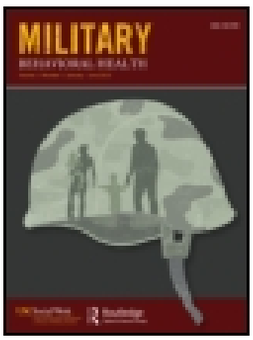

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Examining Implementation Feasibility of a Multicomponent Parenting and Health Promotion Program for Military Families

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ABSTRACT

Promoting military child well-being is imperative for enhancing resiliency and public health within military families and the United States. Providing military families with parent-focused interventions (PFIs) is one, potentially beneficial technique for fostering favorable health outcomes in military children. This study presents implementation feasibility, fidelity, and initial post-program findings from a pilot study of Grow, a PFI that enhances positive parenting, stress management, and physical health promotion skills in military parents of children 5- to 10-year-old. Results indicate that Grow is highly acceptable, feasible to implement with fidelity, and shows promising post-program health outcomes. Study limitations and future directions are discussed.

KEYWORDS

Implementation; military; children; families; parents; parent-focused intervention; evaluation; feasibility; fidelity; health promotion; positive parenting; stress management

Promoting the health of children (i.e., physical, emotional, social and behavioral health domains) has significant impacts for public health in the United States (Mistry et al., 2012). Research clearly shows that adverse physical, emotional, and/or psychosocial experiences during the childhood years are associated with poorer health, wellness, and coping outcomes in adulthood; conversely, favorable, positive experiences during childhood are associated with improved outcomes in later years (Halfon & Hochstein, 2002). Child health promotion is essential to improving overall population health; in fact, 'early and middle childhood' is a topic emphasized within the Healthy People 2020 initiative (U.S. Department of Health and Human Services, 2017).

Children and youth whose parents are veterans are more likely to volunteer for service in the U.S. Military (Burland & Lundquist, 2013), necessitating the promotion of military children's health as essential for our national security. Children of military families are a unique population facing various stressors that children from civilian families may not experience to the same extent (Cozza et al., 2005). Military children must often cope with frequent relocations, long-term separations from a parent, or caregiver wartime deployment (Burrell, 2006; Moeller et al., 2015). This puts members of military families at heightened risk for experiencing a variety of health issues when compared to civilian counterparts (Hosek & MacDermid Wadsworth, 2013; Perkins et al., 2016). The American Academy of Pediatrics (Siegel et al., 2013) asserts that common features of military life affect the health of children of all ages. For elementary school-aged military children, the effects of deployment, for example, have been noted as having a significant psychosocial impact, as evidenced by a high prevalence of emotional and behavioral as well as sleep problems (Flake et al., 2009). Parenting stress has been shown to significantly predict an increase in child psychosocial morbidity among this group (Flake et al., 2009). The association between childhood experiences and health later in life, the stressful contexts in which many military children must grow up, and the extensive sacrifices made by military families mean that fostering the health of military children is of great importance to safeguarding public health in the United States.

One well-supported method through which military child health can be improved is by providing their parents and caregivers with parent-focused interventions (PFIs) designed to harness and enhance key parenting competencies related to child well-being (Prinz, 2016). PFIs typically employ structured

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programing and intervention content delivered to parents through a variety of mediums (e.g., weekly in-person meetings, structured classroom settings, and online learning), aimed at strengthening parenting practices and beliefs in a manner that supports child well-being (Borkowski et al., 2012). Policy makers and stakeholders invested in providing PFIs to military parents should select ones that can be practically implemented in a real-world setting in order to support optimal program reach and long-term sustainability in target populations (Callahan & Zimring, 2011; Perkins et al., 2016).

There are a limited number of PFIs or family-focused interventions designed for military populations. Families Overcoming Under Stress (FOCUS; Lester et al., 2016) and After Deployment, Adaptive Parenting Tools (ADAPT; Gewirtz et al., 2018) are perhaps the most well-known interventions for military families, and both have demonstrated effectiveness with respect to implementation success and program outcomes. ADAPT, however, is targeted at military families who have experienced a combat deployment and neither ADAPT nor FOCUS includes a physical health promotion component. There is a need within the PFI field to develop universal programs that emphasize health promotion in addition to traditional parent support (e.g., discipline, praise, and encouragement) and stress management (e.g., emotion regulation).

Researchers in the field of implementation science have purported that multiple dimensions are vital for ensuring PFI quality and success; these dimensions can be reduced to two overarching elements: feasibility and fidelity. With respect to feasibility, a PFI must demonstrate that people will attend program sessions, utilize taught skills, and feel satisfied with what they have received. Regarding fidelity, PFIs need to establish that facilitators can deliver the curriculum as intended (i.e., curriculum adherence) and in an engaging manner (i.e., delivery satisfaction) (Bellg et al., 2004; Forgatch et al., 2005; Proctor et al., 2011). Interventions which exhibit favorable levels of implementation feasibility and fidelity during pilot studies are those shown to facilitate better *program outcomes*, or, the ability of the intervention for enhancing measures of health behavior post program (Proctor et al., 2011).

