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Natalie O. Rosen , Kayla Mooney & Amy Muise

To cite this article: Natalie O. Rosen , Kayla Mooney & Amy Muise (2016): Dyadic empathy predicts sexual and relationship well-being in couples transitioning to parenthood, Journal of Sex & Marital Therapy, DOI: [10.1080/0092623X.2016.1208698](https://doi.org/10.1080/0092623X.2016.1208698)

To link to this article: <http://dx.doi.org/10.1080/0092623X.2016.1208698>



Accepted author version posted online: 11 Jul 2016.
Published online: 11 Jul 2016.



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Dyadic empathy predicts sexual and relationship well-being in couples transitioning to parenthood

Dr Natalie O. Rosen^{1,2,*} Ms Kayla Mooney¹, Amy Muise^{1,2}

Email: nrosen@dal.ca

¹Dalhousie University, Psychology & Neuroscience, 1355 Oxford Street, Halifax, Nova Scotia,
B3H 4R2 Canada

²IWK Health Centre, Obstetrics & Gynaecology, Halifax, Canada

³Email: kayla.mooney@dal.ca

⁴Email: amy.muise@utoronto.ca

*Corresponding Author: Email: nrosen@dal.ca

Abstract

Becoming a new parent is typically a time of great joy, yet it is also marked by significant declines in sexual and relationship functioning. Dyadic empathy, a combination of perspective-taking and empathic concern for one's romantic partner, may facilitate sexual and relationship quality for new parents. The purpose of this study was to examine the associations between dyadic empathy and sexual satisfaction, relationship adjustment and sexual desire in a sample of first time parents. Couples ($N = 255$) with an infant aged three to 12 months completed an online survey assessing dyadic empathy, sexual satisfaction, relationship adjustment, and sexual desire. Data were analyzed using multilevel analyses guided by the Actor-Partner Interdependence

Model. When new mothers and fathers reported greater dyadic empathy, both they and their partners reported higher sexual satisfaction and relationship adjustment. New mothers who reported higher dyadic empathy also had higher sexual desire, although when they had more empathic partners new mothers reported lower sexual desire. Results remained significant after controlling for potential challenges unique to the postpartum period (e.g., fatigue, breastfeeding), as well as relationship duration. Targeting dyadic empathy in interventions aimed at helping couples transition to parenthood may promote the maintenance of sexual and relationship well-being.

Keywords

dyadic empathy, parenthood, sexual desire, sexual satisfaction, relationship adjustment

The transition to parenthood is typically a time of great joy and happiness, but it also presents unique challenges that may interfere with couples' sexual and relational functioning (Cowan & Cowan, 2000; von Sydow, 1999). In cross-sectional and longitudinal studies, the birth of a child has been associated with increased relationship conflict and decreased relationship satisfaction (Belsky & Kelly, 1994; Cowan & Cowan, 2000; Mitnick, Heyman, & Smith Slep, 2009; Shapiro, Gottman, & Carrère, 2000). Parents also show significantly steeper declines in marital satisfaction compared to nonparents, even after controlling for confounding variables such as relationship length (Lawrence, Rothman, Cobb, Rothman, & Bradbury, 2008; Twenge, Campbell, & Foster, 2003), and these deteriorations appear to persist long term (Doss, Rhoades, Stanley, & Markman, 2009). Similar declines in sexual well-being have been reported in longitudinal studies. New mothers report lower sexual desire and satisfaction during this period compared to pre-pregnancy (Serati et al., 2010; von Sydow, 1999). Although new fathers' level of sexual interest appears to be maintained (Fischman, Rankin, Soeken, & Lenz, 1986), reduced frequency of sexual activity and lower sexual satisfaction have been reported even when there were no changes in sexual desire (Condon, Boyce, & Corkindale, 2004; Maas, McDaniel, Feinberg, & Jones, 2015). In a cross-sectional study of 768 new parent couples, 36% of mothers and 46% of fathers described themselves as dissatisfied with their sexual life at six months postpartum (Ahlborg, Dahlöf, & Hallberg, 2005). Reduced relationship and sexual satisfaction and sexual desire are potentially linked to role transitions, increased stress, sleep deprivation, breastfeeding, less time alone together as a couple, unequal division of household labor, and changes in the couple identity such as no longer viewing each other as lovers (Ahlborg et al., 2005; Cowan & Cowan, 2000; Woolhouse, McDonald, & Brown, 2012).

When new parents experience a decline in their intimate relationships, there are consequences for the new child. Marital conflict has been found to negatively impact the parent-child relationship, as well as the infant's socio-emotional health and later child development (Amato, 2001; Yu, Pettit, Lansford, Dodge, & Bates, 2010). It is therefore important to identify protective factors that may buffer against such deteriorations. A recent meta-analytic review suggests that there is mixed evidence for the effectiveness of interventions designed to support relationship stability in the transition to parenthood (Pinquart & Teubert, 2010). While there is some evidence that sexual health education (e.g., regarding contraception) may be effective in improving knowledge, attitudes, and self-efficacy in women postpartum (Lee & Yen, 2007), no studies to our knowledge have examined the efficacy of interventions focused specifically on couple sexuality in the transition to parenthood. Thus, there is a clear need to identify empirically supported factors that could be targeted in the development of such interventions. Interpersonal factors---such as dyadic empathy---may serve this function.

