

# Observed and Perceived Disclosure and Empathy Are Associated With Better Relationship Adjustment and Quality of Life in Couples Coping With Vulvodynia

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Received: 7 December 2015 / Revised: 19 February 2016 / Accepted: 10 March 2016 / Published online: 10 May 2016  
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**Abstract** Vulvodynia is a common idiopathic vulvovaginal pain condition that adversely affects the quality of life and intimate relationships of afflicted couples. Cross-sectional interpersonal factors, including how couples with vulvodynia communicate with each other, have been linked to women's pain and couples' relationship well-being. The current study investigated the observed and perceived associations between disclosure and empathic response, and couples' relationship adjustment, as well as women's pain during intercourse, and quality of life. Fifty women ( $M$  age = 24.50,  $SD$  = 4.03) diagnosed with vulvodynia and their partners ( $M$  age = 26.10,  $SD$  = 5.70) participated in a filmed discussion of the impact of this condition on their lives. Disclosure and empathic response were assessed by a trained observer and self-reported by participants immediately following the discussion. Analyses were based on the Actor–Partner Interdependence Model. Greater observed empathic response and perceived disclosure in women were associated with their higher quality of life. When women demonstrated greater empathic response, they and their partners reported higher relationship adjustment. In addition, when partners perceived greater empathic response, women reported

higher relationship adjustment. There were no significant associations between disclosure or empathic response and women's pain during intercourse. Disclosure and empathic response may help women sustain the quality of their lives, and couples maintain the quality of their overall relationship while coping with the challenges that vulvodynia poses to their intimate connection. Increasing disclosure and empathic response might be a valuable target for enhancing the efficacy of couple-based interventions for vulvodynia.

**Keywords** Vulvodynia · Empathy · Intimacy · Relationship adjustment

## Introduction

With a prevalence of 8 % in community samples of reproductive-aged women, vulvodynia is characterized by a persistent vulvo-vaginal pain for which there are no relevant physical findings (Harlow et al., 2014). Provoked vestibulodynia (PVD)—an acute recurrent pain when pressure is applied to the vestibule, such as during vaginal intercourse—is suspected to be the most common type of vulvodynia in premenopausal women (Harlow et al., 2014). The etiology of vulvodynia is multidimensional and includes biological, cognitive, affective, and interpersonal factors (Bergeron, Rosen, & Morin, 2011). Controlled studies indicate that vulvodynia adversely affects women's overall quality of life (Arnold, Bachmann, Rosen, Kelly, & Rhoads, 2006; Ponte, Klemperer, Sahay, & Chren, 2009). Vulvodynia disrupts all aspects of women's sexual functioning (Bergeron et al., 2011), and is associated with comorbid pain conditions (Arnold et al., 2006), and depression and anxiety disorders (Khandker et al., 2011). These factors coupled with the common feelings of isolation and invalidation likely contributes to women's poorer quality of life. Women report that having a supportive partner is

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the most important factor in their coping with this pain (Gordon, Panahian-Jand, McComb, Melegari, & Sharp, 2003), yet partners also suffer psychological, sexual, and relationship consequences which may hinder their ability to provide effective support (Smith & Pukall, 2014). Indeed, interpersonal factors may be especially salient in vulvodynia because the pain is typically triggered during partnered sexual activities.

Given that the sexual relationship is an integral component to overall relationship quality (McNulty, Wenner, & Fisher, 2015), it is not surprising that couples note a significant strain of vulvodynia on their relationships. Although the majority of studies have found that affected women report no differences in relationship satisfaction compared to control groups or scale norms, others have shown poorer self-reported relational adjustment compared with pain-free controls (Smith & Pukall, 2011 for review). In qualitative studies, women repeatedly discuss feelings of guilt, shame, and inadequacy as an intimate partner, as well as fears of losing their spouse because of this condition (Ayling & Ussher, 2008; Elmerstig, Wijma, & Bertero, 2008). In one study, 73 % of male partners of women with vulvodynia reported that it negatively impacted their relationships (Smith & Pukall, 2014). Taken together, it is clear that vulvodynia adversely impacts the relationships of affected couples, warranting investigation of possible predictors of couple adjustment.

Past vulvodynia research has relied heavily on self-report measures that typically focus only on the woman's perspective, and are therefore limited in their ability to capture dynamic, couple-level interactions. However, like other chronic health conditions, members of the couple experience the vulvovaginal pain problem independently, and their individual experiences interact to influence how they face it together as an interdependent unit (Latthe, Mignini, Gray, Hills, & Khan, 2006). It is important to use study methods that capture this interdependence as well as isolate the perspectives of each member of the couple (Cano & Williams, 2010). The current study will fill these gaps in the current knowledge by investigating the observed and perceived associations between couple's intimacy—defined as disclosure and empathic response—and women's pain, quality of life, and relationship adjustment as well as their partners' relationship adjustment.

### Interpersonal Factors in Vulvodynia

There is growing evidence that interpersonal factors affect the physical health and well-being of couples (Diamond, Hicks, & Otter-Henderson, 2011; Karademas & Tsaousis, 2014). In chronic pain, theoretical models rooted in operant learning (Fordyce, 1976), communication (Hadjistavropoulos et al., 2011; Sullivan, 2012), empathy (Goubert et al., 2005), and intimacy (Cano & Williams, 2010; Edmund & Keefe, 2015) have all emphasized the critical role of interpersonal relationships in pain and psychosocial adjustment. In support of these models,

researchers have found that factors such as spouse's behavioral responses to pain, verbal and nonverbal communication, and spousal support, influence the development and maintenance of chronic pain and its associated negative consequences (Cano & Williams, 2010; Hadjistavropoulos et al., 2011).

