
PROMOTING POSITIVE MOTHER–INFANT RELATIONSHIPS: A RANDOMIZED TRIAL OF COMMUNITY DOULA SUPPORT FOR YOUNG MOTHERS

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ABSTRACT: Doulas, whose traditional role is to support women during labor and delivery, are being increasingly utilized within community-based programs where a primary goal is supporting mother–infant relationships. The present study investigated the effect of doula services on parenting among young, low-income mothers. A total of 248 pregnant women were randomly assigned to receive either doula services or routine medical and social services. The doulas provided prenatal home visitation, support during labor and delivery, and 3 months of postpartum home visitation. Parenting was assessed through video recordings of mother–infant interaction at 4, 12, and 24 months of child age and maternal report of parenting attitudes and stress. Intent-to-treat analyses showed that mothers who had received doula services endorsed more child-centered parenting values, showed more positive engagement with their infants, and were more likely to respond to infant distress at 4 months. Their infants were less likely to show visible upset during observed interactions. Most effects of the program on parent and child behavior faded over time. Community doula intervention is a promising practice for supporting parenting and parent–infant interaction. Integration of doulas into longer term home-visiting models might sustain the early impact of doula services and enhance parenting services offered by traditional home-visiting programs.

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Childbirth is a powerful life transition and a time when women may have heightened needs for social support (Hodnett & Fredericks, 2003). Doulas are trained labor and birth companions whose work focuses on helping and supporting mothers during the important time when a new baby joins the family (Klaus, Kennell, & Klaus, 2002). Doulas provide physical comfort, emotional support, and information to mothers during labor and the immediate postpartum period. Although much of their work is conducted in hospital settings, doulas are not medical professionals. Their work focuses on helping mothers feel comfortable, nurtured, valued, and informed as they take on the important role of being a parent.

The efficacy of doula interventions for maternal health outcomes has been explored in a variety of controlled clinical trials conducted cross-nationally. Findings have suggested that doula support during labor improves obstetric outcomes at birth and

decreases use of obstetric interventions (D.A. Campbell, Lake, Falk, & Backstrand, 2006; D. Gordon et al., 1989; Hodnett & Osborn, 1989; Hofmeyr, Nikodem, Wolman, Chalmers, & Kramer, 1991; Kennell, Klaus, McGrath, Robertson, & Hinkley, 1991; Klaus, Kennell, Robertson, & Sosa, 1986; Sosa, Kennell, Klaus, Robertson, & Urretia, 1980). Meta-analyses of randomized clinical trials have shown that continuous support provided by trained doulas during hospital labor and delivery leads to reductions in the duration of labor, less use of medications for pain relief, and more spontaneous vaginal deliveries (Hodnett, Gates, Hofmeyr, & Sakala, 2012; Scott, Berkowitz, & Klaus, 1999; Zhang, Bernasko, Leybovich, Fahs, & Hatch, 1996). The presence of a doula at birth also has positive effects on women's psychological well-being during labor and the immediate postpartum period, including decreased labor anxiety (Hofmeyr et al., 1991), increased feelings of control and confidence during labor (N.P. Gordon et al., 1999; Langer, Campero, Garcia, & Reynoso, 1998; Wolman, Chalmers, Hofmeyr, & Nikodem, 1993), and decreased postpartum depression (Wolman et al., 1993).

COMMUNITY DOULA MODELS

Because of these promising empirical results, doulas have increasingly been incorporated into community programs that provide supportive services to pregnant women at social risk, such as women with limited economic resources, pregnant adolescents, or women in substance-abuse treatment (Abramson, Isaacs, & Breedlove, 2006; Bromberg, Backman, Krow, & Frankel, 2009; Glink, 1998). To address the needs of mothers at social risk, the role of the community doula is expanded beyond the period of labor and delivery. Services are offered throughout pregnancy and in the first weeks of the child's life. Therefore, support is provided not only in hospital labor and delivery wards but also in health clinics, social service agencies, and especially in women's homes. Because services are often provided in community settings and because doulas are hired who have strong connections to the communities where the mothers reside, extended doula models are often termed *community doula programs* (Abramson et al., 2006). Sometimes in this extended model, doulas are viewed as specially trained home visitors (Ounce of Prevention Fund, 2005).

The Chicago Doula Project is a community doula program model that has offered doula support to young low-income mothers for more than a decade and has been replicated across Illinois and nationally (Abramson et al., 2006; Ounce of Prevention Fund, 2005). The Chicago Doula Project model was created by the Irving B. Harris Foundation, the Chicago Health Connection (CHC) (currently known as Health Connect One), and the Ounce of Prevention Fund, in partnership with three Chicago agencies that had long commitments to community-based intervention with young parents (Glink, 1998, 1999).

In the Chicago Doula Project, doulas are well-trained, paraprofessional service providers—many who were themselves young mothers and who reside in the same communities as do their clients. In addition to their supportive role during labor and delivery, com-

munity doulas work with mothers prenatally on education about healthy pregnancy and childbirth preparation. During postpartum visits, community doulas offer lactation support, postpartum maternal health education, and information about infant care and development. Beyond the time of labor, doulas work with their clients primarily during weekly home visits, but they also may meet clients at the clinics where prenatal care is provided, at ultrasound facilities, at the hospital during labor and delivery, and at the hospital postpartum. Throughout the intervention, doulas provide emotional support to the mother in the context of a trusting and close relationship. Doulas also encourage mothers to take advantage of community health and social services.