Interpersonal Predictors of Relationship and Sexual Adjustment in the Transition to Parenthood

Not all couples evidence a deterioration in their sexual and intimate relationships after becoming parents. Approximately one third to one half of couples maintain or report increases in relationship satisfaction in the transition to parenthood (Belsky & Rovine, 1990; Shapiro et al., 2000), and similar numbers have been reported with regard to sexual satisfaction (Ahlborg, Rudeblad, Linnér, & Linton, 2008). There have been relatively few studies examining predictors of change in sexual desire and sexual and relationship satisfaction during the postpartum period.

Although some individual (e.g., parental history of divorce, erotophilia-erotophobia) and contextual (e.g., cohabitating premaritally) predictors have been studied (Doss et al., 2009; Fisher & Gray, 1988), interpersonal factors are especially salient because sexual and relationship well-being necessarily involves a romantic partner. Poor communication and couple conflict are consistently linked to declines in relationship functioning following the birth of a child (Cox, Paley, Burchinal, & Payne, 1999; Doss et al., 2009; Shapiro et al., 2000). In a longitudinal study of 130 newlywed couples, Shapiro and colleagues (2000) found that protective factors, such as expressing fondness toward a spouse, and the amount of cognitive ‘space’ allocated to the relationship, were associated with marital stability or increases in satisfaction among those who became parents. It is possible that these factors might act as a buffer to protect the relationship. In contrast, detrimental factors, including negativity and criticism toward a spouse and disappointment in the marriage, predicted declines in marital satisfaction postpartum. The authors suggested that negative factors may be indicative of couple vulnerabilities that became more pronounced in stressful times (such as in this transition; Shapiro et al., 2000).

With regard to predictors of sexual desire and satisfaction among first-time mothers, studies of sexuality have focused almost exclusively on biomedical factors related to labor and delivery, such as vaginal trauma, dyspareunia (pain during intercourse) and breastfeeding (Serati et al., 2010). Further, these studies typically target frequency of sexual behaviors, neglect the role of interpersonal factors, and exclude new fathers. This oversight is striking given the preponderance of evidence underscoring the importance of relationship factors in couples experiencing sexual problems (McCabe et al., 2010; Rosen, Rancourt, Bergeron, & Corsini-Munt, 2014), including during the transition to parenthood (Hipp, Low, & van Anders, 2012). In one retrospective study

of 304 women reflecting on the first three months postpartum, women rated relational factors--- such as feelings of closeness toward a partner, their partners' level of sexual interest in them, and amount of support from a partner---as most influential in facilitating higher sexual desire, whereas other, non-relational factors (i.e., fatigue, stress, or lack of time) were rated as most influential in detracting from their desire (Hipp et al., 2012). In addition, new mothers have reported that communication with their partner is central to negotiating different sexual needs between partners and enhancing their sexual satisfaction during this time (Olsson, Lundqvist, Faxelid, & Nissen, 2005).

Taken together, it is clear that interpersonal factors, and particularly elements of how the couple supports each other during the transition to parenthood, play a role in couples' relational and sexual adjustment. Researchers have identified empathy as contributing to the positive adjustment of individuals struggling with health conditions (Goubert et al., 2005; Manne et al., 2004), including sexual dysfunctions (Bois, Bergeron, Rosen, McDuff, & Gregoire, 2013), as well as to general relationship satisfaction (Busby & Gardner, 2008; Péloquin & Lafontaine, 2010). However, to our knowledge, the role of empathy during the transition to parenthood has not been examined.

Dyadic Empathy

According to Davis' (1994) theoretical model, empathy is a multifaceted construct involving three primary components: a cognitive component (also known as perspective taking), which refers to the ability to understand another person's point of view, an emotional component (also known as empathic concern), which refers to one's emotional reaction as a result of another

person's experience, and a personal distress component, which refers to the tendency to experience distress as a result of others' suffering (Davis, 1983). *Dyadic empathy* is empathy expressed specifically to a romantic partner (Péloquin & Lafontaine, 2010). Because this definition is "other-oriented" (in contrast to a self-oriented response such as personal distress), dyadic empathy encompasses only perspective-taking and empathic concern (Péloquin & Lafontaine, 2010). According to empathy models applied to romantic relationships (Davis & Oathout, 1987; Reis & Shaver, 1988), dyadic empathy increases the likelihood of cognitive, affective, and behavioral responses that facilitate relationship quality for both members of the couple. In particular, dyadic empathy may enhance relationships by allowing an individual to feel understood and validated by their partner, or by promoting prosocial behaviors such as displays of affection, thus serving to maintain their bond and enhancing satisfaction with the relationship. In contrast, a lack of dyadic empathy may convey disinterest, potentially resulting in feelings of being misunderstood or unimportant to the partner, or to insensitive behaviours, both of which could have negative consequences for the relationship (Davis & Oathout, 1987). Given the interdependence of sexual and romantic relationships (McNulty, Wenner, & Fisher, 2015), it follows that dyadic empathy may also impact sexual desire and satisfaction through similar processes.