Women with vulvodynia and their partners are often avoidant not only of sexual activities that are painful, but also of non-painful sexual activities and displays of affection (Ponte et al., 2009), which may further contribute to relationship difficulties and reduced quality of life. Cross-sectional and daily diary studies have identified several key relational variables including spouse's responses to pain, romantic attachment, and sexual communication, which are associated with women's pain, quality of life, and the relationship adjustment of women with vulvodynia and their partners (see Rosen, Rancourt, Bergeron, & Corsini-Munt, 2014 for review). In line with findings in other chronic pain populations (Cano, Barterian, & Heller, 2008; Cano, Leong, Williams, May, & Lutz, 2012), recent evidence suggests that how couples with vulvodynia communicate with each other and regulate their emotional experience is linked to their subjective relationship well-being and quality of life (Awada, Bergeron, Steben, Hainault, & McDuff, 2014; Bergeron et al., 2011). For example, couples' greater ambivalence over emotional expression is associated with their lower relationship satisfaction (Awada et al., 2014), and women's self-reported history of depression is associated with poorer quality of life (Ponte et al., 2009). Further, both solicitous (i.e., expressions of concern and sympathy) and facilitative (i.e., encouraging adaptive coping with pain) partner's responses to pain are linked to greater relationship satisfaction in couples with vulvodynia (Rosen, Bergeron, Steban, & Lambert, 2013; Rosen, Muise, Bergeron, Delisle, & Baxter, 2015), possibly because both types of responses are perceived to be validating in respect of women's experience of pain.

According to the empirically validated Interpersonal Process Model of Intimacy (Laurenceau, Barrett, & Pietromonaco, 1998; Reis & Shaver, 1988), intimacy develops through a dynamic and reciprocal process of affective communication between intimate partners. It is composed of two interrelated processes: disclosure and empathic response. Disclosure refers to the communication of personal information, thoughts, and emotions. Empathic response refers to partner responses that are interpreted by the discloser as understanding, validating, and caring. In couples with chronic pain, Cano and colleagues suggest that enhanced intimacy, assessed through observed displays of partner validation (i.e., a component of empathic response), impacts the pain and its associated psychosocial consequences by improving couples' adaptive emotional regulation (Cano et al., 2008; Cano & Williams, 2010). Through the process of disclosure and providing and receiving validation, both the individual in pain and the spouse who is also affected by the pain are better able to process aversive stimuli and cope adaptively with it (Fruzzetti & Iverson, 2006b; Lumley, Sklar,

& Carty, 2012). Indeed, in individuals with chronic pain, physiological arousal is known to decrease with validation (Shenk & Fruzzetti, 2011), and may be accompanied by reduced attention to the pain. In contrast, low empathic responsiveness may indicate rejection and a lack of concern for the person in pain, and is thus disruptive to couples' emotional regulation. Studies have demonstrated a positive association between the features of intimacy and enhanced relationship quality in couples coping with chronic illness (Fekete, Stephens, Parris, Mickelson, & Druley, 2007; Manne et al., 2004).

With regard to pain intensity, findings are inconsistent. Researchers have found that greater expressions of anger and contempt—thought to be the opposite of empathic response—were associated with greater pain intensity in male, but not female, patients with chronic pain (Romano et al., 1992). However, under experimental conditions, higher perceived empathy from a significant other leads to greater induced pain (Hurter, Paloyelis, Williams, & Fotopoulou, 2014), while other experimental studies have found no influence of validation (a key component of empathic response) on pain (Linton, Boersma, Vangronsveld, & Fruzzetti, 2012; Vangronsveld & Linton, 2011). Fewer studies have examined the role of disclosure. Greater disclosure of pain-related distress is linked to greater pain severity, but not relationship distress, in chronic pain couples (Cano et al., 2012). The conceptualization of disclosure in the current study goes beyond pain-related distress to include the disclosure of personal thoughts, emotions, and impacts of the pain on his/her life. It also focuses on disclosure from both members of the couple. No studies to our knowledge have examined intimacy processes and overall quality of life in chronic pain or in vulvodynia.

In vulvodynia, Bois et al. (2013) found that women's greater self-reported sexual and relationship intimacy (defined in terms of disclosure and empathic response combined) was not associated with women's pain during intercourse. Cano argues that it is essential to utilize methods that will optimally generate emotional disclosure and response, such as an observational design, in order to test hypotheses regarding the role of intimacy in chronic pain (Cano & Williams, 2010). It is possible that the retrospective, self-report nature of Bois et al.'s study obscured associations between intimacy and pain. Greater disclosure and empathic response may assist couples in navigating away from penetrative, painful intercourse and toward sexual activities that are more pleasurable, which is likely to reduce the emotional and functional interferences of vulvodynia, thus enhancing women's quality of life. Disclosure and empathic responding may also reduce the distress associated with vulvodynia via more adaptive emotional regulation (Cano et al., 2008; Edmund & Keefe, 2015), and thus reduce the perceived interference of this condition to the couples' intimate relationship, resulting in greater relationship functioning.

