

Partner influence on health behavior decision-making: Increasing breastfeeding duration

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ABSTRACT

This longitudinal study examined how male partners affect the breastfeeding decisions and behavior of first-time mothers. Based on the reasons model by Meichenbaum and Fong (1993), the breastfeeding reasons, intentions, and behavior of 317 first-time mothers were assessed prenatally and at six time points in the first year postpartum. In a prenatal assessment, men indicated their prescriptive beliefs about whether their partner should breastfeed at the same six time points. Men's prescriptive breastfeeding beliefs predicted the strength of their partners' breastfeeding intentions, over and above the women's own breastfeeding reasons, and they predicted breastfeeding behavior over and above the women's intentions. These results demonstrate the influence wielded by intimate partners and highlight the importance of focusing on partners' beliefs when predicting and intervening in health behavior decisions.

KEY WORDS: breastfeeding • health behavior decisions • partner influence • reasons model

The role of an intimate partner in the performance and maintenance of health-related behavior is an acknowledged, but often under-researched topic. Yet, given the myriad ways in which the lives of intimate partners are physically, socially, and emotionally interconnected (Kelley et al., 1983), a close partner is arguably the most important and powerful source of influence in a person's life. This present study examines the influence that male

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partners' beliefs about breastfeeding have on the breastfeeding intentions and behavior of first-time mothers. Breastfeeding is typically regarded as a woman's domain in which men are seen to play a secondary role (Schmidt & Sigman-Grant, 2000). Thus, the domain of breastfeeding decisions provides a particularly strong test of partner influence.

Personal factors influencing the decision to breastfeed

Breastfeeding is an important health-related issue for new parents. Breastfeeding is typically considered to be the healthiest method for feeding young infants in that it confers nutritional and immunological benefits on infants that cannot be matched by non-human milk or formula. Indeed, the World Health Organization is recommending that infants be exclusively breastfed for a minimum of 6 months, and continue to be breastfed for a year or longer (World Health Organization, 2002). Thus, pregnant women face the important question of whether or not to breastfeed their infants and, if they do choose to breastfeed, how long they will continue.

The decision to breastfeed is ultimately a mother's decision – she must choose whether or not to nourish her infant with her own body. Therefore, the majority of studies attempting to identify predictors of breastfeeding initiation and duration have focused on the woman's own characteristics (for reviews, see Agnew, 1994; Scott & Binns, 1999). Factors such as the woman's age and education are predictive of breastfeeding behavior, but beyond the relevance of such demographic factors there is also evidence that breastfeeding decisions are determined by cognitive and emotional factors (Losch, Dungy, Russell, & Dusdieker, 1995).

Rempel and Fong (2000) used the reasons model to demonstrate the influence of the reasons women hold for and against breastfeeding on their breastfeeding intentions. According to the reasons model, there are three levels of reasons that people consider for and against a target behavior when forming intentions to engage in that behavior. Level I reasons are *evidence-based reasons* that relate to people's personal understanding of the evidence for and against the behavior. For example, women may breastfeed because of the health benefits that they have been told their babies will derive from breastfeeding. Level II reasons are *self-consequential reasons* that relate to the costs and benefits of the behavior for the individual, such as convenience, physical comfort, and the maintenance and enhancement of social relationships. The potential problems associated with breastfeeding or barriers such as returning to work may be Level II reasons for not breastfeeding. Other Level II reasons may include the level of support that women believe they have from significant others. Finally, Level III reasons are *affective, schema-related reasons* that relate to the ways in which the behavior may reflect or affect the individual's emotions, values, and self-concept. For example, women may breastfeed because breastfeeding fits with their values and beliefs about mothering and will help them feel close to their babies. Conversely, they may stop breastfeeding because of social embarrassment or frustration. Rempel and Fong (2000) demonstrated that reasons for and against breastfeeding from

all three levels were related to the breastfeeding intentions of new mothers both prenatally and in the first year postpartum.

Mechanisms of partner influence on breastfeeding decisions

In addition to these individual factors, a woman's intimate partner also plays an important role in influencing her breastfeeding decisions. The ongoing, often daily, contact male partners have with the mother and child provides numerous opportunities for intentional and unintentional forms of influence to take place. Consistent with this proposition, studies have found that the degree to which women perceive that their partners approve of them breastfeeding is related to women's breastfeeding intentions (Joffe & Radius, 1987), breastfeeding initiation (Guigliani, Waleska, Vogelhut, Witter, & Perman, 1994; Littman, Medendorp, & Goldfarb, 1994; Scott, Binns, & Aroni, 1997), and continuing to breastfeed for longer than two months (Bevan, Mosley, Lobach, & Solimano, 1984). Thus, male partners – typically the father of the baby – may exert substantial influence on women's breastfeeding choices. In the following sections, we describe some of the ways in which this influence may occur.

Breastfeeding beliefs. Although several studies have shown the importance of women's *perception* of their partners' support or approval for breastfeeding, very few studies have investigated partners' *actual* approval of breastfeeding or factors that might predict such approval. In the few studies that have examined fathers directly, it has been found that fathers of breastfed newborn babies were more knowledgeable about breastfeeding than fathers of formula-fed babies (Guigliani et al., 1994). Furthermore, fathers' breastfeeding knowledge postpartum was associated with increased breastfeeding duration (Susin et al., 1999). Thus, to the extent that men feel responsible for the well-being of their infant, they may hold their own opinions about baby care, including breastfeeding, and may be actively involved in seeking out breastfeeding information that they communicate to their partner.

