Evaluation of a Family-Centered Preventive Intervention for Military Families: Parent and Child Longitudinal Outcomes

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Objective: This study evaluates the longitudinal outcomes of Families OverComing Under Stress (FOCUS), a family-centered preventive intervention implemented to enhance resilience and to reduce psychological health risk in military families and children who have high levels of stress related to parental wartime military service.

Method: We performed a secondary analysis of evaluation data from a large-scale service implementation of the FOCUS intervention collected between July 2008 and December 2013 at 15 military installations in the United States and Japan. We present data for 2,615 unique families (3,499 parents and 3,810 children) with completed intake and at least 1 postintervention assessment. Longitudinal regression models with family-level random effects were used to assess the patterns of change in child and parent (civilian and military) psychological health outcomes over time.

Results: Improvement in psychological health outcomes occurred in both service member and civilian parents. Relative to intake, parental anxiety and depression symptoms were significantly reduced postintervention, and these reductions were maintained at 2 subsequent follow-up assessments. In addition, we identified an improvement over time in emotional and behavioral symptoms and in prosocial behaviors for both boys and girls. We observed reductions in the prevalence of unhealthy family functioning and child anxiety symptoms, as well as parental depression, anxiety, and posttraumatic stress symptoms from intake to follow-up.

Conclusion: Longitudinal program evaluation data show sustained trajectories of reduced psychological health risk symptoms and improved indices of resilience in children, civilian, and active duty military parents participating in a strength-based, family-centered preventive intervention.

Key words: military-connected children, wartime deployment, family-centered prevention, family resilience, parental mental health


The wars in Iraq and Afghanistan have resulted in the deployment of more than 2.5 million US service members since 2001. Approximately 45% had dependent children, and more than three-fourths had experienced 1 or more deployments. Military children and their parents have negotiated the unprecedented challenges of recurrent separations, frequent moves, and the high operational tempo associated with a country engaged in a long war overseas. Many children have also experienced the hardships of parental injury, illness, and even loss within their families, influencing both child and parental well-being over time, as well as the reverberating impact of these events within their communities (for review, see Holmes et al.). A rapidly expanding body of research has consistently documented increased social, emotional, behavioral, and academic risk associated with parental wartime military service for children across developmental periods, as well as the direct and indirect reverberations of heightened stress across the family system (for review, see Lester and Flake). In this context, there has been a growing public health awareness of the impact of these stressors on the well-being of military children and their families, with increased recognition of the importance of developing and evaluating preventive interventions to reduce psychological health risk and to promote resilience and positive coping in at-risk military families and children.

Family-centered preventive interventions have consistently demonstrated effectiveness in promoting positive outcomes in children at risk for poor developmental and psychological health outcomes across multiple contexts. Family prevention science has documented the important role of parenting and family processes for child well-being and has identified specific family-level interactions as mediators of children’s ability to adapt and thrive in the context of adversity. Interventions that include specific developmental guidance and psychoeducation, as well as the opportunity to build and practice skills that support positive
parenting practices, parent–child relationships, and individual and family coping have been shown to enhance behavioral and emotional regulation in children. Prior research also indicates that family-centered approaches are likely to be more engaging and culturally acceptable than individual interventions.

With the rapidly evolving conditions of a country at war, the Families OverComing Under Stress (FOCUS) preventive intervention was designed to build upon the findings of foundational intervention research, which demonstrated that family-centered preventive interventions targeting child outcomes in at-risk families could also improve parental psychological and family adjustment over time. FOCUS was adapted from 2 evidence-based, family-centered preventive interventions shown to enhance child and family adjustment in the context of parental mental and mental health problems, as well as a third intervention for children and parents affected by wartime exposure. This framework builds upon developmental and intervention research that identifies the mutual influences among individuals and relationships within families, and between families and broader social contexts. FOCUS was designed to improve individual adjustment of parents and children as well as their functioning within family relationships (e.g., parent–parent, parent–child), with the expectation that improvements in each domain will reverberate throughout the entire family.

The FOCUS intervention development team conducted a rigorous review of each of the foundational interventions’ protocols and research, and identified 4 core elements that were then adapted for military families and culture through a previously reported assessment of risk and protective processes and a partnered adaptation process with military providers and families. The core intervention elements include the following: 1) Family Resilience Check-in: a Web-based standardized psychological health and family assessment and provider decision-making tool that provides immediate analytics and guided feedback to provider and family; 2) family psychoeducation and developmental guidance with an emphasis on strengthening parenting, and information on the impact of military-related stressors on children, parents, and family (such as deployment cycle/separation stressors, posttraumatic stress, traumatic brain injury, and physical injuries); 3) narrative timelines: structured, graphic narratives of the experiences of individual family members surrounding key family transitions to enhance perspective taking, reflection, communication, and understanding, and to promote the construction of a shared family narrative; and 4) resilience skill building: learning and practicing key skills, including communication, problem solving, goal setting, emotional regulation, and the management of reminders of separation, trauma, and loss. The FOCUS intervention has been implemented for active-duty military families at 15 US and international installations through the leadership of the US Navy’s Bureau of Medicine and Surgery. Consistent with the Institute of Medicine framework for a public mental health approach to the prevention of mental health disorders, the intervention was implemented as a selective and indicated prevention program in nonclinical community settings using a psychoeducational, skills-based approach to reduce psychological health symptoms and to strengthen individual and family processes identified as protective for youth well-being.

