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## After Deployment, Adaptive Parenting Tools: One-year outcomes of an evidence-based parenting program for military families following deployment

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### Abstract

Despite significant stressors facing military families over the past 15 years of wars in Iraq and Afghanistan, no parenting programs adapted or developed for military families have been rigorously tested. We present outcome data from the first randomized controlled trial of a behavioral parent training program for families with a parent deployed to Iraq or Afghanistan. In the present study, 336 primarily National Guard and Reserve families with 4–12 year-old children were recruited from a Midwestern state. At least one parent in each family had deployed to the recent conflicts: Operations Iraqi or Enduring Freedom, or New Dawn (OIF/OEF/OND). Families were randomized to a group-based parenting program (After Deployment, Adaptive Parenting Tools/ADAPT) or web and print resources-as-usual. Using a Social Interaction Learning framework, we hypothesized an indirect effects model: that the intervention would improve parenting, which, in turn, would be associated with improvements in child outcomes. Using intent-to-treat analyses, we examined the program's effect on observed parenting, and children's adjustment at 12 months post-baseline. Controlling for demographic (marital status, length, child gender), deployment variables (number of deployments), and baseline values, families randomized to the ADAPT intervention showed significantly improved observed parenting compared to those the comparison group. Observed parenting, in turn, was associated with significant improvements in child adjustment. These findings present the first evidence for the effectiveness of a parenting program for deployed military families with school-aged children.

### Keywords

parenting; military; parental deployment; child adjustment; prevention

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The authors declare that they have **no conflicts of interest**.

#### Compliance with Ethical Standards

All procedures performed in studies involving human participants were in accordance with the **ethical standards** of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

## Introduction

Since September 11<sup>th</sup>, 2001, over 2.6 million Americans have deployed to the wars in Afghanistan and Iraq (National Center for Veterans Analysis and Statistics, 2016). Almost half of these service members are partnered and parenting, resulting in more than 2 million children affected by the deployment to war of a parent (Defense, 2009). Families of service members in the National Guard and Reserves (NG/R) have been disproportionately affected by the recent conflicts. Unlike families of Active Duty service members who live on or near military installations, most NG/R families live civilian lives in civilian communities, with few of the supports of the military installation. Prior to September 11<sup>th</sup> 2001, few NG/R service members had deployed to war; since then, these service members have constituted a key fighting force for the U.S. military (Griffith, 2008).

Most military families are resilient. Indeed, data indicate that military children are as well-adjusted as their civilian peers (Park, 2011). However, increasing evidence indicates that a parent's deployment to war is associated with risks to child and partner adjustment (Kelley & Jouriles, 2011). Deployment of a parent is associated with parenting challenges for both the deployed and the non-deployed parents (Creech, Hadley, & Borsari, 2014) and increased rates of anxiety, depression, and substance use in youth (Sullivan et al., 2015).

Conceptually, deployment may be viewed as a *family stressor*, both because of the prolonged absence of a parent service member during deployment, and because of the danger to the service member and accompanying potential for stress and anxiety for the family. Family stress models (e.g., Conger et al., 2002) propose that stressful family contexts indirectly impair children's adjustment via their detrimental impact on parents and parenting. Most of this research has focused on marital transitions and socioeconomic challenges as sources of family stress. In those contexts, parents affected by economic insecurity, divorce, single parenting, or related risks, confer their stress on children via impaired parenting behaviors. For military families, salient parental stressors include deployment related stressors (e.g., length and number of deployments; posttraumatic stress symptoms from war experiences) and these are associated with impaired parenting practices; and, in turn, with poorer child adjustment (Davis, Hanson, Zamir, Gewirtz, & DeGarmo, 2015; Gewirtz, DeGarmo, & Zamir, 2017).

Applying a social interaction learning/SIL model, Patterson and colleagues proposed *how* parenting in stressful family contexts affects children's adjustment: by increasing the frequency and rate of coercive or inept (e.g., harsh or non-contingent) discipline in parent-child interactions (Patterson, 1982, 2005). The model relies on coded observations of parent-child interactions that form the basis for the measurement of parenting practices. The SIL model undergirds the family of interventions known as Parent Management Training-Oregon Model/PMTO (Dishion, Forgatch, Chamberlain, & Pelham, 2015; Forgatch & Patterson, 2010). PMTO targets the reduction of coercion by improving positive parenting (i.e., skill encouragement, problem solving, positive involvement, effective discipline, and monitoring). The PMTO model has been widely tested in randomized trials, and found to be efficacious and effective with diverse families in the USA and Northern Europe (Forgatch &

Patterson, 2010). However, the model has never been tested in military populations or for those affected by traumatic stressors such as war (Gewirtz, Forgatch, & Wieling, 2008).

Few evidence-based prevention and treatment interventions have been specifically developed or modified for military families, despite the extraordinary and somewhat unique stressors faced by families with a parent deployed to war. While several resources are available to military families seeking help with parenting, especially for young children (Gewirtz & Youssef, 2016), to our knowledge, no parenting interventions for military families with school-aged children have been evaluated in randomized trials. The current study therefore represents the first large scale RCT of a parenting intervention for military families after deployment.

