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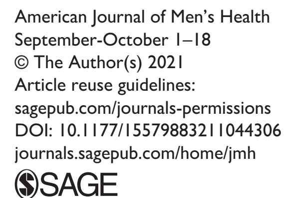
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The Development and Pilot of a Technology-Based Intervention in the United States for Father's Mental Health in the Perinatal Period

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Abstract

Paternal mental health is increasingly recognized as an important public health issue, with about 10% of men experiencing depression perinatally. Paternal depression is associated with less responsive parenting, greater parenting stress, and suboptimal child development. In response to a lack of existing interventions that directly focus on fathers' mental health in the United States, we developed and pilot tested the Fathers and Babies (FAB) intervention for use with partners of women enrolled in home visiting (HV) programs.

After a review of the extant literature, FAB was developed with input from HV stakeholders and infant mental health consultants. FAB was subsequently pilot tested with 30 father-mother dyads, with mixed-method data collected from a subset of intervention participants to assess intervention feasibility and acceptability and guide intervention refinement.

Five themes related to FAB content and delivery considerations emerged from the initial focus groups that were used to guide FAB development. Mixed-method data collected during the pilot study established that fathers receiving FAB reported its content appropriate and thought it was feasible to receive the intervention. Several recommendations for FAB revisions were also provided.

FAB is an innovative intervention developed for fathers from contemporary family structures that was well-received during its pilot testing. Feasibility and acceptability data suggest that fathers have favorable opinions about intervention content and delivery, while also highlighting areas for future revisions of FAB.

Keywords

paternal mental health, home visiting, public health, intervention, technology

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Depression among fathers ("paternal depression") has been reported to have a prevalence of 10% during the perinatal period, with the highest rates occurring three to 6 months postpartum (Habib, 2012; Paulson & Bazemore, 2010)—twice the rate of depression among men in the general public who are not of parenting age (Habib, 2012; Hasin et al., 2005). Postpartum depression in fathers disproportionately affects low-income men across racial and ethnic groups, and it has been hypothesized that men of racial and ethnic minorities experience a higher prevalence of depression (Bernal & Sáez-Santiago, 2006). Mental health services are underutilized among racial and ethnic minorities; these disparities may be due to a number of reasons, including experiences of racism and discrimination, mental health stigma, lack of knowledge about treatment options, cultural mistrust of healthcare providers or misdiagnosis and clinical biases. Men are thought

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to be deterred from seeking out mental health care due to societal norms surrounding masculinity. Traits of traditional masculinity include independence, strength, and stoicism. Additionally, men have a greater tendency to self-medicate with drugs or alcohol. (Hankerson et al., 2015; Sagar-Ouriaghli et al., 2019). Men across all races and ethnicities are less likely to seek out mental health care than women and depression manifests itself differently in men than women—such as irritability or aggressive behaviors—so it is not always detected via commonly used depression screening tools (Call & Shafer, 2018; Scholz et al., 2016). As a result, women in the United States are 1.6 times more likely to receive mental health services than men (Sagar-Ouriaghli et al., 2019). Expectant and new fathers experience significant changes in life after childbirth—many ecological factors may exasperate the stress that comes along with becoming a new parent. Some are unique to fathers including feeling excluded from mother-infant bonding (Kim & Swain, 2007). Additionally, preliminary research suggests that fathers demonstrate low rates of help-seeking behaviors, particularly when dealing with parental stress, depression, and anxiety (Isacco et al., 2016). It is important to consider the intersectionality and compounding nature of these factors when considering the limited use of mental health services among fathers from racial and ethnic minority groups.

There is increasing evidence of the negative consequences associated with paternal depression for fathers and their children. A meta-analysis by Cheung et al. (2019) demonstrated that paternal depression is associated with both mother and father rating poor interparental relationship quality (Cheung et al., 2019). Paternal depression is associated with insecurity in the relationship, feelings of rejection, and perceived hostility from the partner, which increase the risk for poor relationship quality (Bronte-Tinkew et al., 2009; Cheung & Theule, 2019; Du Rocher Schudlich et al., 2019; Shelton & Harold, 2008). Evidence consistently shows that paternal depression is associated with negative parenting behaviors such as corporal punishment, less engagement in educational activities, and more father-child conflict (Cheung & Theule, 2019; Davis et al., 2011; Kane & Garber, 2004). Paternal depression has also been shown to have a deleterious effect on child internalizing and externalizing behaviors independent of maternal depression (Ramchandani et al., 2008; Weinfield et al., 2009), and has been associated with increased rates of psychiatric disorders among children as well as increased social challenges. It is posited that a father's antisocial behaviors when depressed may contribute to a disruption in or lack of socialization of their children (Ramchandani et al., 2008).

Despite the prevalence of paternal depression and its negative sequelae for both father and child, few existing interventions have attempted to address paternal mental health during the perinatal period. While there is robust work surrounding father engagement in parenting, particularly internationally, this is typically not inclusive of paternal mental health, and there have been even fewer studies conducted among men of racial and ethnic minorities, or in the United States. For example, O'Brien et al.'s review of 13 studies—only two of which were in the United States—demonstrates a focus on supporting partner (mother's) mental health, re-envisioning perinatal mental health as a "family concern," or the exploration of treatment options (O'Brien et al., 2017). These are not directly focused on the father, but rather the family or partner.

A review of 19 interventions conducted in the United States for men in the perinatal period reported that these interventions focused on general childbirth education and infant care, co-parenting skills, or case management (Lee et al., 2018). Of these interventions, only four (Diemer, 1997; Feinberg & Kan, 2008; Field et al., 2008; Salman-Engin et al., 2017) examined mental health outcomes, with just one (Field et al., 2008)—a massage-based intervention—yielding reductions in paternal depressive symptoms. Internationally, there has been extensive research on interventions for fathers, but there is a gap in research and evidence around father's mental health in the United States (Fletcher et al., 2018; O'Brien et al., 2017; Rominov et al., 2016). A systematic review of 11 interventions for paternal mental health in the perinatal period reported on six that were conducted in the United States (Rominov et al., 2016). Of the studies done in the United States, one was psychoeducational, two used massage techniques, three were couples-based, and none used CBT or text-messaging approaches (Rominov et al., 2016). Additionally, these previous intervention studies were limited by low enrollment of racial and ethnic minority men and a lack of inclusion of fathers from contemporary family structures such as non-biological partners or biological non-resident fathers.

Lastly, some existing father-focused mental health interventions inclusive of technology-based approaches have been developed outside of the United States (Fletcher et al., 2018, 2019). Building from the evidence and findings of these existing interventions, within the U.S. context, a text-messaging approach has the potential to reach larger numbers of fathers more efficiently and scale more rapidly (Baldwin & Bick, 2017; Fletcher et al., 2018; May & Fletcher, 2019; O'Brien et al., 2017; Rominov et al., 2016). Given that pregnant and postpartum women and infants typically have access to standardized healthcare and services, fathers are rarely the focus of direct services, making technology-based interventions a clear fit to meet their needs.