COMMUNITY DOULAS' ROLE IN SUPPORTING THE MOTHER-INFANT RELATIONSHIP

Although traditional doula models mainly focus on supporting the mother and promoting optimal maternal and child health outcomes, community doula program models often include as one of their primary goals building positive mother-infant relationships that form the foundation for later positive parenting and infant mental health. For example, the Ounce of Prevention Fund (2005), in describing the community doula model used in Illinois, indicated that "The primary focus of a doula . . . is to support the parent-child relationship" (p 3).

Mothers who are bearing and raising their children in the context of poverty, single parenthood, limited education, and overburdened family systems are at heightened risk for exhibiting problematic parenting attitudes and behaviors. Numerous studies have demonstrated that low-income mothers are more likely to engage in harsh, punitive, and less responsive parenting practices and provide less cognitive stimulation for their young children (Bradley & Corwyn, 2002; Linver, Brooks-Gunn, & Kohen, 2002; McLoyd, 1998). Women living in poverty often begin their childbearing at younger ages than do more economically advantaged women (Klein & the Committee on Adolescence, 2005), and a large body of research has suggested that young maternal age is related to parenting attitudes and behavior. Adolescent mothers express less empathy for young children (Baranowski, Schilmoeller, & Higgins, 1990), endorse more punitive child-rearing practices (Reis, 1989), have less realistic expectations about child development (Field, Widmayer, Stringer, & Ignatoff, 1980), are less responsive and sensitive to their infants' needs (Berlin, Brady-Smith, & Brooks-Gunn, 2002), are harsher with their toddlers (Lee, 2009; Scaramella, Neppl, Ontai, & Conger, 2008), and provide less verbal or other stimulation to their infants (Culp, Appelbaum, Osofky, & Levy, 1988; Moore, Morrison, & Greene, 1997; Pomerleau, Scuccimarrì, & Malcuit, 2003) when compared to older mothers.

Doulas have a unique opportunity to play a role in supporting early parent-child relationships. Because women's first emotional connections to their babies begin to form during pregnancy (Leifer, 1980; Rubin, 1984), community doulas, with their prenatal involvement, also have an opportunity to help mothers get to know their

babies in utero and to interact with their infants still in the womb. In the community doula model, doulas often use activities from the prenatal Family Assisted Neonatal Activities (FANA; Cardone & Gilkerson, 1990; Cardone, Gilkerson, & Wechsler, 2008) to help mothers explore the behavior of their unborn infants. These include asking mothers to observe their babies' movements, positions, and sleep cycles and eliciting infant responses in utero, such as by shining a light on the mother's abdomen and gently running a thread over the mother's abdomen. Doulas encourage mothers to talk to their unborn babies and read to them.

Doulas also are present with the mother during the special, emotionally intense minutes and hours after birth, a time when other professionals are not present or may be focusing primarily on provision of medical care. During the time immediately after the birth, doulas are able to share the mother's delight with her new baby and facilitate physical closeness between mother and baby. Doulas model gentle handling of the baby and softly spoken language directed to the baby. Doulas encourage mothers to hold their newborns, to place their newborns skin-to-skin, and to allow their newborns to suckle at the breast.

In the days and weeks after the birth, doulas explore with the mother what she is learning about her new baby and how her own behavior affects her baby. Together, the doula and mother observe things that the baby is able to do, and the doula helps the mother reflect on what she observes. For example, the doula may comment that "Your baby quieted down right away when you picked him up. How did you know that was what he needed?" Doulas help the mother understand the baby's development and delight with the parent in each of the child's new accomplishments. Doulas are sensitive to the parent's exhaustion and frustration and offer information, support, and encouragement. Doulas utilize a variety of tasks from the newborn FANA (Cardone et al., 2008) to help the mother discover her infant and take pleasure in the baby's capacities. During these activities, the mother is guided to elicit infant reflexes and infant attention to sights and sounds, and is encouraged to talk about what she sees and feels. Throughout their time together, doulas focus on helping the mother understand the meaning of her baby's behavior and to see things from her baby's perspective. The doulas always model gentle handling of the baby, and provide guidance to the mothers on responding effectively to the baby's cues. Doulas model talking to the infant and encourage the mother to talk with and read to her baby.

While there are many ways in which doulas support mothers during childbirth and in the transition to parenting, perhaps the most important thing they do to support parenting is to build a nurturing, caring relationship with the mother. The work of a doula has often been described as "mothering the mother" (Klaus, Kennell, & Klaus, 1993, p. 25). The doula is available to listen to the mother's concerns, quell her anxiety, calm her when angry, and provide encouragement and information around parenting. The concept that underlies "mothering the mother" is the parallel process (Bernstein, Campbell, & Akers, 2001), best summarized by Pawl and St. John's (1998) platinum rule of infant mental health intervention: "Do unto others as you would have others do unto others" (p. 7).

