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Original Article

Relationships between types of father breastfeeding support and breastfeeding outcomes

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Abstract

Fathers' support can influence mothers' breastfeeding decisions and behavior. Potentially supportive behaviors have been reported in previous studies, but no studies have directly examined which, if any, of those actions are actually more likely to result in desired breastfeeding outcomes. The two studies reported in this paper address this gap by examining relationships between fathers' reported breastfeeding support and mothers' perceptions of received support and breastfeeding intentions, satisfaction, and duration. The Partner Breastfeeding Influence Scale (PBIS) was used in an online survey with 64 women and 41 men (34 couples) and a telephone survey with 80 mothers and 65 fathers (63 couples). Fathers' and mothers' reports of how often fathers engage in the types of support measured by the PBIS were used to predict breastfeeding intentions, satisfaction, and duration. In Study 1, responsiveness predicted breastfeeding success and satisfaction for men and satisfaction for women. However, mothers' intended breastfeeding duration was *shorter* when fathers both wanted them to breastfeed for a long time and were more appreciative and savvy about breastfeeding. In Study 2, when fathers reported being more appreciative and directly involved in breastfeeding, mothers reported *shorter* breastfeeding duration. In both studies, mothers' perceptions of their partners' responsiveness and fathers' reports of their own responsiveness predicted longer breastfeeding intentions and duration. These findings suggest that the most effective breastfeeding support is delivered using a sensitive, coordinated teamwork approach that is responsive to the mother's needs.

Keywords: Breastfeeding, Fathers, Social Support, Responsiveness.

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Introduction

Breastfeeding is considered the normative standard for infant nutrition. The American Academy of Pediatrics (2012) recommends that children be breastfed exclusively for 6 months and continue to be breastfed for 1 year or longer. However, few mothers meet these goals. For example, in 2011, only 79% of mothers in the United States initiated breastfeeding, 49% were breastfeeding at 6 months, and 27% were breastfeeding at 12 months (Centers for Disease Control and Prevention 2014). There are many factors that are associated with mothers' breastfeeding experiences and duration (Thulier & Mercer 2009); one of these is the assistance and support of other people, particularly intimate partners.

Breastfeeding is clearly the mother's role but there is evidence that the baby's father can have a significant influence on a mother's breastfeeding decisions. Mothers who perceive the father to have more positive attitudes toward breastfeeding are more likely to breastfeed (Vaaler *et al.* 2011). Fathers' attitudes predict mothers' breastfeeding intentions in addition to the mothers' own attitudes (Mitchell-Box *et al.* 2013). Rempel & Rempel (2004) found that fathers' prenatally measured beliefs about breastfeeding duration not only predicted women's breastfeeding intentions over and above the women's own beliefs, but that women whose partners strongly believed in breastfeeding longer than 6 months often breastfed even longer than they had originally intended. Moreover, women's perceptions of their

partner's approval of breastfeeding and their partner's helpfulness were significantly associated with breastfeeding intentions and duration but neither factor accounted for the fathers' influence. Undoubtedly, fathers have an impact on mother's breastfeeding behavior, but the nature of that influence is not clear.

There is some evidence from intervention studies that fathers' knowledge of the benefits and management of breastfeeding can affect initiation and duration (Wolfberg *et al.* 2004; Piscane *et al.* 2005; Lovera *et al.* 2010; Maycock *et al.* 2013; Bich *et al.* 2014; Abbass-Dick *et al.* 2015). Moreover, the fathers surveyed by Brown & Davies (2014) indicated that they want to be given specific, practical advice for how to help their partners, but there is limited research on which to base specific advice.

Some qualitative studies have uncovered what fathers and mothers believe are ways that fathers may support breastfeeding. Fathers in a study by Ingram & Johnson (2004) supported breastfeeding by bathing their baby, changing nappies and doing some household tasks. Sherriff *et al.* (2009) found that fathers supported breastfeeding by taking care of household tasks, offering emotional support and advice and supporting breastfeeding in public. Mothers in a study by Tohotoa *et al.* (2009) added that fathers could share the new parenting burden, research and learn about breastfeeding, make suggestions about breastfeeding technique, assist mother to relax for feeding, give praise or encouraging compliments for the effort of breastfeeding, and be a breastfeeding advocate with family and health professionals. Mothers and fathers interviewed by Nickerson *et al.* (2012) further suggested that fathers could be supportive by sitting with the mother while breastfeeding and recognizing the amount of work breastfeeding requires of the mother.

Such knowledge about what people believe to be supportive actions is very important. However, no studies have directly examined which, if any, of these supportive actions are actually more likely to result in desired breastfeeding outcomes. This current research was conducted to begin addressing this gap by examining the relationships between fathers' reported and mothers' perceptions of received breastfeeding support and mothers' breastfeeding intentions, satisfaction and duration.