### **The After Deployment: Adaptive Parenting Tools/ADAPT intervention**

The ADAPT intervention is a 14-week parenting program delivered in sessions of two hours per week to multi-family groups of six to 15 parents per group. Topics address six core parenting skills: teaching through encouragement, discipline, problem-solving, monitoring, positive involvement with children, and emotion socialization. Material was delivered using active teaching techniques, and according to PMTO implementation (training and fidelity) guidelines (Forgatch, Patterson, & Gewirtz, 2013). In developing ADAPT, we extended the PMTO model by providing material specific to military families and the deployment context (e.g., discussion and role play of deployment-specific family scenarios), and by adding material to enhance parent emotion regulation (with mindfulness exercises) and emotion coaching skills (Gewirtz, Pinna, Hanson, & Brockberg, 2014). Facilitators were military (National Guard and veterans) and non-military human service providers (e.g., school guidance counselors, social workers) who received 11 days of workshop training and biweekly ongoing coaching from the PI and other staff certified in the PMTO model.

### **Effectiveness Hypotheses**

The SIL preventive intervention model (Forgatch & Patterson, 2010) posits that change in proximal targeted outcomes, i.e., parenting practices, lead to changes in distal child adjustment outcomes. Child adjustment factors are considered distal because the intervention is provided directly to parents and not children; therefore, intervention effects on child adjustment should operate indirectly through the putative parenting mechanisms and processes. Evaluations of randomized trials support this approach (Forehand, Lafko, Parent, & Burt, 2014). Based on these findings we formulated the following intent-to-treat (ITT) effectiveness hypotheses:

H1: Parents in the ADAPT intervention group will show greater one-year pre-post change in the proximal outcome of effective parenting practices relative to the control condition.

H2: Pre-post change in effective parenting will be associated with improvements in child adjustment at one year<sup>1</sup>.

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<sup>1</sup>We hypothesize indirect effects of change in parenting to improvements in child adjustment, rather than mediating effects because mediation is more robustly tested with the mediator as a temporal antecedent to a distal outcome. We also expected and tested

We also explored baseline by treatment intervention effects to understand whether parents demonstrating poorer baseline parenting might benefit more from the ADAPT intervention, as prevention interventions commonly benefit those families at greater baseline risk for deficient parenting or child adjustment (Brown et al., 2008; Flay et al., 2005). Finally, in addition to intent to treat, we examined final models using Complier Average Causal Effects (CACE) to examine impact of engagement in the intervention.

## Method

The current sample included 336 military families comprising 314 mothers, 294 fathers, and 336 children. Participants consented and completed a baseline assessment for a prevention study evaluating the effectiveness of a parenting program (ADAPT; After Deployment Adaptive Parenting Tools). Families were eligible to participate in the study if at least one parent had deployed to recent conflicts (i.e., Operation Iraqi Freedom or Operation Enduring Freedom, OIF/OEF) and at least one child between the ages of four and 12 was living in the home.

Of the 336 families participating in the study, 272 families had two parents participating in the study and 64 families had one parent participating. Among the two-parent families, 258 couples were married to each other, 12 couples were not married to each other, and two did not indicate marital status. Of the 64 parents participating in the study without a partner, 41 were mothers and 23 were fathers. Parents participating alone reported being married (but husband declined study participation;  $n = 23$ ), divorced (18), single (10), separated (9), or widowed (1). The rest did not indicate marital status ( $n = 3$ ). Length of marriage to current partner ranged from one to 28 years, with mean length of marriage 9.75 years ( $SD = 5.3$ ) for fathers and 9.4 years ( $SD = 5.3$ ) for mothers. Number of children in a household ranged from one to six with a mean of 2.34 children in a family ( $SD = .96$ ).

Participants were predominantly White (88.4% of fathers and 92.7% of mothers). Mothers' ages ranged from 23 to 51 ( $M = 35.67$ ,  $SD = 5.89$ ), and fathers' ages ranged from 23 to 58 ( $M = 37.75$ ,  $SD = 6.54$ ). About half of participants (47.7% of fathers and 51.9% of mothers) reported completing at least a Bachelor's degree. Household incomes ranged from \$39,999 or less (13.8%) to \$120,000 or more (14.5%), with most families reporting income between \$40,000 to \$79,999 (43.5%) or \$80,000 to \$119,999 (28.2%). Most fathers (84.3%) and about half of mothers (48.4%) were employed full-time.

In 86.7% of participating families one parent was deployed to recent conflicts; and in the remaining 13.3% of families, both parents were deployed to recent conflict. In 18.2% of families, the mother was deployed; in 95% of the families, the father was deployed. Most parents deployed with the Army National Guard (59%); others deployed with the Air National Guard (10.7%), the Army (12.9%), Navy (6.6%), Air Force (2.8%), or Marine Reserves (.3%). During these operations, 51.2% of deployed parents were deployed more

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replication of PMTO findings from Forgatch & DeGarmo (1999) who found that parenting, as target of the intervention, showed preliminary sensitivity to change with indirect associations to child outcomes at 12 months post-baseline, demonstrating full mediation at later follow-ups.

than once for an average of 1.73 deployments ( $SD=1.16$ ). In 58.3% of these deployments parents were deployed for more than 12 months.

Of the 314 mothers and 294 fathers who completed the baseline assessment, 255 (81%) mothers and 226 (76.8%) fathers completed the T3 assessment. (See Figure 1, CONSORT Chart). There were no significant differences in most demographics (i.e., race, income, age, marital status, number of children) between mothers and fathers who completed the T3 assessment and those who dropped out. However, mothers who completed the T3 assessment ( $M=2.27$ ,  $SD=0.59$ ) had more children on average than mothers who dropped out ( $M=2.54$ ,  $SD=1.21$ ) as measured at baseline ( $t_{(307)}=-2.05$ ,  $p<.05$ ).