The doula's role is to try to understand the mother's point of view and respond empathically in such a way that the mother feels heard and cared for so that she can understand her new baby's point of view and nurture her child in the same manner.

STUDY GOALS

Despite the strong rationale for utilizing doulas to promote positive mother–infant relationships, there has been extremely limited empirical attention to effects of this type of intervention on the early mother–infant relationship. Data from a study conducted in Guatemala found that first-time mothers (*M* age = 20 years) who were supported by a doula at the birth stroked, smiled, and talked to their babies more in the first half hour after delivery (Sosa et al., 1980). Similarly, data from an unpublished study conducted at a public hospital in Texas found that, 6 to 9 weeks after delivery, first-time mothers who had received the services of a doula during labor had more positive scores on observations of mother–infant interaction observed during a home visit (Landry, McGrath, Kennell, Martin, & Steelman, 1998). No research has examined the impact of an extended community doula model on the early mother–infant relationship.

The goal of this article is to examine the efficacy of a community doula intervention in supporting behavioral, attitudinal, and emotional aspects of the early parent–child relationship. Specifically, we examined doula effects on mother–infant interaction, beliefs about appropriate parenting, and parent experience of stress in interaction with the infant. Data are drawn from a randomized controlled trial in which the intervention group received community doula services during pregnancy through 3 months postpartum. Outcomes related to parenting and the parent–child relationship are assessed at the end of the intervention and at the children's first and second birthdays.

METHODS

Sample

A total of 248 young pregnant women were recruited over a 3-year period through two affiliated prenatal clinics, one located in a community health center and one in a nearby teaching hospital. Pregnant women attending these clinics were approached to participate in the study if they were under the age of 22 and were less than 34 weeks gestation. If they were interested in participating in the study, their contact information was given to a researcher who called the mother to schedule a consent session.

Four hundred sixty-eight young women, identified through clinic records as being under the age of 22 and less than 34 weeks gestation, were approached about participation. Of those, 70 declined to participate in the research study, 80 could not be reached by telephone to schedule a research consent session, 51 failed to show up for scheduled and rescheduled research consent sessions, 7 delivered or lost the baby before they could be scheduled for a consent session, 11 were excluded because of plans to move from the area, and 1 had plans to give up her baby for adoption. Clinic

rules prevented collecting demographic or health information on the 220 individuals who were recruited but did not participate in the research study, which would have allowed comparisons between participants and nonparticipants. However, the sample of 248 enrolled appeared to be typical of the population of adolescent mothers attending the clinics. All young women recruited into the study were African American, and women were predominantly from working-class and lower income backgrounds; 93.8 % of the women were receiving Medicaid.

Study Enrollment and Randomization Procedures

At the first research session, a research staff member explained the study to mothers in detail and answered mothers' questions. Written informed consent was obtained following procedures approved by a university Institutional Review Board.

Young women who gave their consent participated in a 2-hr baseline interview focused on their feelings about the pregnancy, health habits, childbearing history, education, employment, general psychological well-being, relationship with their family, and relationship with the baby's father.

Immediately following completion of the baseline interview, participants were randomly assigned to receive either the usual prenatal health care and social services offered through the clinics (control group) or a combination of usual services and a doula intervention (doula group). Randomization took place in blocks of 4, 6, or 8 (with equal numbers to intervention and comparison group within a block) to ensure balanced numbers in the two groups throughout the study period. Randomization was done from a series of sealed opaque envelopes prepared by the biostatistician before the study was begun, each labeled with a sequential subject identification number and each containing an assignment to either the intervention group or the comparison group. Investigators and staff members responsible for recruitment, interviewing, or providing intervention were not able to influence the process of assignment to the intervention group.

To check for errors in randomization, the two groups were compared on a set of demographic, psychological, and health variables measured during the baseline interview prior to randomization. Table 1 presents data comparing the two groups on key demographic variables. There were no statistically significant differences between the two groups on these variables at the time of randomization.

Intervention Implementation

A community doula program was established at two nearby prenatal clinics that were located in the same neighborhood and were part of the same healthcare system: one in a large, tertiary care teaching hospital and one at an affiliated community health center. The program was established 1 year in advance of the planned start of the research study to ensure that services were being appropriately delivered before the beginning of the research study.

Four doulas worked in the program that was studied. The doulas were African American women from the communities sur-

TABLE 1. Characteristics of Doula Intervention and Control Groups at Time of Randomization