The primary purpose of this paper is to present the implementation *feasibility* and *fidelity* results of a real-world military pilot of a newly developed PFI, Grow, which aims to enhance the health and well-being of children 5- to 10-years-old. The intervention content focuses on enhancing positive parenting practices, strengthening stress management skills, and promoting child physical health (e.g., through the promotion of healthy eating and physical activity, and monitoring the quality and quantity of screen time behaviors). Grow is part of the THRIVE Initiative (see Chesnut et al., 2018; Czymoniewicz-Klippel et al., 2019), a larger collection of universal parenting programs that spans across the life of a child from 0 to 18 years. A key goal of the current effort is to demonstrate Grow's capacity to enhance child health and well-being in both civilian (Chesnut et al., 2018; Czymoniewicz-Klippel et al., 2017) and military communities, including National Guard and Reserve families. Even when programs demonstrate high feasibility and fidelity, *program outcomes* must also be assessed to determine if implementational success translates to better health and well-being for participants; therefore, a secondary purpose of this paper is to present the initial *program outcomes* of the participating military families.

We hypothesized that Grow would be feasible to deliver to parents/caregivers of military children and that trained facilitators would be able to implement the program with fidelity. In addition, we hypothesized that military parents/caregivers would show significant treatment effects across the measured dimensions of positive parenting, stress management, and child physical health promotion.

Methods

Procedures

This was approved by the University's Institutional Review Board and in accordance with ethical standards of the responsible committee on human experimentation. In addition, the surveys used were approved by the Defense Manpower Data Center's (DMDC's) survey organization, and the Defense Research, Surveys, and Statistics Center (RSSC).

Grow was implemented at four military installations located in the United States, Germany, and Italy from Summer 2016 through Spring 2017. Initially, six sites (four Army, one Navy, and one Air Force) were identified, but two sites (one Army and the Air Force site) did not implement the program due to participant recruitment challenges. Facilitators at these two locations indicated they have historically struggled to recruit parents for family-based programs. The intervention was administered through the Family Advocacy Program (FAP) at each site. The decision to disseminate the program through FAP was made based on the research team's prior established

relationships with collaborators at the Department of Defense (DoD) and FAP.

At each site, the FAP manager identified at least two individuals to attend the Grow facilitator training. Optimal program implementation involves a coordinating facilitator, who oversees the administrative aspects of the program (e.g., participant recruitment and scheduling), and a delivery facilitator, who facilitates the five weekly program sessions. The selection of two individuals per site allowed for each program to run with at least one coordinating and one delivery facilitator. To become certified, all facilitators underwent a 12-week comprehensive online training, which involved completion of a series of self-paced modules that were embedded in an online learning management system and that focused on relevant topics (e.g., effectively facilitating group sessions, dealing with difficult attendees, making referrals to other resources); participated in regular coaching calls; passed a certification quiz; and, passed a skills demonstration assessment. Except for passing the 12-week training, there were no other minimum educational requirements for the two installation facilitators, however FAP managers were encouraged to identify individuals with relevant experience (e.g., helped direct FAP programing in the past) and positive rapport with families and service members on site. The vast majority of facilitators (92%) had at least a Bachelor's degree in a social science or human services discipline, and they had, on average, 12 years of experience working with families.

Each site was supplied with a recruitment toolkit containing a variety of tailored resources, such as fliers, posters, and social media posts. Coordinating facilitators were encouraged to utilize these resources to promote the program on base, to all members of the local military community. They also reached out to other base personnel (e.g., school liaison officers, nurses, counselors, and chaplains) to serve as referral sources, and attended base and community events to connect with potential participants.

Participants registered for Grow by either contacting the research team by phone to complete a brief registration survey or by visiting the program's website to complete the online registration survey. The registration survey collected basic participant information required to participate in the study (e.g., email address and mobile phone number) and to screen participants for eligibility. To be eligible, individuals had to: (a) be at least eighteen years old; (b) occupy a caregiver role for a child between the ages of 5 and 10 years; (c) be willing to attend program sessions and receive some materials through email and text messages; (d) be willing to complete program assessments, including those sent through email and text messages; and (e) speak and understand English proficiently. A total of 70 individuals registered across the four sites.