In this observational evaluation study, we examine the impact of the intervention on parents, children, and family outcomes using data collected to guide service delivery and continuous quality improvement. In previous studies of a demonstration pilot, the intervention was found to be feasible, acceptable, and to demonstrate preliminary effectiveness. Initial pre–post examination of the intervention indicated that it reduced parent and child psychological health risk symptoms, as well as improved family adjustment, and met the expectations of program participants. A second evaluation study showed that child outcomes at follow-up were predicted by changes in family adjustment targeted by the intervention, including improved family-level communication and problem solving.

The goal of the present study is to build upon these findings to examine whether the trajectory of improvements following the intervention is consistent over time for all family members. We use a longitudinal regression model to examine patterns of psychological health adjustment outcomes for children as well as parents in this large, observational evaluation study. We hypothesized that both parents (civilian and military) and children participating in the intervention would have an improved pattern of psychological health adjustment outcomes over time following the intervention. We also hypothesized that the prevalence of clinically meaningful levels of parent and child psychological health symptoms would be lower, and that family adjustment and child coping would be improved post-intervention compared to intake.

**METHOD**

**Intervention**

FOCUS was designed as a structured, manualized, psychoeducational, and skill-building intervention, but with the flexibility to be customized to fit each family’s unique goals and challenges. The intervention was delivered via in-person, provider-led sessions for individual families. Intervention modules included 8 sessions, with parent-only sessions (sessions 1 and 2), child-only (sessions 3 and 4), parent-only (session 5), and family sessions (sessions 6–8). In sessions 1 and 2, parents complete the Family Resilience Check-In, a narrative timeline activity, and psychoeducation and learning/practicing resilience skills. In sessions 3 and 4, children also complete the Family Resilience Check-In (age 6 years and older), a graphic narrative activity, and learn and practice skills outlined above. Session 5 supports parenting skills and planning for family sessions, and sessions 6 to 8 include narrative sharing and additional family-level skill building. Sessions attended only by parents were scheduled for 90 minutes, and children-only sessions were 30 to 60 minutes, depending on the child’s development level. Sessions were delivered by doctoral or master’s level mental health providers with a background in child and family intervention delivery. Providers were employed, trained, and managed by a University of California, Los Angeles (UCLA)-based administrative and intervention development team. Provider training included an online and in-person curriculum, as well as ongoing advanced training.
training through a virtual learning community platform. Model supervisors provided weekly supervision, reviewed intervention fidelity measures and delivery notes, and conducted quarterly site visits with observed sessions. Adult participants used the Family Resilience Check-In to complete standardized assessments at intake, program exit, and follow-up at 1 month (follow-up 1) and 6 months (follow-up 2) postcompletion. Child participants aged 6 years and older also completed the Family Resilience Check-In at intake and program exit. Demographic and deployment history information was obtained from parents at intake. Following intake, assessments were scored and interpreted in real time. When clinical risk, such as suicidal ideation, was identified, further screening and appropriate treatment referrals, including emergency management, were implemented. Upon completion, parents were asked to provide contact information, and a plan for continued contact was developed. Providers were automatically reminded to contact the parents for ongoing support and follow-up. At the time of voluntary enrollment in the intervention, families completed and signed a service agreement outlining the goals of the intervention and evaluation, as well as confidentiality standards and mandatory reporting requirements. The UCLA institutional review board approved this study on the existing service delivery evaluation data.

Recruitment
Participants were active-duty military families living at designated active-duty installations that enrolled in the FOCUS intervention between July 2008 and December 2013. Eligibility criteria for voluntary participation in this free, confidential military service program included active duty families with at least 1 child 3 to 17 years of age with a military parent serving at 1 of the designated military installations. Families with active cases of domestic violence/child abuse were not eligible for participation and were referred for appropriate services according to installation protocols. Outreach was done through a variety of strategies, including media outlets (e.g., military radio), word of mouth, community events, and referrals by other providers (teachers, chaplains, primary care doctors, and mental health providers).

Study Sample
Between July 2008 and December 2013, a total of 3,431 active-duty military families consisting of 5,136 adults (service member and civilian parents) and 6,339 children enrolled in the intervention. Our final sample was obtained by excluding the following: families still actively participating in the intervention (146 families), families who did not complete an intake and at least 1 postintervention assessment (650 families), and families who had invalid postintervention assessment dates (20 families). The resulting final sample consisted of 2,615 families (1,426 service member parents, 2,073 civilian parents, and 3,810 children). Among parents who did not complete any postintervention assessments, there were more males and service members relative to those parents included in the final sample. Children who did not complete any of the follow-up assessments were significantly older than children who were included in the final sample.

We categorized the families in our final sample into “completers” and “partial completers.” Completers were defined as those families for whom parent(s) and youth had at a minimum completed the core elements of the intervention (check-up, narrative timeline, psychoeducation, and skill building) through sessions 1 to 4. Families considered partial completers were those who completed at least 1 intervention session but who did not complete all of the core elements (<4). We designated 2,486 families as completers (n = 3,362 adults and 3,577 children). Remaining families were categorized as partial completers (n = 129 families; 137 adults and 233 children). The 2 most common reasons for families not completing the intervention included relocation or deployment (49.3%) and being “too busy” (27.9%). Another reason was the family reporting that they no longer needed services (9.9%). Among adults belonging to partial completer families, there were more females, civilian parents, younger adults, and lower levels of healthy family functioning at intake relative to those belonging to completer families. Children from partial completer families were not significantly different compared with children from completer families.