		Control Group <i>n</i> = 124	Doula Group <i>n</i> = 124
Mother Age (in years)	<i>M</i> (<i>SD</i>)	17.9 (1.7)	18.2 (1.7)
Mother Years School Completed	<i>M</i> (<i>SD</i>)	10.6 (1.5)	10.9 (1.5)
Mother Working at Enrollment	<i>n</i> (%)	27 (21.8%)	20 (16.1%)
Mother in School at Enrollment	<i>n</i> (%)	68 (54.8%)	67 (54.0%)
Mother Expecting First Child	<i>n</i> (%)	109 (87.9%)	110 (88.7%)
Baby Gestational Age (in weeks) at Enrollment	<i>M</i> (<i>SD</i>)	23.8 (5.3)	23.3 (4.6)
Private Health Insurance	<i>n</i> (%)	9 (7.3%)	6 (4.8%)
Mother Vocabulary (Dunn & Dunn, 1997)	<i>M</i> (<i>SD</i>)	85.5 (11.4)	86.4 (11.2)
Mother Depressive Symptoms (CES-D)	<i>M</i> (<i>SD</i>)	16.9 (9.6)	15.7 (8.6)
No. of Adults Residing in Household	<i>M</i> (<i>SD</i>)	1.9 (1.1)	2.0 (1.1)
Household Member Working	<i>n</i> (%)	84 (67.7%)	91 (74.2%)
Coresiding With Own Mother or Other Primary Caregiver	<i>n</i> (%)	98 (79.0%)	96 (77.4%)
Coresiding With Baby's Father	<i>n</i> (%)	10 (8.1%)	12 (9.7%)
Partner With Baby's Father	<i>n</i> (%)	83 (66.9%)	89 (71.8%)

rounding the hospital. Three of the four women had been adolescent mothers themselves. The doulas each had previous experience as helpers, through counseling pregnant teenagers at their churches, working as peer lactation counselors, or working as home health care assistants, but had no formal training as doulas or as child development professionals prior to being hired by this program. The doulas in this study participated in an intensive 10-week training session provided by the Chicago Health Connection (CHC), which was a developer of the community doula model and offers training to community-based doula programs nationally. Because community doulas need to have in-depth knowledge about pregnancy health, childbirth, mother–infant bonding, and breastfeeding, and because they usually have not had prior professional training in any of these topics, it is typical for community doulas to participate in additional learning opportunities after their initial training. Although there are no recognized standards for inservice training for community doulas, Doulas of North America (DONA) recommends that birth doulas, who work with mothers during pregnancy, labor, and delivery, become certified as childbirth educators and that postpartum doulas, who work with mothers after the birth, receive intensive training in infant feeding (DONA International, 2013). During the time of their work, doulas in this study participated in inservice trainings offered by CHC and other organizations on topics such as breastfeeding, childbirth preparation, health education, bereavement counseling, and narrative therapy. Doulas attended and presented at DONA conferences. During the time of the study, all became certified birth educators, and three became certified lactation counselors. All became certified to administer the community-based FANA through training at the Ounce of Prevention Fund.

Doulas were supervised in their work by an experienced pediatric nurse who also had been trained as a doula. The supervisor

scheduled weekly group and individual reflective supervision sessions. Doulas and their supervisor participated in monthly group reflective supervision sessions conducted by an experienced infant mental health consultant.

If randomized to the doula group, the mothers were assigned to one of the four doulas by the supervisor. The supervisor made the assignments to a particular doula based on geography of mothers' homes, doula caseloads, and the need to ensure that doulas not have too many clients with similar due dates. Doulas initiated contact with their new clients by telephone and then made an appointment to meet at the client's home. Doulas scheduled weekly visits with each woman throughout her pregnancy and until 3 months postpartum. These visits occurred at mothers' homes, at the prenatal clinic, and at specialty clinics, such as for ultrasound examination. Doulas also joined the mother at the hospital during labor and delivery. Mothers were encouraged to call their doulas when they went into labor. In addition, daily checks were made at the labor and delivery unit of the hospital to identify whether study participants had been admitted. Doulas carefully documented each client contact, including the setting, duration, and the topics discussed.

As is typical in home-based early childhood programs, the actual amount of service contact varied greatly across clients and, on average, was less than program service targets. The average mother in the doula group received 2.49 prenatal home visits from her doula with an average duration of 56 min and 3.82 prenatal clinic visits with her doula with an average duration of 61 min. Doulas carried cell phones and pagers, and frequently had contact with mothers over the phone between (or, in some cases, in place of) visits. The mean amount of contact across settings prenatally was 11.6 hr ($SD = 12.0$, range = 0–70.9) (Wen, Korfmacher, Hans, & Henson, 2010), with a mean of 1.8 hr ($SD = 2.0$) of contact focused on "preparing for parenting/childcare." Other contact focused on childbirth preparation, health education, mother personal development, and relationships with family and partner.

For 101 (81.5%) of the mothers in the doula group, the doula was in attendance at the birth. The most common reasons for the doula not being present at the birth were very short labors and failed communication between the mother and her doula. However, most of these received postpartum visits from the doula in the hospital. Across clients, the mean number of hours of contact during labor, delivery, and the immediate postpartum period was 11.1 ($SD = 8.9$, range = 0–47.5) (Wen et al., 2010).

Doulas made an average of 12 contacts with each mother during the 3 months postpartum. The mean number of hours of contact postnatally was 10.2 ($SD = 6.6$, range = 0–31.5) (Wen et al., 2010), with a mean of 4.3 ($SD = 3.1$) hr of contact focused on parenting/childcare.