Intervention

Grow is a manualized program consisting of five, weekly, 90-minute sessions. The program aims to enhance parenting attitudes and practices that promote healthy child development. To this end, it adopts a strength-based perspective on parenting (Green et al., 2004) by focusing on what parents and children are already doing well and helping them build greater capacity. Program development occurred through an iterative process of: (a) identifying common knowledge components present in existing evidence-based parenting and family programs; (b) reviewing the parenting, child development, and health promotion literature for evidence-informed strategies and practices; (c) integrating the identified program information within the theoretical frameworks of Social Cognitive Theory (Bandura, 1986), Community Youth Development Theory (Vilarruel et al., 2003), and Anticipatory Guidance (American Public Health Association, Committee on Child Health & American Public Health Association Committee on Child Health, 1955); and (d) engaging content experts for review of program materials and recommendations. All strategies are evidence-informed and were determined through a common components approach to program development (Chorpita et al., 2007; Czymoniewicz-Klippel et al., 2018)

As per the instructions provided by the Department of Defense's Office of Military Community and Family Policy, Grow was developed as a universal, health-promoting, PFI that should be beneficial to both military and civilian families. That is, no specific adjustments were made to tailor the program to military family-specific concerns. The content and strategies taught in Grow are developmentally-geared toward elementary school-aged children; for example, the everyday moments presented in the program's video vignettes are relatable examples of situations and challenges that parents of five- to ten-year olds regularly experience. Further, child developmental knowledge is emphasized in the program. Parents are consistently encouraged to think about their child's behavior and their relationship with their child through the lens of a 5- to 10-year old.

Program content is largely delivered to participants through video-based instruction, recorded on DVD, that includes both didactic teaching and relatable

examples of common parenting situations. The videos help to standardize program delivery and provide participants with an opportunity to see the strategies and skills emphasized in the program put into practice. Learning also occurs as the delivery facilitator engages participants in group discussions, interactive activities (e.g., role plays), and skill practices. These discussions and activities are fully articulated in session scripts (i.e., a large binder of printed scripts for each session that inform the facilitator how to lead the session verbally word by word and provide additional instructions for timing and directing activities), which must be strictly followed by the delivery facilitator for reasons of program fidelity. Each session focuses primarily on one of the three learning domains infused into all THRIVE programing (i.e., positive parenting, parent and child stress management, and child physical health promotion). However, these domains are not mutually exclusive, meaning that as participants are learning general parenting skills, they are also learning how to apply these skills to stressful situations or in health promotion contexts. For example, as participants learn about establishing routines in the home and communicating rules, they are presented with strategies for providing family meals and setting limits on screen time. Notably, Grow is a manualized program and, as such, is not designed for customization. So, while parents are encouraged to set goals and think about how the skills they are being taught can be successfully implemented in their family, facilitators do not specifically work with individuals to tailor the program content to their particular needs.

Each session ended with the participants being given a weekly exit card to complete prior to leaving the session, which is a brief survey that evaluates participant skill practice since the previous program session, as well as assesses participant satisfaction with the current session. Participants are also asked to complete a homework assignment involving skill practice at home with their child. Between sessions (48 hours post session), participants received a text message prompt to their mobile phone reminding them to practice the skill at home, as well as an email with a link to a brief, 2-minute, online video designed to reinforce what they learned in the last session with a brief recap of relevant skills training; these videos were separately designed from the videos shown in-session. The following session began with a period of reflection on how things went over the past week.

Program groups ranged in size from four to fourteen participants. Sessions were held at times identified by the facilitators as being most convenient for their site's parent population. Due to the time commitment required by the program, sites were encouraged to employ multiple strategies to reduce barriers to participation, such as providing meals, childcare, and small incentives like door prizes. All four sites that ran programs were able to arrange childcare, a well-known barrier-reduction component; however, no sites were able to provide family meals due to installation policies, and only one site was able to offer small incentives through a raffle.

Measures

Implementation data was collected during program delivery. Participant data on positive parenting, stress management, and health promotion related outcomes (e.g., health behaviors) were collected through a pre- and post-survey administered online. Tables 1 and 2 provide an overview of the measures used to assess implementation and program outcomes, respectively. Participant demographic information (e.g., age, race, and family structure) was also collected at pretest.

Data analysis

All analyses were conducted with SPSS version 24. For implementation outcomes, descriptive statistics (e.g., means, frequencies, and ranges) were calculated. For program outcomes, Wilcoxon signed rank tests were used to examine change across time due to visual and statistical (e.g., Kolmogorov–Smirnov test) examinations of the data indicating non-normality.

Results

Participant demographics

Demographic information is presented in Table 3 for the participants who completed the pretest. In general, these participants were White (66.7%), married (88.9%), had a partner who was an Active Duty Service Member (66.7%), had some type of college degree (59.9%), and had an annual family income of $50,000 or more (57.8%).

Feasibility

Dosage

Seventy participants registered across four of the implementation sites. Of these 70, six registered for programs that were not implemented due to group sizes being too small leaving a total of 64 participants. Of these 64, 15 (23.4%) did not attend any sessions.

Table 1. Description of implementation outcome measures.