To examine these relationships, this paper presents two studies that build on qualitative research conducted by Rempel & Rempel (2011) in which fathers and mothers were independently asked to describe the father's experiences and roles in the breastfeeding family and how fathers might influence mothers to breastfeed. That study identified types of behaviors fathers engage in to provide breastfeeding support. The first type of support behaviors involved fathers becoming breastfeeding savvy; learning about breastfeeding and using that knowledge to encourage the mother and suggest solutions to breastfeeding problems. Second, fathers offered support directly in the breastfeeding moment by making the mother comfortable, bringing her food or drink or reducing distractions. Third, fathers provided various forms of instrumental support such as taking care of household tasks, ensuring that the mother was receiving appropriate nutrition and rest, or providing direct care for the infant or older children. Fourth, fathers support the breastfeeding mother by valuing her with direct expressions of appreciation and affirmation, encouraging perseverance and acting as a sounding board for the mother's frustrations. Fifth, fathers offered support by being sensitive to how the mother was feeling, not putting unrealistic demands on her

Key messages

- Fathers can significantly influence a mother's breastfeeding decisions but previous research has not shown which, if any, supportive actions are actually more likely to result in desired breastfeeding outcomes.
- Father breastfeeding influence behaviors that involved being more appreciative, present and knowledgeable about breastfeeding were sometimes associated with lower maternal breastfeeding intentions and duration.
- Only responsive behaviors that were sensitive to the mother's needs consistently predicted positive breastfeeding outcomes.

time and energy and by respecting her breastfeeding decisions, even if that meant deciding to quit.

Many of the behaviors identified in Rempel & Rempel (2011) resonate with supportive activities identified in other studies. A common thread linking all of these themes was the concept of *teamwork* in which the father and mother worked together to provide the best nutrition and caregiving for their child. Fathers engaged in unique mixes of influencing actions, depending on the needs of each 'breastfeeding team,' but the extent to which specific behaviors would be influential remains unknown. This current research uses the specific types of behaviors identified in that study to explore the extent to which those activities influence maternal breastfeeding outcomes.

The first study described in this paper examined relationships between father influence behaviors and mothers' intended breastfeeding duration and judgments of breastfeeding satisfaction. It also examined the relative effects of the different types of influence in promoting breastfeeding satisfaction or longer intended duration and whether these types of influence might help mediate or moderate the relationship between fathers' beliefs about breastfeeding duration and mothers' breastfeeding intentions. The second study examined the relationship between father influence behaviors and breastfeeding duration. It was expected that all types of influence would increase breastfeeding satisfaction and be associated with longer duration. It is important to note that, given the large number of correlations that our analyses produced, our emphases and conclusions are weighted heavily by consistent patterns of findings rather than by unique significant results.

Study 1

Methods

Participants

Sixty-four women and 43 men (34 couples) from Southern Ontario, Canada with children born within the past year were identified from newspaper birth announcements and recruited by telephone. Men and women independently completed a questionnaire package either online or by mail. The majority completed the questionnaires online and a few used the mail. Consent was assumed by submission of the completed questionnaire. One woman and two men did not complete the majority of the questionnaire, leaving a sample of 64 women, 41 men and 34 couples. The men ranged in age from 27 to 44 years with an average age of 34.2 years. Almost 95% of fathers were born in Canada and tended to be well educated (94% fathers indicated having obtained some post-secondary training or education) and relatively affluent (94% of the men reporting had full time employment and the median family income was in the $80 000 to $100 000 per year range). Female participants ranged in age from 25 to 42 years with an average age of 32.8 years. They were mostly well educated (88% obtained some post-secondary training or education) and 93% were born in Canada.

Measures

Partner breastfeeding influence scale

A measure of partner breastfeeding influence, the Partner Breastfeeding Influence Scale (PBIS), was developed using a secondary content analysis of the transcripts from Rempel & Rempel (2011), in which 38 individuals (17 couples and four individuals) were interviewed about the father's role in the breastfeeding family. Probes explored how fathers might support breastfeeding through household activities, childcare and emotional support. The content coding identified 37 partner breastfeeding influence behaviors that were used to create the PBIS. When completing the PBIS, men were asked to indicate how often they engaged in each behavior on a 5-point scale ranging from 1 = *not at all* to 5 = *very often* and women were asked to indicate how often their partners engaged in the same behaviors.

In order to refine and consolidate the theoretically derived categories, an exploratory factor analysis (principal components with varimax rotation) was conducted on the responses from 251 participants who completed the PBIS. The theoretically derived categories took precedence in constructing the final subscales that are presented in Table 1.

