Text-based mentoring for postpartum mothers: Early results from a mixed-methods randomized trial

Background. A new baby can bring both joy and stress. Mothers, particularly, face increased risk of stress and depression in the postpartum period (O'Hara & Swain, 1996). This can have consequences for infant and later child development, including less secure attachment (Coyl, Roggman, & Newland, 2002) and negative effects on behavioral and cognitive outcomes (Canadian Paediatric Society, 2004; Sroufe, 2005). Historically, the U.S. has provided few psychosocial supports to help mothers navigate these challenges.

We investigate the impact of a highly-scalable, low-cost approach to supporting postpartum mothers –text-based mentoring – via a mixed-methods RCT.   Texting has been found to be effective in supporting parents of older children (Doss, Fahle, Loeb, & York, 2018; Kraft & Rogers, 2014; Smythe-Leistico & Page, 2018) but is relatively new to the 0-3 space. Previously, studying feasibility, we examined mothers' engagement with text-based mentoring by coding and analyzing text-messages from 162 mother-mentor pairs (Martin, Weiland, & Page, 2018). We found, on average, mothers stayed engaged most of baby's first year, discussed child focused topics (28% of exchanges) and mother focused topics (8%), received referrals to early intervention (8% of mothers) and postpartum depression (12%) supports, and received timely responses to questions (86% within 48hrs).

Given this promising descriptive evidence, the aims of this study are to: a) identify whether this intervention reduces maternal stress and improves maternal child development knowledge at 4 months postpartum; and b) understand further *how* mothers interact with and experience text-based mentoring. At SREE, our presentation will foreground qualitative findings, though we will also present quantitative findings. The qualitative portion of our mixed-methods study is particularly valuable as it speaks to a need identified by Hall and Bierman (2015) in their review of existing 0-3 interventions for process data on *how* parents interact with behaviorally focused interventions.

Participants. Study participants include 200 moms (100 treatment, 100 control) who are all first- or second-time mothers living in Allegheny County, PA. They gave birth between May 2018 and September 2019 at West Penn Hospital in Pittsburgh. Their child was required to be born full term, weighing at least 5lbs 8oz. Mothers were recruited across all racial, ethnic, and socioeconomic backgrounds. From available data, 66% were first time mothers, 71% were White, and 35% reported a household income below the Pittsburgh median, including 16% below the federal poverty line.

Our data include mother/mentor conversation transcripts for the full treatment sample. Additionally, we drew a qualitative subsample of 24 treatment group mothers, 4 control group mothers, and 8 intervention mentors for semi-structured interviews. We selected this subsample with attention to race/ethnicity, income, and parity. When possible, we selected treatment mother-mentor dyads so that both members of the dyad were interviewed.

Intervention. As described in our feasibility study (Martin et al., 2018), our focal intervention was developed by the Pittsburgh-based nonprofit NurturePA.   Mothers are recruited in hospital and paired with a mentor. Mentors are volunteers who are also mothers and who have received around six hours of training including a focus on postpartum mood disorders and early language development. Mother/mentor pairs communicate exclusively through text. Mentors answer mothers' questions, provide emotional support, encourage activities that support

maternal wellbeing and healthy child development, and connect mothers to local resources. They use a web-based platform to communicate with mothers. This platform provides conversation prompts tailored to baby's age and a library of curated information and expert recommendations on infant care and development to share with mothers. Its content draws from reputable sources including the American Academy of Pediatrics and Zero to Three. Mothers may contact their mentors whenever they like and can stay enrolled in the program for three years.

Procedures. Participants were recruited in the hospital within days of their baby's birth and randomized to treatment or control status at intake, with treatment moms paired with a mentor and control moms receiving periodic one-way texts about health/safety topics. During enrollment, mothers completed a baseline survey. All mothers were also texted the link to a follow-up survey four months after enrollment. The qualitative texting transcripts shared with our research team capture the entirety of treatment mom-mentor dyad interactions.   We conducted interviews with our qualitative subsample over the phone around four months after enrollment.

Measures. For our quantitative analysis, we developed 4-month mother surveys that capture: 1) parenting stress, using scales from the Parenting Stress Index (Abidin, 1995); 2) mothers' knowledge of infant care and development (Opinions about Babies; (Reich, 2005)); and 3) mother-child frequency of activities that support language development. For our qualitative analysis, we coded transcripts for conversation topics and supports offered by mentors. Semi-structured interview protocols captured how participants used NurturePA's program, what other resources they used, and what guided their decisions and preferences around resource use.

Research Design. Following our pre-reregistered plan, we will estimate intent-to-treatment effects on maternal stress, knowledge of infant development, and support of language development. All models will control for baseline covariates including age, race/ethnicity, SES, maternal parity, and mental health history. We will cluster standard errors by mentor.

In our qualitative analyses, we will apply a coding scheme developed during our prior feasibility study to transcripts available for all treatment mom-mentor pairs. We will document conversation topics, frequency of contact, and supports and resources offered to mothers. We will use a grounded theory approach to coding interview transcripts. Through this analysis, we will aim to understand which program aspects mothers found the most /least helpful and the conditions and priorities shaping mothers' choices and preferences around engagement with the NurturePA intervention.

Findings and Conclusions. The final few mothers were being recruited in late September. Accordingly, full four-month postpartum transcript data will be available by mid-February. The qualitative interviews will be complete by the end of September 2019 and fully analyzed by SREE. Accordingly, at SREE, we will focus on results from our qualitative subsample and descriptive statistics/study design for the full sample. Our study will contribute both to the evidence around text-messaging programs in the 0-3 space in supporting positive parenting and

child development but also to filling in the black box of process data (Bierman & Hall, 2015), capturing *how* mothers of young children are engaging with behaviorally focused interventions.

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