Research on the role of empathy in couple relationships has investigated empathic accuracy---whether individuals can accurately understand their partner's thoughts and feelings during an interaction---using experimental study designs (e.g., Kilpatrick, Bissonnette, & Rusbalt, 2002; Simpson, Ickes, & Blackstone, 1995; Simpson et al., 2011). Studies of empathic accuracy are therefore based on a particular couple interaction and do not necessarily generalize to all

interactions between partners. Fewer studies have examined dyadic empathy as a dispositional quality assessed using self-report measures. Such studies seek to examine empathy generally expressed within the context of romantic relationships, rather than the exact perception of a partner's thoughts and feelings during a particular interaction (Péloquin & Lafontaine, 2010). Within this literature, greater dyadic empathy has been linked to one's own greater relationship satisfaction over time, and above and beyond general empathy, thus highlighting that these are distinct constructs (Busby & Gardner, 2008; Cramer & Jowett, 2010; Péloquin & Lafontaine, 2010). Further, in line with the Actor-Partner Interdependence Model (Kenny, Kashy, & Cook, 2006), an individual's level of empathy may also impact a partner's outcomes. Indeed, greater dyadic empathy in one member of a couple (especially men) has been found to predict more relationship satisfaction in their spouse (and more so for women), and over time (Busby & Gardner, 2008).

Although there is little empirical research on the role of dyadic empathy (i.e. empathy felt toward a partner) in sexuality, cross-sectional studies focusing on perceptions of empathic response (i.e., empathy from a partner) have found links with sexual satisfaction and desire. Empathy is thought to promote feelings of validation, which has been associated with greater sexual satisfaction in older adults (Kleinplatz, Ménard, Paradis, Campbell, & Dalgleish, 2013). Similarly, perceptions of partner empathy have been linked to greater sexual satisfaction in both men and women (Gadassi et al., 2015). In a sample of couples whereby the woman has a sexual dysfunction, greater perceived and observed empathic response in each member of the couple was associated with their own and their partners' improved sexual satisfaction (Bois et al., 2015). Further, in one study of married couples, husbands' premarital level of empathic communication

was associated with wives' sexual satisfaction one year after being married (Larson, Anderson, Holman, & Niemann, 1998). Finally, in the context of initial acquaintances, perceiving a person as empathically responsive was associated with greater interest in sex with this person (Birnbaum & Reis, 2012). Of note, prior studies relating to sexual satisfaction and desire have focused on perceptions of empathic response from a partner (e.g., "how much do you feel understood and cared for by your partner?") rather than dyadic empathy expressed toward a partner (e.g., "I often have concerned feelings for my partner"), and have neglected perspective-taking (e.g., "I try to look at my partner's side of a disagreement"). Laurenceau and Kleinman (2006) have suggested that empathy is beneficial both in perceiving or receiving an empathic response, as well as when a person *provides* an empathic response, which is most relevant to dyadic empathy as defined in the current study. Indeed, previous research has demonstrated that being prosocial in relationships benefits the recipient of responsive care, but also the person providing the care. For example, people who are motivated to be responsive to their partners' needs reap personal benefits such as feeling happier in their relationships (Kogan et al., 2010) and having higher sexual desire and satisfaction (Muisse, Impett, & Desmarais, 2013).

The purpose of this study is to examine the associations between dyadic empathy and sexual desire, sexual satisfaction and relationship adjustment in a sample of first time parent couples. In order to avoid confusion when referring to effects of dyadic empathy on the partner (which could be either member of the couple), and because all couples in our sample were in mixed-sex relationships, we refer to participants as women and men. Based on empathy models applied to couple relationships and on prior literature, we hypothesize that women's and men's greater

dyadic empathy will be associated with their own, and their partners', higher sexual desire, sexual satisfaction, and relationship adjustment.

Method

Participants

Couples were recruited across North America from several online sources (Kijiji, Craigslist, Reddit, scienceofrelationships.com) from September 2014 to May 2015 as part of a larger, cross-sectional online study on sexuality and relationships during the transition to parenthood. Internet samples have been found to be relatively diverse (Gosling, Vazire, Srivastava, & Oliver, 2004) and to be as reliable as samples recruited through other, more traditional methods (Buhrmester, Kwang, & Gosling, 2011). Furthermore, nonserious or repeat responders do not adversely impact self-reported data collected via the Internet, and findings are typically consistent with those from more traditional methods (Gosling et al., 2004). To be eligible for the study, couples were required to be first-time parents with an infant currently aged three to 12 months and who was born at term (37 to 42 weeks of gestation) and healthy. Couples had to be in a romantic relationship with each other. Women were required to be 18 to 45 years of age and partners to be older than 18 years. All participants were given a brief screening questionnaire prior to beginning the survey, and only those who met the selection criteria were allowed to proceed with the survey. Further, if one member of the couple failed the selection criteria but had a partner who already completed the survey, the partner's data was excluded as well. In total, 67 participants were excluded from participating for not meeting one or more of the selection criteria ($N = 51$ women; $N = 16$ partners). In addition, several of the sociodemographic items