## The Current Research

The aim of the current study was to investigate associations between disclosure and empathic response—both observed and perceived—and women's pain, quality of life, and relationship adjustment as well as their partners' relationship adjustment. In line with recent dyadic studies of couples coping with chronic pain (Cano et al., 2008, 2012), we combined both observation and self-report in order to better capture the complex process of intimacy. This approach allowed us to obtain an observed quantitative measurement of couples' intimacy behaviors during a standardized laboratory-based discussion task, as well as the subjective experience of intimacy following this interaction, and with minimal recall bias. Prior studies have rarely assessed both observed and perceived levels of disclosure and empathic response (but see Cano, Leong, Heller, & Lutz, 2009) in order to examine their unique predictive value to patient and spouse's outcomes. We hypothesized that (1) women's and partners' greater observed and perceived disclosure would be associated with their own and their partners' greater relationship adjustment, (2) women's and partners' greater observed and perceived empathic responses would be associated with their own and their partners' greater relationship adjustment. Although the intimacy model of chronic pain (Cano & Williams, 2010) suggests that greater disclosure and empathic response should be associated with women's lower pain during intercourse and greater quality of life, given the lack of prior research and conflicting prior results for pain intensity, we examined these associations in an exploratory manner.

## Method

The current study used data from a completed study of which some results have been published previously, focusing on the patient's and spouse's outcomes of sexual satisfaction and sexual distress (Bois et al. 2015). The outcomes examined in the current paper are distinctly important indices of wellbeing for women with vulvodynia (Arnold et al., 2006; Ponte et al., 2009; Rosen et al., 2014). Comprehensive details regarding the participants and methodology can be found in Bois et al. (2015), while a brief description is reported here.

## Participants

Of the 140 interested women, 87 were ineligible and three couples failed to complete the study. Reasons for ineligibility were the following: 24 (28 %) were not in a relationship, 20 (23 %) indicated that they lived too far away to come to the laboratory, 19 (22 %) had partners who declined participation, and 24 (28 %) were ineligible for other reasons (i.e., fibromyalgia,

pregnancy, chronic vaginal infections). The final sample included 50 women ( $M$  age = 24.50,  $SD$  = 4.03) and their partners ( $M$  age = 26.10,  $SD$  = 5.70), and comprised 49 mixed-sex couples and one same-sex couple. Women's eligibility was determined using a structured interview focusing on symptoms consistent with provoked vestibulodynia (PVD). Inclusion criteria were: (1) pain during vaginal penetration which is subjectively distressing, occurs(ed) on 75 % of intercourse attempts in the last 6 months, and had lasted for at least 6 months, (2) pain located at the entrance of the vagina, (3) pain limited to intercourse and other activities involving pressure to the vestibule (e.g., bicycling), and (4) involved in a committed romantic relationship of least 6 months. Exclusion criteria were: (1) vulvar pain not clearly linked to intercourse or pressure applied to the vestibule, (2) absence of sexual activity (defined as manual or oral stimulation, intercourse) with the spouse in the last month, and (3) presence of one of the following: active infection previously diagnosed by a physician or self-reported infection, vaginismus (as assessed by a screening question regarding ability to have penetrative vaginal intercourse), pregnancy, and age less than 18 or greater than 45 years. Of the final sample, three (6 %) women did not attend their scheduled diagnostic gynecological examination, and their diagnosis of PVD was based on self-report during the structured interview. These women did not differ in regards to sociodemographic characteristics from those who were diagnosed by a gynecologist. Further details, including information regarding participant recruitment, eligibility, and attrition, as well as a complete description of the gynecological exam, is reported in Bois et al. (2015).

## Procedure

Participants provided informed consent and completed questionnaires assessing their sociodemographics and relationship adjustment. Women also completed a measure of pain intensity during intercourse and quality of life. Following this, couples completed a discussion task consisting of three stages: (1) a "warm-up" conversation where they spent 5 min discussing something they recently read in the newspaper or saw on television (Manne et al., 2004); (2) a filmed conversation about vulvodynia. Each partner took a turn as 'speaker' and 'listener' (order randomly assigned). The 'speaker' was asked to share the ways in which vulvodynia has affected his or her life. The 'listener' was asked to react as he/she would like. After 10–15 min, the 'speaker' and 'listener' switched roles. Couples were instructed to discuss the topic in as natural a way as possible and to act as they would at home. Indeed, participants indicated that this discussion was similar to what they would have had at home; and (3) participants completed a brief questionnaire measuring perceptions of their own and their partners' disclosure and empathic response during the discussion. Each couple received \$50 compensation, educational information about vulvo-vaginal pain, and references to local health professionals

with expertise in vulvodynia. This research was approved by the institution's Ethical Review Boards.

## Self-Report Measures

The self-report measures of perceived empathic response and disclosure were based on Laurenceau's work (Laurenceau et al., 1998), but were adapted to reflect the definitions as outlined in the Interpersonal Process Model of Intimacy (Reis & Shaver, 1988). Reliability statistics for all measures can be found in Table 2.

### *Perceived Disclosure*

Women's and partners' perceived disclosure during the discussion task was measured using 16 items. Items referred to disclosure of thoughts, information, positive emotions, negative emotions, hopes, and behavior, as well as their sexuality, and the impact of the pain on their life. Eight items assessed participants' perceptions of their own disclosure (e.g., "During the discussion, to what extent did you disclose your thoughts?"), and eight parallel items assess participants' perceptions of their partner's disclosure (e.g., "During the discussion, to what extent did your partner self-disclose about his/her thoughts?"). Ratings are made on a 5-point Likert scale (1 = *not at all*, 5 = *very much*). Higher scores indicated greater perceived disclosure and a total score could range from 16 to 80.