Table 1. Partner breastfeeding influence scale subscales

Breastfeeding savvy	Cronbach's alphas: men = 0.87, women = 0.82
Discuss or negotiate with your partner about how long to continue breastfeeding.	
Discuss with your partner ideas for trying to solve breastfeeding problems or make suggestions for creative or different ways to make breastfeeding work better.	
Learn more about breastfeeding by reading books or articles on breastfeeding.	
Tell your partner your opinion about how long you think that she should breastfeed.	
Speak up in support of your partner or defend breastfeeding when someone makes a negative breastfeeding comment.	
Help your partner get assistance from others for solving breastfeeding problems or improving breastfeeding.	
Remind your partner of the benefits that breastfeeding has for her or for your baby.	
Show patience and a willingness to wait for your opportunity to feed the baby.	
Support your partner's attendance at a breastfeeding support group.	
Helping	Cronbach's alphas: men = 0.79, women = 0.82
Help out with or take care of other childcare tasks with the baby.	
Give something up in order to make breastfeeding easier.	
Help out with other household tasks and responsibilities to free up your partner's time and energy.	
Help out with breastfeeding at night.	
Care for your baby during and after breastfeeding is done.	
Try to improve your partner's health and nutrition.	
Give your partner a break from the baby.	
Appreciation	Cronbach's alphas: men = 0.86, women = 0.84
Encourage your partner to do her beast when it comes to breastfeeding and let her know that she is not less of a mother if she feels like quitting.	
Praise your partner for breastfeeding and let her know that what she is doing is a beautiful, worthwhile thing.	
Let your partner know that breastfeeding is natural and/or give her the message that she is breastfeeding because she wants the best for her baby.	
Listen to and encourage your partner when she is feeling frustrated or discouraged about breastfeeding.	
Show appreciation that your partner is breastfeeding.	
Tell your partner that you value and support her mothering decisions and intuitions around breastfeeding.	
Breastfeeding presence	Cronbach's alphas: men = 0.88, women = 0.82
Try to improve the breastfeeding experience by getting equipment or supplies ready for breastfeeding.	
Act attentively towards your partner during breastfeeding.	
Quietly share time and watch or hold your partner during breastfeeding.	
Physically help with breastfeeding related activities.	
Help create a quiet, pleasant environment for breastfeeding.	
Show pleasure and satisfaction while your partner is breastfeeding.	
Responsiveness	Cronbach's alphas: men = 0.77, women = 0.76
Make it easy for your partner to breastfeed while entertaining company or visiting others.	
Respond sensitively and positively to sexual issues.	
Be patient and understanding of the time it takes to breastfeed and don't get upset if the other housework is not done.	
Show your comfort with breastfeeding in public and help her feel comfortable too.	
Pay attention to how much and how your partner wants you to participate in breastfeeding.	
Omitted items	
Notice and show dislike or take offense at formula advertisements or marketing practices.	
Encourage your partner to breastfeed as a way to calm the baby.	
Discourage or disagree with your partner's desire to stop breastfeeding.	
Take care of the older children (if you have older children).	

Items were derived from content analysis of interviews with fathers and mothers of breastfed infants (Rempel & Rempel 2011). Cronbach's alphas are based on the combined data from Studies 1 and 2.

The *Breastfeeding Savvy* subscale involves learning about and discussing breastfeeding knowledge. The *Helping* subscale includes items of direct, tangible support such as household support, childcare and partner caretaking. The *Appreciation* subscale measures behaviors of encouragement and valuing the breastfeeding mother. The *Presence* subscale measures the domain of the father's assistance during breastfeeding. The *Responsiveness* subscale includes items addressing the father's sensitivity to the mother's needs and respect for her decisions.

Female breastfeeding intentions and male prescriptive breastfeeding beliefs

Women indicated how much they would like or would have liked to still be breastfeeding at 1, 3, 6, 9, 12, 18 and 24 months on a scale from 0 (*definitely would not like to breastfeed for that long*) to 10 (*definitely would like to breastfeed for that long*). These measures were summed to form a duration intention score, which is a significant predictor of breastfeeding duration (Rempel 2004). Men were asked to indicate their prescriptive breastfeeding beliefs by rating how strongly they would like or would have liked their partner to breastfeed to each time point on the same scale.

Breastfeeding evaluation

Both men and women evaluated the mother's breastfeeding experiences. Breastfeeding Satisfaction was measured using six items from the breastfeeding satisfaction scale developed by Leff *et al.* (1994): (1) 'I really enjoyed breastfeeding'; (2) 'Breastfeeding made me feel like a good mother', (3) 'Our baby loved to breastfeed'; (4) 'Our baby gained weight and grew really well while breastfeeding'; (5) 'Breastfeeding kept me from going places or doing activities that I enjoy'; (6) 'I did not like the way I looked or felt when I was breastfeeding'. Breastfeeding Success was measured with a single item. Participants responded on a 5-point scale ranging from *strongly disagree* to *strongly agree.*

Statistical analysis

Means were calculated for all scales and subscales and correlations were calculated for all scales and subscales within and between partners. Hierarchical linear multiple regressions were conducted to test for moderation effects of fathers' breastfeeding duration preferences on the relationship between PBIS subscales and mothers' breastfeeding intentions. Separate multiple regression analyses were conducted for each PBIS subscale. The PBIS subscale and fathers' breastfeeding duration preferences were regressed on mothers' intended breastfeeding duration in Step 1, and the PBIS subscale by duration preferences interaction term was added in Step 2.