## Measures

**Effective Parenting practices**—Scores on parenting practices were obtained from direct observation of parent-child interactions during structured Family Interaction Tasks (FITs). These were a series of 5-minute tasks in which parents and children (mother-child; father-child; mother-father-child) were asked to (i) identify and then solve a source of everyday conflict, (e.g., bedtime, cleaning bedrooms, homework; Prinz, Foster, Kent, & O’Leary, 1979), (ii) discuss deployment-related concerns (e.g., missing a child’s birthday), and (iii) plan a fun family activity. Other tasks assessed teaching: games in which parents were told to provide children with the help they needed; and monitoring: children told of a time when parents were not present; parents were instructed to gather information from the child (adapted from Dishion, Peterson, Winter, Jabson, & Hogansen, 2007).

Parenting practices were measured with five previously validated SIL indicators; (1) problem solving outcome, (2) harsh discipline, (3) positive involvement, (4) skill encouragement, and (5) monitoring. In prior observational studies of parent-child relationships in families with children aged four to 12, FIT codes demonstrated ecological validity, construct validity, and sensitivity to change with at-risk families (Forgatch & DeGarmo, 1999; Gewirtz, DeGarmo, Lee, Morrell, & August, 2015; Gewirtz, DeGarmo, Plowman, August, & Realmuto, 2009). Immediately after reviewing video footage of each task, trained coders scored FITs using a Coder Impressions system (Forgatch, Knutson, & Mayne, 1992). Observers were trained for 60 hours and underwent bi-weekly recalibration meetings to minimize observer drift and continue training. Inter-rater reliability was assessed with intraclass correlation coefficients ( $ICCs$ ) for randomly selected coder teams.

*Problem solving outcome* was scored with a 9-item scale evaluating the quality of the parent and child solution, extent of resolution, apparent satisfaction at the outcome of the discussion, and likelihood the family would put this solution to use ( $\alpha = .87 - .89$ ,  $ICC = .88 - .94$ ). Items were rated based on the problem-solving interactions using a 5-point Likert scale ranging from 1 (*untrue*) to 5 (*very true*). *Harsh discipline* was measured by an 8-item scale assessing overly strict, authoritarian, erratic, inconsistent, or haphazard parenting practices ( $\alpha = .75$ ;  $ICC = .58 - .78$ ). Items were rated based on the entire interaction on a 6-point Likert scale ranging from 1 (*never*) to 6 (*always*). *Positive involvement* was derived from a 10-item scale evaluating parent’s warmth, empathy, encouragement, and affection ( $\alpha = .75 - .76$ ;  $ICC = .76 - .84$ ). Items were rated based on the entire interaction on a 6-point Likert scale ranging from 1 (*never*) to 6 (*always*). *Skill encouragement* was assessed using

an 8-item scale reflecting parent's ability to promote children's skill development through encouragement and scaffolding strategies ( $\alpha = .76 - .83$ ;  $ICC = .72 - .76$ ). Items were rated based on teaching tasks on a 5-point Likert scale ranging from 1 (*untrue*) to 5 (*very true*). *Monitoring* was measured by a 4-item scale assessing parents' supervision and knowledge of their child's daily activities ( $\alpha = .60 - .71$ ;  $ICC = .74 - .64$ ). Items were rated on a 5-point Likert scale ranging from 1 (*untrue*) to 5 (*very true*). All scales were averaged to create summary scores, such that higher scores indicate higher positive communication. The final mother and father parenting scores were composites of the 5 SIL indicators scaled 1 to 5.

**Child Adjustment Construct**—A multiple indicator latent construct was defined to evaluate the distal outcome of child adjustment, using child-, teacher-, and parent-reported scale scores. Scores were selected from a set of indicators previously employed to evaluate the baseline theoretical model that specified indicators demonstrating factor convergence in a higher order confirmatory factor model using all three data sources (Gewirtz et al., 2017). The following indicators demonstrated pre-post factor convergence and acceptable fit in a confirmatory factor analysis model.

**Self-Report of Child Adjustment:** The child report scales included the school problems composite T score from the Behavioral Assessment Scale for Children (BASC-2; Reynolds & Kamphaus, 2004) and the Loneliness and social dissatisfaction scale (Asher & Wheeler, 1983). The BASC-2 has established construct validity, and convergent validity with other scales such as the Child Behavior Checklist (Achenbach & Rescorla, 2001), good internal consistency and test-retest reliability (Reynolds & Kamphaus, 2004). Self-report data were collected using age and gender normed instruments for children aged 5–7, 8–11, and 12–18. Symptom items were rated on a Likert-type scale from 1 (*never*) to 4 (*almost always*). Internal consistency across age groups, time, and subscales was good. The *School Problems* composite included two BASC scales for younger children; the poor attitudes toward school and poor attitudes toward teachers, as well as the sensation seeking scale score for adolescents. *Negative attitudes toward school* was a 7-item scale ( $\alpha$  range = .79–.86); *negative attitudes toward teachers* was a 9-item scale ( $\alpha$  range = .75–.77) and *sensation seeking* was a 9-item scale ( $\alpha$  range = .73–.79).

The second child report indicator assessed internalizing symptoms measured with the Loneliness and social dissatisfaction scale (Asher & Wheeler, 1983), a 24-item scale of loneliness and dissatisfaction with peer relations rated on a 3-point scale. Items were scored to indicate increasing loneliness. Sample items were: *have nobody to talk to in class*, *lonely in school*, *don't have any friends in school*, *feel left out* ( $\alpha$  range = .72–.87).