Home visiting (HV) programs serve vulnerable families, and aim to improve birth outcomes, maternal life

course, parenting knowledge and skills, and to foster healthy child development through the delivery of in-home services by a trained home visitor. Home visitation occurs throughout all 50 states, with an estimated 750,000 families receiving HV services (Avellar et al., 2016; Sama-Miller, 2017). Many HV models exist, with a 2017 report highlighting 20 evidence-based models that have shown favorable impacts on one or more maternal and child health outcomes using rigorous research designs (Sama-Miller, 2017). HV programs provide services throughout the perinatal period and up to ages 3–5, in preparation for children's school readiness (Sama-Miller, 2017). Over the last decade, we have worked closely with HV programs across the United States to address maternal depression among pregnant women and mothers that they serve through the implementation of the Mothers and Babies (MB) intervention. MB has been determined to be efficacious in preventing the onset of postpartum depression and reducing depressive symptoms via multiple randomized controlled trials, (Tandon et al., 2011, 2014; S. D. Tandon et al., 2018) and was highlighted by the United States Preventive Services Task Force as one of the two most effective interventions for prevention of postpartum depression (Curry et al., 2019; Siu et al., 2016). MB is guided by principles of cognitive-behavioral therapy (CBT) and attachment theory, and has been designed to be highly adaptable among different participant populations. In recent years, there has been a significant increase in the attention HV programs have given to fathers' needs (Sandstrom et al., 2015; Sandstrom & Lauderback, 2019; The Child & Family Research Partnership, 2014; The Child and Family Research Partnership, 2013).

In response to the gaps in existing interventions for fathers and to better address paternal depression, there is growing emphasis at the local, state, and national levels on engaging both parents through home visiting (Sandstrom et al., 2015; Sandstrom & Lauderback, 2019; The Child & Family Research Partnership, 2014; The Child and Family Research Partnership, 2013). Additionally, we have identified the need for father-focused intervention through regular consultation efforts with HV programs throughout the United States. The evolution of innovative technological approaches to efficient care delivery has allowed us to develop Fathers and Babies (FAB), a manualized intervention guided by the same cognitive behavioral therapy and attachment principles that undergird MB. FAB was designed to mirror the flexibility to be integrated into HV and adaptability to meet diverse families' needs. The dual goals of FAB are to improve paternal mental health and to help fathers support their partner's mental health. Like MB, each session connects the core elements of CBT to child development, behaviors, and relationships. FAB was initially developed to be delivered in conjunction with the MB intervention, incorporates technology-based intervention delivery, and intervenes with fathers regardless of marital or cohabitating status. This manuscript describes the process of FAB development, presents feasibility and acceptability findings from an uncontrolled pilot study, and outlines revisions being made to FAB based on pilot study findings. A separate manuscript reporting on mental health, parenting, and interparental relationship has been published in the Frontiers Journal of Health Psychology (Tandon et al., 2021).

Methods

Overview

Initial development of FAB occurred between 2016 and 2018 in collaboration with key community stakeholders conducted through advisory meetings, interviews and focus groups. These stakeholders included (1) infant mental health consultants, (2) fatherhood experts, (3) academics, (4) home visitors, (5) fathers and mothers, which offered a wide range of expertise and perspective. Subsequently, FAB was pilot tested to assess the intervention's feasibility and acceptability. During the pilot, mixed methods were employed to collect data that are being used to guide adaptations to FAB content and delivery.

Prior to any study activities, informed consent was obtained from all participants. Online informed consent was captured via Research Electronic Data Capture (REDCap) (Harris, 2009), in-person was documented through a signed consent form, and verbal consent was conducted through verbal agreement (yes or I agree) and documented by study personnel. Participants who consented in person were given a copy of their consent form, and participants who provided consent by phone or online were mailed a copy of their consent form. Participants had the option to opt out of study activities by notifying the study team at any time. The Northwestern University Institutional Review Board approved all study procedures (STU00203918).

FAB Development

As a first step, we consulted with a group of infant mental health consultants with home visiting expertise, as well as fatherhood experts, and reviewed fatherhood literature related to existing mental health interventions for perinatal fathers. These steps, along with our successes with MB, guided the development of the broad contours of the FAB intervention and helped develop focus group guides to obtain additional insights from an array of key stakeholders. We developed a draft version of the FAB

intervention content and worksheets to guide specific focus group topics. The core FAB intervention content is based on the same core components (CBT, Attachment Theory) and modular structure as MB (Jensen et al., 2018; Le et al., 2015; McFarlane et al., 2017; D. Tandon et al., 2018). A study investigator (CG) has extensively studied fathers and health and developed a smartphone app to support parents of very low birth-weight infants as they transition to home from the NICU and findings from this research supported the development of FAB (Garfield, Duncan, et al., 2014; Garfield, Lee, et al., 2014; Kim et al., 2015; D. Tandon et al., 2018).

Three focus groups were conducted during December of 2017, each with a key stakeholder group with insights related to both FAB content and implementation: specifically, (a) home visitors who work with perinatal women and had been trained on and implemented MB, (b) perinatal women enrolled in HV programs, and (c) fathers (partners of perinatal women enrolled in HV programs). Home visitors ($n = 11$) were recruited from six HV programs in Illinois with whom we had previous relationships. Mothers (perinatal women) ($n = 4$) and fathers (partners of perinatal women) ($n = 4$) were recruited from the same HV programs, two of the dyads were first time parents and two had two or more children. All parents were in the postnatal period. The inclusion criteria for home visitors included having received MB training and previous experience implementing MB. Inclusion criteria for perinatal women included being enrolled in HV, previous or current receipt of MB, and having a male partner (father) who was interested in participating in a focus group (regardless of marital status). Both members of the dyad needed to agree to participate in their respective focus group, which were held at the same time and location to minimize travel for study participants.

A study investigator and the Research Manager facilitated each focus group. Childcare and food were provided during the focus groups and participants were compensated with a $35 gift card. The focus groups were conducted in person and averaged 90 min in length. The semistructured focus group guides asked participants to provide recommendations in four areas: (1) content and skills to support fathers' mental health, (2) content and skills to help a father support his partner's mental health, (3) approaches to deliver FAB content to fathers, and (4) alignment of FAB with MB content and delivery. The focus groups were audio recorded and transcribed verbatim.

The Research Manager and a master's level student independently coded each focus group transcript to identify key concepts and themes related to each of the four areas covered during the focus groups. A deductive and inductive approach to coding was used (Bradley et al., 2007). Data were initially coded using pre-identified themes and new codes were added during coding to capture additional themes. Each transcript was coded manually by one team member and checked by a different team member for quality assurance. Team members met to resolve coding discrepancies through discussion and consensus. Themes were organized in excel for content analysis. Saturation was determined when no new codes or themes were identified in the data. Triangulation across the three focus group's themes was employed to determine which themes converged to guide the FAB content.

FAB Pilot Study

Participants. An uncontrolled pilot study of FAB was conducted with 30 father-mother dyads. We recruited dyads from nine HV programs between March 2018 and February 2020. These HV programs had been previously trained on MB and had prior experience delivering MB to perinatal women. HV programs participated in a training webinar with study investigators to review FAB implementation, study design and participant recruitment. We received referrals for 37 father-mother dyads in which the HV client was pregnant, or the dyad had a child <12 months old. Additional eligibility requirements included comfort participating in intervention and research activities in English, being ≥ 18 years old, and dyads were either in a relationship parenting together or not in a relationship and co-parenting together. Marital or cohabitation status was not an eligibility requirement. Among the 37 dyads referred, we enrolled 30 (81%) dyads. Of the seven individuals who did not enroll, four were not interested, and three were unable to be contacted by the study team.