Primary Outcome Measures
Parental psychological health outcomes were assessed using 2 subscales of the self-report Brief Symptom Inventory-18 (BSI-18), those indexing depression and anxiety symptoms administered at intake, exit, and 2 follow-ups. Service member and civilian parents indicated the extent to which they had been bothered or distressed by symptoms during the past week on a Likert scale. Anxiety and depression symptom scores were calculated by averaging across the 6 items pertaining to each primary symptom dimension (Cronbach α = 0.83 and 0.84, respectively). A higher score indicated a higher level of depression or anxiety symptoms. Clinical cut-offs were used to identify clinically meaningful levels of anxiety (0.68 for men, 0.99 for women) and depression symptoms (0.66 for men, 1.11 for women).

Child psychological health symptoms and prosocial outcomes were assessed using the Strengths and Difficulties Questionnaire (SDQ)–Parent Report. Age-appropriate versions of the SDQ were completed by both parents at intake and follow-ups with regard to each of their children aged 3 to 17 years. When multiple parents completed an SDQ for a single child, 1 parent was selected as the primary reporter, and his or her assessments were used across all time points. The primary reporter was the parent with the most postintervention assessments completed, which increased our ability to compare across multiple time points. If multiple parents completed the same number of postintervention assessments, the primary reporter was determined based on endorsement of the self-reported primary caregiver question. A total difficulties score was calculated by summing the scores received on 20 Likert scale items related to conduct problems, emotional symptoms, hyperactivity, and peer problems (Cronbach α = 0.83). A higher score indicated a child had more difficulties. A prosocial behavior score was calculated by summing the scores received on the 5 items that assessed a child’s consideration of other people’s feelings, willingness to share with other children, helpfulness toward other hurt or upset children, kindness to younger children, and voluntary helpfulness toward others (Cronbach α = 0.90). Higher scores indicated greater prosocial behaviors. A cut-off score of ≥16 was used to indicate high total difficulties, and a cut-off score of <6 was used to indicate high difficulties with prosocial behavior.

Secondary Outcome Measures
Family functioning was measured by the 12-item General Functioning subscale of the self-report McMaster Family Assessment Device (FAD) that was administered to both parents when available at intake and exit. The General Functioning subscale is designed to be a shorter version of the FAD and provides an overall measure of family adjustment including communication, problem solving, and emotional relatedness. Scores on some items were reversed so that high scores always reflected unhealthy family functioning. The score was calculated by taking the average across all 12 items (Cronbach α = 0.91). A cut-off score of ≥2 was used to identify unhealthy family functioning.
Parent posttraumatic stress was assessed using the PTSD (post-traumatic stress disorder) Checklist (PCL), a brief inventory of 17 self-report items designed to determine the severity of PTSD symptoms within the past month. At intake and exit, parents selected how much they had been bothered by symptoms related to a stressful event. Military and civilian versions of the PCL were available and administered to service member and civilian parents, respectively. A PCL total score was calculated by summing the scores from all 17 items (Cronbach $\alpha = 0.94$). A cut-off score of 30 or greater indicated a high probability of the presence of PTSD.

Self-reported symptoms of anxiety among children aged 8 to 17 years were assessed at intake and exit using the Total Anxiety scale from the 39-item Multidimensional Anxiety Scale for Children (MASC). The MASC asked children to provide a response to items related to physical symptoms, harm avoidance, social anxiety, and separation/panic using a Likert scale. The Total Anxiety score was calculated by summing all items, with higher scores corresponding to increased emotional problems (Cronbach $\alpha = 0.90$). $t$ Scores were calculated based on child age and gender. A $t$ score cut-off of $>65$ was used to indicate clinically meaningful elevated anxiety.

Child coping was assessed by the KidCope, a brief child self-report measure. At intake and exit, children ages 6 years and older provided responses to 15 items assessing their positive and negative coping strategies. Cognitive restructuring, emotional regulation, and social support scores were set equal to the numeric score of the single items associated with each subscale. The problem-solving subscale was calculated by averaging 2 different item scores.

**Statistical Analysis**

Descriptive statistics and frequencies for parents’ (service member and civilian) and children’s characteristics, and descriptive statistics of primary and secondary outcome measures for parents and children are provided in Table 1.