**Adult Report of Child Adjustment:** Parent and teacher reports of the adaptive skills composite T score from the Behavioral Assessment Scale for Children (BASC-2; Reynolds & Kamphaus, 2004) were used to assess behavioral problems in children (ages 6 to 11) and adolescents (ages 12 to 21). Parents and teachers rated BASC items on a 4-point scale ranging from 0 (*never*) to 3 (*almost always*). The adaptive skills composite demonstrated good internal consistency across reporters, age groups, and time ( $\alpha$  range = .78 – .94). The teacher reported *adaptive skills* composite assesses functional communication, adaptability, social skills, leadership, and study skills, and is composed of 39 items in the child and

adolescent version. The parent report adaptive skills composite included four subscales; adaptability, social skills, activities of daily living, and functional communication. Parent scores were the average of available mother and father reports. Analyses controlled for marital status and years married.

**Covariates:** Impact of the ITT effect was coded 1 for assignment to the ADAPT condition and 0 for controls. Deployments was the combined number of months the military parent(s) were deployed. Married was a dichotomous indicator representing two-parent versus single-parent status coded 0 for single and 1 for married. Years married was the average of husband and wife reports of years married to current spouse. Gender was coded 1 for girl and 0 for boy.

**Analytic Strategy:** Results were examined using intent-to-treat analysis (ITT). The main effectiveness hypotheses and indirect effects analyses were tested with structural equation path modeling (SEM) using Mplus 7.4 (Muthén & Muthén, 1998–2015). SEM is a latent variable regression technique that simultaneously combines factor analyses with path analyses under the assumptions of multivariate normality. Model fit was evaluated using recommended fit indices (Byrne, 2013; McDonald & Ho, 2002) of a chi-square minimization  $p$  value above .05, a comparative fit index (CFI) above .95; a chi-square ratio ( $\chi^2/df$ ) less than 2.0; and a root mean square error of approximation (RMSEA) below .08.

Data for observed parenting practices, parent-, teacher-, and child-report were collected at baseline/pre-intervention at Time 1 (T1) and post-intervention Time 3 (T3), 12 months later. An immediate posttest data point, Time 2 (6-months post baseline), involved only adult self-report data, and thus data from that time point are not included in this report. For the two-wave data, SEM models were specified as auto-regressive change models, a pre-post intervention analysis of covariance approach. We specified across time error covariances for pre-post indicators as recommended for repeated measures and correlated error (Byrne, 2013).

**Analysis of indirect effects on child adjustment outcomes:** Effectiveness hypotheses were tested using an indirect effects modeling approach to examine the impact of the intervention on child adjustment outcomes via change in parenting (Shrout & Bolger, 2002). To estimate indirect effects, bias-corrected bootstrapped standard errors and confidence intervals are recommended to address the asymptotic distribution of the multiplicative indirect term. We also examined direct effects in order to explore whether indirect effects might be mediated (MacKinnon, 2008). Mediation requires a direct intervention effect on the distal child adjustment outcome as well as on the proximal target of the intervention, parenting practices. Change in parenting is required to be associated with change in child adjustment, and also required to render the direct effect on child adjustment nonsignificant. Finally, since the ADAPT study was a preventive intervention we also explored whether there were baseline by treatment (i.e., moderated) intervention effects.

**Missing Data and Attrition Analyses:** Data were modeled using full-information maximum likelihood (FIML), which uses all available information from the observed data in handling missing data. FIML estimates are computed by maximizing the likelihood of a

missing value based on observed values in the data. Compared to mean-imputation, list-wise, or pair-wise models, FIML provides more statistically reliable standard errors. Individuals who have baseline data only and no follow-up data contribute nothing to the likelihood of estimates and are effectively excluded from change analyses.

**CACE Complier Analyses:** Finally, we specified complier average causal effects analyses (CACE) where treatment effects are examined taking into account intervention compliance observed in the intervention group and estimated in controls. CACE mixture modeling matches intervention “noncompliers” (observed class) with the control “noncompliers” (not observed) according to their measured characteristics. Once control noncompliers are identified, a control complier class can be identified. Using this subgroup from the control condition, *unbiased* intervention impact effects can be calculated (Jo, 2002; Little & Yau, 1998). Compliance status was defined as either parent engaging in 7 or more treatment sessions. Among intervention mothers 54% attended 7 or more sessions, while 44% of fathers did so.

## Results

### Hypothesis 1: Proximal Impact

Means and standard deviations for the pre-post indicator scale scores used in the SEM effectiveness evaluation are presented in Table 1 by source of data collection and group condition. The first step of the primary effectiveness evaluation tested hypothesis 1 focusing on the impact of the ADAPT intervention on change in observed parenting practices. Findings supported hypothesis 1. Results are presented in Figure 2 in the form of standardized coefficients. Controlling for baseline pre-intervention levels of observed parenting practices, the ADAPT ITT contrast was associated with increases in effective parenting at 1-year relative to the control group ( $\beta = .16, p < .01$ ). Only one of the control variables was significantly associated with change in parenting. Couples who were married longer exhibited decreases in effective parenting ( $\beta = -.14, p < .05$ ). Overall, the model provided adequate fit to the data; although the chi-square minimization  $p$  value was below .05 the CFI was near .95, the RMSEA was less than .08, and the chi-square ratio was below 2.0 [ $\chi^2(83) = 118.64, p = .01, CFI = .94, RMSEA = .03; \chi^2/df = 1.42$ ]. Using change in  $R^2$ , the ADAPT ITT contrast variable accounted for 3% explained variance, a moderate effect size of .35. Cohen (1988) characterizes .20 as small and .50 as medium. No baseline by treatment effects were detected.