Baseline demographic data were collected from 30 dyads (30 fathers and 30 mothers) at the beginning of the FAB pilot study (Table 1). Mean age for fathers was 27.7 years, while mothers' mean age was 26.5 years. Fathers and mothers were nearly equally distributed by race/ethnicity (Black, Hispanic, Caucasian). There was some disagreement in selected marital status between mothers and fathers though most were equally distributed between being single, married, or living with a partner. Fewer respondents articulated that they were engaged. At enrollment, 6 dyads were prenatal and 24 were postnatal.

Intervention Delivery. Fathers received the 12-session FAB intervention concurrent with their partner's receipt of MB. FAB intervention content aligned with the MB content their partner received at the same time and focused on both promoting father's mental health and helping fathers support their partner's mental health. The initial FAB session typically lasted 30 min and was delivered in-person during a regularly scheduled home visit with both the mother and the father, or by phone with the

Table 1. FAB Pilot Participants: Baseline Demographic Characteristics.

Baseline characteristics	Fathers (*n* = 30, %)	Mothers (*n* = 30, %)
Age (mean)	27.7	26.5
Race (*N*, %)		
Black/African American	11 (37)	10 (33)
Hispanic/Latino	9 (30)	9 (30)
Caucasian	8 (27)	8 (27)
Other	2 (7)	3 (10)
Marital status (*N*, %)		
Single	9 (30)	10 (33)
Married	9 (30)	8 (27)
Living with partner	9 (30)	7 (23)
Engaged	3 (10)	5 (17)
Employment Status (*N*, %)		
Not currently working	0 (0)	18 (60)
Working part-time	5 (17)	7 (23)
Working full-time	25 (83)	5 (17)
Educational attainment (*N*, %)		
< High school degree	3 (10)	3 (10)
High school degree/GED	12 (40)	6 (20)
Some college or beyond	15 (50)	21 (70)
Pregnancy status (*N*, %)		
Prenatal		6 (20)
Postpartum		24 (80)
Age of child (*N*, %)		
Prenatal		6 (20)
0–3 months		10 (33)
3–6 months		5 (17)
6–9 months		1 (3)
9–12 months		5 (17)
12–18 months		3 (10)

father if he could not attend the in-person visit. Subsequent FAB sessions were delivered: (a) in person, if possible; (b) via text message with embedded links to online content; (c) or a mix of both in-person and text messaging. Mothers received MB sessions in person with their home visitor, with supplemental text messages.

A FAB session was "triggered" when the home visitor delivered a MB session to the mother. Specifically, after the mother received her MB session, a home visitor recorded MB session completion in our Healthy SMS platform; this documentation then deployed a series of text messages to both the mother and the father. HealthySMS (www.healthysms.org) (Aguilera et al., 2017) is a web-based platform designed to deliver health-related text messages. Along with receiving their in-person MB sessions, mothers received three text messages in between sessions that focused on skill reinforcement, personal project reminders, and self-monitoring. Both mothers and fathers received a stipend of five dollars monthly to help offset text messaging costs.

For each *FAB text-based intervention session*, fathers received three to six text messages over the course of three to seven days, per session, with a total of 51 messages over 12 sessions. Text messages explained key concepts related to mood management, with embedded links in the text messages sharing worksheets and videos with more information about FAB core content and activities to promote practice of CBT skills. For example, the second FAB session focuses on encouraging fathers to engage in pleasant activities to help alleviate stress and improve their mood (Table 2). The videos included in the text messages were selected by study investigators from external sites and focused on core CBT elements. Participants could reply with "Stop" to opt out of receiving the text messages at any time. For fathers who received *FAB sessions in person*, the material in the worksheets was delivered to the father by the home visitor, concurrent with delivering MB to the mother, using the MB/FAB facilitator guide. Twelve fathers received FAB solely via text (after the initial session), seven fathers received a combination of in person and text-based intervention content, and seven fathers received all sessions in person. The mode of delivery for the remaining four fathers was not reported. FAB session delivery

Table 2. Example of the FAB Text Messages.

Skill reinforcement	Personal project reminder	Self-monitoring
Session 1: We can do activities, change our thoughts, and seek support to help us manage our stress. FAB will help you manage stress and help you support your partner. *LINK: Worksheet 1.1*	Session 3: Pleasant activities can be low cost, brief, and part of our daily routines. You can do Pleasant Activities by yourself, with your partner, and with your baby. Link: https://www.first5california.com/en-us/videos/keeping-kids-physically-active-can-be-simple-and-fun/	Session 6: Have you noticed any harmful thoughts you have? Reply Y/N [Also tell us if you used one of the talking back strategies to reduce it.

flexibility allowed fathers to choose the modality that worked best for their availability, and accounted for limitations to home visitor capacity to schedule additional visits. All mothers completed in-person visits. Sessions were considered completed by the home visitors documenting session dates.

Data Collection and Analysis

Quantitative Data. Both fathers and mothers provided informed consent via Research Electronic Data Capture (REDCap) (Harris, 2009) to participate in research activities associated with the pilot study. Fathers and mothers completed three self-report assessments—at baseline, 3-month follow-up, and 6-month follow-up. Survey links were sent via REDCap, or administered via telephone by the Research Manager or MPH intern for participants who did not choose to complete their surveys online. This report focuses on the FAB development and refinement process and presents mixed-methods data from a pilot study focused on the intervention's feasibility and acceptability. A separate manuscript describes mental health, parenting, and relationship outcomes (Tandon et al., 2021).

Feasibility and Acceptability of FAB. FAB feasibility was defined by home visitor adherence to the MB-TXT protocol which included post-session documentation of participant session data (i.e., date a FAB/MB session was completed, and the triggering of text messages within seven days of completing each in-person MB 1-on-1 session). Additionally, feasibility was assessed through post-intervention surveys for HVs using questions developed by the study investigators (see Tables 5 and 6). Thirteen of sixteen involved home visitors completed this survey. For each feasibility measure, criteria of success was indicated if the two most positive responses were endorsed at 75% or higher level of agreement (e.g., Strongly Agree or Agree).

FAB acceptability was defined by participants' perceived utility and comprehension of the text messages was measured using a 4-point Likert scale that assessed usefulness (i.e., 4 = very useful to 1 = not at all useful) and understanding (i.e., 4 = totally understood to 1 = did not understand at all) of each text message. Additionally, acceptability was assessed through post-intervention surveys for HVs, mothers, and fathers, questions were developed by the study investigators (see Tables 5 and 6). Seventeen of thirty enrolled fathers and nineteen of thirty enrolled mothers completed the post-intervention survey. For each acceptability measures criteria of success were considered if the two most positive responses were endorsed at 75% or higher level of agreement (e.g., Strongly Agree or Agree).

Qualitative Data. Using convenience sampling, after 2 months of recruitment and outreach to all fathers who completed the post-intervention survey ($n = 17$), we recruited eight fathers who completed FAB to participate in key informant semistructured interviews. We conducted these interviews to obtain additional information to assess FAB acceptability and determine areas that required modification before its more widespread testing. The semistructured interview guide was comprised of 21 questions and focused on the following topics: (1) acceptability of the FAB delivery modality and content; (2) satisfaction with FAB; (3) the relationship between FAB and MB and how the interventions affected paternal and maternal health and well-being; (4) additional topics that should be included in FAB; and, (5) methods to best engage fathers in FAB. Interviews were completed by phone and lasted 20–45 min. Of the eight interview participants, four were African American, two were Latino, and two were Caucasian. Six lived in urban areas, while two resided in rural areas. At baseline, three reported being married, two reported living with their partner, and three reported being single. All single fathers were co-parenting with their partners. The fathers represented a mix of delivery modalities (i.e., solely via text, solely in person or a combination of both). All fathers were in the postnatal period. Three were first-time fathers, four had two children and one had three children.