However, it is not clear from these studies if men's breastfeeding knowledge and approval caused changes in women's intentions and behavior or if they were merely reflecting their partners' knowledge and intentions. For example, when Shepherd, Power, and Carter (2000) found that men were not as supportive of breastfeeding as were women, it may be that these men were simply paralleling their partners' beliefs at a lower absolute level. In order to determine the influence that men have on women's breastfeeding decisions, it is important to examine the effects of male partners' breastfeeding beliefs controlling for mothers' own breastfeeding beliefs.

If fathers' breastfeeding beliefs do, indeed, influence their partners' breastfeeding decisions, it would also be important to understand the determinants of men's own breastfeeding beliefs. Previous studies have suggested that fathers' approval of breastfeeding is related to their knowledge about breastfeeding (Freed, Fraley, & Schanler, 1992, 1993; Jordan &

Wall, 1990). However, it is likely that the extent of fathers' approval for breastfeeding is based on more than factual knowledge about breastfeeding. In the same way as mothers base their intentions on all three levels of reasons suggested by the reasons model, fathers likely also base their approval on reasons from all three levels. Such a complex examination of fathers' breastfeeding beliefs has not been conducted.

Approval and emotional support. In addition to influencing women's reasons for and against breastfeeding, men may directly influence breastfeeding decisions by providing emotional support and encouragement to mothers who experience breastfeeding difficulties, or by 'cheering on' mothers who breastfeed successfully (Hewat & Ellis, 1986). Breastfeeding difficulties are not uncommon and breastfeeding often involves the woman in certain restrictions of diet and habits that might have a substantial impact on her sense of self and well-being. A woman's decision will likely be influenced by the extent to which she feels that her male partner is sensitive to the struggles that she is facing and is concerned for her personal welfare. If new mothers believe that their partners approve of them breastfeeding, such approval should reinforce their decision to breastfeed and it should strengthen their resolve in the face of breastfeeding difficulties. Conversely, expressions of disapproval by an intimate partner could easily undermine perseverance and contribute to feelings of discouragement.

Tangible helpfulness and support. Men can also influence breastfeeding decisions in tangible ways as they provide assistance with household and other tasks that make it easier for women to continue to breastfeed. Such instrumental support, or the lack of it, may be a deciding factor in whether or not women continue to breastfeed. An involved, helpful male partner may reduce the stress of parenting and may make it easier for women to breastfeed, whereas men who fail to contribute such concrete assistance may add to the stress and fatigue that already exists. Thus, the extent to which men are perceived to offer observable support and assistance should facilitate the ease with which breastfeeding can be maintained.

Invisible support. Finally, it is possible that a man may influence his partner's breastfeeding decisions outside of her awareness that influence has occurred. For example, without even being consciously aware of her partner's attitudes and beliefs, a woman in a supportive and caring relationship may simply continue to breastfeed, knowing that such behavior is not threatening her intimate relationship with her partner. Conversely, planning to breastfeed when her partner is less approving may make a woman more ambivalent about breastfeeding, even if such thoughts are not consciously acknowledged. Studies examining invisible support (Bolger, Zuckerman, & Kessler, 2000) and positive illusions (Murray, Holmes, & Griffin, 1996) support the idea that social influence can occur outside of conscious awareness.

Hypotheses

In the present study, we measured women's breastfeeding intentions and behaviors, their reasons for and against breastfeeding, their perceptions of partner support for starting and continuing to breastfeed, and their perceptions of partner helpfulness at various points prenatally and postpartum. Analogously, we examined, prenatally, the extent to which men felt that their partners should breastfeed as well as men's reasons for and against breastfeeding.

First, in accordance with the reasons model, we expected that men's reasons for and against breastfeeding would predict their prescriptive beliefs regarding whether or not their pregnant partners should breastfeed.

Second, we hypothesized that men's prescriptive breastfeeding beliefs would be related to their pregnant partners' reasons at all three levels, but predominantly at Levels II and III. Level II includes reasons that consider the maintenance and enhancement of relationships. Thus, male partners' beliefs about breastfeeding should predict women's Level II reasons for or against breastfeeding. For example, if a man feels that his spouse should not continue to breastfeed an older child and the mother considers quitting because of her partner's apparent disapproval, the reason would be considered a Level II reason. Level III reasons would be reflected in the degree to which male partners' beliefs are consistent with, and shape, women's own values, self-concepts, and the expected affective consequences of breastfeeding.

Third, we expected men's prescriptive breastfeeding beliefs to be positively related to their partner's intentions to breastfeed, over and above the effect that their beliefs may exert on the women's breastfeeding reasons. We further hypothesized that the women's intentions to continue breastfeeding would change over time to become more consistent with the men's beliefs.

Fourth, we hypothesized that men's prescriptive breastfeeding beliefs would be predictive of women's actual breastfeeding behavior such that more positive breastfeeding beliefs would be associated with longer breastfeeding duration.

Fifth, we tested two additional candidates as mechanisms of father's influence – the woman's perception of her partner's approval of breastfeeding and the woman's perception of her partner's helpfulness and tangible support. We expected that higher levels of partner approval would predict increased intentions to breastfeed and increased breastfeeding duration. Similarly, we anticipated that the perception of a partner's helpfulness would predict increased breastfeeding intentions and duration. We also examined the extent to which the men's prescriptive breastfeeding beliefs were able to predict a woman's breastfeeding intentions over and above the observable influence of her perception of his approval and helpfulness.