### Hypothesis 2 Distal Impact: Indirect Effects

In the next stage of analyses we tested for hypothesized indirect effects of changes in parenting on child adjustment at T3. The data supported hypothesis 2 with evidence of indirect effects to child- and adult-report child adjustment. Results of the indirect pathways are presented in Figure 3 in the form of standardized coefficients for the multi-agent reported adjustment construct. No direct effects were obtained for the distal child adjustment, thus we did not test for mediation (direct effect of ITT was .03,  $p > .05$ ).



For the child adjustment model (Figure 3), data showed that the ADAPT ITT effect significantly predicted change in observed parenting practices ( $\beta = .16, p < .01$ ), and change in parenting, in turn, predicted change in the child adjustment construct ( $\beta = .15, p < .01$ ). Using change in explained variance prior to and after entering parenting practices, change in parenting accounted for two percent of explained variance in change in child adjustment ( $r = .02, d = .26$ ), a moderate effect. The indirect effects are summarized in Table 2 for ITT (.024,  $p < .09$ , bias corrected bootstrapped 95% CI [.01, .07]) and CACE, an unbiased estimate of intervention impact accounting for compliance (.028,  $p < .05$ , 95% CI [.01, .05]).

In summary, the intent-to-treat analyses demonstrated a small to medium, or moderate effect size for improved parenting practices using direct parent-child observation assessed at baseline and at the one-year follow up. Improvements in parenting were in turn significantly associated with improvements in child adjustment reported by parents, teachers, and children. Parenting practices was associated with a small to moderate effect size in child adjustment. No direct effects were observed for the one-year distal outcomes measuring child adjustment. Hypothesized indirect effects through the proximal target of the intervention were supported.

## Discussion

Deployment of parents to war is a risk factor for families, challenging parenting and increasing the likelihood of child behavioral and emotional problems (Lester et al., 2010). Evidence-based parenting programs abound in the civilian world, yet few such programs have been developed for military families (Gewirtz & Youssef, 2016). As far as we know, data from the current study provide the first RCT evidence to demonstrate the effectiveness of a parenting preventive intervention specifically developed for deployed military families with school-aged children. Results of this study indicated that the ADAPT intervention had moderate positive effects on observed parenting practices at one-year post baseline (approximately 6 months following the end of the program) and that stronger positive parenting practices were associated with improvements in child adjustment. The use of multiple methods (observations and reports) and informants (parents, children, and teachers) provides a robust test of the intervention.

Two recent articles have highlighted the dearth of findings elucidating the processes by which parenting programs effect change (Forehand et al., 2014; Sandler, Schoenfelder, Wolchik, & MacKinnon, 2011). In addition to the examination of effectiveness, our findings offered a test of the theoretical SIL model that predicts that effective parenting practices can buffer children from adjustment difficulties in the wake of family stressors, providing further evidence for the generalizability of the PMTO model. Indeed, our findings closely replicated the results of Forgatch & DeGarmo, (1999) who evaluated a parenting program (Parenting Through Change) for single mothers. That study and other prior tests of the SIL model using PMTO interventions with prevention samples have been conducted with primarily low SES families (Forgatch & DeGarmo, 2011). The current study, in contrast, evaluated the ADAPT program with a predominantly middle income, well educated, and married sample of families, representative of the National Guard population in the Midwest. Our data suggest that the intervention likely provided ‘value added’ skills to strengthen parenting in

participating families. Given the busy lives that Reserve Component families lead, rates of participation in the groups (over 75%) exceeded our expectations (Doty, Rudi, Pinna, Hanson, & Gewirtz, 2016), and the typically low attendance patterns for preventive interventions (Spoth, Redmond, Haggerty, & Ward, 1995). Related, complier analyses indicated a stronger intervention impact for observed and estimated families engaging in 7 or more sessions, underscoring importance of both engagement and compliance.

Similar to Forgatch & DeGarmo's (1999) study, we found significant effects of the intervention on observed parenting practices but no main effect of the program on child adjustment; hence, there was no evidence for parenting practices *mediating* the intervention's effects on child adjustment at this point in the study. A more robust test of mediation would also require that the putative mediator (i.e., parenting practices) predict child adjustment at a *later* date (Kraemer, Wilson, Fairburn, & Agras, 2002). Pending research with this sample will enable examination of whether parenting change at 12 months predicts change in child adjustment at 24 months. However, earlier PMTO research indicates that over time, parenting practices have been shown to mediate change in child adjustment (e.g., Forgatch et al., 2009). Indeed, PMTO studies are among a minority of parenting prevention studies that have examined indirect or mediating roles of parenting practices on an intervention's effect on child outcomes (Forehand et al., 2014; Sandler et al., 2011).

The effects of the intervention on observed parenting were small to medium (i.e., moderate), as is typical for measures of change that do not rely on self-report (Durlak & Wells, 1997). However, multiple method, multiple informant measures of outcomes produce effects more likely to be generalizable than those based on a single method/reporter; observational methods in particular provide robust measurement of parenting practices (Snyder et al., 2006). Moreover, observations may indicate more reliable estimates of change following intervention than parent-report measures, as the latter may be more prone to positive expectancy bias (Patterson, 1982).