Results

Fathers' breastfeeding influence behaviors

Means, standard deviations and correlations for each PBIS subscale can be found in Table 2. Responsiveness was the most frequently demonstrated type of influence behavior. The frequency of Appreciation and Helping influence was somewhat lower, and Savvy was the least frequently demonstrated type of influence. With the exception of Responsiveness, fathers' and mothers' reports of each form of influence were significantly correlated.

Predicting breastfeeding duration intentions and success

We examined relationships between father influence, as measured by the PBIS, and mothers' intended breastfeeding duration and judgments of breastfeeding satisfaction and success. Correlations within individuals and between mothers and fathers are presented in Table 2. Mothers' breastfeeding intentions were positively correlated with fathers' breastfeeding duration preferences. Mothers' intentions were significantly positively correlated with her assessment of her own breastfeeding satisfaction and success. Fathers' breastfeeding duration preferences were significantly positively correlated with their own perception of his partner's breastfeeding success as well as her rating of her breastfeeding success.

Mothers' and fathers' breastfeeding satisfaction and success ratings were correlated with various types of breastfeeding influence. Mothers' breastfeeding satisfaction was significantly positively correlated with her perceptions of her partner's Presence during

Table 2. Study 1 descriptives and correlations for mothers and fathers individually and between partners

		Mothers								Fathers						
Variable	Mean (SD)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Mothers (n = 64)																
1. BF Intention	52.6 (17.2)															
2. BF Satisfaction	4.10 (0.76)	0.39**														
3. BF Success	3.85 (1.30)	0.31*	0.78***													
4. Savvy	3.21 (0.70)	0.02	0.00	−0.01												
5. Helping	3.71 (0.71)	0.15	0.23	0.15	0.53***											
6. Appreciation	3.77 (0.80)	0.08	0.14	0.15	0.56***	0.41***										
7. Presence	3.39 (0.75)	0.11	0.27*	0.20	0.61***	0.76***	0.55***									
8. Responsiveness	4.06 (0.56)	0.23	0.31*	0.22	0.48***	0.66***	0.54***	0.57***								
Fathers (n = 41)																
9. BF Preference	46.1 (18.9)	0.39*	0.21	0.40*	0.32	0.05	0.24	0.23	0.00							
10. BF Satisfaction	3.92 (0.73)	0.23	0.72***	0.48**	0.28	−0.01	0.20	0.17	0.04	0.22						
11. BF Success	3.88 (1.45)	0.11	0.52**	0.70***	0.11	−0.24	0.29	−0.04	−0.19	0.33*	0.56**					
12. Savvy	3.13 (0.84)	−0.07	0.13	0.03	0.64***	0.21	0.54***	0.34	0.30	0.15	0.33*	0.09				
13. Helping	3.73 (0.67)	−0.06	0.18	−0.19	0.64***	0.60***	0.40**	0.51**	0.31	0.14	0.24	0.10	0.60***			
14. Appreciation	3.63 (0.81)	−0.02	0.19	0.17	0.48***	0.10	0.53**	0.31	0.33	0.01	0.35*	0.12	0.87***	0.55***		
15. Presence	3.33 (0.93)	0.06	0.27	0.30	0.63***	0.32	0.52**	0.49**	0.18	0.24	0.38*	0.14	0.87***	0.73***	0.82***	
16. Responsiveness	3.94 (0.79)	0.18	0.23	0.16	0.52**	0.22	0.53**	0.27	0.30	0.26	0.36*	0.35*	0.74***	0.58***	0.69***	0.73***

Variable numbers across the top of the table correspond to the variables listed down the first column. Mothers' individual correlations (n = 65) are presented in the top left triangle, fathers' individual correlations (n = 43) are presented in the bottom right triangle and correlations between mothers and fathers within each couple (n = 34) are presented in the bottom left rectangle.

***$P < 0.001$,

**$P < 0.01$,

*$P < 0.05$

breastfeeding and her perceptions of his Responsiveness with respect to breastfeeding. Fathers' perceptions of his partner's breastfeeding satisfaction were significantly positively correlated with his own claims of being more knowledgeable about breastfeeding (Savvy), showing more appreciation for his partner's breastfeeding (Appreciation), being more involved during breastfeeding (Presence), and being more sensitive and responsive (Responsive). Responsiveness was the only influence subscale that was significantly correlated with fathers' judgments of breastfeeding success.

Although various supportive actions by fathers, especially Presence and Responsiveness, were associated with judgments of breastfeeding satisfaction and success, correlations between father's support behaviors and mothers' intentions to breastfeed longer were not significant. Thus, fathers' influence behaviors do not appear to mediate the relationship between fathers' duration preferences and mothers' intentions.