Method

Participants

Three hundred and seventeen women expecting the birth of their first infant were recruited to participate in the Waterloo Region Infant Feeding Study through the use of a recruitment video at hospital pre-birth registration clinics, by information sheets distributed by area midwives to their clients, and through visits by the first author to prenatal classes. At the initial assessment, these first-time mothers were a mean of 34.16 weeks gestation ($SD = 2.92$). They ranged in age from 16 to 42, and their mean age was 27.68 years ($SD = 5.17$). Most were either married (76%) or living common-law (13%), and 10% were single. Their mean number of years of education was 14.97 years ($SD = 2.78$) and their modal annual family income was more than \$60,000. The majority of women (75%) were employed prior to the birth of their babies. Thirteen percent of participants were born outside Canada and 38% had at least one parent born outside Canada.

Pregnant participants who indicated that they were currently in an established close relationship were sent a partner questionnaire and information letter in their questionnaire package. When arrangements were made for the prenatal assessment of the pregnant participants, a trained research assistant or the first author also ascertained the partners' willingness to take part in the study. A total of 213 male partners agreed to participate. On average, participating men were 30.49 years of age ($SD = 5.36$). They had completed a mean of 15.56 years of education ($SD = 2.91$) and only 2% were unemployed. Sixteen percent of the men were born outside of North America, and 39% had at least one parent born outside of North America.

Materials

Breastfeeding Reasons Questionnaire. The Breastfeeding Reasons Questionnaire (BRQ) was developed using reasons for and against breastfeeding and reasons for weaning that have been identified in the breastfeeding literature, as well as reasons identified by health professionals and lay women who have had experience supporting breastfeeding women. The BRQ contains a list of 25 reasons for breastfeeding (pro breastfeeding reasons) and 33 reasons for not breastfeeding (con breastfeeding reasons). For pro breastfeeding reasons, participants were given the stem 'I might breastfeed because:' and were asked to indicate how important that reason was as one of their reasons for breastfeeding. Their response options ranged from 0 (*not a reason to breastfeed*) to 5 (*extremely important reason to breastfeed*). For the con breastfeeding reasons, pregnant participants were given the stem, 'I might stop breastfeeding or might not breastfeed because:' and were asked to indicate how important that reason was as one of their reasons against breastfeeding using parallel response options.

The BRQ included reasons from all three levels of the reasons model: evidence-based Level I, self-consequential Level II, and affective, schema-related Level III. Reasons from the three levels were randomly ordered within the overall domains of reasons for breastfeeding and reasons for not breastfeeding. Evidence-based Level I pro breastfeeding reasons included items such as, 'Breastfeeding keeps babies healthy,' and 'The more months a mother breastfeeds the better it is for mothers and babies.' Self-consequential Level II

pro breastfeeding reasons included items such as, 'Breastfeeding will be convenient for me,' and 'Breastfeeding will save me money because it is cheaper than formula feeding.' Affective, schema-related Level III pro breastfeeding reasons included items such as, 'It is important for me to do anything that is good for my baby, and that includes breastfeeding,' and 'Breastfeeding will make my baby feel secure and loved.'

Level I con breastfeeding reasons included items such as, 'You can't tell how much a breastfed baby drinks,' and 'Formula is pretty much as good for babies as breastmilk.' Level II con breastfeeding reasons included items such as, 'I plan to go back to work or school outside my home,' and 'I may not be able to make enough milk for my baby.' Level III con breastfeeding reasons included items such as, 'Breastfeeding a newborn for a few months is all right, but it would seem strange to keep breastfeeding once my baby gets older than that,' and 'Breastfeeding may make me feel frustrated and unhappy.'

At each assessment point following the birth of their baby, mothers who breastfed were again asked their reasons for and against breastfeeding. Mothers who had discontinued breastfeeding were asked to indicate precisely when they had done so.

Breastfeeding intentions. Female participants were also asked whether or not they planned to breastfeed. Those who planned to breastfeed were asked the strength of their intentions to breastfeed at all and the strength of their intentions to still be breastfeeding at 1 month, 2 months, 4 months, 6 months, 9 months, 12 months, and longer than 12 months. Strength of intentions was measured on a scale from 0 (*definitely do not intend to breastfeed for that long*) to 10 (*definitely do intend to breastfeed for that long*). At each assessment point following the birth of their baby, mothers who were still breastfeeding were again asked to indicate their intentions to continue breastfeeding to each of the remaining assessment points.

Perceived partner approval. Women's perception of their partners' approval for breastfeeding was measured using a subjective norms measure similar to one that would be used in a Theory of Reasoned Action or Theory of Planned Behavior study. Perceived approval was measured prenatally and again at 9 and 12 months (for those women who were still breastfeeding). Prenatally, women were asked 'Would your partner approve of you breastfeeding?'. At 9 and 12 months, women were asked if their partners would approve of them breastfeeding to 9, 12, and longer than 12 months. Responses were given on a 5-point scale from 1 (*disapprove strongly*) to 5 (*strongly approve*). Partner approval was only measured at 9 and 12 months because there is greater variance in approval for breastfeeding an older infant (Rempel, 2001).