Key informant respondents received $35 compensation. Interviews were audio-recorded and transcribed verbatim and subsequently analyzed using NVivo (Version 2020) (QSR International Pty Ltd, 2020) to identify common themes related to the acceptability and benefits of FAB and to guide FAB revisions. We developed a codebook based on codes derived from the interview guide. This codebook included categories (themes) and

Table 3. Main Themes and Illustrative Quotes from FAB Development Focus Groups.

Theme	Illustrative quotes
Theme 1: Importance of Supporting Father's Stress Management	I wish I knew a little bit more about stress then before I started having a kid. I just let everything come in as it comes, because this is just life, so stuff is coming at you. You've got to accept it as it comes. Sometimes, it's hard to even get prepared for things because you never know what's coming next *(Father Focus Group)*
	I started getting really badly stressed with my first kid. I would get aggravated, and I wouldn't know what to do, and I would expect my wife to do it, but of course, she didn't know either because it was all new to us. So, if I would have been able to have something to help me with the stress and aggravation, that would be great *(Father Focus Group)*
Theme 2: Fathers Should Also Support their Partner's Mental Health	When we first had our kid, there was a program that we went to. . . .we would go there, and they would teach her stuff—post-partum depression and stuff. Maybe if I got information of how the women feel right after the kid is born, it would be a lot easier to understand them. *(Father Focus Group)*
	I do like the idea of mood for dads and their partners, because yeah, they come home really stressed depending on what they're going through at work and everything. *(Mother Focus Group)*
	The curriculum should include understanding mom's postpartum depression, absolutely. *(HV Focus Group)*
Theme 3: FAB Should Allow for Flexible Delivery	If it's to be done in the home, the majority of our families don't have access to computers. . . .The majority of them have smart phones, so I could see the texting working, and they tend to want to communicate more that way. *(HV Focus Group)*
	I do not want to do too much talking because there's a lot of talking going on, so I would rather text, I think that will work. *(Father Focus Group)*
Theme 4: FAB Should be Available to Couples with Different Relationship Statuses.	We have some dads that are the primary caregivers. *(HV Focus Group)*
	What if you have a situation where the mother has a new boyfriend, or a person who's very involved, who's around their child frequently, and they're gonna be having some impact on the child's life, and they're not a father or a parent already? Could they also benefit from something like this so they could learn? *(HV Focus Group)*
	Or if the couple is not still intact and there's tension, especially with teens, how to then, if mom is really angry still, how is dad developing that relationship with possibly some obstacles with mom and that kind of stuff? So, I mean, just for the integrity of dad feeling like this is about him, I think it needs to actually be done. *(HV Focus Group)*
	They don't have to be married, but together parenting. *(HV Focus Group)*
Theme 5: FAB and MB Content Should Be Aligned	But, yeah, pleasant activities for Mom and Dad. We guys – as much as they want – my wife told me almost every day she wants time for both of us together, so if we can find pleasant activities or we can find Mom and Dad time, that'd be good *(Father Focus Group)*
	I think it's actually really good how it says how dad can support mom's pleasant activities. . . . . .I think that's a really good idea to talk about with dads. And the pleasant activities for dad and baby. . . . . . .Also overcoming the obstacles, that's a really good one, because I would think, as smart as my boyfriend is, sometimes they don't know how to manage things that come along their way as much as we do. *(Mother Focus Group)*
	I think that creating a curriculum with the dads that serves and acknowledges their needs in parallel, but not necessarily the same, would probably be a bonus. *(HV Focus Group)*
	Well, I see it kind of going parallel to what the mom is doing in the home visits. That's kind of how I'm looking at it. So, they could have that conversation between themselves. So, doing plus an activity this week, and dad knows what mom's talking about when she says that. *(HV Focus Group)*

subcategories (subthemes). We applied a deductive and inductive approach to coding (Bradley et al., 2007), with an initial set of codes developed based on our interview guides and additional codes developed during the coding process. Each transcript was coded by one team member and reviewed by a different team member for quality assurance. To resolve coding discrepancies team members met on a weekly basis and discussed to reach consensus. After coding all transcripts, and ensuring agreement across coding, we reviewed queries of all codes in search of overarching themes. Themes were identified through patterns in coded data and were given priority based on prevalence. We reviewed and discussed emerging themes until no new concepts emerged from the data and saturation was reached. Saturation was determined through deductive thematic saturation and was considered to be reached when no new codes or themes were identified within the data (Saunders et al., 2018).

Results

FAB Development: Focus Group Themes

Table 3 presents the five main themes, and illustrative quotes, that emerged from our analysis of focus groups conducted with home visitors, mothers (female HV

clients), and fathers (their male partners) to help shape the development of FAB.

Theme 1: Importance of Supporting Father's Stress Management. When asked to comment on FAB content that would be important to include in the intervention, stakeholders consistently recommended that FAB provide fathers with both a better understanding of the stressors associated with fatherhood and specific skills to help manage their stress. They also suggested that FAB's stress management tools would resonate, in particular, with first-time fathers who were now being asked to balance work, fatherhood and home life. Additionally, home visitors, mothers, and fathers suggested that FAB should not only support fathers in managing their own stress and mental health, but also support their partners' stress management.

Theme 2: Fathers Should Also Support Their Partner's Mental Health. Across focus groups, there was a recommendation that fathers should receive more information on maternal postpartum depression. Specifically, there were recommendations to help fathers understand the thoughts and feelings of their partner as a catalyst for them to provide support that their partner needs.

Theme 3: FAB Should Allow for Flexible Delivery. Scheduling with fathers was one of the major barriers identified by home visitors especially when delivering MB and FAB in tandem. As such, home visitors suggested FAB delivery should be flexible. In particular, it was recommended that if a father could not meet in person, he could receive FAB through a series of text messages. Home visitors also mentioned that many families do not have access to computers—therefore, a text-message based intervention would be more accessible for fathers. Fathers agreed with flexible delivery options of either in person, text, or a mix of in person and text.

Theme 4: FAB Should Be Available to Couples with Different Relationship Statuses. Home visitors, fathers and mothers all emphasized that it was important that FAB and MB be offered regardless of parental relationship or cohabitation status, in recognition that only a portion of women enrolled in HV will be part of a traditional cohabitating relationship with their baby's biological father.

Theme 5: FAB and MB Content Should Be Aligned. Focus group respondents felt that FAB should align with MB in terms of content and theoretical basis (e.g., attachment theory, cognitive behavioral therapy). Home visitors suggested that the way to accomplish this would be to create a parallel FAB curriculum that is father-focused, while MB is mother-focused. The content of FAB and MB would then be delivered in parallel so that fathers and mothers would receive the same type of content at the same time.