Hierarchical multiple regressions were used to explore a possible moderating effect of father's influence behaviors on the relationship between fathers' duration preferences and mothers' intentions. As shown in Table 3, significant interactions were found for Savvy, Appreciation and Presence (marginal) such that, when fathers preferred the mother to breastfeed for fewer months, the more these fathers reported using positive breastfeeding influence the longer mothers intended to continue breastfeeding. However, when fathers preferred longer breastfeeding duration, mothers intended to breastfeed for *fewer* months when fathers reported using more breastfeeding influence behaviors. The addition of the interaction term was not significant for Helping and Responsiveness subscales.

Study 2

Methods

Participants

Participants in Study 2 were mothers who had participated in a Breastfeeding Best Practice Guidelines implementation study following the birth of their infants (Rempel & McCleary 2012) and their male partners. Of the original 140 participants, 124 mothers agreed to be contacted for a follow-up study.

Participants were initially recruited from hospitals by public health nurses who obtained permission for the researchers to contact the mothers. At approximately 2 weeks, 2 months and 6 months postpartum, participants completed a 20 to 30 min telephone survey. Of these women, 14% were born outside of Canada, and 89% reported English as their first language. Ninety-seven percent were married or in common-law relationships, and 58% were multiparas.

Both partners were contacted by a research assistant via telephone at 12 months postpartum and invited to participate in a follow-up study. Participants completed a questionnaire via telephone interview or by mail. Eighty-two mothers and 65 fathers, of whom 65 were couples, participated. Two mothers did not complete the majority of the measures, resulting in a sample of 80 mothers and 63 couples. Mothers' mean age was 32.0 years (range 20–41 years, $SD = 0.46$), while fathers' mean age was 34.3 years (range 26–46 years, $SD = 4.28$). Participants tended to be well-educated (80% of mothers and 82% of fathers had post-secondary education) and of higher socioeconomic status (92% of fathers were employed full-time and 50% of fathers reported a household income over $80 000). The average length of breastfeeding was 8 months ($n = 82$, $SD = 4.63$), with 26 mothers (32%) still breastfeeding at 12 months.

Measures

The PBIS used in Study 1 was also used in Study 2 along with the following measures.

Breastfeeding evaluation

Breastfeeding satisfaction was measured using the full Maternal Breastfeeding Evaluation Scale (Leff *et al.* 1994), which was completed by mothers only at 2 months postpartum.

Breastfeeding behavior

Study 2 assessed breastfeeding status at 12 months and total breastfeeding duration if mothers had weaned.

Table 3. Multiple regressions testing fathers' breastfeeding duration preferences moderating prediction of mothers' breastfeeding intentions by fathers' breastfeeding influence (n = 33)

Predictor (Fathers)	Mothers' Breastfeeding Intentions					
	ΔR^2	B	SE	β	95% CI	
					Lower	Upper
Step 1	0.19*					
Savvy		−4.50	4.20	−0..18	−13.05	4.06
Duration preference		0.40	0.16	0.44*	0.08	0.72
Step 2	0.19**					
Savvy		12.41	6.84	0.51[1]	−1.58	26.40
Duration preference		1.71	0.47	1.87**	0.76	2.68
Savvy × Duration preference		−0.42	0.14	−1.81**	−0.72	−0.13
Total R^2	0.37**					
Step 1	0.17[1]					
Helping		−3.38	4.46	0.41*	−12.50	5.74
Duration preference		0.37	0.15	−0.13	0.06	0.69
Step 2	0.001					
Helping		−2.09	10.07	−0.08	−22.68	18.50
Duration preference		0.48	0.75	0.53	−1.06	2.02
Helping × Duration preference		−0.03	0.20	−0.14	−0.44	0.38
Total R^2	0.17					
Step 1	0.16[1]					
Appreciation		−1.19	4.62	−0.04	−10.62	8.23
Duration preference		0.36	0.153	0.40*	0.05	0.67
Step 2	0.28**					
Appreciation		34.1	9.98	1.24**	13.70	54.50
Duration preference		3.16	0.74	0.348***	1.64	4.68
Appreciation × Duration preference		−0.74	0.19	−3.46***	−1.14	−0.35
Total R^2	0.44**					
Step 1	0.16[1]					
Presence		−2.04	3.86	−0.10	−9.92	5.84
Duration preference		0.39	0.16	0.43*	0.05	0.72
Step 2	0.09					
Presence		7.69	6.38	0.36	−5.37	20.74
Duration preference		1.22	0.47	1.35*	0.26	2.19
Presence × Duration preference		−0.26	0.14	−1.21[1]	−0.55	0.02
Total R^2	0.25[1]					
Step 1	0.16[1]					
Responsiveness		1.74	4.14	0.07	−6.71	10.20
Duration preference		0.34	0.16	0.37*	0.01	0.66
Step 2	0.02					
Responsiveness		5.46	6.04	0.23	−6.88	17.81
Duration preference		0.88	0.66	0.97	−0.47	2.23
Responsiveness × Duration preference		−0.14	0.17	−0.67	−0.48	0.20
Total R^2	0.18					

The ΔR^2, change in R^2 for each step; *B*, regression value based on the units of each variable; *SE B*, standard error of the *B* value; β, the standardized value of *B*.