overlapped with the selection criteria, which provided a second opportunity to verify that individuals who passed the selection criteria indeed satisfied the eligibility requirements. Participant responses from the selection criteria were compared with their own (and their partners') responses on the sociodemographics questionnaire to ensure consistency. Couples were excluded if: (1) their responses did not match with each other (e.g., if the woman and partner reported different ages of the child), or (2) their responses on the sociodemographic items violated the selection criteria (i.e., inconsistent responding within a participant). Ten couples were excluded for these reasons. Two same-sex couples were also excluded because a test of distinguishability (Kenny et al., 2006) revealed that the couples were distinguishable by participant gender ($p < .001$). Lastly, twelve couples were excluded due to missing data representing more than 10% of the measure of dyadic empathy, our primary independent variable. Thus, the final sample included in the analyses was 255 couples. Participants ranged in age from 20 to 45 years old (Women: $M = 27.20$, $SD = 3.31$; Men: $M = 28.93$, $SD = 4.05$). The majority of participants were married (90%) and had been in their current relationship for an average of 47.11 months ($SD = 28.13$). The majority of participants were residing in the United States (85.9%), and were American (80.4% and 80.0% of women and men, respectively). Demographic characteristics of the sample are reported in Table 1.

Measures

Sample characteristics. Both members of the couple self-reported their age, country of residence, biological sex, and cultural background. Women additionally reported on the couples' annual household income, current relationship status, relationship duration, current age of their

baby, mode of delivery, whether or not they were breastfeeding, frequency of intercourse in the past four weeks (0 = *less than once a month*, to 4 = *multiple times a week*), pain intensity during intercourse (0 = *no pain*, to 10 = *worst pain ever*), and her average level of fatigue on a typical postpartum day (1 = *extreme fatigue*, to 7 = *high energy*; see Table 1).

Dyadic empathy. Dyadic empathy was assessed using the Interpersonal Reactivity Index for Couples (IRIC), which has been shown to be reliable and valid in previous research (Péloquin & Lafontaine, 2010). The IRIC consists of 13 questions that ask about participants' empathic concern and perspective-taking in the context of their relationship. Example items include "I try to look at my partner's side of a disagreement before I make a decision", and "I often have tender, concerned feelings for my partner when he/she is less fortunate than me." Items are scored on a scale of 0 (*does not describe me well*) to 4 (*describes me well*). Higher total scores on the IRIC indicate higher levels of dyadic empathy towards one's partner. Means, standard deviations, and cronbach's alpha for all study measures are reported in Table 2.

Sexual desire. Sexual desire was measured using the Sexual Desire Inventory-2 (SDI-2), a valid, reliable measure of sexual desire (Spector, Carey, & Steinberg, 1996). This 14-item measure assesses interest in sexual activity, particularly one's thoughts on approaching or being responsive to sexual stimuli. Items are scored on either an 8-point scale (0 = *not at all*, to 7 = *more than once a day/many times a day*) or on a 9-point scale (0 = *no desire/no importance*, to 8 = *strong desire/extreme importance*). Higher total scores indicate greater sexual desire.

Sexual satisfaction. Sexual satisfaction was measured using the Global Measure of Sexual Satisfaction (GMSEX), a valid, reliable measure of sexual satisfaction in relationships

(Lawrance & Byers, 1995). The GMSEX consists of 5 items that ask the participant to rate their sexual relationship with their partner using a pair of words (e.g., bad -- good, unpleasant -- pleasant, etc.). Participants are asked to respond to each item on a 7-point scale, with higher ratings indicating higher levels of satisfaction.

Relationship adjustment. Relationship adjustment was measured using the 32-item version of the Couples Satisfaction Index (CSI), which has been found to be valid and reliable in previous research (Funk & Rogge, 2007). The CSI assesses both positive and negative indicators of relationship quality and adjustment. Most of the items are scored on a 6-point scale (with the exception of one item, scored on a 7-point scale), with higher total scores indicating greater satisfaction and adjustment.

Procedure

Prior to commencing the online survey, individuals provided informed consent online. One member of the couple completed the online questionnaires assessing their dyadic empathy, sexual desire, sexual satisfaction, and relationship adjustment (among other measures not pertinent to the current study). At the end of the survey, they provided the email address for the other member of the couple. The partner was then emailed a unique questionnaire link, which included an embedded couple ID identifier that allowed the data to be linked once both members completed the survey. Members of each couple were required to complete the survey within four weeks of each other. After completing the survey, individuals received a list of online resources related to sexuality and relationships during the transition to parenthood. Once both members of

the couple completed the survey, they were each compensated with a \$15 gift card to Amazon.com/.ca. This study received approval from our institution's ethical review board.