Perceived partner helpfulness. At all time points postpartum, breastfeeding mothers were asked to indicate how much help they felt that they were receiving from their partners that facilitated continued breastfeeding. Mothers indicated their perception of their partners' helpfulness on a 6-point scale, from 1 (*not at all helpful*) to 6 (*extremely helpful*).

Men's Breastfeeding Reasons Questionnaire. The men's version of the BRQ paralleled the women's version, with reasons items rewritten to reflect the perspective of a male partner. Men were asked to indicate on a 5-point scale

how important each pro breastfeeding reason was as a reason why his partner should breastfeed and how important each con breastfeeding reason was as a reason why his partner should not breastfeed or should stop breastfeeding. For example, one Level III con breastfeeding reason was reworded to read, 'Breastfeeding may make my partner feel frustrated and unhappy.'

Men's prescriptive breastfeeding beliefs. On this measure, men were asked how strongly they thought that their partner *should* breastfeed to each of the referent times on a scale from 0 (*definitely should not breastfeed*) to 10 (*definitely should breastfeed*).

Procedures

Table 1 indicates which questionnaires the male and female participants completed at each measurement time point. The 1- and 2-month postpartum measurement time points were selected because, during the first 2 months, women are learning to breastfeed and this is the time when they often face the most difficulties. The 4- and 6-month time points were chosen because they represent the points at which many women end their maternity leaves and return to work. The 9- and 12-month time points were selected because they provide measures of longer term breastfeeding – something that has rarely been assessed in breastfeeding studies.

Women's prenatal surveys. A sub-sample of 295 participants (81%) was randomly assigned to have their reasons for and against breastfeeding assessed using the closed-ended BRQ. The remaining 62 participants (19%) were asked about their reasons for and against breastfeeding in an open-ended structured interview. All participants completed measures of breastfeeding intentions and behavior. Content validity of the closed-ended questionnaire was assessed by comparing the items with the responses in the open-ended interview data. The reasons in the closed-ended questionnaire essentially paralleled the open-ended reasons spontaneously generated in the interviews.

Participants were mailed the prenatal survey and an information letter. Women in the closed-ended condition were given the option of completing the survey by telephone or returning the survey to the Waterloo Region Community Health Department. The survey was administered to participants in the open-ended condition by telephone or home visit.

TABLE 1
Prenatal and postpartum measures assessed for male and female participants

	Prenatal measures	Postpartum measures (1, 2, 4, 6, 9, and 12 months)
Women	Breastfeeding reasons Breastfeeding intentions Perceived partner approval	Breastfeeding reasons (to continue) Breastfeeding intentions (to continue) Breastfeeding status Perceived partner helpfulness Perceived partner approval (9 and 12 months)
Men	Breastfeeding reasons Prescriptive breastfeeding beliefs	

Men's prenatal surveys. Partner surveys were mailed to all participating women who had indicated that they currently had a male partner. Participants and their partners were asked not to discuss their responses to the questionnaire until after they had completed the prenatal interview or had placed their completed surveys in the mail. Of the male partners who participated in the study, 163 (76%) were in the closed-ended group and 50 (23%) were in the open-ended group.

Women's postpartum surveys. A confidential list of women participating in the Infant Feeding Study was provided to program assistants at the Waterloo Region Community Health Department who informed the first author of the birth of a baby to any mother on the Infant Feeding Study list. Interviews were arranged within the first month postpartum with all mothers who had done any breastfeeding. Mothers who were breastfeeding at the time of the first survey were contacted to complete follow-up questionnaires at 2, 4, 6, 9, and 12 months or until the wave following the point at which they quit breastfeeding.

Results

Men's prescriptive breastfeeding beliefs

On average, men strongly believed that their pregnant partners should breastfeed over the first few months. The mean strength of their beliefs that their partners should breastfeed in the first 2 months ranged from 9.64 ($SD = 0.81$) to 9.75 ($SD = 0.72$) out of a possible 10. They held fairly strong beliefs that their partners should breastfeed to 4 months ($M = 9.13$, $SD = 1.53$), but held increasingly weaker beliefs that their partners should breastfeed longer than that (6 months $M = 7.88$, $SD = 2.63$; 9 months $M = 5.66$, $SD = 2.31$; 12 months $M = 3.76$, $SD = 3.48$; longer than 12 months $M = 2.27$, $SD = 2.91$). A composite measure of men's prescriptive breastfeeding beliefs (PBB) was computed by summing the strength of their beliefs regarding breastfeeding at each referent time point. Higher PBB indicated stronger beliefs that their partners should breastfeed for a longer portion of the first year or beyond.

Men's breastfeeding reasons

We expected that men's reasons for and against breastfeeding would predict their own beliefs regarding how long their partners should breastfeed. To analyze men's reasons, six subscales were computed using the mean importance rating given to Level I, Level II, and Level III pro and con breastfeeding reasons. Reliabilities for the reasons subscales ranged from .71 to .86, with the exception of a reliability of .49 for Level I con breastfeeding reasons. Men's PBB scores were regressed onto all six reasons variables (see Table 2). Two sets of reasons uniquely predicted the degree to which the men thought that their partners should breastfeed longer. Specifically, Level I pro breastfeeding reasons were significant positive predictors of men's PBB, $\beta = .39$, $p = .001$, and Level II con breastfeeding reasons were significant negative predictors of men's PBB, $\beta = -.34$, $p = .002$. These results suggest that, in formulating their beliefs regarding how long their partners should breastfeed, men appear to focus particular attention on the evidence supporting breastfeeding and the potential barriers such as difficulty making milk, fatigue, or discomfort that their partners may experience.