[1] $P < 0.10$

* $P < 0.05$,

** $P < 0.01$,

*** $P < 0.001$.

Statistical analysis

Means were calculated for all scales and subscales and correlations were calculated for all scales and subscales within and between partners. The primary breastfeeding outcome (duration) was truncated because some mothers were still breastfeeding at the time of the study. Thus, univariate and multivariate Cox hazard analyses were conducted to assess the effects of predictor variables on reported breastfeeding duration.

Results

Use of influence behaviors

Variable means, standard deviations and correlations within and between partners can be found in Table 4. As was found in Study 1, Responsiveness was the most frequently demonstrated type of influence, followed by Appreciation and Helping, then Presence and lastly Savvy. Mothers' and fathers' reports of fathers' Savvy, Appreciation and Presence were significantly correlated.

Predicting breastfeeding duration

Table 4 presents the relative risks from univariate Cox regressions for each variable predicting breastfeeding duration. Greater breastfeeding satisfaction at 4 months reduced the risk of early breastfeeding cessation, paralleling the breastfeeding intention-satisfaction correlation found in Study 1. Mothers' perception of greater father Responsiveness also reduced the risk of early cessation. In a multivariate Cox regression with all mothers' influence subscales entered simultaneously, mothers' ratings of fathers' Responsiveness was the only significant independent predictor of breastfeeding duration. Results are shown in Table 5.

In terms of fathers' reports of their influence behaviors, with the exception of Responsiveness, greater father influence predicted shorter duration in univariate Cox regressions (Table 4). Appreciation and Presence significantly increased the risk of early cessation and the effect for Savvy was marginal. However, when all of the men's reported breastfeeding specific influence behaviors were entered simultaneously into a multivariate Cox regression, Responsiveness emerged as a unique predictor of longer breastfeeding duration, controlling for Savvy, Helpfulness, Appreciation and Presence (Table 5). In addition, the unique effect for Appreciation was significantly associated with shorter breastfeeding duration.

Discussion

Fathers clearly have an influence on mothers' breastfeeding intentions and behaviors. In Study 1, breastfeeding duration intentions and preferences were related to breastfeeding success and satisfaction, which, in turn, were related to breastfeeding influence. Women's feelings of breastfeeding satisfaction were correlated with their perceptions that their partners were present and involved during breastfeeding and sensitive and responsive to their needs. Similarly, men's perception of their partner's breastfeeding satisfaction was related to the men claiming greater use of most types of breastfeeding influence behaviors.

Yet despite these positive perceptions, some forms of breastfeeding support had mixed effects on intended breastfeeding duration. When fathers were not as concerned about longer-term breastfeeding, supportive behaviors were associated with mothers intending to breastfeed longer. But when fathers wanted their partners to breastfeed for a longer period of time and expressed appreciation for breastfeeding (Appreciation), were highly informed and invested in breastfeeding (Savvy) and, to a lesser extent, were present during breastfeeding (Presence), women actually intended to breastfeed for a *shorter* period of time.

These results were supported in Study 2, where we found that women actually breastfed for a shorter period of time when their partners claimed to be more appreciative, present and savvy (marginal) regarding breastfeeding. Thus, even when fathers provided emotional, practical or informational assistance in an effort to facilitate breastfeeding, such behaviors were associated with *decreases* in the achievement of a goal that both partners valued.

It is possible that men increased their helpful behavior because their partner was having breastfeeding problems and was intending to stop. Certainly, a sensitive father would become more actively involved if his partner were experiencing difficulty. However, the fact that fathers' breastfeeding support behaviors were not

Table 4. Study 2 descriptives, relative risks and correlations for mothers and fathers individually and between partners

		Mothers							Fathers			
Variable	Mean (*SD*)	1. BF Duration (*RR*)	2	3	4	5	6	7	8	9	10	11
Mothers (n = 80)												
1. BF Duration	32.7 (18.5)											
2. BF Satisfaction	4.14 (0.59)	0.30***										
3. Savvy	3.01 (0.95)	1.13	−0.05									
4. Helping	3.54 (0.91)	0.80	−0.05	0.68***								
5. Appreciation	3.84 (1.00)	1.05	0.15	0.53***	0.59***							
6. Presence	3.13 (1.02)	1.02	0.14	0.77***	0.76***	0.67***						
7. Responsiveness	3.97 (0.86)	0.69*	0.22	0.58***	0.71***	0.63***	0.68***					
Fathers (n = 65)												
8. Savvy	3.28 (0.88)	1.38	−0.19	0.45***	0.23	0.21	0.25*	0.06				
9. Helping	3.96 (0.67)	1.45	−0.19	0.22	0.25	0.23	0.20	−0.10	0.63***			
10. Appreciation	3.98 (0.88)	1.63*	−0.24	0.36**	0.11	0.30*	0.30*	−0.01	0.67***	0.71***		
11. Presence	3.58 (0.95)	1.49*	−0.14	0.37**	0.26*	0.37**	0.35**	0.04	0.73***	0.77***	0.67***	
12. Responsiveness	4.10 (0.74)	1.00	0.09	0.04	−0.02	0.15	0.07	−0.05	0.38***	0.47***	0.39**	0.35**