Operationalizing Focus Group Findings to Develop the FAB intervention

Based on triangulation of data collected via focus groups, literature review, and conversations with fatherhood experts, FAB was designed to be delivered concurrently with MB so fathers and mothers would receive similar stress management and parenting content at the same time. The study team manualized FAB into a facilitator guide and participant workbook that aligned with the MB intervention and core CBT elements. The focus group findings guided the creation of father-centric stress management skills, including mood tracking, behavioral activation, mood regulation, social support, father-baby attachment, and partner support. Worksheets similar to the MB worksheets were developed to conceptualize the findings from the focus groups, literature, and key stakeholders. Concurrent MB and FAB delivery was expected to promote fathers' ability to support his partner, since fathers would receive content on how to support his partner's use of core MB skills that she had just received. To accommodate fathers' schedules, FAB was developed to be flexible in delivery, allowing for either in-person delivery or delivery via text messages with embedded content. We also developed FAB to be delivered to fathers regardless of relationship status or family make up. For example, this intervention can be delivered to a father if he is the biological father or not, the primary caregiver, or in a co-parenting relationship with his partner. The idea is that is it accessible to all father figures. Focus group data also helped guide specific content identified in FAB. Table 4 provides an overview of key differences and additional content in FAB, broken out by each intervention module.

FAB Pilot Study: Feasibility and Acceptability

Fifteen (50%) out of thirty enrolled fathers received all twelve sessions. The remaining 15 fathers received anywhere from one to eight sessions, with an average of 7 sessions. The sessions were a mix of text, in-person, or both in person and text message. Three of these fathers still completed all research activities despite not receiving all 12 intervention sessions. Five fathers dropped out of the study all together due to complete withdrawal from HV, one father was incarcerated, and the remaining six fathers were lost to follow up (See Figure 1).

Thirty fathers who enrolled in the study, 80% (24/30) and 57% (17/30) completed 3- and 6-month follow-up assessments. For mothers enrolled in the study, 90%

Table 4. Overview of MB and FAB Content, By Intervention Module.

Intervention module	Goals of MB content	FAB: Key differences and additional content
Introduction	• Relationship between stress and mood • How stress affects mother-baby relationship • Purpose and overview of MB • Importance of noticing one's mood and its triggers • Introduction to Quick Mood Scale	• How stress affects father-baby relationship and the relationship with your partner • Purpose and overview of FAB
Pleasant activities	• Relationship between pleasant activities and mood • Brainstorm pleasant activities to do alone, w/adults, and w/children • Overcoming obstacles to mothers doing pleasant activities	• Overcoming obstacles to fathers doing pleasant activities • Strategies to support mother's engagement in pleasant activities
Thoughts	• Relationship between thoughts and mood • Helpful and harmful thoughts about being a mother • Ways to change harmful thought patterns • Goals for my future and my baby's future	• Helpful and harmful thoughts about being a father • Helpful and harmful thoughts your partner has about being a mother • Goals for my future, my baby's future, and ways to support my partners' goals
Contact with others	• Relationship between mood and contact with others • Identify supportive people in one's life and the ways they provide support to me and my child • Communication styles to help get needs met • Role changes and how they can increase need for social support	• Identify supportive people for me, my child, and my partner • Role changes in becoming a father • Role changes and how they increase need for social support in both mothers and fathers

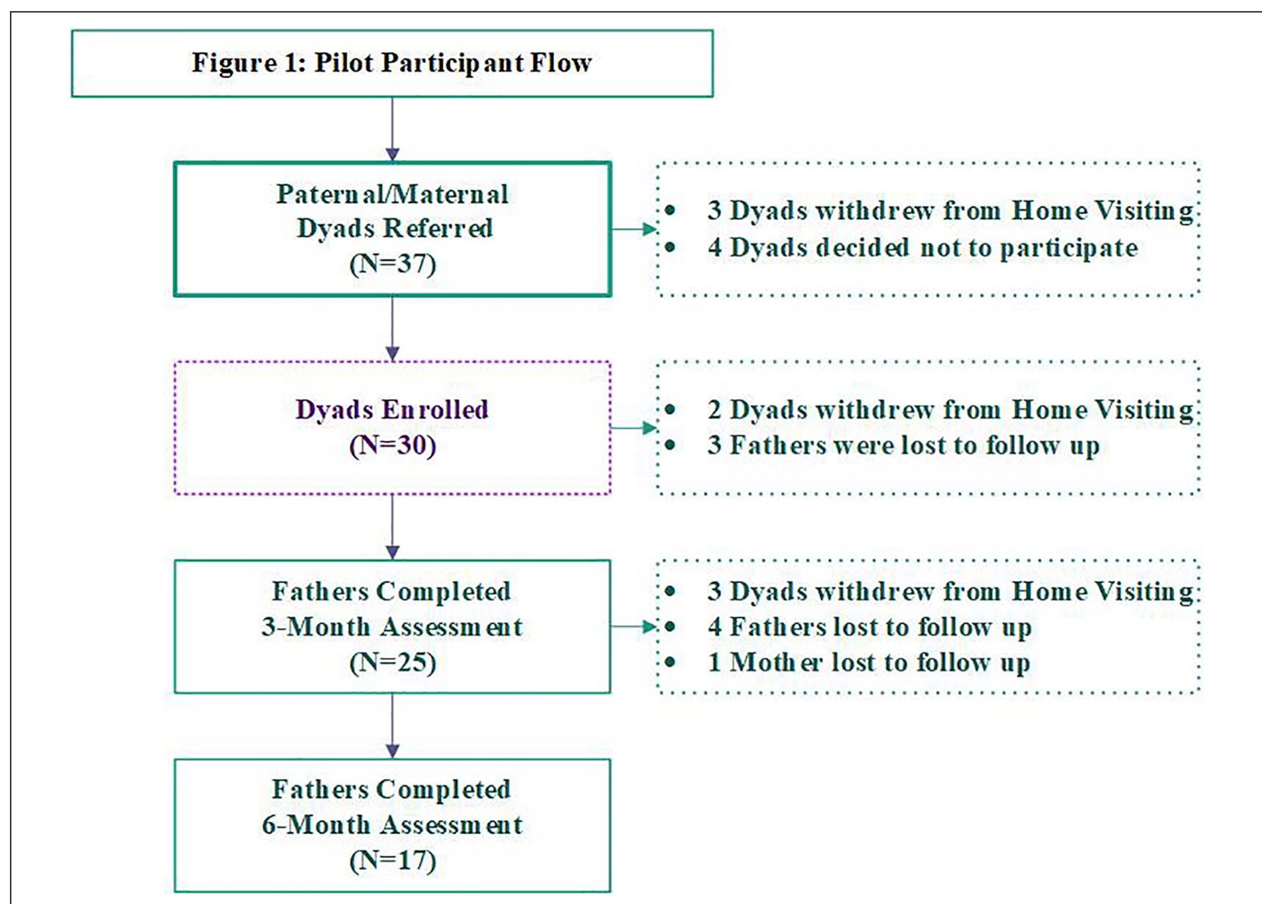

Figure 1. Pilot Participant Flow.

Table 5. Fathers and Mothers Post Intervention Survey Responses.