**Table 1**

<table>
<thead>
<tr>
<th></th>
<th>Service Member n = 1,426 (40.8%)</th>
<th>Civilian n = 2,073 (59.2%)</th>
<th>All n = 3,499</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male, n (%)</td>
<td>952 (66.8)</td>
<td>19 (0.9)</td>
<td>971 (27.8)</td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>474 (33.2)</td>
<td>2,054 (99.1)</td>
<td>2,528 (72.3)</td>
</tr>
<tr>
<td><strong>Age at intake, y, mean (SD)</strong></td>
<td>33.8 (5.99)</td>
<td>33.1 (6.27)</td>
<td>33.4 (6.17)</td>
</tr>
<tr>
<td><strong>BSI measures at intake</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety, mean (SD)</td>
<td>0.58 (0.71)</td>
<td>0.63 (0.68)</td>
<td>0.61 (0.69)</td>
</tr>
<tr>
<td>Clinically meaningful, n (%)</td>
<td>341 (23.9)</td>
<td>485 (23.4)</td>
<td>826 (23.6)</td>
</tr>
<tr>
<td>Depression, mean (SD)</td>
<td>0.56 (0.72)</td>
<td>0.63 (0.68)</td>
<td>0.60 (0.70)</td>
</tr>
<tr>
<td>Clinically meaningful, n (%)</td>
<td>387 (27.1)</td>
<td>409 (19.7)</td>
<td>796 (22.8)</td>
</tr>
<tr>
<td>FAD unhealthy family functioning, mean (SD)</td>
<td>1.97 (0.52)</td>
<td>1.87 (0.51)</td>
<td>1.91 (0.51)</td>
</tr>
<tr>
<td>Unhealthy functioning, n (%)</td>
<td>702 (49.3)</td>
<td>882 (42.6)</td>
<td>1,584 (45.3)</td>
</tr>
<tr>
<td>PCL total score, mean (SD)</td>
<td>27.1 (13.2)</td>
<td>27.8 (10.9)</td>
<td>27.5 (11.9)</td>
</tr>
<tr>
<td>Clinically meaningful, n (%)</td>
<td>370 (26.1)</td>
<td>643 (31.1)</td>
<td>1,013 (29.1)</td>
</tr>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at intake, y, mean (SD)</td>
<td>7.14 (3.46)</td>
<td>7.40 (3.59)</td>
<td>7.26 (3.52)</td>
</tr>
<tr>
<td><strong>SDQ measures at intake</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prosocial behavior, mean (SD)</td>
<td>7.47 (2.03)</td>
<td>8.16 (1.89)</td>
<td>7.79 (2.00)</td>
</tr>
<tr>
<td>High difficulties, n (%)</td>
<td>382 (18.6)</td>
<td>205 (11.6)</td>
<td>587 (15.4)</td>
</tr>
<tr>
<td>Total difficulties, mean (SD)</td>
<td>13.2 (6.69)</td>
<td>11.4 (6.25)</td>
<td>12.4 (6.55)</td>
</tr>
<tr>
<td>High difficulties, n (%)</td>
<td>723 (35.3)</td>
<td>435 (24.7)</td>
<td>1,158 (30.4)</td>
</tr>
<tr>
<td><strong>KidCope measures at intake</strong></td>
<td>n = 1,452</td>
<td>n = 1,303</td>
<td>n = 2,755</td>
</tr>
<tr>
<td>Cognitive restructuring</td>
<td>1.55 (1.01)</td>
<td>1.56 (1.01)</td>
<td>1.56 (1.01)</td>
</tr>
<tr>
<td>Emotional regulation</td>
<td>1.49 (0.99)</td>
<td>1.56 (0.93)</td>
<td>1.52 (0.96)</td>
</tr>
<tr>
<td>Social support</td>
<td>1.70 (0.99)</td>
<td>1.82 (0.98)</td>
<td>1.76 (0.99)</td>
</tr>
<tr>
<td>Problem solving</td>
<td>1.21 (0.84)</td>
<td>1.26 (0.78)</td>
<td>1.24 (0.81)</td>
</tr>
<tr>
<td><strong>MASC measures at intake</strong></td>
<td>n = 832</td>
<td>n = 792</td>
<td>n = 1,624</td>
</tr>
<tr>
<td>Total anxiety, mean (SD)</td>
<td>46.03 (17.58)</td>
<td>51.39 (17.99)</td>
<td>48.64 (17.98)</td>
</tr>
<tr>
<td>Clinically meaningful, n (%)</td>
<td>119 (14.3)</td>
<td>116 (14.7)</td>
<td>111 (6.8)</td>
</tr>
</tbody>
</table>

Note: BSI = Brief Symptom Inventory; FAD = McMaster Family Assessment Device; MASC = Multidimensional Anxiety Scale for Children; PCL = PTSD (Posttraumatic Stress Disorder) Checklist; SDQ = Strengths and Difficulties Questionnaire.
children at intake, were summarized. For the primary outcome measures for parents, linear mixed-effects longitudinal regression models with family-level random effects were used to assess the change in anxiety and depression symptoms reported by parents over time. The fixed effects included participants’ age and gender, and a time variable (intake, exit, and 2 follow-up assessments). Time effects were estimated by calculating the difference between intake and each postintervention assessment through model contrasts. The models included family-level random intercepts to account for dependence within families and a first-order autoregressive (AR1) covariance structure to account for repeated observations per participant. These adjusted analyses were done for all parents (main models), and separately for service member and civilian parents. We used the same modeling approach to assess the time effects on children’s prosocial behaviors and total difficulties reported by parents on the SDQ. Additional regression models were conducted by adding a gender-by-time interaction term to evaluate whether there were gender differences in changes of these SDQ outcomes. To examine time effects on the prevalence of clinically meaningful levels of parental anxiety and depression symptoms, and child total difficulties, logistic mixed-effects longitudinal regression models were analogously constructed using the same sets of fixed effects, family-level random effects, and AR1 covariance structures.

For the secondary outcome measures (collected at intake and exit), we simplified the above models by including family-level and participant-level random intercepts that accounted for dependence within families and repeated observations per participant, respectively. Fixed effects included were gender and a time variable (intake and exit). Similarly, time effects were assessed by estimating the difference from intake to exit using a model contrast.

Finally, we conducted exploratory analyses to investigate whether the time effects on parent anxiety and depression symptoms (BSI) for participants from the families who completed FOCUS differed from those who were partial completers. We included 2 additional fixed-effects, study status (completers versus partial completers), and time-by-study status interaction term, to the main models, and examined the differences in time effects on these measures between completed and partially completed families through model contrasts. All statistical analyses were done using SAS 9.4; PROC MIXED and GLIMMIX were used to fit all linear and logistic mixed effects models, respectively. All of the graphs were generated using R.