Variable numbers across the top of the table correspond to the variables listed down the first column. Values in the BF Duration column are relative risks (*RR*) for each variable predicting breastfeeding duration in univariate Cox hazard analyses. Mothers individual correlations (n = 80) are presented in the top left triangle, fathers' individual correlations (n = 65) are presented in the bottom right triangle and correlations between mothers and fathers within each couple (n = 63) are presented in the bottom left rectangle.

***$P < 0.001$,

**$P < 0.01$,

*$P < 0.05$

Table 5. Cox regression predicting breastfeeding duration by Mothers' and Fathers' partner breastfeeding influence subscales

Predictors	*Relative risk*	95% Confidence interval		*P*-value
		Lower	Upper	
Mothers (n = 80)				
Savvy	1.45	1.13	1.87	0.14
Helping	0.77	0.30	0.95	0.26
Appreciation	1.22	1.00	1.50	0.32
Presence	1.18	0.90	1.55	0.54
Responsiveness	0.49	0.37	0.65	0.01
Fathers (n = 65)				
Savvy	0.89	0.64	1.24	0.72
Helping	0.66	0.39	1.06	0.40
Appreciation	2.06	1.44	4.23	0.04
Presence	1.83	1.27	2.64	0.10
Responsiveness	0.51	0.38	0.67	0.03

strongly related to the mothers' breastfeeding satisfaction ratings (as would be expected if the mother were having problems) suggests that men who reported being very appreciative, present and knowledgeable may sometimes have done so in ways that were not sufficiently sensitive and responsive to their partner's needs.

The paradox of received support

The negative influence of support behaviors on breastfeeding outcomes may seem counterintuitive, but such findings are not unique in the social support literature. Although there are clear benefits that come from *perceiving* that support is available if needed (e.g. Holt-Lunstad *et al.* 2010), numerous studies have found negative health consequences associated with actually *receiving* tangible support (e.g. Uchino *et al.* 2012). For example, Ito *et al.* (2013) found that the more fathers were involved in direct infant care, the less likely mothers were to breastfeed.

Moreover, it does not appear that these negative outcomes are only a reflection of people who are facing greater health challenges receiving increased support (e.g. Stewart *et al.* 2012). Rather, a number of studies indicate that knowing that they have received social support may undermine recipients' sense of self-efficacy, autonomy and control by implicitly conveying that they are not capable of dealing with the challenges. For example, Martire *et al.* (2002) found that older women had fewer negative reactions to receiving instrumental support from their husbands when the amount of support corresponded to the women's desire for independence. Bolger *et al.* (2000) have shown that support that is invisible to the recipient is more beneficial than visible support, and Bolger & Amarel (2007) showed that the ability of a support recipient to maintain a sense of self-efficacy mediated this effect. Stewart *et al.* (2012) found that respondents who indicated that they typically received non-directive support that involved cooperation and advanced the respondent's agenda were more likely to engage in health-promoting behaviors.

Similarly, *responsiveness* – the extent to which individuals believe their relationship partners understand, validate, and care for them (Reis *et al.* 2004) – also appears to ameliorate the negative outcomes associated with receiving social support. Accumulating evidence is showing that supportive actions that are seen to be understanding, validating and caring are not associated with negative health outcomes (Maisel & Gable 2009; Selcuk & Ong 2012). Thus, to minimize negative outcomes, delivered social support must be sensitive to the partner's needs and must respond to these needs in a way that respects the partner's autonomy.

Examination of the behaviors in the PBIS subscales suggest differences between the subscales in terms of sensitivity to the mother's needs and potential impact on her autonomy. Breastfeeding Savvy involves development and use of breastfeeding knowledge. Having a knowledgeable father is important, but if such knowledge is used as a directive form of influence, it could be experienced as pressuring the mother to breastfeed. The Presence subscale combines tangible actions with emotional involvement during breastfeeding. For some mothers, this may also be experienced more as pressure than as support. The Appreciation items also reflect positive emotional involvement but may implicitly send the message that the mother is incapable of meeting her goals without some form of cheerleading. Behaviors on the Helping subscale have the potential to implicitly send the message to mothers that they are not self-sufficient as well, but may also be seen as sensitive and caring depending on how overtly the help is offered. Finally, behaviors on the Responsiveness subscale reflect the highest levels of sensitivity for the

mother's needs and the greatest respect for her autonomy. Thus, in our studies, the behaviors associated with the Savvy, Appreciation and Presence subscales may sometimes have suggested to mothers that fathers were being directive, pressuring them to breastfeed and possibly 'getting in the way'.