Survey questions & response options	Fathers % agreement (n = 17)	Mothers % agreement (n = 19)
Acceptability		
How useful were the text messages?		
Very useful	41% (7)	
Useful	35% (6)	
Somewhat useful	24% (4)	
How helpful were the information and skills in the worksheets, videos, and resources?		
Very helpful	53% (9)	
Helpful	47% (8)	
How well did you understand the information and directions from the text messages?		
Totally understood	59% (10)	
Understood	35% (6)	
How well did you understand the information and skills in the worksheets, videos, and resources?		
Totally understood	56% (9)	
Understood	38% (6)	
How much did you enjoy the information in the texts?		
Very enjoyable	24% (4)	
Enjoyable	47% (8)	
Somewhat enjoyable	29% (5)	
FAB helped me be a better father		
Strongly agree	29% (5)	
Agree	59% (10)	
FAB gave me skills to help better manage mood and stress		
Strongly agree	35% (6)	
Agree	53% (9)	
How likely are you to recommend FAB to other men?		
Extremely likely	58% (10)	
Likely	41% (7)	
FAB helped me and my partner talk about stress, parenting, and our relationship		
Strongly agree	50% (8)	32% (6)
Agree	38% (6)	47% (9)
The FAB program improved support I receive from my partner		
Strongly agree		21% (4)
Agree		53% (10)
Neither agree nor disagree		21% (4)
If in the future if I had to choose how to receive the program, I would choose:		
Only MB		11% (2)
MB with FAB		84% (16)
Only FAB for my partner		5% (1)
Not receive any program		0% (0)
How likely are you to recommend MB with FAB to other women and families?		
Extremely likely		47% (9)
Likely		53% (10)

(27/30) and 77% (23/30) completed 3- and 6-month follow-up assessments (see Figure 1). Seventeen of thirty enrolled fathers and nineteen of thirty enrolled mothers completed the post-intervention survey. Of these 17 fathers, 12 (71%) completed all twelve sessions. The other five fathers completed between four and

Table 6. Home Visitor Post Intervention Survey Responses.

Survey questions & response options	Home visitors % agreement, (n = 13)
Acceptability	
Overall, I feel that fathers and babies (FAB) ENCOURAGED my clients to discuss stress and parenting with their partners	
Strongly agree	39% (5)
Agree	46% (6)
I felt COMFORTABLE delivering FAB in addition to mothers & babies	
Strongly agree	54% (7)
Agree	31% (4)
How likely are you to RECOMMEND FAB to your female clients who have partners?	
Extremely likely	46% (6)
Likely	54% (7)
I felt that the HealthySMS platform was user-friendly.	
Strongly agree	39% (5)
Agree	39% (5)
How likely are you to RECOMMEND FAB to other home visitors?	
Extremely likely	15% (2)
Likely	85% (11)
Feasibility	
I LIKED the flexibility of being able to deliver FAB either through text or in person sessions	
Strongly agree	62% (8)
Agree	31% (4)
FAB was FEASIBLE to implement	
Strongly agree	38% (5)
Agree	62% (8)
I felt that I was well-prepared to use the HealthySMS platform after training	
Strongly agree	31% (4)
Agree	54% (7)

eight sessions. At baseline, seven (41%) reported being married, five (29%) reported being single, four (24%) reported living with his partner, and one (6%) reported being engaged. Race was evenly distributed across Black, Hispanic and Caucasian with one father identifying as Asian American and one as bi-racial. At least one partner across twenty dyads provided responses on this post-intervention survey. There were two instances in which only mom responded, and one instance in which only dad responded. Both partners completed the survey in the remaining dyads. This section only reports on the responses related to feasibility and acceptability.

Thirteen fathers (76%) reported the FAB text messages were "useful" or "very useful" and all fathers reported the information and skills in FAB worksheets, videos, and resources to be "helpful" or "very helpful" (100%). Sixteen (94%) of fathers stated they "understood" or "totally understood" the information and directions in the text messages, and 15 (88%) "understood" or "totally understood" the information and skills in the FAB worksheets, videos and resources. Twelve (71%) fathers identified the information in text messages to be "enjoyable" or "very enjoyable" (see Table 5).

When asked about the FAB skills, 15 (88%) fathers "agreed" or "strongly agreed" that the program helped them to become a better father and with similar numbers (88%) stating that they "agreed" or "strongly agreed" that FAB gave them skills to help manage their mood and stress (see Table 4). Fourteen (82%) of fathers "agreed" or "strongly agreed" that FAB helped them and their partner talk about stress, parenting, and their relationship with their baby's mother. All 17 fathers said they would be "likely" or "extremely likely" to recommend FAB to other fathers (100%) (see Table 5).

Nineteen of 30 enrolled mothers completed the web-based post-intervention survey. Fifteen (79%) mothers "agreed" or 'strongly agreed' that FAB helped her and her partner talk about stress, parenting, and their relationship. Fourteen (74%) mothers "agreed" or "strongly agreed" that the FAB program improved the support she received from her partner. Additionally, sixteen (84%) mothers stated that if they had the opportunity to choose how the program was delivered (i.e., MB as a standalone course or MB with FAB), they would want to receive MB with FAB. Additionally, all (100%) of the mothers who completed the post-intervention survey were "likely" or

"extremely likely" to recommend MB with FAB to other women and families (see Table 5).

Thirteen home visitors who implemented the FAB intervention with fathers completed the post-intervention survey. These home visitors, who completed the intervention with one to five families, offered positive feedback on the feasibility and acceptability of the FAB intervention. All (100%) home visitors "agreed" or "strongly agreed" that FAB was feasible to implement. Twelve (92%) "agreed" or "strongly agreed" that they liked the flexibility of being able to deliver FAB either through text or in person sessions. Eleven (85%) home visitors "agreed" or "strongly agreed" that they felt comfortable delivering FAB alongside MB, pointing to strong self-efficacy surrounding implementation. Ten (77%) home visitors "agreed" or "strongly agreed" they felt the HealthySMS platform was user friendly, and 11 (85%) "agreed" or "strongly agreed" they felt they were well-prepared to use HealthySMS after training. Although HVs felt prepared and that HealthySMS was user friendly, eight (62%) discussed forgetting to send the messages immediately after sessions and two (15%) discussed not having enough time between or after sessions to do so. Other barriers discussed were related to technical issues with the HealthySMS platform itself, or changing participant phone numbers. Despite these barriers, all home visitors (100%) were "likely" or "extremely likely" to recommend FAB to other home visitors. Additionally, all (100%) home visitors were "likely" or "extremely likely" to recommend FAB to mothers with whom they are working who have partners (see Table 6).

Key Informant Interview Themes

A number of different themes emerged from the eight key informant interviews conducted with fathers who participated in FAB. The interview guide included questions related to acceptability and feasibility. Fathers spoke about both the benefits of FAB and recommendations for improving or refining FAB (see Tables 7 and 8, respectively, for illustrative quotes on key themes within each of these areas).

Benefits of FAB

Stress management & coping. All fathers interviewed described the value of the FAB tools for stress management and coping skills. Fathers discussed the positive impact the FAB skills had on their relationship with their partner and/or children. Five fathers mentioned that FAB provided tools not only to manage personal stress, but also how to model positive stress management for their children (see Table 5).

Partner relationship & communication/partner support. Six fathers described improvements in communication with their partner and improved partner support. Fathers indicated they had the enhanced ability to talk about stress with their partner; as well as conversations about increased engagement with a baby or child, and increased empathy toward their partners and baby or child. Fathers also referenced working together to navigate into new roles as parents.

Parenting. All fathers described a new prioritization of engaging with their child. This included spending more time with their child, focusing on their child's development, and working toward being a "good co-parent" or partner for their baby's well-being.