Data analysis

Missing data representing 10% or less of a single measure was replaced by the mean of the scale for that particular person. None of the variables violated the assumption of normality (i.e., skewness and kurtosis estimates did not exceed absolute values of 2). Data were analyzed with multi-level modeling using mixed models in SPSS 20.0 where partners were nested within couples (Kenny et al., 2006). Analyses were guided by the Actor Partner Interdependence Model (APIM), and all models included women's and men's dyadic empathy as the independent variables. Separate models were conducted for each outcome variable. In addition to testing the associations using the total scale score for dyadic empathy, we also ran the analyses for each subscale---perspective taking and empathic concern---to determine whether the associations were consistent for each subscale. We report and discuss the main findings using the total scale score for clarity and parsimony. In the analyses, we assessed the associations between women's and men's dyadic empathy and their own outcomes (i.e., actor effects) and the association between a partner's dyadic empathy and women's and men's outcomes (i.e., partner effects). We also tested for gender differences in the strength of the effects. Finally, we conducted an additional set of analyses to exclude the possibility that any observed effects could be accounted for by other variables that might facilitate dyadic empathy and contribute to sexual and relationship well-being (e.g., maternal fatigue, sexual frequency, relationship duration).

Results

Descriptive Characteristics and Correlations

Correlations between women's and men's dyadic empathy and all of the outcome variables are presented in Table 2. Women's and men's scores on dyadic empathy and relationship adjustment did not differ significantly. Women reported significantly lower sexual satisfaction and sexual desire compared to men, $t(254) = 3.74, p < .001$, $t(254) = 14.84, p < .001$, respectively. Women's and men's reported relationship adjustment was highly correlated, while their sexual satisfaction and dyadic empathy were moderately correlated and their sexual desire was correlated at low levels. None of the sociodemographic variables or characteristics of labor and delivery correlated with the independent or dependent variables at $>.30$, and were therefore not included as covariates in analyses (Frigon & Laurencelle, 1993).

Associations between Women and Men's Dyadic Empathy and Their Outcomes

First we tested our prediction that new mothers and fathers who were more empathic toward their partners would report greater sexual satisfaction, relationship adjustment and sexual desire, and would also have partners who were more satisfied and had higher desire. The results are reported in Table 3 and Figure 1. In line with our predictions, both women and men who were more empathic towards their partners reported higher sexual satisfaction and relationship adjustment. In addition, after accounting for their own dyadic empathy, women and men with more empathic partners reported higher sexual satisfaction and relationship adjustment. There were no significant gender differences in these effects, with one exception: having an empathic partner had a significantly stronger association with women's relationship adjustment than men's

relationship adjustment, $b = -.53$, $SE = .17$, $t(208) = 3.05$, $p = .003$. Also in line with our predictions, women who reported higher dyadic empathy had higher sexual desire, but this association was not significant for men. In addition, a surprising effect emerged where women who had more empathic partners reported lower sexual desire. For this effect, having an empathic partner had a significantly stronger association on women's desire than men's, $b = .68$, $SE = .16$, $t(379) = 4.33$, $p < .001$. In fact, for men, having an empathic partner was not associated with their desire.

We also re-ran the analyses separately for each subscale---perspective taking and empathic concern---to determine if one component of dyadic empathy was driving the effects. In fact, the pattern of results was mostly consistent across both subscales suggesting that both perspective taking and empathic concern are important for satisfaction and desire for couples undergoing the transition to parenthood. However, one significant effect from using the total score was not significant in the analyses with the empathic concern subscale: men who reported more empathic concern for their partners did not report significantly higher sexual satisfaction, $b = .08$, $SE = .10$, $t(252) = .76$, $p = .45$. In addition, when run as separate subscales, women's perspective taking and empathic concern did not significantly predict their sexual desire, $b = .07$, $SE = .31$, $t(252) = .22$, $p = .83$, $b = .08$, $SE = .32$, $t(252) = .36$, $p = .71$, respectively.

Ruling Out Alternative Hypotheses

We conducted an additional set of analyses in order to rule out the possibility that our effects could be accounted for by other variables that might facilitate dyadic empathy and contribute to sexual and relationship well-being. Specifically, we tested whether our effects could be attributed

to couples simply having an easier time in the postpartum period, in which case they would have more energy to devote to being empathic, and may therefore experience better sexual and relationship outcomes. We re-ran all of our analyses while controlling for relevant contextual factors that may impact the ability to be empathic, or have an impact on sexual and relationship outcomes during this period (i.e., fatigue, breastfeeding, pain during intercourse, infant age) and all of the effects for sexual and relationship well-being remained significant. We also wanted to rule out the possibility that our effects were driven by the frequency of sexual activities (in the preceding four weeks). All of our effects remained significant when controlling for frequency of sexual activity, suggesting that our effects are not driven by how frequently couples are having sex. In addition, given that sexual desire, and sexual and relationship satisfaction, are known to decline over time (Huston, Caughlin, Houts, Smith, & George, 2001; Klusman, 2002), we considered whether our effects could be attributed to the length of the relationship. We ran all of our analyses again while controlling for relationship duration, and all of the effects remained significant, which suggests that our findings are not accounted for by relationship length. Finally, all of our effects remained significant when we controlled for sexual satisfaction in the model for relationship adjustment, and vice versa. In summary, even when couples are facing unique challenges related to the transition to parenthood, feeling empathic toward one's partner is beneficial to the sexual and relationship well-being of new parents.