The unique role of responsiveness

Only behaviors on the Responsiveness subscale predicted positive, long-term health outcomes. In Study 1, Responsiveness predicted both breastfeeding success and satisfaction for men and satisfaction for women. Also, the moderation analyses did not show any negative effects for Responsiveness. Indeed, it is possible that, in Study 1, fathers who were not as strongly invested in long-term breastfeeding may have been more effective in strengthening the mother's intentions to breastfeed longer because the support they provided was focused on meeting their partner's needs, not their own.

In Study 2, the mother's perceptions of her partner's responsiveness uniquely predicted longer breastfeeding duration, as did men's claims of acting responsively (when controlling men's other reported support behaviors). Thus, sensitive responsiveness – the form of breastfeeding influence that is most attuned to the mother's needs – was predictive of positive breastfeeding outcomes, especially when it was not combined with more directive forms of support.

Responsive support also appears to be the least visible form of support. Although Responsiveness was the type of influence reported most frequently by both parents, the correlation between fathers' and mothers' reports of responsiveness was quite low, whereas the correlations between partner's reports of all other support behaviors were significant. This suggests that mothers were not reliably aware of when the father was engaging in responsive behaviors, which might be another reason that those 'invisible' behaviors were making a positive difference for her breastfeeding experience.

Implications for practice and future research

Providing breastfeeding support is important for men's schemas of their fathering role (Rempel & Rempel 2011). Thus, men's perception that the support they provide to mothers results in a satisfying breastfeeding experience can be an important factor in fostering a positive transition to parenting for men. Although the implications of our studies must be considered tentative, given our comparatively small sample sizes, the results from our two studies are consistent with the idea that effective breastfeeding support is more likely to occur when couples work together as a 'breastfeeding team' (Rempel & Rempel 2011). Successful two-person teams (e.g. beach volleyball or doubles tennis players) must share a versatile and flexible skill set. Each partner is important and must do his or her part, but both need to be ready to step in and do whatever is needed. Partners also need to coordinate what they are doing and trust each other to handle needed tasks. This requires ongoing communication, observation and attention to what the other is doing. Each partner can then be ready to assist if the other needs help and stay out of the way when the partner has everything under control. The components of this teamwork metaphor are core aspects of sensitive and respectful breastfeeding support and they reflect the key elements of effective social support found in the theoretical and empirical literature (e.g. Rafaeli & Gleason 2009; Collins *et al.* 2010).

Of course more research is needed. The breastfeeding influence measure used in these studies was developed from in-depth interviews with fathers and mothers in breastfeeding families. The result is a comprehensive, participant-generated set of father support behaviors that breastfeeding couples deem important. In addition, rather than asking participants to make inferences about the supportiveness of these behaviors, we reduced demand effects by having participants simply report the extent to which these behaviors occurred. Thus, additional research with diverse samples of parents is important in order to confirm the psychometric properties and utility of the PBIS.

Further research is also needed to establish causality. The issue of causal direction is a limitation of all cross-sectional correlational studies and requires that the causal implications of the results from these two studies be considered with caution. Furthermore, the stability of the correlations could be negatively

affected by the somewhat small samples and large number of correlations in the two studies. The consistent pattern of results across the two studies goes a long way to allay these concerns but future studies will need to test these processes directly, perhaps with controlled trials of interventions that include training on 'parenting teamwork'. In addition, these studies were conducted with relatively affluent, well-educated volunteer samples in North America and future studies will need to access a more economically, educationally and culturally diverse range of participants. In particular, fathering norms and roles can vary considerably across cultures and further studies are needed to establish the extent to which the breastfeeding support behaviors that we identified in our North American sample are applicable to fathers in different cultural contexts.

Even so, the current studies significantly advance our knowledge of effective father breastfeeding support. Specifically, when breastfeeding support takes on a teamwork approach, the potentially negative effects of mother knowing she has received support can be ameliorated and breastfeeding duration can be enhanced. Such a teamwork approach will require women to have greater input and freedom of choice, especially in their breastfeeding decisions where women could reasonably expect to have the stronger voice. Fathers should be informed that there are many ways that they can support breastfeeding and that all types of support can be valuable. Providing fathers with a toolbox of potential support behaviors is important in order to increase their sense of efficacy in providing support. However, fathers should also be helped to learn how to offer and provide support in a way that is sensitive to what the mother actually needs. Thus, health professionals should help fathers to develop a greater awareness of how mothers value their involvement and the extent to which the father's involvement is desired as couples work together to achieve important parenting goals for the health and well being of their children.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

Contributions

LR and JR designed both studies and conducted the statistical analyses. LR, JR, and KM developed the PBIS using data reported in Rempel & Rempel (2011). LR and JR wrote the first draft of the manuscript. All authors approved the final manuscript. Portions of Study 2 are based on KM's Master's thesis.

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