TABLE 2
Multiple regression of men's reasons predicting their prescriptive breastfeeding duration beliefs ($N = 155$)

Variable	β
Con Breastfeeding Level I	.06
Con Breastfeeding Level II	-.34**
Con Breastfeeding Level III	-.01
Pro Breastfeeding Level I	.39**
Pro Breastfeeding Level II	-.17
Pro Breastfeeding Level III	.12

Note. $R^2 = .23$.

** $p < .01$.

The influence of men's prescriptive breastfeeding beliefs on women's breastfeeding reasons

The previous analyses indicated some of the reasons that men consider when they formulate their PBB. These reasons influence how strongly the men think that their partners *should* breastfeed. But do their resulting beliefs actually have an influence on the degree to which their pregnant partners *intend* to breastfeed? We have suggested that men's PBB will influence their partners' breastfeeding intentions, and that one mechanism for that influence may be through their influence on their partners' breastfeeding reasons.

Prenatal reasons. Reasons subscales were created for women in the same way as the six reasons subscales for men. Reliabilities for women's reasons subscales ranged from .74 to .87, with the exception of a reliability of .58 for Level I con breastfeeding reasons. In order to examine men's influence on women's reasons, we first correlated PBB scores with women's prenatal pro and con reasons at all three levels. These correlations can be found in Table 3. Men's PBB scores were significantly positively correlated with participants' Level II (self-consequential) and Level III (affective, schema-related) pro breastfeeding reasons and significantly negatively correlated with women's endorsements of reasons against breastfeeding at all three levels.

Predicting changes in women's reasons. Because of the longitudinal design of the Waterloo Region Infant Feeding Study, we were also able to examine the effect of their partners' PBB on changes in mothers' breastfeeding reasons

TABLE 3
Men's prescriptive breastfeeding beliefs: Correlations with women's prenatal breastfeeding reasons ($N = 239$)

	Women's prenatal breastfeeding reasons					
	Con I	Con II	Con III	Pro I	Pro II	Pro III
Men's prescriptive breastfeeding beliefs	-.17*	-.15*	-.13*	.11	.14*	.22**

* $p < .05$; ** $p < .01$.

after the birth of the baby. In hierarchical regressions, mothers' reasons at all three levels measured during the first month postpartum were regressed on the corresponding level of reasons measured prenatally. This provided us with a measure of change in the women's reasons. Partners' PBB scores were added in step 2. The results can be found in Table 4. Partners' prenatal prescriptive beliefs about longer term breastfeeding predicted increases in women's Level II pro breastfeeding reasons and decreases in mothers' Level II and Level III con breastfeeding reasons. Thus, breastfeeding mothers whose partners thought that they should breastfeed longer were more likely to increase the importance they gave to the personal benefits of breastfeeding and more likely to decrease the importance they gave to the negative personal and emotional consequences of breastfeeding.

The influence of men's prescriptive breastfeeding beliefs on women's breastfeeding intentions

Prenatal intentions. During pregnancy, women were asked to indicate how strongly they intended to breastfeed at all and to 1, 2, 4, 6, 9, 12, and longer than 12 months. The breastfeeding intentions of the pregnant women in this study were similar in range to the breastfeeding beliefs of male partners. The mean strength of participants' intentions to breastfeed at all was 9.50 of 10 (*SD* = 1.55). The strength of intentions to still be breastfeeding at 1 month was even higher (*M* = 9.71, *SD* = 1.12). Strength of intentions to breastfeed to 2 months was also strong (*M* = 9.61, *SD* = 1.45), but, thereafter, decreased with increasing infant age (4-month *M* = 8.91, *SD* = 2.21; 6-month *M* = 7.40, *SD* = 3.35; 9-month *M* = 4.25, *SD* = 3.68; 12-month *M* = 2.73, *SD* = 3.49; and longer than 12 months *M* = 1.27, *SD* = 2.43).

The previous results indicated that men's breastfeeding beliefs influenced women's reasons for and against breastfeeding. In a previous study, women's intentions to breastfeed to all specific time points were predicted by their own pro and con breastfeeding reasons (Rempel & Fong, 2000). Thus, by extension, it can be surmised that men's PBB scores would affect women's breastfeeding intentions via women's breastfeeding reasons. However, we also considered the possibility that the men might have some influence outside of their partner's awareness. We conducted another series of hierarchical regressions in order to test for the presence of influence that was not mediated by the effect of men's breastfeeding beliefs on their pregnant partners' breastfeeding reasons. Pregnant women's intentions to breastfeed to each of the referent time points

TABLE 4
Hierarchical regressions for men's prescriptive breastfeeding beliefs predicting change in women's breastfeeding reasons (N = 183)

Variable	<i>R</i> ² Δ in 1-month breastfeeding reasons					
	Con I	Con II	Con III	Pro I	Pro II	Pro III
Step 1: Women's prenatal reasons	.10***	.26***	.35***	.45***	.28***	.38***
Step 2: Men's prescriptive breastfeeding beliefs	.00	.03**	.02*	.01	.03**	.00

p* < .05; *p* < .01; ****p* < .001.

was regressed on their own pro and con breastfeeding reasons in Step 1. Men's single item beliefs score regarding breastfeeding for the corresponding duration was added in Step 2. The results of these regressions can be found in Table 5.