Outcome	Assessment (number of items)	Sample item	Scale range
Feasibility			
Dosage	Attendance records (1)	"Did participant attend today's session?"	0–1
Satisfaction	Weekly exit cards (1)	"In general, how satisfied are you with how the facilitator delivered today's session?"	1–5
Session Content Relevance	Weekly exit cards (2)	"How important is it to you to enhance or establish rules and routines within your home?"	1–5
Online video Helpfulness	Weekly online video follow-up surveys (1)	"Did the weekly video help to increase or enhance your understanding of how to help your child in times of stress?"	1–5
Engagement	Weekly exit cards (1)	"In general, how engaged were you in today's session (e.g., actively listening to the facilitator, responding to questions)?"	1–5
	Fidelity observation forms (5)	"Considering all of the participants in the group, how many were willing to discuss and process the session content?"	1–5
	Delivery facilitator weekly exit surveys (4)	"Considering all of the participants in your group, how many demonstrated a positive attitude toward the session content?"	1–5
Skill usage	Weekly exit cards (2)	Since session 1 (over this past week), how often have you praised and encouraged your child?"	1–4
	Weekly text message surveys (1)	"Since session 1, how often have you praised and encouraged your child?"	1–4
Fidelity			
Curriculum Adherence	Fidelity observation forms (varies by session)	"Did the facilitator start the video at the beginning of the session?"	0–1
	Delivery Facilitator Weekly Exit Surveys (1)	"How closely did I follow the script for this session in my manual?"	1–4
Delivery Quality	Fidelity observation forms (3)	"How friendly was the facilitator to participants?"	1–4
	Delivery facilitator weekly exit surveys (3)	"How clear were my explanations of activities?"	1–4

Reasons for drop out reported by some of these participants ($n = 5$) included illness, work conflict, difficulty reserving childcare through the base's Child Development Center, and inability to travel to the program's location.

Participant attendance declined slightly over the five-week implementation period: 40 participants (62.5%) attended session one, 39 (60.9%) attended session two, 33 (51.6%) attended session three, 30 (46.9%) attended session four, and 32 (50%) attended session five. Of those who attended at least one session ($n = 49$), 33 (67.3%) attended more than half of the program (i.e., at least three sessions) with eight (24.2%) attending four and 20 (60.6%) attending all five sessions. The results of a Kruskal–Wallis test indicated no statistically significant differences between sites regarding the number of sessions attended ($H[3] = 7.31$, $p = 0.06$).

In addition to the face-to-face video-based sessions, participants received supplemental program content throughout the week through text message reminders and online videos[1]. Regarding text message engagement, the highest response rate was for the first week (58.3%) with the lowest occurring at the third week (25%). Regarding the supplemental online videos, the first week's video had the highest response rate (i.e., the online system hosting the videos indicated 46.9% of participants watched the entire video), with the third week's video having the lowest response rate (only 21.9% of participants watched the entire video).

[1]Text message surveys were only sent to participants at domestic sites as the system was not capable of receiving replies from international sites.

Satisfaction

Across all sessions, participants who completed the weekly exit cards indicated they were satisfied with the way the facilitator delivered the sessions ($M = 4.63$, $SD = 0.59$, $Scale = 1–5$). The lowest response recorded (i.e., 2 – *a little satisfied*) occurred only once, with the highest response (i.e., 5 – *a great deal satisfied*) comprising 68% of the scores.

Session content relevance

Over two-thirds (68.2%) of the responses from participants who completed weekly exit cards indicated they learned *quite a bit* or *a great deal* of new information throughout the sessions ($M = 3.92$, $SD = 0.95$, Scale = 1–5). Almost all (98.3%) the responses reflected that participants found the sessions' core skills to be *quite a bit* or *a great deal* important ($M = 4.79$, $SD = 0.48$, $Scale = 1–5$), and almost all (95.3%) responses indicated they were *likely* or *very likely* to use the core skills with their child between sessions ($M = 4.66$, $SD = 0.66$, $Scale = 1–5$).

Engagement

Almost all (92.9%) of the responses provided by participants who completed weekly exit cards indicated

Table 2. Description of program outcome measures.