RESULTS

Demographic and Intake Characteristics

Table 1 presents the demographic characteristics and primary and secondary outcome measures at intake for service member and civilian parents and their children. Of the parents, 41% were service members. Approximately 67% of the service member parents were male, and 99% of the civilian parents were female. The average age for all of the parents was 33 years (range 18–66 years), and the average ages for service member and civilian parents were similar. In all, 54% of the children were boys, and the average age of

![FIGURE 1 Estimated trajectories of Brief Symptom Inventory (BSI) outcomes overall (a, b) and by parent type (c, d). Note: Estimated means with 95% CIs (mean bars) for anxiety symptoms (a, c) and depression symptoms (b, d) are plotted at the following assessments: intake (pre), exit, and 2 follow-ups. Solid line with circle represents the mean bar for service member parents (SM); dashed line with triangle represents the mean bar for civilian parents (CP).](https://www.jaacap.org/content/55/1/18/F1.large.jpg)
children was 7.3 years. A highly deployed population, families in this sample reported an average of 2.12 combat deployments and 2.41 noncombat deployments, or 4.53 total deployments before enrollment.

At intake, service member parents reported lower levels of anxiety (mean 0.58 versus 0.63, respectively; \( p = .042 \)) and depression symptoms (mean 0.56 versus 0.63; \( p = .002 \)) than their civilian parent counterparts. At intake, approximately 23% of service members and civilian parents reported clinically meaningful levels of anxiety symptoms, based on gender-specific cut-offs. In all, 27% of service members and 20% of civilian parents reported clinically meaningful levels of depression at intake based on gender-specific cut-offs. Notably, 31% of civilian and 26% of service member parents were identified as having FCI scores above the cut-off of 30, indicating clinically meaningful levels of posttraumatic stress symptoms. Civilian parents reported significantly lower levels of unhealthy family functioning relative to service member parents (1.87 versus 1.97; \( p < .0001 \)). Almost 50% of service member and 43% of civilian parents indicated unhealthy family functioning at baseline.

Of children entering the intervention, 35% of boys and 25% of girls had high total difficulties with prosocial behaviors at intake. The mean level of total difficulties for all children was 12.4 (± 6.55). Boys had significantly higher levels of total difficulties at intake compared to girls (13.2 versus 11.4, respectively; \( p < .0001 \)). Compared to girls, boys also had significantly lower levels of positive prosocial behavior (7.47 versus 8.16; \( p < .0001 \)).

Among the 1,624 children who completed the MASC, girls reported significantly greater levels of anxiety symptoms than boys (51.4 versus 46.0; \( p < .0001 \)). At intake, 14.3% of boys and 14.7% of girls between the ages of 8 and 17 years reported clinically elevated levels of anxiety symptoms. Among the 2,755 children who completed self-reported coping on the KidCope at intake, mean scores on cognitive restructuring and problem-solving measures were similar for boys and girls. Girls reported significantly higher scores than boys on the emotional regulation (1.56 versus 1.49; \( p = .047 \)) and social support measures (1.82 versus 1.70; \( p = .002 \)).

Parents: Improvement in Psychological Health Symptoms Over Time

The estimated mean levels (with 95% CIs) of anxiety and depression at intake, exit, and the 2 follow-up assessments for all parents and by parent type (service member or civilian) are plotted in Figure 1. The estimated changes in anxiety and depression symptoms from intake to each of the post-FOCUS assessments are summarized in Table 2.

Parental psychological health symptoms improved over time. In Figure 1a, the estimated mean level of anxiety symptoms decreased at the exit assessment (estimated change: 0.191 ± 0.010, \( p < .0001 \); Table 2) and continued to decrease at the 2 follow-up assessments (0.223 and 0.233, respectively). A significant reduction in depression symptoms at exit was observed (0.224 ± 0.010, \( p < .0001 \)). However, the estimated mean level of depression symptoms went up slightly at follow-up 1, then went down again at follow-up 2 (Figure 1b). Figures 1c and 1d present the mean levels of depression and anxiety symptoms for service member (solid line with circle) and civilian (dashed line with triangle) parents estimated from the stratified longitudinal analyses, suggesting that improvement in psychological health symptoms occurred in both service member and civilian parents. Relative to intake, significantly lower odds of clinically meaningful levels of anxiety and depression

### TABLE 2 Improvement in Parent Psychological Health Symptoms and Reductions in the Prevalence of Clinically Meaningful Symptoms Over Time

<table>
<thead>
<tr>
<th>Change From Intake</th>
<th>Anxiety Symptoms</th>
<th></th>
<th>Depression Symptoms</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate (SE)</td>
<td>OR (95% CI)</td>
<td>Estimate (SE)</td>
<td>OR (95% CI)</td>
</tr>
<tr>
<td>All Parents&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
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<tr>
<td>Exit</td>
<td>0.191 (0.010)</td>
<td>0.33 (0.30–0.37)</td>
<td>0.224 (0.010)</td>
<td>0.29 (0.26–0.32)</td>
</tr>
<tr>
<td>Follow-up 1</td>
<td>0.223 (0.013)</td>
<td>0.33 (0.29–0.37)</td>
<td>0.192 (0.014)</td>
<td>0.36 (0.31–0.41)</td>
</tr>
<tr>
<td>Follow-up 2</td>
<td>0.233 (0.015)</td>
<td>0.32 (0.28–0.37)</td>
<td>0.224 (0.015)</td>
<td>0.36 (0.32–0.42)</td>
</tr>
<tr>
<td>Service Members&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit</td>
<td>0.147 (0.015)</td>
<td>0.33 (0.27–0.38)</td>
<td>0.188 (0.016)</td>
<td>0.31 (0.27–0.37)</td>
</tr>
<tr>
<td>Follow-up 1</td>
<td>0.180 (0.021)</td>
<td>0.34 (0.28–0.43)</td>
<td>0.174 (0.022)</td>
<td>0.28 (0.23–0.35)</td>
</tr>
<tr>
<td>Follow-up 2</td>
<td>0.195 (0.025)</td>
<td>0.30 (0.24–0.38)</td>
<td>0.195 (0.026)</td>
<td>0.24 (0.18–0.30)</td>
</tr>
<tr>
<td>Civilians&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit</td>
<td>0.222 (0.013)</td>
<td>0.19 (0.17–0.22)</td>
<td>0.251 (0.014)</td>
<td>0.16 (0.14–0.19)</td>
</tr>
<tr>
<td>Follow-up 1</td>
<td>0.253 (0.015)</td>
<td>0.19 (0.16–0.22)</td>
<td>0.210 (0.016)</td>
<td>0.27 (0.23–0.31)</td>
</tr>
<tr>
<td>Follow-up 2</td>
<td>0.260 (0.016)</td>
<td>0.21 (0.18–0.26)</td>
<td>0.245 (0.018)</td>
<td>0.31 (0.26–0.36)</td>
</tr>
</tbody>
</table>