### *Perceived Empathic Response*

Participants reported their perception of their spouse's empathic response during the discussion task. Women's and partners' perceived empathic response was assessed using three items in which participants report the degree to which they felt understood, accepted, and cared for by their partner during the discussion. Participants responded on a 5-point Likert-scale (1 = *not at all* to 5 = *very much*). Higher scores indicated greater perceived empathic response. Total scores could range between 3 and 15.

### *Intercourse Pain Intensity*

Women's average intercourse pain intensity during the last 6 months was assessed using a numerical rating scale (NRS) that ranged from 0 (*no pain*) to 10 (*worst pain ever*). NRSs are recommended for the assessment of clinical pain intensity, and correlate with other measures of pain intensity (Hjermstad et al., 2011).

### *Quality of Life*

Women's quality of life was assessed using an adapted version of the well-validated Skindex-29 (Chren, Lasek, Flocke,

& Zyzanski, 1997), a measure of quality of life for those with skin diseases. The Skindex-29 was adapted previously for use with women with vulvodynia (Ponte et al., 2009). Consistent with Ponte et al. (2009), 15 items adapted from the Skindex-29 as well as three additional items were included to assess the emotional (e.g., “I am frustrated by my vulvo-vaginal pain”) and functional (e.g., “my vulvo-vaginal pain interferes with my sex life”) dimensions of women’s quality of life during the previous four weeks. Participants respond on a 10-point Likert-scale (10 = *no effect* to 100 = *maximum effect*). Responses were reverse coded for ease of interpretation. Total scores could range between 100 and 1000, and lower scores indicated poorer quality of life.

### Relationship Adjustment

Women’s and partners’ relationship adjustment was assessed using the brief version of the Dyadic Adjustment Scale (DAS-4; Sabourin, Valois, & Lussier, 2005). The DAS-4 includes four items. Participants responded to the first three items (e.g., “In general, how often do you think that things between you and your partner are going well?”, “How often do you discuss or have you discussed divorce, separation, or terminating your relationship?”, and “Do you confide in your spouse?”) on a 6-point Likert-scale (0 = *never*, 5 = *all the time*). Participants responded to the fourth item (i.e., “Please select the response which best describes the degree of happiness, all things considered, of your relationship.”) on a 7-point Likert-scale (0 = *extremely unhappy*, 6 = *perfect*). Higher scores indicated greater perceived relationship adjustment. Total scores could range between 0 and 21. The DAS-4 has demonstrated good psychometrics in previous research (Sabourin et al., 2005).

### Manipulation Check

Participants were asked to respond to the following question on a 5-point scale (1 = *not at all*, 5 = *very much*): “To what extent did the discussion you had with your partner resemble a discussion you would have had at home”.

### Observational Measures

The observational measures were developed for the purposes of the current study. Measure development was informed by Reis and Shaver’s (1988) Model of Intimacy, previous research using observational designs (Laurenceau et al., 1998; Manne et al., 2004), collaboration with senior psychologists in couple therapy, and a pilot study with couples experiencing vulvodynia. For the observational measures, the trained observer first had to reach good interrater reliability with the trainer using the pilot participants, before moving on to the current data.

### Observed Empathic Response

Women’s and partners’ empathic response were assessed using the Empathic Response Card-Sort (ERCS). The ERCS is a 44-item measure that describes the quality of empathic responses including empathic (e.g., minimal empathic verbal attention; empathic attempt to understand the other by asking questions on his/her behaviors and/or personal experiences) and nonempathic (e.g., listener reprimands or criticizes the speaker; speaker expresses distress to the listener, but listener is not aware of it, ignores it, or does not respond to it) responses. After watching a couple’s videotaped discussion, an observer sorted the ERCS items into five piles. Each pile reflected the degree to which items described the ‘listeners’ behavior during the task (−2 = *very unlike her/his behavior* to 2 = *very similar to her/his behavior*). To calculate a total observed empathic response score, scores on the nonempathic items were reversed and added to scores on empathic items. Thus, higher scores indicated greater observed empathic response, and total observed empathic response scores could range between −88 and 88. Twenty percent of randomly selected videotaped discussions were coded by two independent raters. Interrater reliability was very good (intraclass correlation = .85).

### Observed Disclosure

Women and partners’ observed disclosure were assessed using the Disclosure Coding System (DCS). The DCS is a 7-item measure that assesses the speaker’s disclosure of personal thoughts and hopes, emotions, and impacts of the pain on his/her life. The DCS also assessed the centrality of the disclosure (i.e., whether the speaker is central to the experience when he/she discloses) and was designed to capture both verbal and nonverbal disclosure. After watching a couple’s videotaped discussion, a trained observer assigned ratings on a 5-point Likert-scale (1 = *not at all* to 5 = *very much*). All seven items were summed to create a total observed disclosure score. For example, individuals received higher scores if they self-disclosed fewer but personal thoughts, and lower scores when they self-disclosed many but impersonal thoughts. Thus, higher scores indicated greater observed disclosure and total observed disclosure scores could range between 7 and 35. Twenty percent of videotaped discussions were coded by two independent raters. Interrater reliability was adequate (intraclass correlation = .70).