Longitudinal Retention of Sample

The sample was followed up at three time points after completion of the intervention: when the infant was 4 months, 12 months, and 24 months of age. Of the original 248 mothers, 89.1% ($n = 221$) were assessed at 4 months, 88.3% ($n = 219$) at 12 months, and

79.4% ($n = 197$) at 24 months. Some mothers who missed a session were included in a later follow-up. Most attrition was related to the inability to locate mothers, but some declined to participate in follow-up interviews, 1 baby died of sudden infant death syndrome, and 3 mothers lost custody of their children because of child endangerment, a rate of removal by the child welfare system within the range of what is expected for adolescent mothers living in the state (Hoffman, 2006).

Sample retention was examined with respect to the same set of variables reported in Table 1 that were measured at enrollment. Retention was unrelated to these baseline variables, except that mothers who had been working at enrollment were less likely to be participating in the study at 4, 12, and 24 months. Sample retention was not significantly different between the doula and control groups. Retention at 4, 12, and 24 months was 87.1, 86.3, and 76.6%, respectively, for the doula groups and 91.1, 90.3, and 82.3%, respectively, for the control group.

Outcome Assessment

Follow-up data-collection sessions were conducted in a research playroom located in the clinic where many of the mothers had received prenatal care and where many took their children for pediatric care. Follow-up sessions included a mix of observational data and structured interview questions.

Parent-child interaction. Videorecordings of parent-child interaction were made when the child was 4, 12, and 24 months of age. During the recording sessions, the mother was asked to undress, weigh, and redress the infant; show her baby how to play with an age-appropriate toy/book, and engage her baby in free play. At the 24-month assessment, the mother also was asked to have the child help put away the toys. The full video-recording protocol was designed to take approximately 20 min at each session. Typically, video recording was done at the beginning of the research visit, unless the child was tired and needed a nap, in which case interviews with the mother were conducted first. The protocol was administered flexibly to take into consideration children's needs for rest, warm-up, diapering, and snacks.

The Parent-Child Observation Guide (PCOG) was used to code parent-child interaction from the video recordings made at the 4-, 12-, and 24-month sessions (Bernstein, Percansky, & Hans, 1987). The PCOG coding instrument was developed in collaboration with an ethnically diverse group of paraprofessional home visitors at early intervention programs for adolescent mothers in Chicago and consists of a series of items coded dichotomously as 0 (*not observed*) or 1 (*observed*). Exploratory factor analyses in previous work yielded two parenting constructs—Maternal sensitive responsiveness and maternal encouragement and guidance—and one child construct—positive involvement with parent (Bernstein, Harris, Long, Iida, & Hans, 2005). Mother sensitive-responsiveness assesses sensitivity to child cues in situations not involving infant upset. It includes items such as "remain patient with child," "act interested in what the child is doing," and

“adjust/pace behavior to that of child.” In other studies, the Maternal sensitive-responsiveness scale has been correlated with lower levels of maternal hostility (Sokolowski, Hans, Bernstein, & Cox, 2007), lower levels of family violence (Bernstein et al., 2005), infant secure attachment (Finger, Hans, Bernstein, & Cox, 2009), and toddler social competence (Bernstein & Hans, 1994), and has been effective at predicting child behavior problems up to 8 years later (Wakschlag & Hans, 1999). The Mother Encouragement and Guidance scale taps into items that are believed to support child engagement and to provide cognitively and emotionally enriching environments. In some publications, it has been referred to as the Maternal Teaching scale. It includes items such as “smile at child in a variety of situations,” “enjoy interacting with child during routines,” and “repeat or imitate child’s vocalizations or gestures.” In other studies, the Encouragement and Guidance scale has been correlated with mother verbal descriptions of children characterized by joy and engagement (Sokolowski et al., 2007) and to cognitive-enriched home environments (Bernstein et al., 2005). The Child Positive Involvement scale taps into the child’s social connectedness to the parent. It includes items such as “look at parent’s face,” “smiles at parent in a variety of situations,” “join parent in a sustained activity.” In other studies, child positive involvement with the parent has been correlated with teacher and parent ratings of child social skills (Bernstein et al., 2005).

These multi-item PCOG scales address interaction that is occurring in general social interaction. The PCOG forms used for the 4- and 12-month-old infants (but not the 24-month-old toddlers) also include a single dichotomous item to assess whether children displayed “no uncomfortably long period of upset” and whether the parent responded to child upset with prompt responsiveness (with parents whose children did not cry not coded on this scale).

Three two-person teams coded the 4-, 12-, and 24-month video sessions. The video coders were blind to information about parents’ histories or group assignments and were trained to greater than 80% item-level agreement with one of the authors (V.B.) who developed the instrument. The two coders began by both coding the same 20 video recordings, conferring after these initial recordings to resolve disagreements. Subsequently, both members of the team coded every fifth recording, again conferring to resolve disagreement. Interrater agreement was calculated for all sessions coded by two coders. Intraclass correlations for sensitive responsiveness ranged between .79 and .85, for encouragement and guidance between .85 and .90, and for child positive involvement between .81 and .85. Kappa coefficients for parent response to distress ranged between .51 and .57, and for infant distress between .75 and .94.

