or above. Mother deployment: 0 = non-deployed, 1 = deployed. Bolded numbers indicate statistically significant correlations (α = .05).

Table 2.

Estimates of mediational pathways in four dual latent growth models

M		Non-supportive PES slope		Supportive PES slope	
		Model 1	Model 2	Model 3	Model 4
DV		Externalizing behavior	Internalizing behavior	Externalizing behavior	Internalizing behavior
	a1	−0.090* (*p*=.021)	−0.082* (*p*=.036)	0.065 (*p*= .112)	0.055 (*p*=.172)
Father	b1	0.805 (*p*=.083)	0.790* (*p*=.040)	−2.401 (*p*=.415)	−2.824 (*p*=.265)
	a1*b1	−0.045 [−0.533, 0.017]	−0.065* [−0.356, −0.007]	−0.155 [−1.040, 0.041]	−0.156 [−1.179, 0.009]
Mother	a2	−0.084** (*p*=.004)	−0.092** (*p*=.001)	0.028 (*p*=.428)	0.028 (*p*=.427)
	b2	2.035* (*p*=.013)	1.351* (*p*=.023)	−0.094 (*p*=.915)	0.412 (*p*=.464)
	a2*b2	−0.174* [−0.407, −0.015]	−0.124 [−0.272, 0.008]	−0.003 [−0.367, 0.318]	0.012 [−0.059, 1.049]

Note: PES = parental emotion socialization; M = mediator; DV = dependent variable; a1 = path from intervention to fathers' PES slope; b1 = path from fathers' PES slope to child outcome; a2 = path from intervention to mothers' PES slope; b2 = path from mothers' PES slope to child outcome; a1*b1 = indirect effect of intervention on child outcome through fathers' PES slope; a2*b2 = indirect effect of intervention on child outcome through mothers' PES slope.