Women's own breastfeeding reasons were significant predictors of their prenatal intentions to breastfeed to each of the referent time points. In addition, from 4 months on, men's beliefs regarding breastfeeding to that time point significantly enhanced the prediction of pregnant women's breastfeeding intentions, over and above the women's own breastfeeding reasons. Thus, men's opinions about how long expectant mothers should breastfeed appear to have an effect on these women's breastfeeding intentions that cannot be completely accounted for by their effect on the breastfeeding reasons that these women hold.

Changes in breastfeeding intentions. The longitudinal design of this study allowed us to test the hypothesis that men's PBB scores could predict changes in women's breastfeeding intentions. Breastfeeding women's intentions measured at 1 month to continue to breastfeed to 2, 4, 6, 9, and 12 months were summed and these composite intentions were regressed on men's PBB scores, controlling for women's intentions measured prenatally. In the same way, at each remaining time point we regressed intentions to continue breastfeeding on PBB scores after controlling for the intentions measured at the previous time point. In this way we could assess if men's prenatally measured beliefs were predictive of changes in women's intentions from one time point to the next.

As can be seen in Table 6, men's PBB scores predicted changes in breastfeeding mothers' intentions to continue breastfeeding at almost every time point. Although mothers' intentions to continue breastfeeding were very strongly predicted by their own breastfeeding intentions at the prior time point, their partners' PBB scores often added significantly to the prediction of those intentions to continue. Thus, even after mothers had experienced breastfeeding, they frequently changed their breastfeeding intentions to be more in line with their partners' prenatally measured beliefs.

TABLE 5
 $R^2\Delta$ values for hierarchical multiple regression analyses of men's prescriptive breastfeeding beliefs predicting women's prenatal breastfeeding intentions controlling for women's prenatal breastfeeding reasons ($N = 146$)

Variable	$R^2\Delta$ for women's prenatal intentions to breastfeed to:						
	At all	1 month	2 months	4 months	6 months	9 months	12 months
Step 1: Women's reasons	.35***	.17***	.27***	.31***	.29***	.26***	.20***
Step 2: Men's prescriptive breastfeeding beliefs	.00	.00	.00	.04**	.07***	.11***	.11***

** $p < .01$; *** $p < .001$.

TABLE 6
***R*²Δ values for hierarchical multiple regression analyses for men’s prescriptive breastfeeding beliefs predicting change in women’s breastfeeding intentions over time**

Variable	<i>R</i> ² Δ in women’s intentions to continue breastfeeding measured at:				
	1 month (<i>n</i> = 229)	2 months (<i>n</i> = 199)	4 months (<i>n</i> = 169)	6 months (<i>n</i> = 125)	9 months (<i>n</i> = 80)
Step 1: Women’s intentions at the preceding assessment	.52***	.76***	.63***	.58***	.50***
Step 2: Men’s prescriptive breastfeeding beliefs	.05***	.01**	.01*	.03**	.00

p* < .05; *p* < .01; ****p* < .001.

The influence of men’s prescriptive breastfeeding beliefs on women’s breastfeeding behavior

Finally, and most important, the longitudinal design of this study allowed us to assess whether men’s breastfeeding beliefs also influenced women’s breastfeeding behavior. Given that mothers’ postpartum intentions to continue breastfeeding were consistently predictive of breastfeeding status (Rempel & Fong, 2000), it follows that influencing intentions also influenced behavior. Would men’s beliefs demonstrate the same influence on breastfeeding behavior that they exerted on intentions? A strong case for that contention could be made if men’s beliefs regarding breastfeeding to specific time points could predict whether or not women actually were breastfeeding at each of the referent time points postpartum over and above the women’s intentions to breastfeed that long.

Table 7 shows the results of multiple logistic regressions predicting whether or not women breastfed at all and their breastfeeding status at each of the postpartum assessment points. Mothers’ prenatal breastfeeding intentions to breastfeed to each of the referent time points from 2 months on were significant predictors of whether or not they were actually breastfeeding at each point. However, men’s beliefs regarding breastfeeding to 6, 9, and 12 months added to the prediction of mothers’ breastfeeding status at 6, 9, and 12 months, over and above mothers’ own prenatal breastfeeding intentions. Thus, in regards to breastfeeding for longer than 4 months, mothers changed their behavior in the direction that their partners had indicated prenatally that they should. It appears that men were not only influencing their partners’ breastfeeding intentions, but they were also influencing their breastfeeding behavior.

The influence of perceived partner approval on women’s breastfeeding intentions

In order to explore possible mechanisms of the partner influence, we examined whether women’s perceptions of their partners’ approval for breastfeeding could account for the demonstrated effect of men’s PBB on women’s breastfeeding intentions. The composite measure of women’s breastfeeding duration intentions, created by summing women’s intentions to breastfeed to all assessed time points, was used in these analyses. Table 8 contains the results of a

TABLE 7
Final regression coefficients for multiple logistic regression analyses predicting women's breastfeeding behavior

	Women still breastfeeding at:					
	1 month (<i>n</i> = 197)	2 months (<i>n</i> = 188)	4 months (<i>n</i> = 196)	6 months (<i>n</i> = 194)	9 months (<i>n</i> = 189)	12 months (<i>n</i> = 187)
Step 1: Women's prenatal intentions	.14	.35*	.31**	.29***	.24***	.29***
Step 2: Men's prescriptive breastfeeding beliefs	-.02	-.04	.13	.21**	.14*	.17*

* $p < .05$; ** $p < .01$; *** $p < .001$.

hierarchical multiple regression in which women's prenatal breastfeeding duration intentions were regressed on their perception of their partner's approval in Step 1. Women's prenatal perception of their partners' approval significantly predicted their prenatal duration intentions. However, men's PBB scores, added in Step 2, strongly predicted women's duration intentions over and above women's own perceptions of their partners' approval.