Parenting attitudes. At the 4-month follow-up (but not other time periods), parent attitudes about child development and child-rearing practices were assessed by the Adult-Adolescent Parenting Inventory (AAPI; Bavolek, 1984). The AAPI was originally developed to be sensitive to the parenting and child-rearing practices and beliefs of abusive parents. The full AAPI consists of 32 statements about parenting to which the respondents indicate their agreement on a scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*),

with higher scores indicating more problematic attitudes. For this study, 12 items from the AAPI were administered, three chosen a priori from each of the following subscales: inappropriate expectations of children, lack of empathy toward children’s needs, strong belief in use of corporal punishment, and reversing parent-child family roles. Examples of items are “parents spoil babies by picking them up when they cry,” “children cry just to get attention,” “strong-willed toddlers need to be spanked to get them to behave,” and “children should know when their parents are tired.” Items were chosen from those that had high factor loadings on the subscales in the norm sample and that seemed most related to infancy and toddlerhood. The α for the total score in this study was .612.

Parenting stress. At all three time points, the parent-child items from the short version of the Parenting Stress Inventory-Short Form (PSI-SF) were used to assess the mother’s perception of the parent-child interaction as stressful (Abidin, 1983). The PSI uses a series of items on which the respondents indicate their agreement on a scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*), with higher scores indicating more stressed parenting. The PSI has been used with families from a broad socioeconomic range. Examples of items assessing dysfunctional parent-child interaction are: “My child smiles at me much less than I expected” and “When I do things for my child, I get the feeling that my efforts are not appreciated very much.” Extensive validity data are available on the long form of the instrument, including its relation to measures of parenting behavior and its sensitivity to intervention effects. The PSI-SF has been shown to be inversely related to responsive, positive parenting (Chang et al., 2004). For the current sample, the dysfunctional parent-child interaction subscale (12 items) had an internal reliability α of .78 at 4 months, .82 at 12 months, and .78 at 24 months.

Analytic Methodology

Intent-to-treat analyses were computed on each parent-child interaction and parenting variable, comparing the families in the two groups as they were randomized. Because of strong directional hypotheses, statistical tests were one-tailed, and effect size statistics are included to evaluate the strength of intervention effect.

RESULTS

Parent-Child Interaction Outcomes

Table 2 provides mean scores by doula and control group for each of the PCOG scales assessing video-recorded parent-child interaction. The groups differed on several features of parent-infant interaction at the 4-month assessment, which was conducted soon after the end of the intervention. Doula group mothers showed more encouragement and guidance of their infants at 4 months than did control group mothers. In addition, infants whose mothers had been assigned to the doula intervention were less likely than were infants in the control group to have a long period of distress during the video recording. When infants did express distress,

TABLE 2. PCOG Mother–Infant Interaction: Intent-to-Treat Comparisons Between Intervention Groups

Variable	Infant Age (in months)	No. of Items	Control Group		Doula Group		Statistical Test	Effect Size Cohen's <i>d</i>
			<i>n</i>	<i>M</i> (<i>SD</i>)	<i>n</i>	<i>M</i> (<i>SD</i>)		
Mother Variables								
Mother sensitive responsiveness	4	9	112	6.80 (1.93)	107	7.13 (1.61)	$t(217) = 1.40$	0.19
	12	9	112	7.65 (1.44)	107	7.75 (1.56)	$t(217) = 0.47$	0.06
	24	10	101	7.23 (2.12)	95	7.39 (2.08)	$t(194) = 0.54$	0.08
Mother encouragement and guidance	4	7	112	2.72 (1.84)	107	3.34 (1.97)	$t(217) = 2.38^{**}$	0.32
	12	8	112	4.51 (1.84)	107	4.82 (1.87)	$t(217) = 1.25$	0.17
	24	8	101	4.88 (2.17)	95	5.05 (2.40)	$t(194) = 0.53$	0.08
Mother prompt responsiveness to upset (for children who displayed upset)	4	1	52	0.33 (0.47)	44	0.50 (0.51)	$t(94) = 1.73^{*}$	0.35
	12	1	14	0.36 (0.50)	14	0.64 (0.50)	$t(260) = 1.52^{\dagger}$	0.56
Child Variables								
Child positive involvement with mother	4	6	112	2.72 (1.55)	107	2.65 (1.45)	$t(217) = 0.43$	0.05
	12	10	112	5.70 (1.79)	107	5.63 (2.04)	$t(217) = 0.27$	0.04
	24	10	101	5.35 (1.88)	95	5.54 (1.95)	$t(194) = 0.70$	0.10
Infant displayed no uncomfortably long period of distress	4	1	112	0.83 (0.38)	107	0.91 (0.29)	$t(217) = 1.68^{*}$	0.24
	12	1	112	0.96 (0.21)	107	0.98 (0.14)	$t(217) = 1.09$	0.11

$^{\dagger}p < .10$, one-tailed. $^{*}p < .05$, one-tailed. $^{**}p < .01$, one-tailed.

mothers in the doula group were more likely to respond promptly to the distress. There were no significant intervention effects on sensitive responsiveness or on infant positive involvement with the parent at 4 months. There also were no statistically significant group differences in mother–infant interaction at the 12- and 24-month sessions.

Parenting attitudes. Doula group mothers were significantly less likely to endorse high-risk parenting attitudes on the AAPI at 4 months than were mothers in the control group (see Table 3). Parenting attitudes were not assessed at later time points.