Discussion

The purpose of this study was to examine the associations between dyadic empathy and sexual satisfaction, relationship adjustment and sexual desire in a sample of couples transitioning

to parenthood for the first time. When women and men reported greater dyadic empathy, both they and their partners reported higher sexual satisfaction and relationship adjustment. Women who reported higher dyadic empathy also had higher sexual desire, although women who had more empathic partners reported lower sexual desire. These effects remained significant after controlling for potential challenges that may be unique to the postpartum period such as fatigue, breastfeeding, pain during intercourse, infant age, and reduced frequency of sexual activity, and for factors that are known to be associated with lower sexual and relationship satisfaction over time such as relationship duration and frequency of sexual activity. These findings contribute to a small literature examining interpersonal predictors of relationship adjustment during the transition to parenthood (Doss et al., 2009; Shapiro et al., 2000), and extend this body of work to examine sexual satisfaction and sexual desire, which are integral components of couples' quality of life that are known to decline during this period (Serati et al., 2010). Results are consistent with empathy models applied to romantic relationships (Davis & Oathout, 1987; Reis & Shaver, 1988), which suggest that dyadic empathy may facilitate relationship quality by allowing individuals to feel understood and validated by their partner, and by promoting relationship-enhancing behaviors. Such models could extend theoretically to explain increases in sexual satisfaction and sexual desire in relation to greater dyadic empathy, especially given that relational intimacy may trigger sexual desire and arousal (Basson, 2001), and that sexual satisfaction contributes to overall relationship quality (McNulty et al., 2015).

With regard to sexual satisfaction, new mothers and fathers who reported more empathy toward their partner and had partners who reported more empathy toward them, also indicated higher sexual satisfaction. When new parents are more concerned about their partner, and try to

see things from their partners' point of view, this may encourage more open communication between partners about their sexual relationship, resulting in more sexual satisfaction for both. Sexual communication may involve discussions of how to adapt or adjust expectations for sexual activity in relation to the new realities of early parenthood. Sexual concerns in the postpartum period are extremely common, with one study indicating that 89% of new mothers and 83% of new fathers endorse at least one sexual concern in the first year after childbirth, and over 50% of parents report between two and eight (of a possible 19) concerns (Pastore, Owens, & Raymond, 2007). Despite the prevalence of postpartum sexual concerns, research in community couples suggests that talking about sexual topics is one of the most difficult areas of discussion for couples (Sanford, 2003). Greater sexual communication has been linked to enhanced sexual and relationship satisfaction for oneself and one's partner (MacNeil & Byers, 2009). Whether dyadic empathy enhances sexual communication, in turn, resulting in greater sexual satisfaction, should be examined in future research. Another possible explanation is that empathy may be related to less conflicts and frustration around new roles and changes in the couple dynamics due to the arrival of the child. Indeed, prior research has linked greater dyadic empathy to reduced relationship conflict (Pauls, Occhino, & Dryfhout, 2008). When couples experience less conflict, they may be more likely to engage in sexual activity and experience it positively. For relationship adjustment, new mothers' and father's greater dyadic empathy predicted heightened relationship well-being for themselves and their partners. New parents are tasked with juggling a host of new responsibilities and demands that can be taxing on their emotional and physical resources. Having a partner who tries to share in one's experience by seeing things from the other parent's perspective and expressing concern for the challenges that the other

parent is experiencing may enhance feelings of facing parenthood together as dyadic unit, thus encouraging more adaptive coping with novel stressors (e.g., sleep deprivation), and leading to greater relationship adjustment. Dyadic coping (i.e., working together as a couple) has been found to enhance marital quality for both members of the couple over a two year period (Bodenmann, Pihet, & Kayser, 2006), as well as over stressful periods such as coping with a chronic illness (e.g., Badr, Carmack, Kashy, Crisofanilli, & Revenson, 2010). Also, both new mothers and fathers who are more empathic toward their partner report higher sexual and relationship satisfaction themselves. This finding is in line with prior research that indicates provision of empathy has unique benefits to the provider, beyond the benefits of receiving or perceiving an empathic response (Laurenceau & Kleinman, 2006). Indeed, focusing on meeting a partners' needs, including sexual needs, has been found to contribute to enhanced relationship and sexual satisfaction for the self (Impett, Muise, & Rosen, 2015).

Another possible explanation for our findings is in line with Davis & Oathout's (1987) empathy model in romantic relationships. When a partner makes an effort to understand their spouses' perspective and communicate that understanding with concern, their spouse may be more inclined to make behavioural changes (e.g., take on more childcare responsibilities), which could translate into greater relationship satisfaction, as well as enhanced sexual desire and satisfaction. Prior studies have linked more equitable divisions of household tasks to greater relationship satisfaction (Barstad, 2014); specifically, when mothers perceive fathers to be more involved in child rearing, this is associated with both partners' greater marital satisfaction (Galovan, Holmes, Schramm, & Lee, 2014). Further, in a study of 137 first-time parent couples, satisfaction with the division of labor predicted greater sexual satisfaction at 12 months

postpartum (Maas et al., 2015). As role overload in new parents has been linked to lower sexual satisfaction (Maas et al., 2015), expressing empathy toward a partner and, in turn, feeling understood and cared for by that partner, may also reduce feelings of being overloaded and stressed as a new parent.