<sup>a</sup>Adjusted for participant age and gender.

<sup>b</sup>Models for civilians were adjusted for participant age because 99% of the civilians were female.
symptoms were observed at all postintervention assessments for both service members (range of adjusted odds ratios [ORs] for both symptoms: 0.24–0.34) and civilian parents (range of adjusted ORs: 0.16–0.31; Table 2). Among all parents, percentages of clinically meaningful anxiety and depression symptoms decreased from approximately 23% at intake to around 11% at exit and remained similarly low at both follow-ups (range of adjusted ORs: 0.29–0.36).

Both civilian and service member parents reported a decrease in PTSD symptoms (3.08–0.16, \( p < .0001 \)) from intake to postintervention. Significantly lower odds of clinically meaningful posttraumatic stress were observed at the postintervention (adjusted OR = 0.47, 95% CI = 0.42–0.53). Overall, parents also reported a decrease in unhealthy family functioning (0.19 ± 0.01, \( p < .0001 \)), and a lower odds of meeting the cut-off for unhealthy functioning (adjusted OR = 0.50, 95% CI = 0.43–0.58).

Children: Improvement in Psychological Health Symptoms and Prosocial Behaviors Over Time

The estimated levels (with 95% CIs) of prosocial behaviors and total difficulties at intake and the 2 follow-up assessments by child gender are plotted in Figure 2. The changes in prosocial behaviors and total difficulties from intake to each of the follow-up assessments are summarized in Table 3.

Significant reductions in children’s total difficulties were found at both follow-up assessments (3.45 ± 0.09 and 3.79 ± 0.11, respectively; both \( p < .0001 \)). Furthermore, improvement in children’s prosocial behaviors was significant at follow-up 1 (0.61 ± 0.03, \( p < .0001 \)), and the scores continued to increase at follow-up 2 (0.68 ± 0.04, \( p < .0001 \)). Relative to intake, we observed significantly lower odds of high total difficulties and high difficulties with prosocial behavior for boys and girls at both follow-up assessments (range of adjusted OR: 0.16–0.44; Table 3). Among all children, the prevalence of high total difficulties (30% to < 14%) and high difficulties with pro-social behavior (15% to < 9%) dropped from intake to both follow-up visits.

Results from the interaction regression model indicated that total difficulties and prosocial behaviors improved more among boys than among girls. These time trends can be seen in Figures 2a and 2b for prosocial behaviors and total difficulties, respectively.

We also observed significant improvement in children’s self-reported anxiety symptoms (MASC total score: 2.57 ± 0.37, \( p < .0001 \)). Among children 8 years and older, the prevalence of clinically elevated anxiety decreased from 14.5% at intake to 11.8% postintervention. We found significantly lower odds of clinically meaningful anxiety from intake to postintervention (adjusted OR = 0.78, 95% CI = 0.63–0.96).

A significant improvement was observed in the following child-reported positive coping skills: cognitive restructuring (0.06 ± 0.02, \( p = .008 \)), emotional regulation (0.09 ± 0.02, \( p < .0001 \)), and problem solving (0.04 ± 0.02, \( p = .016 \)).

Exploratory Analysis: Completed Versus Partially Completed Families

The mean levels of depression and anxiety symptoms (± standard error) over time for parents from families that completed versus partially completed the intervention were

FIGURE 2  Estimated trajectories of child Strengths and Difficulties Questionnaire (SDQ) outcomes for boys and girls. Note: Estimated means with 95% CIs for child SDQ prosocial behaviors (a) and total difficulties (b) are plotted at the following assessments: intake (pre) and 2 follow-ups. Solid line with circle represents the mean bar for boys; dashed line with triangle represents the mean bar for girls.
TABLE 3 Improvement in Child Psychological Health Symptoms and Prosocial Behaviors and Reduction in the Prevalence of High Difficulties Over Time

<table>
<thead>
<tr>
<th>Change From Intake</th>
<th>Prosocial Behavior</th>
<th>SDQ Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate (SE) OR (95% CI)</td>
<td>Estimate (SE) OR (95% CI)</td>
</tr>
<tr>
<td>Allb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up 1</td>
<td>0.613 (0.029) 0.47 (0.42–0.53)</td>
<td>–3.454 (0.088) 0.21 (0.18–0.24)</td>
</tr>
<tr>
<td>Follow-up 2</td>
<td>0.677 (0.037) 0.46 (0.41–0.52)</td>
<td>–3.787 (0.114) 0.22 (0.19–0.25)</td>
</tr>
<tr>
<td>Boysb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up 1</td>
<td>0.704 (0.040) 0.42 (0.36–0.49)</td>
<td>–3.755 (0.121) 0.16 (0.13–0.19)</td>
</tr>
<tr>
<td>Follow-up 2</td>
<td>0.797 (0.051) 0.44 (0.38–0.51)</td>
<td>–4.104 (0.156) 0.16 (0.13–0.19)</td>
</tr>
<tr>
<td>Girlsb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up 1</td>
<td>0.502 (0.043) 0.44 (0.37–0.52)</td>
<td>–3.092 (0.131) 0.17 (0.14–0.21)</td>
</tr>
<tr>
<td>Follow-up 2</td>
<td>0.533 (0.056) 0.37 (0.31–0.45)</td>
<td>–3.427 (0.170) 0.22 (0.18–0.26)</td>
</tr>
</tbody>
</table>