Outcome	Assessment (number of items)	Sample item	Scale range	α	Validity
Positive parenting					
Over-reactive Discipline	Parenting scale[a] (5)	"When my child misbehaves … I am picky and on my child's back – I am no more picky than usual."	1–7	0.72	Convergent
Inconsistent Discipline	Alabama parenting questionnaire[b] (3)	"You threaten to punish your child and then do not actually punish him/her"	1–5	0.59	Convergent; discriminant
Child adjustment	Strengths and difficulties questionnaire[c] (SDQ) – externalizing behaviors (10)	"Restless, overactive, cannot sit still long"	0–2	0.84	Convergent; discriminant
	SDQ – internalizing behaviors (10)	"Rather solitary, prefers to play alone"	0–2	0.62	Convergent; discriminant
	SDQ – prosocial behaviors (5)	"Helpful if someone is hurt, upset, or feeling ill"	0–2	0.69	Convergent; discriminant
Stress management					
Parenting stress	Parental stress scale[d] (7)	"Caring for my child sometimes takes more time and energy than I have to give"	1–5	0.90	Convergent; discriminant
Parental sense of control	Parental locus of control scale[e] (10)	"My child often behaves in a manner very different from the way I would want him/her to behave	1–5	0.82	Convergent; discriminant
Socialization of coping	Socialization of coping scale[f] (SOC) – primary control (7)	"When my child has a problem, or is upset, I encourage my child to … Deal with the situation head on rather than ignoring it"	1–5	0.87	Convergent; discriminant
	SOC – cognitive restructuring	"When my child has a problem, or is upset, I encourage my child to … Look for something good in what is happening"	1–5	0.92	Convergent; discriminant
Health promotion/Behavior					
Physical activity Support	Home environment scale[g] – physical activity parental policies	"How often do you encourage your child to be physically active?"	1–5	0.69	Convergent
Outdoor Playtime	Outdoor time recall[h] (2)	"How much time would you say your child spends playing outdoors on a typical weekday?"	Hours, minutes	–	Convergent
Feeding Practices	Feeding Practices and Structure Questionnaire[i] (FPSQ) – Reward for Behavior (4)	"I offer my child his/her favorite foods in exchange for good behavior."	1-5	.87	Predictive
	FPSQ – reward for eating (6)	"I reward my child with something to eat when he/she is well behaved"	1–5	0.92	Predictive

Note: Cronbach alpha values calculated from pretest data. For more information on positive parenting, stress management, and health promotions measures used (e.g., additional psychometric information), or for clarifications of the example items provided above, please see individual references.
[a]Arnold et al. (1993).
[b]Elgar et al. (2007).
[c]Goodman et al. (2010).
[d]Berry and Jones (1995).
[e]Campis et al. (1986).
[f]Monti et al. (2014).
[g]Gattshall et al. (2008).
[h]Burdette et al. (2004).
[i]Jansen et al. (2015).

they were either *quite a bit* or *a great deal* engaged in the sessions ($M = 4.47$, $SD = 0.66$, *Scale* = 1–5). The lowest response recorded (i.e., 2 – *a little engaged*) was only provided twice across all sessions. Trained fidelity observers, usually the coordinating facilitators, also indicated participants were engaged during the sessions ($M = 4.87$, $SD = 0.34$, *Scale* = 1–5).

Helpfulness of online videos

A little over two-thirds (67.4%) of the responses gathered from participants who watched the online videos indicated they found them to be *quite a bit* or *a great deal* helpful at increasing their understanding of the subject matter ($M = 3.89$, $SD = 0.98$, *Range* = 1–5). The lowest recorded response (i.e., 1 – *not at all*

Table 3. Participant demographic information ($n = 45$).

Caregiver role[a]	
Mother	70.5%
Father	22.7%
Step-parent	4.5%
Foster parent	2.3%
Race[b]	
White	71.1%
Black/African American	15.8%
American Indian/Alaska Native	2.6%
Asian	10.5%
Native Hawaiian/Pacific Islander	0%
Hispanic Origin[c]	
Yes	15.4%
No	84.6%
Age	
25–34	53.3%
35–44	40.0%
45–54	6.7%
Marital status	
Married	88.9%
Divorced	6.7%
Never married	4.4%
Highest degree conferred	
High school	35.5%
Vocational/associate	22.2%
Bachelor's	24.4%
Graduate/professional	17.7%
Occupation	
Full-time paid employment	44.4%
Part-time paid employment	2.2%
Stay-at-home parent	33.3%
Student	15.6%
Other	4.4%
Annual household income[a]	
Less than $50,000	40.9%
$50,000 or more	59.1%
Military affiliation	
Active duty service member	31.1%
Spouse of service member	48.9%
DoD civilian employee	11.1%
National Gaurd/Reserve	2.2%
Previous service (e.g., discharged, retired)	2.2%
Other	4.4%
Partner's military affiliation	
Active duty service member	66.7%
Spouse of service member	17.8%
Previous service (e.g., discharged, retired)	6.7%
DoD civilian employee	4.4%
Other	4.4%
Target child age (*M*, *SD*)[a]	6.5 (1.3)
Target child gender (% male)[a]	56.8%

[a] $n = 44$.
[b] $n = 38$.
[c] $n = 39$.

helpful) was only provided once, and it was in relation to the fifth week's video on health promotion.