Parenting stress. There were no differences related to the doula intervention in mother report of dysfunctional parent–child interactions at 4 months. At 12 months, mothers in the doula group reported less stress in their interactions with their children than did

mothers in the control group. There were no significant differences in parenting stress at 24 months.

DISCUSSION

Doulas are increasingly being utilized as service providers for adolescent and other socially vulnerable parents (Glink, 1999; Health-ConnectOne, 2012). Although it has often been claimed that doulas can have an impact on parenting behavior, the emotional connection between mother and child, and mother–child interaction, no published studies prior to the current one have tested those claims. The present study employed a rigorous research design to examine the efficacy of a community doula model for encouraging positive parenting and parent–infant interaction among young, urban mothers. Overall, findings demonstrate that the community doula model has a positive impact on parent–child interactions and

TABLE 3. Parent Report of Child-Rearing Attitudes and Parenting Stress: Intent-to-Treat Comparisons between Intervention Groups

Variable	Age (months)	No. of items	Control Group		Doula Group		Statistical Test	Effect Size Cohen's <i>d</i>
			<i>n</i>	<i>M</i> (<i>SD</i>)	<i>n</i>	<i>M</i> (<i>SD</i>)		
High-risk parenting attitudes								
AAPI total score	4	12	113	32.4 (5.7)	108	31.1 (5)	$t(219) = 1.9^{*}$.24
Parenting Stress								
PSI dysfunctional interaction	4	12	113	16.5 (4.1)	108	16.0 (4.5)	$t(219) = 0.76$	0.12
PSI dysfunctional interaction	12	12	112	17.0 (4.7)	107	16.0 (4.4)	$t(217) = 1.69^{*}$	0.23
PSI dysfunctional interaction	24	12	102	18.5 (5.1)	95	17.6 (5.2)	$t(195) = 1.16$	0.16

AAPI = Adult–Adolescent Parenting Inventory; PSI = Parenting Stress Inventory.
 $^{*}p < .05$, one-tailed. $^{**}p < .01$, one-tailed.

maternal attitudes about parenting practices, and a delayed impact on reducing maternal stress. However, the impact of the intervention on mother behavior faded out after the intervention ended.

Immediately after the end of the intervention, when the children were 4 months old, mothers who had received services from a community doula were less likely to endorse parenting attitudes that have been conceptually and/or empirically linked to child maltreatment (Bavolek, 1984; Bavolek & Keene, 2005) and poor developmental outcomes in young children (Kiang, Moreno, & Robinson, 2004). Also at 4 months' postpartum, parents who had been supported by a community doula engaged in more positive mother–infant interactions. Specifically, mothers were more responsive to child distress, infants cried and fussed less, and mothers showed more encouragement of learning and expression of positive affect. Recent research has suggested that maternal sensitivity, particularly in response to infant distress, is a strong predictor of positive socioemotional development in young children (Leerkes, Weaver, & O'Brien, 2012). Maternal verbal stimulation and encouragement of exploration during infancy is associated with both socioemotional and cognitive development (Landry, Smith, & Swank, 2006; Page, Wilhelm, Gamble, & Card, 2010; Shonkoff & Phillips, 2000).

In the present study, the size of the significant effects at 4 months ranged from about 1/5 to 1/3 of an *SD*. Even though improvement of parenting behavior is just one of many goals of the community doula intervention, these effect sizes are in the range of what has previously been found in meta-analytic evaluations of interventions specifically targeting parenting sensitivity in mothers of infants (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003). Home-visiting interventions that target a range of parent and child outcomes have varied greatly in their impact on parenting outcomes specifically (Nievar, van Egeren, & Pollard, 2010), and many of the nationally implemented home-visiting models have no published evidence supporting their effectiveness for positive parenting (Paulsell, Avellar, Sama Martin, & Del Grosso, 2010). All published reports of the impact of home visiting on positive parenting behavior have come from assessments of parents of toddlers and young children who have been engaged in long-term home-visiting services (e.g., Dishion et al., 2008; Love et al., 2002; Olds et al., 2002; Rodriguez, Dumont, Mitchell-Herzfeld, Walden, & Greene, 2010). To the best of our knowledge, the present study is the first to report on the impact of a nationally implemented home-visiting model on parenting outcomes during the early months of parenting. In that context, the community doula model holds promise as an evidence-based practice to promote positive parenting attitudes and behavior.

The present evaluation of the community doula model, however, did not demonstrate a significant reduction in mother-reported stress at 4 months. Unexpectedly, there was an intervention impact on parenting stress at 1 year. There is precedent in the early childhood evaluation literature for sleeper effects. Some of the more notable findings in the early intervention literature are on aspects of adolescent behavior never anticipated by the original intervention designers (Olds, 2006; Schweinhart & Weikart, 1998). How-

ever, shorter term sleeper effects also have been found, such as in the Early Head Start evaluation where maternal depression was impacted at child age 5 years, but not child age 3 years (Chazan-Cohen et al., 2007). Although one should be cautious about interpreting the maternal stress sleeper effect in the present study, note that that sleeper effects in early childhood intervention studies are usually attributable to changes in developmental systems—particularly to changes in children's developmental levels. Toddlerhood is known as a time of increasing stress for parents as children become mobile and begin to more strongly assert their desires. Although the parents in the present study, on average, reported increasing parenting stress as their children became toddlers, mothers in the intervention group showed less of an increase. It is plausible that doulas' earlier messages—normalizing children's expression of their needs and encouraging parents to experience joy in their interactions with their children—provided parents with greater resilience in accepting their toddler's assertive or independent behavior as normal.