### Data Analyses

The effects of observed and perceived disclosure and empathic response on women’s quality of life were tested using a multivariate regression model as only women gave ratings of these variables. There were no significant correlations between observed and perceived disclosure and empathic response

and women's self-reported pain during intercourse, and thus, no further analyses were performed. To examine associations between observed and perceived disclosure and empathic response and couples' relationship adjustments, analyses were guided by the Actor–Partner Interdependence Model. Data were analyzed with multilevel modeling using mixed models in SPSS 20.0 in order to account for the nonindependence of the dyadic data (Kenny, Kashy, & Cook, 2006). As both women's and spouse's scores are modeled concurrently, the nonindependence was estimated by permitting the residuals of both partners' outcome variables to correlate and by examining the associations between an individual's predictor variables and their partner's outcome variables. Observed disclosure was not included in the analyses because this variable was not associated with any of the dependent variables within a partner and across partners, both in women and their romantic partners. Individual data (Level 1) was nested within couple dyads (Level 2) to create a two level model with between-person analyses at the first level and between-dyad analyses at the second level. Thus, we assessed the associations between women's and partners' disclosure and empathic response and their own outcomes (i.e., actor effects) as well as the associations between women's and partners' disclosure and empathic response and their spouse's outcomes (i.e., partner effects). Mean substitution was used to replace missing values. Fewer than 5 % of self-report data points were missing.

## Results

### Descriptive Statistics and Bivariate Correlations

Descriptive characteristics of the sample are reported in Table 1 and correlations between all variables are reported in Table 2. Women's age, pain duration, and women and partners' education, relationship duration, and income were not associated with the outcomes. Women's and partners' observed and perceived disclosure and empathic response were not correlated with women's pain intensity during intercourse. Women's observed empathy, women's and partners' perceived empathy, and women's perceived disclosure were positively correlated with women's quality of life. Women's and partners' relationship adjustments were significantly correlated with each of women's and partners' perceived and observed measures of empathic response, as well as the perceived measures of disclosure. All predictor and outcome variables were moderately correlated between women and partners. Observed and perceived empathic measures were significantly correlated for women and partners, whereas observed and perceived disclosure measures were unrelated for women and approached significance for partners. Participants indicated that the discussion they had in the laboratory was very similar to a discussion

**Table 1** Descriptive statistics for the sample ( $N = 50$  couples; Bois et al., 2015)

Variable	<i>M</i> (range) or <i>N</i> (%)	<i>SD</i>
Age (years)		
Women	24.50 (18–34)	4.03
Partners	26.10 (19–46)	5.70
Education level (years)		
Women	15.92 (12–22)	2.06
Partners	15.54 (9–21)	2.42
Marital status		
Cohabiting	26 (52)	–
Married	3 (6)	–
Committed	21 (42)	–
Relationship length (years)	3.45 (0–14)	2.99
Couple's annual income		
\$0–19,999	11 (22)	–
\$20,000–39,999	10 (20)	–
\$40,000–59,999	11 (22)	–
\$60,000 and over	18 (36)	–
Women's pain duration (months)	51.50 (6–180)	43.34

they would have had at home:  $M = 3.96$   $SD = 0.92$  for women, and  $M = 3.92$ ,  $SD = 0.99$  for partners.

### Associations Between Disclosure, Empathic Response, and Women's Quality of Life

In support of our hypotheses and as shown in Table 3, greater observed empathy in women was associated with their higher quality of life ( $\beta = 0.32$ ,  $t(48) = 2.10$ ,  $p < .05$ ). In addition, women's greater perceived disclosure was associated with their higher quality of life ( $\beta = 0.36$ ,  $t(48) = 2.24$ ,  $p < .05$ ). The overall model was significant ( $F(6,48) = 3.30$ ,  $p < .01$ ) and accounted for 32 % of the variance in women's quality of life. There were no significant effects of partners' observed empathy, women's and partners' perceived empathy, or partners' perceived disclosure on women's quality of life.

### Associations Between Disclosure, Empathic Response, and Couples' Relationship Adjustment

In line with our hypotheses (Table 4), when women demonstrated greater empathic response, they and their partners reported higher relationship adjustment. When partners perceived greater empathic response from their partner, women reported higher relationship adjustment. There were no significant effects of partners' observed empathic response, women's perceived empathic response, or perceived disclosure on relationship adjustment.

**Table 2** Descriptive statistics and correlations among the study variables ( $N = 50$  couples)

	Descriptive statistics			Correlations											
	<i>M</i>	<i>SD</i>	$\alpha$	2	3	4	5	6	7	8	9	10	11	12	
1. Pain (W)	6.94	1.35	–	–.01	.05	.33*	–.10	–.06	.14	.09	.13	–.02	.15	.28	
2. Qual life (W)	942.04	233.47	.86	–	.44**	.38**	.36*	.33*	.47**	.25	.21	.36*	–.18	–.20	
3. Rel adj (W)	15.33	3.52	.84	–	.61***	.35*	.52***	.35*	.34*	.51***	.29*	.09	.03		
4. Rel adj (P)	15.62	3.19	.76	–	.33*	.40**	.31*	.42**	.54***	.38**	.11	.17			
5. Perc emp (W)	13.38	2.19	.82	–	.40**	.55***	.31*	.35*	.47**	.04	–.14				
6. Perc emp (P)	13.02	2.34	.88	–	.42**	.76***	.46**	.47**	.17	–.21					
7. Perc disc (W)	63.96	9.07	.87	–	.43**	.27	.32	–.01	–.05						
8. Perc disc (P)	66.46	9.73	.92	–	.38**	.44**	–.05	–.27							
9. Obs emp (W)	22.04	21.97	.91	–	.43**	–.01	–.19								
10. Obs em (P)	30.22	19.89	.88	–	.29*	.02									
11. Obs disc (W)	23.20	4.31	.76	–	.48***										
12. Obs disc (P)	9.93	5.14	.85	–											

W woman, P partner, “Pain” Intensity of Pain, “Qual life” Quality of Life, “Rel Adj” Relationship Adjustment, “Perc Emp” Perceived Empathy, “Perc Disc” Perceived Disclosure, “Obs Emp” Observed Empathy, “Obs Disc” Observed Disclosure