Skill usage

On average, participants indicated that they were using the program's core skills somewhat frequently prior to attending the sessions ($M = 3.36$, $SD = 0.70$, *Scale* = 1–4). Session three's skill concerning rules and routines had the highest prior frequency rating ($M = 3.67$, $SD = 0.60$) and session five's skill concerning health promotion had the lowest prior frequency rating ($M = 3.19$, $SD = 0.82$). Data from participants collected two to three days after attending each session indicated they were continuing to use the program's core skills fairly frequently ($M = 3.42$, $SD = 0.68$). Participants indicated using session four skills regarding rewarding appropriate behavior most frequently ($M = 3.62$, $SD = 0.50$) and session two skills regarding helping children cope with stress least frequently ($M = 3.22$, $SD = 0.74$). Similarly, participant data collected one week after each session revealed their use of the program's core skills remained frequent ($M = 3.55$, $SD = 0.58$). Session four skills had the highest frequency rating ($M = 3.75$, $SD = 0.44$) while session five skills had the lowest rating ($M = 3.39$, $SD = 0.67$).

Fidelity

Curriculum adherence

The average curriculum adherence score for all sessions based on fidelity observers' ratings was 95.9%. This score is presented as a percentage because the fidelity observation forms are specific to each Grow session, which means the total raw score per session is not standardized. The fidelity observation forms are a checklist completed by the coordinating facilitator during the program sessions. The checklist includes all of the required components of the script used by the Delivery Facilitators, and the Coordinating Facilitator responds to each item on the form by selecting "Yes" or "No." A total percentage score is calculated as follows: (number of yes responses/total number of items) × 100. Average adherence scores for individual sessions ranged from 93.3% (session 2) to 97.6% (session 3), which suggests facilitators were closely following the program's delivery model. This is further supported by delivery facilitators' self-reports of their adherence to the curriculum. On average, delivery facilitators stated they closely adhered to the session scripts ($M = 3.58$, $SD = 0.50$, *Range* = 1–4). In fact, all collected responses indicated the facilitator either *closely adhered* (42.4%) or *very closely adhered* (57.6%) to the session scripts.

Delivery quality

Fidelity observers' ratings of delivery quality included an assessment of the facilitators' clarity of explanations, friendliness toward participants, comfort in leading the sessions, effectiveness at using facilitation skills, and effectiveness in managing time. The average delivery quality score indicated the facilitators were performing well on these aspects of delivery ($M = 3.80$, $SD = 0.48$, *Scale* = 1–4). Average scores from individual sessions were all consistently high (*Range* = 3.69–3.93). The delivery facilitators also

Table 4. Program outcomes.

	M (Mdn, SD)				
Outcome	Pretest	Post-test	*z*	*p*	*r*
Over-reactive discipline[a]	3.65 (4.00, 1.12)	3.08 (3.00, 1.30)	−1.81	0.07	−0.26
Inconsistent discipline[b]	2.36 (2.33, .62)	2.16 (2.00, .71)	−1.98	0.05	−0.28
Externalizing behaviors[c]	7.73 (7.00, 4.48)	6.53 (5.50, 4.15)	−2.56	0.01	−0.36
Internalizing behaviors[c]	4.54 (4.00, 2.96)	2.88 (1.50, 3.00)	−3.50	<0.01	−0.48
Prosocial behaviors[c]	7.69 (8.00, 2.04)	8.38 (9.00, 1.60)	2.07	0.04	0.29
Parenting stress[d]	2.41 (2.43, 1.03)	2.15 (1.00, .87)	−2.30	0.02	−0.31
Parental sense of control[a]	2.78 (3.00, .72)	2.44 (2.35, .65)	−2.61	<0.01	−0.38
Primary control coping[c]	4.19 (4.00, .62)	4.23 (4.29, .57)	0.34	0.73	0.05
Cognitive restructuring coping[c]	3.49 (3.50, 1.05)	3.77 (3.90, 1.14)	1.40	0.16	0.19
Physical activity support[c]	2.76 (2.80, .57)	2.93 (2.80, .59)	2.20	0.03	0.31
Weekday outdoor playtime[c]	136.54 (120.00, 81.43)	162.69 (120.00, 178.43)	.21	0.84	0.03
Weekend day outdoor playtime[e]	187.78 (180.00, 95.81)	175.56 (180.00, 101.80)	−.83	0.41	0.11
Behavior-based food rewards[b]	1.88 (1.75, .71)	1.62 (1.50, .51)	−1.98	0.05	−0.28
Rewards for eating[b]	2.00 (2.00, .85)	1.64 (1.67, .51)	−2.22	0.03	−0.31

[a] $n = 24$.
[b] $n = 25$.
[c] $n = 26$.
[d] $n = 27$.

provided some information on delivery quality by indicating how comfortable they were leading each session. Similar to the fidelity observers' scores, delivery facilitators self-ratings were high ($M = 3.44$, $SD = 0.57$, *Scale* = 1–4), and the vast majority of responses (97%) indicated they felt *comfortable* or *very comfortable* leading the sessions. The lowest recorded response (i.e., 2 – *somewhat comfortable*) was provided only once in relation to the first session.