Similarly, the intentions of women who were still breastfeeding at 9 months to continue breastfeeding longer were predicted by their perceptions of their partner's approval to do so. However, men's PBB scores strongly predicted the women's intentions to continue over and above the women's perception of their partner's approval. Thus, women's perceptions of their partner's approval

TABLE 8
Hierarchical multiple regression analyses for women's perceived partner approval and men's perceived breastfeeding beliefs predicting women's prenatal and 9-month breastfeeding intentions

Source of influence	β	$R^2\Delta$
Prenatal breastfeeding intentions (<i>n</i> = 195)		
Step 1:		
Prenatal partner approval	.20**	.04**
Step 2:		
Prenatal partner approval	.12*	
Men's prescriptive breastfeeding beliefs	.48***	.22***
9-Month breastfeeding intentions (<i>n</i> = 58)		
Step 1:		
9-Month partner approval	.52***	.27***
Step 2:		
9-Month partner approval	.45***	
Men's prescriptive breastfeeding beliefs	.36**	.12**

* $p < .05$; ** $p < .01$; *** $p < .001$.

or disapproval of breastfeeding could not entirely account for the influence that the men were exerting on them.

The influence of perceived partner helpfulness on women’s breastfeeding intentions

We also tested whether mothers’ perceptions of their partners’ helpfulness with breastfeeding could account for the observed partner influence. Mothers’ breastfeeding duration intentions as measured at 1 month postpartum were regressed on their perceptions of the amount their partners had helped them to continue breastfeeding. The results of this regression can be found in Table 9.

As expected, a woman’s perception of her partner’s helpfulness predicted the strength of her intentions to continue breastfeeding. However, men’s pre-natally measured PBB scores strongly predicted women’s intentions to continue breastfeeding for a longer duration over and above the women’s perceptions of her partner’s helpfulness. Similar results were found when predicting women’s intentions to continue breastfeeding and their perceptions of their partners’ helpfulness when assessed at 2 months. Thus, it appears that perceived helpfulness, even in the critical early months, cannot fully explain partners’ influence on women’s breastfeeding intentions and subsequent behavior.

Discussion

This study has provided strong evidence showing that male partners do, in fact, influence women’s breastfeeding decisions. Our results indicate that men based their own beliefs about long-term breastfeeding, at least in part,

TABLE 9
Hierarchical multiple regression analyses for women’s perceived partner helpfulness and men’s perceived breastfeeding beliefs predicting women’s 1- and 2-month breastfeeding intentions

Source of influence	β	$R^2\Delta$
1-Month breastfeeding intentions (<i>n</i> = 172)		
Step 1:		
1-Month helpfulness	.25***	.06***
Step 2:		
1-Month helpfulness	.19**	
Men’s prescriptive breastfeeding beliefs	.56***	.30***
2-Month breastfeeding intentions (<i>n</i> = 148)		
Step 1:		
2-Month helpfulness	.16*	.03*
Step 2:		
2-Month helpfulness	.07	
Men’s prescriptive breastfeeding beliefs	.61**	.39***

p* < .05; *p* < .01; ****p* < .001.

on their pro and con reasons. In particular, they focused on the positive benefits breastfeeding may have for the infant and on the negative consequences breastfeeding may have for the mother. Men's beliefs about whether their partners should breastfeed for 4 months or longer directly predicted whether or not these expectant mothers intended to breastfeed for that long. More importantly, those same prescriptive beliefs predicted changes in mothers' breastfeeding intentions after the birth of their babies. Finally the beliefs men held prenatally about breastfeeding for 6 months and longer predicted mothers' breastfeeding behavior, over and above the mothers' own prenatal breastfeeding intentions. These women behaved more in accordance with what their partners thought they should do than with what they had originally intended to do.

These findings provide compelling support for our contention that intimate partners are an important source of influence on health-related cognitions and behaviors. The results are all the more dramatic because of the domain in which this influence occurs. As independent, self-directed individuals, women may be tempted to negate the strength of the influence that others can have, believing that the decision to breastfeed is theirs and theirs alone. In fact, during data collection for this study, some men were reluctant to respond to the prescriptive breastfeeding beliefs measures because they insisted that the decision was up to their partner. However, our findings show that partners are indeed a relevant and influential factor in affecting women's breastfeeding cognitions, intentions, and actual behavior.

It was expected that male partners' breastfeeding beliefs would affect women's breastfeeding intentions by promoting the development of reasons that are consistent with those of their partners. As predicted, men's prescriptive breastfeeding beliefs were correlated with expectant mothers' breastfeeding reasons, most strongly at Level III. It appears that the degree to which women feel good or worried about breastfeeding may, in part, be a response to their partners' positive or negative messages. In addition, men's beliefs about how long their partners should breastfeed predicted changes in women's reasons following breastfeeding experience. Women whose partners more strongly supported long-term breastfeeding increased the importance they placed on the convenience and ease of breastfeeding and decreased the importance they placed on the negative consequences of breastfeeding.