Changed perspective. All fathers described a change in their perspective surrounding fatherhood, masculinity, mental health, or parenting. For example, one father explained that it changed his ideas surrounding masculinity and mental health. He now believes that it is acceptable and beneficial to have conversations about stress and stress management.

Fits into fathers' lives. All fathers described benefits of the accessibility, convenience and flexibility in the delivery of FAB. Seven fathers referenced the convenience of the text messages given their busy schedules, and more specifically, the convenience of text messages while raising a child. Two fathers mentioned that they liked that they could learn independently and at their own pace due to the flexibility in delivery. However, all fathers agreed that having the first session via phone or in person was important.

Peer support & father engagement. Five fathers discussed the benefits of having a father-focused program that allowed for peer support and the prioritization of fathers. Two fathers mentioned the perceived benefits of challenging social norms and masculinity, while promoting father engagement.

Recommendations for improving FAB. Despite an overwhelming positive response from fathers who participated in the key informant interviews, they also offered several helpful recommendations for future refinements and modifications to the FAB program (See Table 8).

Delivery. While fathers were generally happy with FAB's flexible delivery, there was a desire for more in person or phone contact, as appropriate, given their schedules. When asked about other delivery modalities, more physical resources (e.g., book, packet, worksheets, and videos) and email were mentioned for longer bodies of text. The idea of a "welcome kit" was recommended by one father, in which a box containing all of the necessary

Table 7. Themes of FAB's Benefits.

Theme	Illustrative quote(s)
Stress Management & Coping	So, for me as somebody who you'd be considering like—I'm characterized as like I do "manly" things. My occupational background, the way I was raised and everything. So, for her it was a lot of trying to get me to understand that just blocking off everything wasn't helpful, so actually trying to figure out what your emotions were, what's causing you stress? A lot of the conversations were her using the worksheets to try to show me like, "Oh the reason why you reacted like this is because of this." So, the emotional part of it was what she used the worksheets, like when we use them together it was very helpful. *(FAB Participant)*
	Now, I know how to take a second and breathe and actually like, okay, if I know I'm mad or if I'm frustrated the kids are gonna feel that. So, I just always take a minute and calm down before dealing with the kids because if I don't then we are all just gonna be frustrated and nothing's gonna get done. So that's the biggest impact I've had at being in this program because I feel like that's really important. Because every time someone in the house is frustrated the kids are frustrated and it's not good for neither one of us. *(FAB Participant)*
	I would recommend it to every father. I'm not gonna lie. I would recommend it every father because it just—it's so much you can learn. It may seem like a little bit but it's a lot to learn. And it's some stuff that you think that you may know – that you think you already know – you might not actually know. Or, you might know a little bit, but when you going in you can learn more details about it and learn how to do it more than just one way. *(FAB participant)*
Partner Relationship & Communication / Partner Support	Yeah, there's sometimes you find the stress getting to her faster than it can to me. I'll watch the kids sometimes for her and let her go out by herself whenever I can, or go spend some time with one of her friends, and just try to let her regenerate. You know what I'm saying? You know what I mean? *(FAB Participant)*
	How much emotional support you get from your partner about the baby. How much physical help you get from your partner. So, I was lucky enough to have my partner next to me throughout this whole process. I was able to discuss it with her and we were able to take in mind and go back and remember exactly who was doing what and how much help we were giving each other. *(FAB Participant)*
Parenting	I was playing more with my baby. I was, you know, I was spending more time. I wanted to take more part in the baby's day and time that it spent awake. You know, aside from feeding it and clothing it and stuff like that, I just wanted to spend more time with my baby. So, it did increase, you know, my thinking of the time that I wanted to spend with my baby. *(FAB Participant)*
Changed Perspective	There's a father's, women's, and baby program that helps out with parenting. You know, information regarding your children development, and how to be a good co-parent and a person. And definitely, if you take it serious, you actually can get something out of it. And it change your paradigm if you want. *(FAB Participant)*
Flexibility in Delivery	I liked the text messages because my wife actually got to see her home visitor every week. It was a little bit harder for me to make it to those appointments, but like seeing it coming in through text message was a lot more easier for me because that way with my job, it was really hard for me to be home sometimes at a specific time. And so then, that way, it would be the acceptability of to be able to do Fathers to Babies while still working. *(FAB Participant)*
Peer Support & Father Engagement	I feel like it gives you some—I feel like it's designed for help, you know what I mean? And, I feel as a father, generally, your look is you need to man up and just go ahead and handle it. But I feel like that it gives me a feeling that like, "Oh, this stuff is hard and that there is help that you can get, and that it's not going to be easy." And, I feel like it was great to let you know that you're supposed to be following resources and then somebody that we depend on. But we struggle too, you know? *(FAB Participant)*

materials and resources that a father would need before beginning the program would be sent to him.

Content. Overall, fathers reported the amount of content to be appropriate. Three fathers desired more content. A variety of topics were mentioned for this additional content, including additional resources surrounding co-parenting, how to apply the FAB skills to different child developmental stages, and more mental health resources including access to therapy and counseling. One father desired further age specification as he felt that the examples were more general in nature and the situation may change based on the child's age. Further, fathers desired more interactive content such as videos or games, and specifically content that he could use to engage his child.

Engagement with other fathers. Four fathers desired engagement with other fathers in the program. This could be developed in different ways including a Facebook group for current and past participants or a FAB alumni

Table 8. Themes of Recommendations for Improving FAB.

Theme	Representative quote(s)
Delivery	Like I said, having more of a person-to-person communication. More like a feel like that you're talking to people. I think it was just because I was doing it through text messages. That's why I wasn't, you know, feeling . . . I was kind of feeling that I was talking to robots for a short time. But, I just feel more person-to-person contact would help. Like I said, it helps sometimes talking it out too. So, yeah, I just recommend more like phone calls and, you know, trying to reach out to people, you know, taking in mind their schedule. *(FAB Participant)*
	Yeah. I think that the main suggestions that I were upon earlier just personally are valid. More physical information maybe would want them to utilize it more and maybe engage people a little bit more. Because I feel something that I can write stuff down instead of typing. But there was—The packet was good with the home visitor. *(FAB Participant)*
Content	I feel like it was great frequency and everything. Just I guess if you need more help you always want more stuff, right? *(FAB Participant)*
	Like, when you have a newborn, you know, it usually spends most of its time sleeping compared to either a toddler, which is awake. And, some of the questions that they ask you, like, "How much time do you spend playing with your baby?" But, having a newborn, you know, it slept that day and they just woke up to like feed and probably bathe and stuff like that. I think it should be specific of the child's age regarding the parent. So, maybe take in mind that the age of the child, of the person that's being interviewed. *(FAB Participant)*
	Yeah, little videos and like little game puzzles and stuff, maybe, you know, along with the papers. *(FAB Participant)*
Engagement with Other Fathers	But I'm hoping that one day ya'll could get just to a place where it could be once a month or once every 6 months or once a year that fathers could just get together, share their experience to you, their ideas, what they have learned and what they did different so that—because everyone not the same. *(FAB Participant)*

group that meets periodically throughout the year. Additionally, four champions were identified throughout the interview process who are interested in offering their expertise throughout the refinement process.