Program outcomes

Of the 64 participants who were registered for the four program groups, 45 (70.3%) completed the pre-program survey with 27 (42.8%) completing the post-program survey. Results of Mann–Whitney *U*-tests revealed no statistically significant baseline differences on program outcomes between those who completed the post-survey and those who did not. However, there was evidence of a linear relationship between program completion status and level of education ($M^2 = 7.73$, $df = 1$, $p < 0.01$) and income ($M^2 = 8.06$, $df = 1$, $p < 0.01$). Both of these linear relationships indicated that people with higher levels of education and income were more likely to have completed the post-survey.

Results of the Wilcoxon signed rank tests are presented in Table 4. In sum, child externalizing and internalizing behaviors, parenting stress, parents' engagement in inconsistent discipline practices, and parents' use of food rewards or rewards to encourage eating decreased in a statistically significant manner; while child prosocial behaviors, parents' sense of control over their child's behavior, and parents' encouragement of their child's physical activity increased in a statistically significant manner. Over-reactive discipline approached statistical significance ($p = 0.07$). Effect sizes (i.e., *r*) for statistically significant outcomes are in the small to medium range, suggesting a modest magnitude of change from pre- to post-test. Statistically significant improvements were not detected for parental encouragement of primary control and cognitive restructuring strategies and child weekday and weekend day outdoor playtime.

Discussion

This study presents implementation feasibility and fidelity results from a military pilot of the Grow parenting program, as well as initial post-program outcomes. Overall, these findings are promising, indicating that military professionals were highly capable of effectively implementing and delivering the program to military parents, and that participants were willing to engage in the program. Participants also showed positive program outcomes related to enhanced positive parenting, stress management, and child physical health promotion. These results reinforce the initial study hypotheses and signal the feasibility of moving forward with a larger-scale evaluation of the program among military families.

In terms of feasibility, these data suggest that Grow is appropriate and acceptable to program participants. Participants were highly *satisfied* with how the facilitators delivered the program, which is an important consideration for a face-to-face program as facilitators are a vital aspect of this delivery mode. In addition, the majority of participants indicated that the program's content was highly relevant to them, which further speaks to the appropriateness of the

intervention content and activities for parents. *Engagement* scores, reported by both participants and fidelity observers, suggest the parents were motivated to actively participate in the sessions.

Program dosage (e.g., attendance and retention) followed a trend similar to other PFIs implemented in military and civilian communities (i.e., 40–60%; Axford et al., 2012). More than three-quarters (76.6%) of participants who registered for a group that was implemented attended at least one session, and over two-thirds (67.3%) of those who came to at least one session attended over half of the program. Program attendance declined slightly after the first session, which may indicate a modest lack of long-term participant commitment to the program. That said, there are a variety of alternative explanations for the decline in attendance that may not be related to the program itself, such as work or family life conflicts.

The differential attrition findings suggest modifications to the program may need to be made to make it more accessible to lower SES families. For example, the program developers could work even more closely with facilitators during training to identify what types of program supports and resources they can mobilize at their individual installations to make attendance easier for parents (e.g., offering meals; and other alternative incentives specific to facilitator location). This could also involve the program developers traveling to study sites to directly assist with recruitment and retention. We were unable to do this for the current study due to logistical and financial constraints. As another example, the program developers could elicit in-depth feedback from military parents regarding what content, resources, and delivery mechanisms would be most helpful. Though the program was designed to be universal and to work with military and civilian populations, adjustments may need to be made to better align the program with the needs of military parents.

Participants indicated they were using the skills taught in Grow somewhat frequently prior to learning about them during the sessions. Considering the universal nature of the program, this finding is not surprising. Skill usage remained frequent during the periods between sessions, and in general, seemed to increase slightly. Providing parents with specific skills to practice at home with their child appears feasible and may be a useful way to encourage more consistent use even among those who reported using them prior to the program. Some sessions seemed to elicit greater skill practice at home (i.e., session three: rules and routines practice) than others (e.g., session five: involving health promotion). The role of program and participant characteristics is important to consider in how they may be influencing skill practice motivation (Berkel et al., 2011; Danko et al., 2016). As previously mentioned, gathering in-depth feedback from participants regarding the appropriateness and usefulness of the program's content is needed. Such data would allow us to better understand what parenting skills are most relevant to the target population and what content or delivery adjustments are needed to increase skill practice motivation.