We found no baseline risk by treatment effects; that is, no evidence that parents demonstrating stronger or weaker observed parenting practices at baseline differentially benefited from the intervention. This suggests that a range of parents can benefit from the skills offered by the ADAPT program. Furthermore, our prior ADAPT outcome findings suggest that parental benefit extends beyond parenting practices. For example, ITT analyses indicated that both mothers and fathers showed improved parenting sense of control at 6 months posttest (immediately following the ADAPT program), which, in turn, led to reductions in parental depression, PTSD symptoms, and suicidality 6 months later (Gewirtz, DeGarmo, & Zamir, 2016). Subsequent research with this sample will examine how change in outcome variables following the intervention are sequenced in time, to examine the role of parenting practices in effecting change not only in child outcomes, but also for parents' mental health, their couple relationships, and family functioning (e.g., Forgatch et al., 2009).

Results from several prevention studies of family programs show salutary effects on both children and adults that grow over time (Patterson, Forgatch, & Degarmo, 2010; Wolchik et al., 2013). Considering the gradual processes involved in behavior change, this is not surprising. Parents learn multiple new skills in the ADAPT program to support them in the

complex task of parenting school-aged children. For example, emotion regulation (mindfulness) skills taught in ADAPT are assumed to be crucial for effective parenting, and may be particularly important for families in which parents are suffering from combat stress symptoms. Further, in order for parents to teach their children new behaviors using contingent positive reinforcement ('teaching through encouragement', a core ADAPT/PMTO skill) they must initiate incentive charts. Those skills require practice and consolidation. Progress can be uneven, and setbacks occur. Indeed, in Forgatch & DeGarmo's (1999) study, mothers actually showed increases in coercive parenting immediately following the end of the intervention (six months), before changing trajectory for a long-term reduction in coercion at 12 months post baseline (often termed the 'struggle-work through' challenge; (Forgatch & DeGarmo, 1999)<sup>2</sup>. We look forward to examining change over time as we follow the military families in the ADAPT study.