However, the influence of male partners was not limited to altering the ways in which women thought about breastfeeding. In fact, to a large extent, the impact that men had on their partner's intentions and behavior could not be accounted for by changes in the women's reasons for or against continued breastfeeding. Similarly, men's influence could not be accounted for by women's perceptions of their partner's approval for breastfeeding or by women's perceptions of the extent to which the men provided tangible help with breastfeeding. Rather, men's opinions about how long expectant mothers should breastfeed affected the women's intentions over and above the effect that could be accounted for by women's cognitions.

Our results raise the importance of sources of influence that do not register on the recipient's awareness. Bolger et al. (2000) found that supportive actions that went unrecognized by the recipients of the support were more effective in reducing anxiety and depression than were supportive actions of which the recipients were cognizant. The results from the current study support and extend this idea. Direct means of influence, in which the awareness that another is attempting to change one's behavior is heightened, may result in feelings of reactance (Brehm & Brehm, 1981) and efforts to resist the influence attempt. When influential actions go unrecognized, perhaps because they are processed peripherally (Petty & Cacioppo, 1986), such resistance may not materialize and the influence will be especially effective. Further research will need to examine this provocative possibility.

Why might men have such a strong effect on the breastfeeding decisions of these first-time mothers? To the extent that men have accepted their child as a part of their self-identity, they will be motivated to do whatever is the best for their baby, hence the focus on the positive benefits of breastfeeding. Additionally, men seem to be concerned about the implications breastfeeding has for their female partner and appear to have some idea about how their partners handle difficult situations. Thus, out of a concern for their partner's well-being, men may interact with their partners in ways that implicitly or explicitly affect the women's breastfeeding decisions. Future longitudinal research that identifies the responses of male partners to their female partners' breastfeeding experiences could help elucidate the mechanisms by which male partners affect mothers' ongoing breastfeeding intentions and behavior.

It is interesting to note that the effects that male partners had in this study were limited to mothers' intentions and behavior regarding breastfeeding for 4 months and longer. This is likely because both the men and women who participated in the Waterloo Region Infant Feeding Study were strongly in favor of initiating breastfeeding. Breastfeeding a newborn was almost a universal expectation, whereas breastfeeding an older, larger, more independent baby was met with more ambivalence. In addition, because many women planned to return to work by 6 months, breastfeeding longer than that represented a significant lifestyle decision. It appears that male partners had particular influence on these significant decisions. We suspect that a study of mothers who were uncertain about initiating breastfeeding would also evidence men's influence on decisions involving breastfeeding initiation.

Limitations

The current study has a number of limitations that future research will need to address. First, the sample was self-selected, highly educated, and strongly committed to initiating breastfeeding. From the current study, we do not know when and to what extent male partners would influence breastfeeding decisions in less educated couples or couples less committed to breastfeeding. Second, the measures used were created specifically for

this study. As a result, future research will need to further establish their reliability and validity in additional, more diverse samples.

Third, it was not possible to measure the precise nature of the interpersonal influence in the current study. Tucker and Mueller (2000) have identified the modeling of health behavior, discussing health issues, and providing emotional support as effective strategies for prompting partners to engage in healthy behaviors. It is very likely that couples in this study would have discussed infant feeding options prior to the birth of their child. The verbal and nonverbal messages about breastfeeding communicated during these discussions would be expected to influence breastfeeding decisions. Future studies will need to assess effective and ineffective mechanisms of influence more directly.

Finally, this study examined only first-time mothers. This is an important methodological advantage in the current study in that all participants were equally inexperienced with the health behavior in question. Thus, our results could not be confounded with individual differences in past experience. However, this also limits the generalizability of our findings to novel health behaviors such as taking previously unused medications, for example. Health behaviors such as exercise or breastfeeding subsequent children, when participants come with varied levels of personal experience, may involve different, possibly more complex, patterns of response to partner influence.

Conclusion

Examining the influence of partners on health behavior decisions is an exciting line of research. How much do partners affect each other's behavioral decisions? There are certainly some domains, such as condom use, in which partners are actually involved in the behavior and, therefore, likely exert a very powerful effect on intentions and behavior. However, breastfeeding is an act in which the male partner is not involved directly, yet his opinion is influential. To what extent do intimate partners have a similar, or even greater, impact on other decisions such as intentions to exercise, lose weight, quit smoking, drive safely, or engage in other behaviors over and above their effect on the 'rational' decision-making process represented by the reasons model? These important questions open up avenues for future research.

These results also highlight the importance of including close partners in early and ongoing health education efforts. With regards to breastfeeding, it is important to provide men with the evidence supporting breastfeeding so that they have a solid basis on which to develop pro breastfeeding beliefs. Making fathers aware of the evidence seems particularly important to the development of beliefs regarding breastfeeding for 4 months and longer. It also seems prudent to include male partners in education efforts that promote coping with potential breastfeeding problems. Partners who know that the negative consequences of breastfeeding can often be overcome may be more supportive of continued breastfeeding, either by

offering direct assistance or by encouraging mothers to obtain the help they need when they encounter a problem.

In sum, continued attention needs to be paid to the interpersonal processes between partners that encourage or undermine health-related intentions and behavior. Research that examines both the effects of interpersonal relationships on health decisions and the effects of health decisions on interpersonal relationships is crucial to our understanding of the powerful ways in which partners can influence each other to engage in healthy behaviors.

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