Note: All changes from intake (FU-Intake) were statistically significant (p < .0001). OR = adjusted odds ratio; SE = standard error.

aAdjusted for participant’s age at intake and gender.
bInteraction model (gender-by-followup) adjusted for children’s age at intake, used to generate improvement estimates, and model adjusted for age was used for adjusted odds ratios.

estimated. Because there were very few parents who partially completed and reported their depression and anxiety at exit (n = 7), the variability for depression and anxiety symptoms among this group was too high to make reasonable inferences. Thus, we removed depression and anxiety symptoms at exit from these analyses. Instead, we focused on the data at intake and the last 2 follow-ups. The 2 groups had comparable levels of depressive and anxiety symptoms at intake. Estimated time effects on parental depressive and anxiety symptoms from the complete families were consistent with those for the entire sample. For example, the levels of anxiety symptoms between the 2 groups were similar at intake (0.019 ± 0.054). However, the difference in anxiety symptoms became larger, but not significant, at the last follow-up (0.049 ± 0.078), suggesting that the families who completed FOCUS may improve more over time.

DISCUSSION

US military families have experienced the impact of a sustained war overseas for more than a decade, presenting unprecedented tests of the resilience of service members, their families and children, as well as the systems that support them. The FOCUS preventive intervention was implemented at highly deploying military installations as a response to a growing public health awareness of the impact of parents’ military service on their children and families during a historical period of high operational tempo, including 2 military surges overseas. In this context, the families participating in FOCUS had experienced an ongoing, cumulative exposure to stress. The mean number of deployments reported by families before entering the intervention was >4 since the birth of their first child. This observational evaluation study of the FOCUS intervention provides detailed information on trajectories of longitudinal psychological health and resilience outcomes in active-duty military parents, civilian partner parents, and children. To our knowledge, this is the largest longitudinal study of post-9/11 active-duty military children and parents that includes individual parent-, child-, and family-level assessments.

About one-third of children participating in the FOCUS intervention were at increased risk for clinically significant difficulties at baseline, with boys (35%) at greater risk than girls (25%) for emotional and behavioral symptoms and poor peer relationships at the time of enrollment. Military and civilian parents participating in this community-based prevention program also reported increased risk for clinically significant symptoms of anxiety, depression, and PTSD at intake. Both service member (27%) and civilian parents (20%) experienced clinically significant depressive symptoms, whereas civilian parents reported higher risk levels for clinically significant PTSD symptoms (31%) than did service member parents (26%) at baseline. The prevalence of clinically meaningful PTSD symptoms in civilian parents warrants further investigation to better understand these symptoms in the context of lifetime or recent exposures to traumatic events and to examine their impact on family functioning and child well-being. These data underscore the importance of integrating trauma-informed, behavioral health screening practices in systems serving military-connected families as an opportunity to identify and address early behavioral health risk.

As hypothesized, both military and civilian parents completing the FOCUS intervention demonstrated patterns of improvement in depression and anxiety symptoms over time. For both types of parents, a similar pattern of change indicated a reduction in symptoms after completion of the intervention that was sustained and continued to improve over 6 months of repeated follow-up. Notably, we also found significant reductions (from 23% to 11%) of those parents screening at risk for anxiety and depressive symptoms that were sustained at longitudinal follow-up.
Similarly, both male and female children participating in the intervention also demonstrated significant and clinically meaningful improvements over time, with similar patterns of change in emotional and behavioral symptoms and prosocial behaviors. The identification of similar outcome trajectories for all types of family members provides support for the expectation that improvements in both individual and family adjustment will reverberate across the family system.

Changes in service member and civilian parental PTSD symptoms also reflected significant and clinically meaningful improvements. This finding was particularly notable because the FOCUS intervention was not a clinical treatment program but did provide trauma-informed psychoeducation and skills training in the management of traumatic reactions and reminders that are typically not included in family preventive interventions. We anticipated that these skills would improve parenting and family relationships in the presence of the often corrosive impact of posttraumatic stress symptoms on interpersonal relationships. Child self-reported anxiety symptoms also improved following completion of this intervention, as did reports of improved positive coping skills, such as emotional regulation and problem solving, both of which are key skills taught and practiced during the intervention.

Taken as a whole, this evaluation study suggests that participation in the intervention provided durable improvements in parent and child psychological health outcomes. Given that parental psychological adjustment has been identified in previous research as a consistent and robust mediator of child adjustment, the reduction of parental symptoms is particularly important at both an individual and a family level. Both civilian and military parents also reported significant improvements in family adjustment following the intervention, reflecting positive changes in domains associated with family-level resilience and positive child outcomes including communication, problem solving, and emotional relatedness consistent with the intervention’s theoretical framework.

Participating parents consistently indicated that they sought out the FOCUS intervention to help them manage their child’s distress and/or to be better prepared for future stressors, but then found that the information and skills that they learned helped “everyone in the family.” The finding that 49% of participating parents in this voluntary program were active-duty service members suggests that family-centered prevention services can successfully engage and retain military personnel through approaches that are designed to proactively strengthen the family as a whole, providing guidance to future intervention research and program implementation design.