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

**Table 3** Regression analysis predicting women’s quality of life

Predictor variable	<i>b</i> ( <i>SE</i> )	$\beta$	<i>t</i>
Observed empathy			
Women	3.33 (1.59)	0.32*	2.10*
Partners	–1.27 (1.91)	–0.12	–.664
Perceived empathy			
Women	8.85 (17.61)	0.08	.503
Partners	10.47 (20.97)	0.12	.499
Perceived disclosure			
Women	9.34 (4.18)	0.36*	2.24*
Partners	–2.17 (4.85)	–0.09	–.45

$N = 49$ ,  $R^2 = .32$

*b* unstandardized estimates, *SE* standard error,  $\beta$  standardized coefficient

\*  $p < .05$

## Discussion

This study investigated the associations between observed and perceived disclosure and empathic response, and women’s pain, quality of life, and relationship functioning as well as their partners’ relationship functioning. Empathic response and disclosure were unrelated to women’s pain during intercourse. Greater observed empathy in women and women’s greater perceived disclosure were associated with their own higher quality of life. When women demonstrated greater empathic response, they and their partners reported higher relationship adjustment. Further, when partners perceived greater empathic response from their female partner, women reported higher relationship adjustment. Sex and couple therapy frequently focuses on enhancing

couple intimacy as a therapeutic goal (Schnarch, 1991), although empirical evidence to support its integration is limited and primarily cross-sectional (Bois et al., 2013; McCabe, 1997). The current study adds to a small but growing observational literature examining intimacy processes in couples dealing with chronic pain (Cano et al., 2008, 2009, 2012). Findings support the interpersonal process model of intimacy demonstrating that empathic response plays an important role in relationship quality, although disclosure did not. Results are also in line with intimacy models of chronic pain (Cano & Williams, 2010), suggesting that disclosures that are followed by empathic responses may enhance the emotion regulation of the couple, leading to their greater relationship adjustment and women’s quality of life.

**Table 4** Associations between observed and perceived empathy, perceived disclosure, and relationship adjustment

Predictor variable	Relationship adjustment			
	Women		Partners	
	<i>b</i> ( <i>SE</i> )	<i>t</i>	<i>b</i> ( <i>SE</i> )	<i>t</i>
Observed empathy				
Women	.05 (.02)	2.42*	.06 (.02)	2.79**
Partners	−.01 (.03)	−.36	.01 (.02)	.55
Perceived empathy				
Women	.09 (.25)	.37	.10 (.23)	.42
Partners	.68 (.30)	2.29*	−.06 (.27)	−.20
Perceived disclosure				
Women	.05 (.06)	.90	.02 (.05)	.42
Partners	−.07 (.07)	−.98	.07 (.06)	1.08

dfs range from 40 to 43

*b* unstandardized estimates, *SE* standard error

\*  $p < .05$ , \*\*  $p < .01$

Women's greater perceived disclosure was associated with their higher self-reported quality of life. Although there is evidence for the importance of disclosure of pain-related distress for patient pain and psychosocial distress (Cano et al., 2012), to our knowledge there are no prior studies linking reciprocal intimate disclosures to pain patients' quality of life. The quality-of-life measures used in this study encompassed disruptions to women's emotions (e.g., frustration and shame) and functioning (e.g., interference with social, romantic, and sexual relationships) as a result of their vulvodynia. When women feel that they and their partners share more thoughts and feelings concerning the pain, they may be better able to work together in adapting their sexual activities to be less painful and more pleasurable. Indeed, a cross-sectional study showed that greater perceived intimacy (defined as a combination of disclosure and empathic response) among couples with vulvodynia was associated with women's enhanced self-efficacy for coping with the pain and greater sexual satisfaction (Bois et al., 2013). Given that vulvodynia interferes with all aspects of the female sexual response (Bergeron et al., 2011) and is associated with feelings of inadequacy, guilt, and shame (Ayling & Ussher, 2008), engaging in less or nonpainful sexual behaviors could in turn lead to a reduced negative impact on women's quality of life. In accordance with intimacy models (Cano & Williams, 2010; Edmund & Keefe, 2015), greater perceived disclosure may allow women to better process emotionally charged information about their pain and couples' shared sexuality, thus enhancing feeling of closeness and positive affect, and reducing couples' avoidance of affection and sexual activities. In this way, perceptions of reciprocal disclosure may buffer against disruptions to women's quality of life.

Women's higher observed empathic response was associated with their own greater quality of life, and their own and

their partners' greater relationship adjustment. In addition, spouse's higher perceived empathic response was related to women's higher relationship adjustment, illustrating the link between partners' perceptions and women's relationship quality. Together, these findings highlight the importance of women's empathic response (whether observed during a filmed discussion or perceived by their spouse) to their own quality of life, and their own and their spouse's relational functioning. Empathic response expresses feelings of validation, affection, and investment in the relationship. This reaction may in turn reinforce perceptions that the couple is facing the vulvovaginal pain problem together as a unit, contributing to greater relational well-being (Dagan et al., 2014). It might also be that women's empathic response communicates understanding and support about how difficult vulvodynia is for their partners, and it makes both members of the couple feel more relationally satisfied when the woman engages in this perspective taking. Indeed, a central tenet of cognitive-behavioral couples' therapy for vulvodynia is to shift the focus from the woman as the pain patient to the couple as a unit in which both members are affected by and affect the pain (Corsini-Munt, Bergeron, Rosen, Mayrand, & Delisle, 2014).