Participant interaction with the weekly videos sent via email was lower than expected. Week one had the highest engagement, with the online video-hosting software indicating that 46.9% of participants access and watched the entire video for that week. This low engagement may be due to end-user receipt issues (e.g., emails being filtered to 'junk mail'), or a lack of engagement with email within this population. Text message delivery rates were high for domestic participants (i.e., systems indicated that scheduled messages were successfully sent to participants' cellular carriers; no undeliverable texts were recorded). However, similar to the weekly video emails, domestically delivered text messages, which elicited replies from participants, had rather low response rates (36.7% overall). One possible explanation may involve complications with domestic delivery of the text messages to participants' specific mobile phones (e.g., the cellular carrier may have received the text, but recognized it as spam and did not forward to the participants' device). Another possible explanation is that participants were receiving and reading the text message content, but not generally receptive to interacting with it by sending replies as part of the program. While previous research on utilizing text messaging as a conduit to deliver health intervention content has been shown to be effective (Hall et al., 2015), our findings warrant further consideration of overall participant appeal to the text message and online video components of Grow. Because of the challenges noted in this study, the researchers were unable to examine the usefulness of these technologies. Perhaps, the text messages and videos are not helpful in improving treatment effects, however, these data are inconclusive and further research is needed. Moving forward, it may be helpful to simplify the use of technology by asking participants to choose if and how (i.e., text, email, or both) they receive the technology-related aspects of the program.

Regarding implementation fidelity, the delivery facilitators exhibited high levels of *curriculum adherence* (95.9%). This suggests they were able to effectively utilize the tools provided (e.g., manualized curriculum, skills taught during training) to ensure

coherent provision of almost all intervention content, as intended by the program developers. *Delivery quality*, as assessed by fidelity observers and the facilitators themselves, was also very high. This indicates that delivery facilitators were comfortable with providing the program in a face-to-face setting to military parents, and that they did so with confidence and dependability. However, it is important to note that high levels of curriculum adherence and delivery quality do not ensure high levels of program completion or program impact. Future work examining the relationship between program fidelity, program completion, and program impact is needed.

The program outcome findings also showed promise. Parents reported improvements in all three of the program's primary domains (i.e., positive parenting practices, stress management, and child physical health promotion). In fact, statistically significant changes were noted for all but three program outcomes (i.e., over-reactive discipline, parental encouragement of primary control and cognitive restructuring strategies, and child outdoor playtime). However, given the small sample size, lack of a comparison group, and evidence of differential attrition, these findings should be interpreted cautiously. While the results are insufficient for making determinations of the program's efficacy or effectiveness, they do provide preliminary evidence that the program may help to strengthen parenting and health promotion knowledge and skills among military families. In this way, the findings serve as proof of concept, which suggests further, more rigorous evaluations of the program are warranted.

This study represents a solid initial examination of the Grow program, nevertheless limitations exist. First, program outcomes were assessed via self-report measures, which can be subject to systematic errors, such as recall bias or common method variance. In addition, four measures had Cronbach's alpha values lower than the conventional standard of 0.70 at pretest. While there is good reason to not be overly reliant on cutoffs for internal consistency estimates (Field, 2013), low values may be indicative that participants are not responding to items in a consistent fashion, which brings into question the validity of the results. Second, the sample size was lower than anticipated (i.e., 70 participants originally registered, whereas only 45 completed the pre-program survey and 21 completed the post-program survey). The small sample size resulted in reduced statistical power, which may explain why over-reactive discipline only trended toward significance. Third, some evidence of differential attrition was found with respect to education and income. Specifically, participants with greater levels of education and income were more likely to finish the program and complete the post-test. These differential attrition effects limit the generalizability of the study's findings and suggest the program may be less appealing or harder to access for lower SES parents. Fourth, several retention challenges were experienced during program implementation. That is, some sessions were initially canceled because of insufficient enrollment, and some parents found it difficult to enroll their children in the childcare services provided during face-to-face programing (e.g., they had to obtain vouchers, drop children off at inconvenient childcare locations, and some reported these annoyances were reasons for not attending a session). Fifth, facilitators were largely unable to provide suggested program supports (e.g., incentives and family meals) that have been previously shown to increase attendance and engagement with PFIs (Kumpfer & Alvarado, 2003; Kumpfer et al., 2003).

In summary, Grow is a PFI that has potential for enhancing and promoting the health of children living in military contexts. Military families often face a variety of unique challenges that may influence the families' and children's health and well-being. Providing them with a universal program to strengthen positive parenting, stress management, and health promotion skills is an operative method for enhancing health in this important population. Future plans include: (1) examining further longitudinal face-to-face military participant program outcomes; (2) adapting program content to be delivered in an online format; and (3) evaluating the online version for implementation and treatment effects. Large scale disseminations of both the face-to-face and online versions of Grow are planned in both military and civilian populations, answering an overarching call for assessing the program's universality for improving parenting and ultimately child well-being outcomes across a variety of contexts and populations.

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Originality statement

This manuscript is the original work of the authors, and has not been published or submitted simultaneously for publication elsewhere.

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