The current study is limited by the open trial design of the program. We conducted this evaluation study on an existing data set for a large-scale implementation of a family-centered preventive intervention for the US military. The optimal design to evaluate effectiveness of this adapted intervention might have been a randomized controlled trial (RCT) or other implementation design such as a stepped wedge design, but this was not feasible in the context of a rapidly evolving public health need that emerged during wartime operations. The findings are also limited by the availability of information about parental characteristics in this data set. Aside from parent age and gender, other parental characteristics that could potentially have influenced child outcomes were not collected among this sample, such as type of parent (biological/nonbiological) or marital status of parents. Similarly, characterization of the intervention participation in relation to the deployment cycle was not possible, given the heterogeneous nature of the timing and type of deployments across participating service branches. We also note that 1 of the primary child outcomes uses a parent-report assessment (i.e., the SDQ), which could reflect response bias from parent characteristics. However, additional child self-report measures (e.g., MASC and Kid-Cope) provide confirmatory findings for the parent-report assessment. Improvements in child adjustment over time may have been attributable in part to maturational change, although it is unlikely that the nonintervention changes would account for differences over a relatively brief developmental period.

Despite these limitations, the current study design has several strengths. First, the implementation design included a continuous quality improvement monitoring data infrastructure that provided the opportunity to provide ongoing follow-up assessments over time with 67% of the enrolled families. Second, we selected a mixed effects longitudinal analytical model for this study to provide novel information about the pattern of improvement over time among this large, unique sample of active-duty families and children. Furthermore, we used data from multiple reporters: including, for both parents, self-report, parent report on child, and parent report on family assessments, and for children, child self-report assessments.

The implementation of this theoretically grounded preventive intervention through a partnered collaboration with military medicine, families, and communities represents a paradigm for adapting existing evidence-based interventions in response to urgent public health challenges. Consistent with recommendations of a comprehensive continuum of care as outlined by the Institute of Medicine for at-risk and distressed populations, FOCUS was integrated as a selective and indicated preventive intervention, with the goal of bridging gaps in the existing continuum of behavioral health care for military families. Distinct from many family-centered and parenting intervention models that focus on child outcomes as the primary targets of preventive intervention, the underlying ecological framework of this intervention included attention to the reverberating impact of adversity as potentially disruptive to any combination of individuals and relationships within the family system, addressing stress at the level of the family unit. Findings that similar patterns of improvements were seen in the trajectory of outcomes for parents and children alike provide further support for this framework. The longest war in US history has led to a rapid expansion of research on the impact of parental military service on children, as well as on their prevention and treatment needs. These findings contribute unique information about the psychological adjustment in
parents and children in active duty populations navigating wartime service, underscore the relevance and potential of family-centered prevention to enhance the well-being of military children and families, and provide guidance for further intervention research design.

Clinical Guidance

- The longest war in US history has led to a rapid expansion of research on the impact of parental military service on the well-being of children and families, as well as on their mental health prevention and treatment needs.
- As a trauma-informed, family-centered intervention, FOCUS is grounded in an ecological model designed to enhance resilience and mitigate mental health risk at both the individual and family level through psychoeducation, narrative construction, and cognitive-behavioral skill building.
- Using a public mental health framework, FOCUS was implemented as a selective and indicated preventive intervention to bridge gaps in the continuum of behavioral health care for military families.
- The positive evaluation of this intervention for children, parents, and families encourages further research into family-centered prevention for families facing adversity.

Accepted October 23, 2015.

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The FOCUS program was implemented through the leadership of United States Department of Navy Bureau of Medicine and Surgery (BUMED) through contract to UCLA #N0019809C2058. The evaluation study is also supported through funding from the Fusenot Foundation to UCLA Semel Institute. Dr. Liang and Ms. Aralis served as the statistical experts for this research. The opinions expressed in this article are the authors’ own and do not necessarily reflect the view of the United States Government, the United States Department of Defense, the United States Navy, the United States Marine Corps, or the United States Navy Bureau of Medicine and Surgery.

The authors express their profound gratitude to US Service Members and their families for the courage and resilience they demonstrate in serving our country. The authors also thank Marlene Castañeda, BA, NREPCoordinator, of UCLA Semel Institute for Neuroscience and Human Behavior, for assistance in manuscript preparation.

Disclosure: Dr. Lester has received funding from the Department of Defense, the Frederick W. Weisman Philanthropic Foundation, the McCormick Foundation, the National Institute for Child and Human Development (NICHD), the UCLA Foundation Fund, the Pritzker Foundation, the US Army Medical Research and Materiel Command (USAMRMC), and the UniHealth Foundation. Dr. Liang has received grant funding from the National Institutes of Health (NIH).

Dr. Milburn has received grant funding from the National Institute for Minority Health and Health Disparities, the National Institute on Drug Abuse, and the California HIV/AIDS Research Program. Dr. Mogil has received grant funding from NICHD, the Institute of Education Sciences, the Atlas Family Foundation, and the Carl and Roberta Deutsch Foundation. Dr. Beardslee has received grant funding from the Baer Foundation, the National Institute of Mental Health, and the Department of Mental Health of the State of Massachusetts.

Dr. Saltzman has received grant funding from USAMRMC and the Substance Abuse and Mental Health Services Administration. Ms. Aralis has received grant funding from NIH. Drs. Nash and Klosinski, Mss. Woodward and Sinclair, and Mr. Semaan report no biomedical financial interests or potential conflicts of interest.

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http://dx.doi.org/10.1016/j.jaac.2015.10.009

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