Our findings are consistent with growing evidence that relational intimacy may buffer against the distressing consequences of sexual problems (Stephenson & Meston, 2010), including relationship dissatisfaction and poorer quality of life. Theoretical models of intimacy in chronic pain suggest that empathic response may enhance emotion regulation for both partners by allowing each person to process stressful stimuli in an adaptive way (Cano & Williams, 2010; Fruzzetti & Iverson, 2006a). In this context, women's pain and couples' corresponding distress and feelings of isolation may be experienced as less disruptive and thus its interference with the quality of the relationship and



women's quality of life may be reduced. In a study of community couples, negative affect observed during a discussion of a sexual conflict was associated with lower relationship satisfaction (Rehman et al., 2011a). The moderating role of distress in the associations between empathic response and relationship adjustment in vulvodynia should be tested in future research. When women are empathically responsive they might foster more facilitative spouse's responses (i.e., demonstrations of affection and encouragement of adaptive coping) and fewer negative spouse's responses (i.e., expressions of hostility and frustration), which have been associated with greater relationship satisfaction in women with vulvodynia (Rosen et al., 2015). Finally, repeated experiences of empathic response over time may lead to feelings of safety and security, or the reverse may be true: women who engage in more empathic responding might already have a more secure romantic attachment style. Secure romantic attachment styles are linked to greater relationship adjustment (Simpson, 1990).

There was no effect of observed or perceived disclosure or empathic response on women's pain intensity during intercourse, which is consistent with a prior cross-sectional study in vulvodynia (Bois et al., 2013). There have been conflicting prior results regarding the role of these variables in pain, with some studies indicating that higher perceived empathy and disclosure of pain-related distress is linked to greater pain (Cano et al., 2012; Hurter et al., 2014), and others showing no associations (Linton et al., 2012; Vangronsveld & Linton, 2011). It appears that the benefits of empathic response experienced in the context of vulvodynia may be more relevant to interpersonal and functional impairments than to pain. It is also possible that other facets of the pain experience, beyond pain intensity, that were not captured in the current study may be impacted by disclosure and empathic response (Edmund & Keefe, 2015). For example, this type of communication could affect the emotional experience associated with the pain such as the degree of pain catastrophizing and pain acceptance, or confidence in one's ability to manage the pain.

There has been far less attention paid to the role of disclosure in comparison to empathic response in chronic pain couples. The current study was the first to our knowledge to attempt an observational coding system for more extensive disclosure (i.e., beyond disclosure of pain-related distress as in; Cano et al., 2009). The lack of significant correlations between observed disclosure and our outcomes, despite numerous studies demonstrating the important role of disclosure in intimate relationships (Manne et al., 2004; Rehman, Rellini, & Fallis, 2011b), suggests that future research is needed to refine this system, especially given the fairly low interrater reliability observed in the current study. Future studies might extend the number of nonverbal and verbal behaviors included in the observational measure of disclosure, which may contribute a more specific measure of this construct and allow for higher interrater reliability.

## Strengths and Limitations

The combination of observational and self-report methods close in time to the discussion task allowed us to examine couples' actual behaviors and reduce the likelihood of socially desirable responding and memory biases. This method also enabled us to examine the differential impacts of observed and perceived levels of disclosure and empathic response in chronic pain couples, which Edmund and Keefe (2015) recently called for. An observational method better represents the natural interactions occurring between the couple, and indeed, participants in this study rated the discussions to be characteristic of conversations they had at home. Still, the laboratory context is more artificial and may have made couples more inhibited in their interactions.

Some additional limitations of this research should be noted. Our observational coding system included primarily verbal displays, and a few general nonverbal aspects of partner responses (e.g., expresses affection through physical contact). Future observational studies should incorporate more nuanced nonverbal displays of empathic response to examine their potential impact above and beyond verbal communications. The findings pertain to women with PVD and should be expanded to other types of vulvodynia, such as generalized. The study had a relatively low response rate, limiting its generalizability, but reflecting the intensive nature of the study design. Finally, the cross-sectional design of this study does not allow for causal conclusions. In addition, disclosure and empathic responses were assessed in relation to the specific discussion task; however, relationship adjustment and quality of life were retrospective measures of the previous four weeks, and pain during intercourse was reported on for the previous six months, on average. It might be interesting to measure couples' relationship and quality-of-life experience immediately following the discussion task (e.g., "how satisfied do you feel with your relationship *right now*") to better determine the specific influence of intimate communications.

## Conclusions

Our results suggest that disclosure and empathic responding may be beneficial in couples affected by vulvodynia. The impact of this type of communication may depend on the goals for disclosure or nondisclosure, which could range from enhancing intimacy to obtaining support to protecting the relationship from harm (Manne, Siegel, Kashy, & Heckman, 2014). In breast cancer patients, avoidance of certain topics was not detrimental to relationship satisfaction when the woman felt it was safe to talk, but she chose not to (Donovan-Kicken & Caughlin, 2010). Future research might investigate what are the goals for disclosure and nondisclosure as well as the moderating influence of

these goals in the associations between disclosure, empathic response and adjustment in vulvodynia, and chronic pain more generally.