The present evaluation of the community doula model found significant program effects on parenting behavior that were clear when the infants were 4 months, but diminished to nonstatistically significant levels by the time the infants were 12 and 24 months old. While not statistically significant at 12 and 24 months, the intervention effects in parent–child interaction and parenting behavior were always in a direction favoring the intervention group. It is common for intervention effects of all kinds to diminish over time, and “fade-out” has long been documented and discussed in the field of early intervention (F.A. Campbell & Ramey, 1994; Lally, Mangione, & Honig, 1988; Lazar & Darlington, 1982; McCarton et al., 1997). While the developmental sciences offer reason to believe that intervention will be most effective when started early (Shonkoff & Phillips, 2000), this study provides more evidence that it is not realistic to expect short-term early interventions with multirisk families to inoculate families from future problems (Lyons-Ruth & Easterbrooks, 2006; Shonkoff & Phillips, 2000).

The results of this study raise the practical challenge of how to sustain the effects of this promising intervention to promote positive parenting and parent–infant interaction. In other fields of intervention research, it is common to offer less intensive “booster” interventions to prolong the impacts of an intervention (Tolan, Gorman-Smith, Henry, & Schoeny, 2009). In this situation, however, because doulas are specially trained to focus on the mother–child relationships during pregnancy and during the newborn period, it may not be feasible to extend the length of the service that they provide. In the case of the community doula model, it would make sense that the doula intervention be followed by ongoing home-visiting services that support parents with the challenges of parenting after the early months. In many localities, this is already being done through the integration of community doulas into other longer term, evidence-based home-visiting models (Ounce of Prevention Fund, 2005). The marriage of the community doula model with longer term home-visiting holds the potential benefit of sustaining the impact of the community doula model. It also offers the potential for other home-visiting models to more effectively

engage mothers during pregnancy and to boost their effectiveness at supporting positive parenting by offering a specialized focus on the beginning of the mother–infant relationship.

This study has many methodological strengths, including the randomized design; assessment of multiple aspects of parenting; data collection by staff independent of the service delivery; assessment of parenting behavior from video recordings by blinded, reliable observers; longitudinal follow-up with low attrition; and intent-to-treat analyses. The study also has limitations, however. The observations of parenting were made in a comfortable university setting, but not in families' homes where more natural interactions may have taken place. In addition, this evaluation is of the efficacy of a model drawing on one program site serving one population: young African American women. Further research would be needed to determine whether the program is effective for other high-risk populations and when implemented more broadly in community-based settings not affiliated with research universities. The randomized controlled trial research design and analyses, which by nature is designed to determine "whether" a program works, is not ideally suited for understanding "why" a program works. That type of question can be better analyzed by qualitative studies and meta-analyses across varied evaluations.

Even though the randomized controlled trial does not tell us why the community doula program is effective at improving parenting outcomes, there are a number of core features of this intervention model that have been shown to be important for intervention success elsewhere in the literature on home-visiting and early childhood intervention. The community doula model relies on the formation of a strong, trusting relationship between the doula and mother. Other research on home-visiting programs has shown that the quality of the helping relationship is a key predictor of client engagement and retention and may be linked to other program outcomes (Korfmacher, Green, Spellmann, & Thornburg, 2007). The community doula model begins earlier than do most parenting programs, always during pregnancy and sometimes early in the pregnancy, which allows the relationship between the doula and mother to develop before the baby is born and for the helper to be with the mother when her first ideas about her baby and herself as a mother are forming. The doula may have advantages over other home visitors at engaging in a relationship with the mother during pregnancy, given that the doula brings expertise in childbirth and that many of the mother's fears and concerns during pregnancy focus on the birth. In addition to being with the mother during pregnancy, the community doula's role is unique in that the helper is able to share with the mother the powerful moments during which the baby enters the world.

In addition, the community doula model rests on the assumption that the best approach to working with high-risk families is through services provided by someone who shares characteristics with the family and knows the family's community. This shared cultural background helps to build the close relationship between the mother and doula. While other program models utilizing paraprofessionals share the philosophy that families may more easily accept helpers who come from the same communities and have

similar backgrounds (Hans & Korfmacher, 2002), this model is different in that the doulas also are highly trained and experienced in technical skills around labor and delivery support. Qualitative data from the present study suggest that mothers perceived the doulas as knowledgeable, and therefore were open to the doula's guidance (Korfmacher, 2008).

In conclusion, our findings show that the community doula model holds promise for enhancing positive parenting and parent–child interaction in multirisk populations that goes beyond its traditional role in improving the health of mothers and infants around childbirth. At the same time, the fading effect of the intervention also is a cautious reminder that ongoing efforts are needed to support intervention effects in the lives of mothers facing multiple risks in their parenting.

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