One unexpected finding emerged that was contrary to our predictions: although women who reported higher dyadic empathy also had higher sexual desire, women who had more empathic partners reported lower sexual desire. The first result is consistent with theoretical models of female sexual response, which have proposed that emotional intimacy -- of which empathy is a core component -- underlies the motivation to pursue partnered sexual activity or to be receptive to a partner's initiation (Basson, 2001). The second result is more puzzling. It is possible that women who have lower desire may require more empathic partners. Another possibility is that empathic partners engage in more solicitous behaviors (i.e., sympathy and instrumental support) that reinforce avoidance of sexual activity and in turn, diminish women's sexual desire. Rosen et al. (2014) found that women with genito-pelvic pain reported poorer sexual functioning (including desire) on days when they or their partners reported higher solicitous partner responses. However, given that this finding runs contrary to theory (Davis & Oathout, 1987), prior research (Birnbaum & Reis, 2012), and our own findings related to sexual satisfaction, it seems premature to speculate on this association without further replication.

An important strength of this study was the examination of possible alternative explanations for the observed associations. We found that even after accounting for the unique challenges that couples face during the transition to parenthood (e.g., fatigue, breastfeeding, infant age, pain

during intercourse, and frequency of sexual activity) and relationship duration, feeling empathic toward one's partner is beneficial to the sexual and relationship well-being of new parents.

Although this study provided a much needed focus on interpersonal predictors of sexual and relationship adjustment during the transition to parenthood, it has some limitations. This study was cross-sectional, and causal conclusions cannot be drawn. It is possible that greater sexual and relationship satisfaction lead to greater perspective taking and empathic concern in these couples. Future studies should employ a longitudinal design in order to tease apart the temporal order and trajectory of these associations. Data were collected using an online self-report format in order to access a greater number of couples, however responses were limited to those who had access to computers and were interested in completing a study of this nature. All couples were in mixed-sex relationships and it is unknown whether the findings would generalize to couples in same-sex relationships. Finally, all couples were parents to a healthy infant who was born at term, and the findings may not generalize to couples faced with more difficult circumstances such as an infant born pre-term or with health problems.

In summary, greater dyadic empathy may trigger cognitive-affective and behavioural responses that facilitate one's own and one's partners' positive evaluation of both the sexual and general romantic relationship following the birth of a child. Although some prior research indicates that the transition to parenthood is more stressful for new mothers than new fathers (Belsky & Pensky, 1988; Shapiro et al., 2000), the current results suggest that dyadic empathy plays an important role for both members of the couple. At present, interventions aimed at helping couples maintain strong relationships during the transition to parenthood -- including their sexual desire and satisfaction -- are modest in efficacy (Pinquart & Teubert, 2010). Thus,

there is a clear need to identify empirically supported targets to improve these interventions, especially given the wide-reaching implications of parental relationship conflict or dissolution to the parent-child relationship and the child's socio-emotional development (Amato, 2001; Yu et al., 2010). Results from the current study suggest a novel target -- dyadic empathy -- that may enhance the quality of interventions aimed at helping couples transition to parenthood while maintaining their sexual and relationship well-being. Specifically, it may be beneficial to help new parents develop greater empathy for their partner by facilitating dyadic discussions of the sexual and relational challenges and changes to each of their lives since becoming a parent. New parents should be encouraged to share their thoughts and feelings with one another to foster greater understanding and acceptance of each parents' perspective. In this way, new parents will be able to garner an appreciation for their partner's perspective, as well as develop a deeper emotional concern for their partner's experience during the joyful, but often stressful and overwhelming, period of new parenthood.

Acknowledgements

This research was supported by an operating grant from the (*blinded*) awarded to the first author. The authors would like to thank (*names blinded for review*) for this assistance with data collection, as well as the many couples who participated in this research. No conflicts of interest are declared for any of the authors.

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Table 1 Sample Characteristics (N = 255 unless otherwise noted)

	Women		Men	
	<i>M</i> (range) or n	<i>SD</i> or %	<i>M</i> (range) or n	<i>SD</i> or %
Characteristic				
Age (years)	27.20 (20)	3.31	28.93 (40)	4.05
Country of residence				
U.S.A.	219	85.9%	---	---
Canada	36	14.1%	---	---
Biological sex				
Female	255	100.0%	.	.
Male	.	.	255	100%
Cultural background				
Canadian	41	16.1%	41	16.1%
American	205	80.4%	210	80.0%
European	3	1.2%	5	2.0%

Other	6	2.8%	4	2.0%
Annual income (household)				
\$0-19,999	2	.80%	---	---
\$20,000-39,999	14	5.4%	---	---
\$40,000-59,999	47	18.4%	---	---
\$60,000-79,999	100	39.2%	---	---
\$80,000-99,999	49	19.2%	---	---
≥ \$100,000	43	16.9%	---	---
Relationship status				
Married	229	89.8%	---	---
Common-law	8	3.1%	---	---
Dating	18	7.1%	---	---
Relationship duration (months; N=253)	47.11	28.13	---	---
Infant age (months)	6.69 (3-12)	2.47	---	---
Breastfeeding (yes)	153	60.0%	---	---