Discussion

This manuscript describes the development and initial testing of a technology-based intervention, FAB, for fathers in the United States during the perinatal period aimed at improving both fathers' mental health and providing strategies for fathers to support their partners' mental health. FAB's focus on improving fathers' mental health is innovative, as prior interventions for fathers in the United Sates in the perinatal period have largely focused on increasing fathers' knowledge about childbirth and child development and promoting co-parenting. No studies in Lee et al.'s (2018) review of interventions for fathers in the perinatal period directly focused on mental health. Our pilot study of FAB enrolled predominately racial and ethnic minority dyads and enrolled non-biological fathers or biological non-resident fathers. Prior studies, in contrast, were limited in their enrollment of racial and ethnic minority participants and typically excluded men who were not biological resident fathers. By enrolling racial and ethnic minority fathers from contemporary family structures, FAB, therefore, has the potential to be generalizable to a larger community of fathers. Additionally, given the challenges men of racial and ethnic minorities face in seeking mental health care, FAB has the potential to provide mental health care to those who may otherwise be without.

One major barrier in fathering interventions is identifying delivery modalities that fit into the reality of a father's life that balances work, school, fatherhood, and home responsibilities (Fletcher et al., 2006, 2018). Coupled with the fact that during pregnancy and baby's first year, fathers are rarely the designated patient or client in health and home visiting services, interventions for fathers need to be designed for non-traditional delivery in order to reach and impact them. By providing the option to receive intervention content asynchronously via text messages with embedded links to intervention material, FAB minimizes the need for in-person visits, allowing fathers to access intervention content at a time and location of the father's choosing. Further, in the midst of the COVID-19 pandemic, flexibility in delivery modalities is of paramount importance. Additionally, as fathers are less likely to seek out help from a mental health professional due to numerous factors such as gender norms, mistrust of clinical settings, and parental stress, FAB allows fathers to receive mental health content and care in a less intrusive manner. Dads do not necessarily have to directly engage in conversation with a service provider, or mental health clinician, unless they choose in-person delivery, which may further facilitate perceived accessibility and acceptability of care. Future work will need to better understand the times and situations during which fathers

access FAB content. Future intervention trials examining FAB's implementation could also consider prompting fathers to access FAB materials after experiencing a stressful situation or if they notice their mood is deviating from their norm.

Feasibility testing of programs designed to serve fathers in the perinatal period, such as FAB, need to account for lower research response rates and the decreases in service uptake among fathers (Reichman et al., 2001; Salvesen von Essen et al., 2021) in comparison to mothers. That said, it is also important to note that father's engagement in this pilot study, depended on that of their partner. For example, if mom dropped out of home visiting services, dad was not able to continue with FAB. As FAB is revised, unique inclusion of fathers is perhaps a first step toward addressing this. One large study found that fathers themselves state that their reason for not participating in research is because they have not been asked to participate (Davison et al., 2017). Non-residential fathers in particular suggested social service programs as worthwhile recruitment venues. Therefore, as FAB is further tested and scaled, it will be important to offer the intervention as a stand-alone for single or co-parenting fathers, and regardless of mom's intentions of participating in MB. Taking each of these factors into consideration, our preliminary findings suggest that despite a drop off in participation, FAB is feasible and appropriate to both HV programs delivering the intervention and fathers receiving it.

Father engagement has been increasingly acknowledged as an important focus for HV in the last decade, with a growing set of promising practices emerging (Sandstrom & Lauderback, 2019). Many of these practices were incorporated in developing and pilot testing FAB, including father-centric recruitment strategies, flexible scheduling practices, and tailoring content specific to fathers' needs and experiences (Fletcher et al., 2018). The MB intervention is increasingly being replicated nationally in HV programs (Le et al., 2015), thereby providing an opportunity to scale FAB to a national network of HV programs. In fact, many HV programs using MB have expressed interest in FAB and its potential to engage and improve health and well-being for both parents, along with benefits for child development.

There are several limitations associated with this work. While we conducted focus groups with home visitors, HV clients, and their partners to help guide FAB's development, only one focus group was conducted with each stakeholder type. Additional focus groups may have yielded additional guidance on issues related to FAB delivery or its content. It is likely that fathers who chose to enroll in FAB were more interested in parenting and fatherhood, which may lead to bias or inherent differences among pilot study participants compared to fathers who declined study participation. More than half of study participants who completed the FAB intervention responded to our 6-month follow-up survey, but it is possible that those who did not respond may have had less favorable views of the intervention's feasibility, acceptability, and usefulness. Our study was largely qualitative and exploratory in nature, and therefore, we did not test hypotheses. Additionally, our analysis relied on the recollection and perceptions of the participants the study team interviewed. Therefore, both recall bias and social desirability could have played a role in our findings. Recall bias speaks to participants not remembering past events accurately or omitting details. Social desirability is another type of bias in which respondents provide answers in a manner that allow them to be viewed in a positive light. Given that we, the investigators, conducted the interviews, it is possible that the fathers provided favorable answers to please the study team.

Based on the results from the pilot study "Examining the Effectiveness of the Fathers and Babies Intervention: A Pilot Study"(Tandon et al., 2021), and the findings presented in this manuscript, FAB modifications and refinement will be focused on the following areas: (1) creating more video content that aligns with core FAB content, (2) tailoring content to model FAB skills across child developmental phases, (3) tailoring FAB language to reflect various types of relationships between fathers and mothers (or their partners), and (4) developing a welcome packet for fathers. Additionally, we will align FAB with our current MB intervention which includes: refinement to 9 sessions for more rapid delivery, inclusion of mindfulness practices for stress reduction, manual redesign including facilitation tips and updated text-messages. In keeping with a collaborative approach that we have undertaken throughout our FAB work, we plan to work with fathers from different cultural backgrounds to serve as consultants throughout the iterative process of our FAB revisions.

A growing number of public programs, including HV, are renewing their focus on the importance of fathers and how to best engage fathers during their transition to fatherhood. Therefore, FAB is likely to be highly appealing as it is connected with an existing evidence-based intervention for mothers (i.e., MB), pragmatic in its approach by offering in-person and asynchronous text-based content, and available for use with couples beyond traditional heterogeneous cohabitating couples. These preliminary findings align with findings in the literature related to the need for father-centered interventions for mental health (Fletcher et al., 2018; O'Brien et al., 2017). While these pilot data support the feasibility and acceptability of FAB by fathers, mothers, and home visitors, additional research on this intervention in similar and different populations, ideally using an experimental

study design and longer-term follow-up data collection period is needed. Future work should continue to explore the feasibility of implementing FAB and MB together as well as a free-standing intervention separate from its concurrent delivery with MB, which may allow for greater implementation of FAB across health and human service settings. There remains a significant gap of evidence based mental health interventions for fathers that are flexible, father-centric, and address perinatal mental health which is inclusive of the whole family (Fletcher et al., 2011, 2014; O'Brien et al., 2017; Reupert & Maybery, 2011; Rominov et al., 2016).

At the root of our FAB work is the notion that the human services sector needs tools, interventions, and programs to provide additional supports for fathers—specifically related to mental health—to ensure that they are on the path to live healthy, economically stable, and self-determined lives. Given the limited focus of prior interventions on addressing paternal mental health, FAB has the potential to fill this need by providing fathers with information and skills that can help offset the stress associated with parenting a new child. Thus, we believe FAB has the potential to robustly impact paternal mental health, as well as the health and well-being of the partners and children of fathers who receive FAB.

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Ethical Statement

All procedures followed were in accordance with the ethical standards of the of Northwestern University's Institutional Review Board. Informed consent was obtained from all participants included in the study.

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