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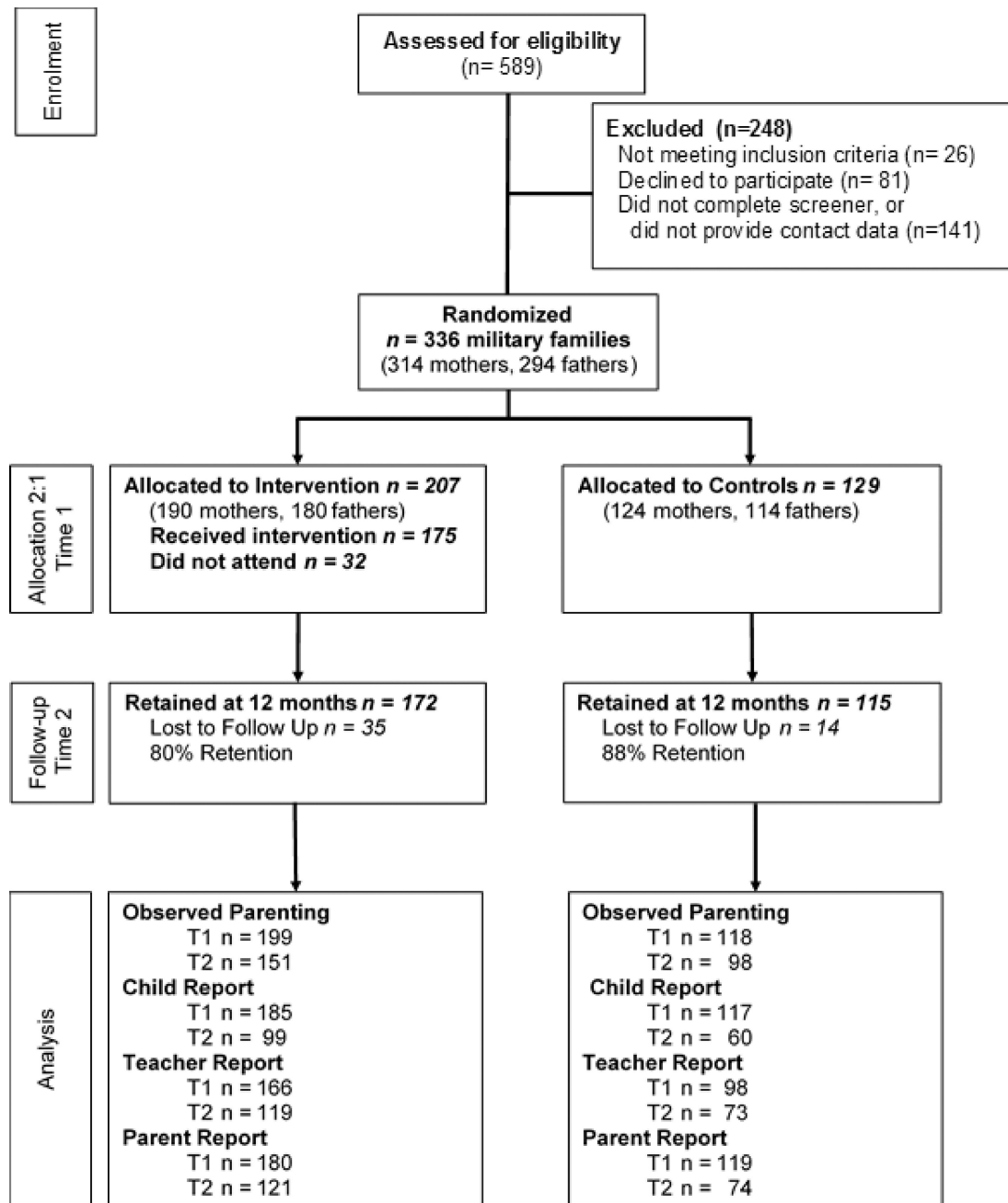
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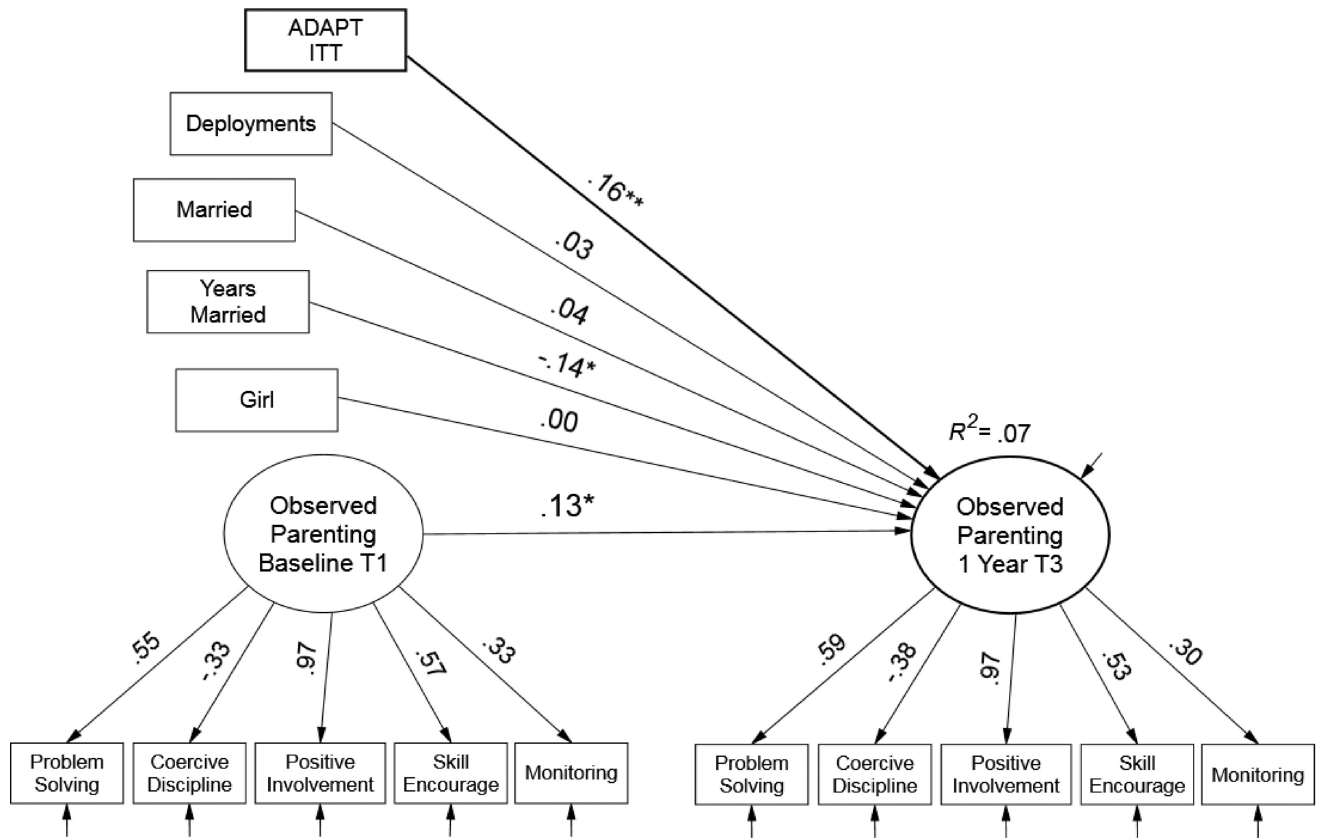
<sup>2</sup>It was for that reason – as well as consideration of participant burden – that we opted not to gather observational parenting data at posttest (T2). That is why the current report focuses on change from T1 to T3.