Frequency of intercourse in past 4 weeks (N = 172)			---	---
Less than once a month	2	1.2%		
About once a month	18	10.5%		
2-3 times a month	32	18.6%		
Once a week	51	29.7%		
Multiple times a week	69	40.1%		
Pain intensity during intercourse	3.76 (0-9)	2.96	---	---
Postpartum fatigue (N = 220)	4.59 (2-7)	1.13	---	---

Table 2 Correlations between dyadic empathy and the outcome variables

	Descriptive statistics				Correlations							
	<i>M</i>	<i>SD</i>	α		1	2	3	4	5	6	7	8
1. Dyad emp (W)	30.07	5.12	0.87		-	.18**	.28***	.24***	.28***	0.09	.18**	.16**
2. Dyad emp (M)	30.8	4.7	0.88			-	.34***	.52***	.75***	.79***	.34***	-0.05
3. Sex sat (W) ⁺	25.29	6.61	0.91				-	.63***	.44***	.37***	.21**	.19**
4. Sex sat (M)	26.58	6.13	0.9					-	.49***	.55***	-0.01	.23***
5. Rel adj (W) ⁺	110.05	27.93	0.97						-	.81***	-.20**	0.03
6. Rel adj (M)	112.42	26.77	0.97							-	.28***	0.02
7. Sex des (W)	47.27	18.5	0.9								-	.17**
8. Sex des (M)	62.41	13.83	0.8									-

⁺ n = 26; [^] n = 225; *** p < .001, ** p < 0.01

Note. W = woman; M = men; “Dyad emp” = dyadic empathy; “Sex sat” = sexual satisfaction;

“Rel adj” = relationship adjustment; “Sex des” = sexual desire; “Dep” = depression.

Table 3 Actor-Partner Interdependence Model with total dyadic empathy as independent variable, and sexual satisfaction, relationship satisfaction, and sexual desire as dependent variables

		Dyadic empathy				
		<i>b</i>	Standard error	df	<i>T</i>	<i>P</i>
Sexual satisfaction						
Actor effects						
Women		.31	.07	252	4.71	<.001
Men		.36	.07	252	5.47	<.001
Partner effects						
Women		.14	.04	252	3.47	.001
Men		.18	.04	252	4.70	<.001
Relationship satisfaction						
Actor effects						
Women		1.34	.21	252	6.26	<.001
Men		1.10	.27	252	4.05	<.001

Partner effects					
Women	1.68	.13	252	12.95	<.001
Men	1.15	.15	252	7.47	<.001
Sexual desire					
Actor effects					
Women	.84	.21	252	4.04	<.001
Men	.34	.19	252	1.77	.08
Partner effects					
Women	-.81	.12	252	6.60	<.001
Men	-.13	.11	252	1.23	.22

Note. Actor effects refer to the association between women or men's dyadic empathy and their own outcomes, where as partner effects refer to the association between a partner's dyadic empathy and women's or men's outcomes.

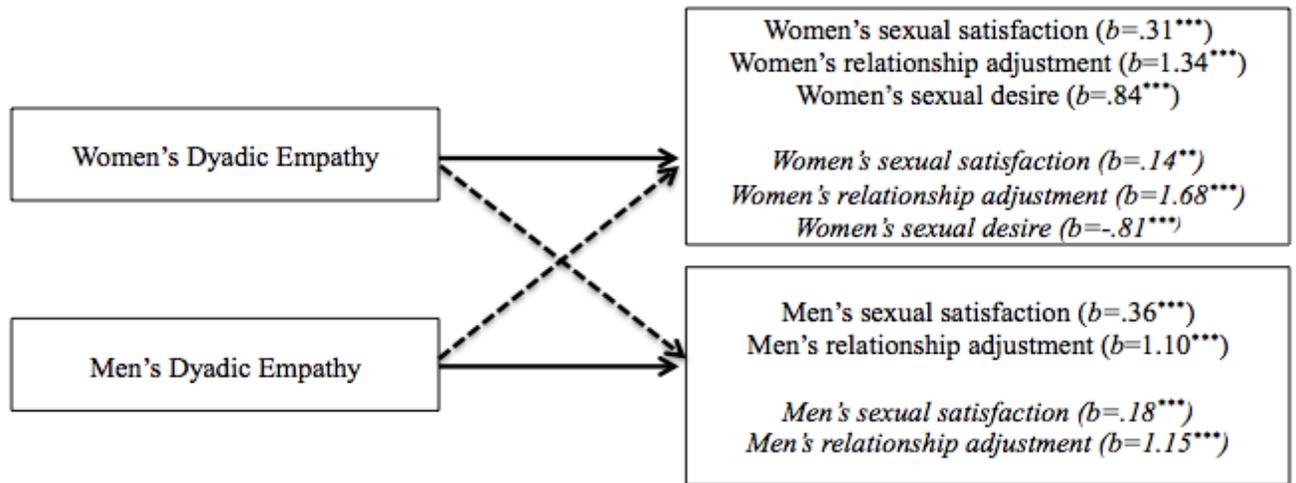


Figure 1. Summary of actor and partner effects of dyadic empathy on sexual satisfaction, relationship satisfaction, and sexual desire. *Note.* Only significant effects are presented in the figure. Solid lines/Roman font indicate actor effects, dashed lines/italic fonts indicate partner effects. ** $p = .001$; *** $p < .001$