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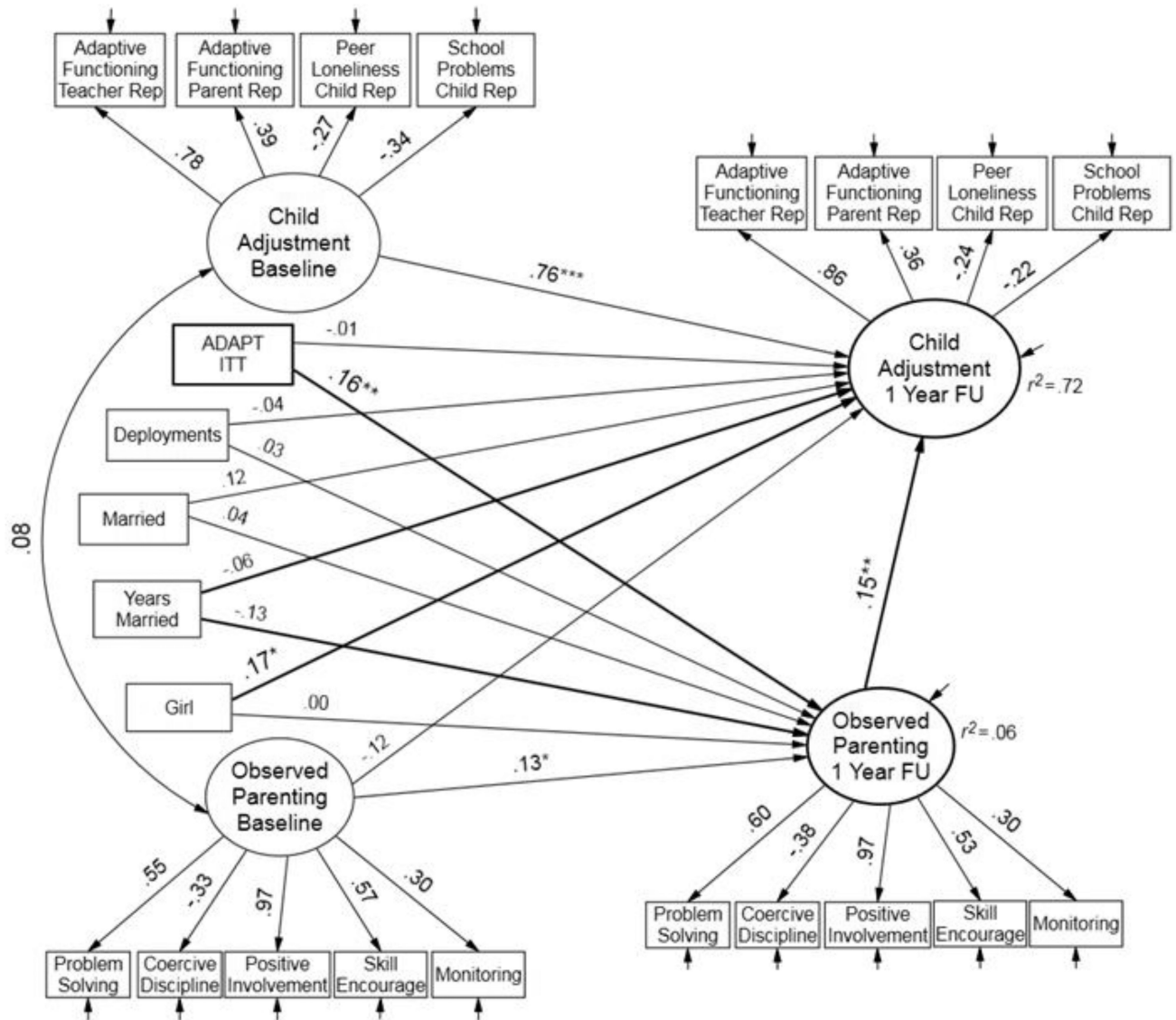


**Figure 1.**  
 CONSORT flow chart of ADAPT randomized control trial and 12-month data in present report.



**Figure 2.**

Structural equation path model for test of intent to treat (ITT) effect of ADAPT parent training intervention on pre-post observed effective parenting practices. Paths are standardized estimates. Model Fit [ $\chi^2(83) = 118.64, p = .01, CFI = .94, RMSEA = .03; \chi^2/df = 1.42$ . \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ ]. ADAPT effect size  $d = .35, r^2 = .03$ .



**Figure 3.** Structural equation path model for test of intent to treat (ITT) effect of ADAPT parenting practices on multi-agent child adjustment construct. Paths are standardized estimates. Model Fit [ $\chi^2(206) = 290.54$ ,  $\chi^2/df = 1.41$ , CFI = .92, RMSEA = .03]. \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ . Indirect effect of change in parenting = .024,  $p < .09$ , 95% CI [.01, .06].



**Table 1**

Means and standard deviations for study variables by group condition

	Controls ( <i>n</i> = 129)						ADAPT ( <i>n</i> = 207)					
	Time 1		Time 3		Time 1		Time 3		Time 1		Time 3	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<b>Observed Parenting</b>												
Problem Solving	2.54	.60	2.79	.44	2.53	.63	2.96	.68				
Coercive Discipline	1.38	.43	1.25	.38	1.35	.41	1.25	.36				
Positive Involvement	3.47	.46	3.52	.45	3.41	.45	3.67	.47				
Skill Encouragement	2.68	.71	2.65	.66	2.69	.69	2.65	.57				
Monitoring	3.47	.74	3.41	.75	3.43	.74	3.44	.67				
<b>Child Report</b>												
School Problems T	47.23	7.45	47.33	8.12	48.25	8.52	45.22	8.32				
Peer Loneliness	22.15	5.03	22.01	5.05	22.40	5.66	22.02	5.33				
<b>Teacher Report</b>												
Adaptive Skills T	50.20	11.02	51.75	11.28	49.82	9.27	50.58	10.32				
<b>Parent Report</b>												
Adaptive Skills T	49.49	8.69	49.73	9.12	50.37	8.54	51.47	9.24				

**Table 2**

Standardized indirect effects and confidence intervals.

Indirect Path			Indirect Effect	95 <sup>th</sup> Percent C.I.		
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">ADAPT ITT</div>	$\rightarrow$ .16**	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Change Parenting Practices</div>	$\rightarrow$ .15**	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Change Child Adjustment</div>	.024†	[.01,.07] <sup>1</sup>
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">ADAPT CACE</div>	$\rightarrow$ .18**	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Change Parenting Practices</div>	$\rightarrow$ .16**	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Change Child Adjustment</div>	.028*	[.01,.05]

Note:

<sup>1</sup> Bias corrected bootstrapped confidence intervals with 1000 draws.

\*\*\* p < .001,

\*\* p < .01,

\* p < .05,

† p < .10.