Disclosure and empathic responding may be a useful strategy to help women maintain their quality of life and help couples maintain their overall relationship adjustment while coping with the challenges that vulvodynia poses to their intimate connection. In other chronic illnesses, engaging in relationship maintenance strategies facilitates greater dyadic adjustment over time (Badr & Carmack Taylor, 2008). Moreover, a recent study showed that validation training for partners of individuals with chronic pain is feasible and has a positive emotional impact for the person with pain (Edlund, Carlsson, Linton, Fruzzetti, & Tillfors, 2015). In conclusion, our findings suggest that increasing disclosure and empathic response might be a valuable target for enhancing the efficacy of couple-based interventions for vulvodynia, for which there is preliminary evidence (Corsini-Munt et al., 2014).

**Acknowledgments** This research was supported by a postdoctoral fellowship from the Canadian Institutes of Health Research (CIHR) awarded to the first author, a doctoral fellowship awarded to the second author by the Social Sciences and Humanities Research Council, and an operating grant from the CIHR awarded to the last author. We are grateful to Delphine Lamothe-Maillé, Marilyn Dumais, and Catherine Grégoire for their assistance with data collection, and to the couples who contributed to this work.

#### Compliance with Ethical Standards

**Conflicts of interest** The authors have no conflicts of interest.

**Human and Animal Rights and Informed Consent** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

#### References

- Arnold, L. D., Bachmann, G. A., Rosen, R., Kelly, S., & Rhoads, G. G. (2006). Vulvodynia: Characteristics and associations with comorbidities and quality of life. *Obstetrics and Gynecology*, *107*, 617–624. doi:10.1097/01.AOG.0000199951.26822.27.
- Awada, N., Bergeron, S., Steben, M., Hainault, V., & McDuff, P. (2014). To say or not to say: Dyadic ambivalence over emotional expression and its associations with pain, sexuality and distress in couples coping with provoked vestibulodynia. *Journal of Sexual Medicine*, *11*, 1271–1282. doi:10.1111/jsm.12463.
- Ayling, K., & Ussher, J. M. (2008). “If sex hurts, am I still a woman?” The subjective experience of vulvodynia in hetero-sexual women. *Archives of Sexual Behavior*, *37*, 294–304. doi:10.1007/s10508-007-9204-1.
- Badr, H., & Carmack Taylor, C. L. (2008). Effects of relational maintenance on psychological distress and dyadic adjustment among couples coping with lung cancer. *Health Psychology*, *27*, 616–627. doi:10.1037/0278-6133.27.5.616.
- Bergeron, S., Rosen, N. O., & Morin, M. (2011). Genital pain in women: Beyond interference with intercourse. *Pain*, *152*, 1223–1225. doi:10.1016/j.pain.2011.01.035.
- Bois, K., Bergeron, S., Rosen, N. O., Mayrand, M. H., Brassard, A., & Sadikaj, G. (2015). Intimacy, sexual satisfaction and sexual distress in vulvodynia couples: An observational study. *Health Psychology*. doi:10.1037/hea0000289.
- Bois, K., Bergeron, S., Rosen, N. O., McDuff, P., & Gregoire, C. (2013). Sexual and relationship intimacy among women with provoked vestibulodynia and their partners: Associations with sexual satisfaction, sexual function and pain self-efficacy. *Journal of Sexual Medicine*, *10*, 2024–2035. doi:10.1111/jsm.12210.
- Cano, A., Barterian, J. A., & Heller, J. B. (2008). Empathic and nonempathic interaction in chronic pain couples. *Clinical Journal of Pain*, *24*, 678–684. doi:10.1097/AJP.0b013e31816753d8.
- Cano, A., Leong, L. E. M., Heller, J. B., & Lutz, J. R. (2009). Perceived entitlement to pain-related support and pain catastrophizing: Associations with perceived and observed support. *Pain*, *147*, 249–254. doi:10.1016/j.pain.2009.09.023.
- Cano, A., Leong, L. E. M., Williams, A. M., May, D. K. K., & Lutz, J. R. (2012). Correlates and consequences of the disclosure of pain-related distress to one’s spouse. *Pain*, *153*, 2441–2447. doi:10.1016/j.pain.2012.08.015.
- Cano, A., & Williams, A. C. (2010). Social interaction in pain: Reinforcing pain behaviors or building intimacy? *Pain*, *149*, 9–11. doi:10.1016/j.pain.2009.10.010.
- Chren, M. M., Lasek, R. J., Flocke, S. A., & Zyzanski, S. J. (1997). Improved discriminative and evaluative capability of a refined version of Skindex, a quality-of-life instrument for patients with skin diseases. *Archives of Dermatology*, *133*, 1433–1440. doi:10.1001/archderm.1997.03890470111018.
- Corsini-Munt, S., Bergeron, S., Rosen, N. O., Mayrand, M., & Delisle, I. (2014). Feasibility and preliminary effectiveness of a novel cognitive-behavioral couple therapy for provoked vestibulodynia: A pilot study. *Journal of Sexual Medicine*, *11*, 2515–2527. doi:10.1111/jsm.12646.
- Dagan, M., Sanderman, R., Hoff, C., HJeroen Meijerink, W. J. H., Baas, P. C., van Haastert, M., & Hagedoorn, M. (2014). The interplay between partners’ responsiveness and patients’ need for emotional expression in couples coping with cancer. *Journal of Behavioral Medicine*, *37*, 828–838. doi:10.1007/s10865-013-9543-4.
- Diamond, L. M., Hicks, A. M., & Otter-Henderson, K. D. (2011). Individual differences in vagal regulation moderate associations between daily affect and daily couple interactions. *Personality and Social Psychology Bulletin*, *37*, 731–744. doi:10.1177/0146167211400620.
- Donovan-Kicken, E., & Caughlin, J. P. (2010). A multiple goals perspective on topic avoidance and relationship satisfaction in the context of breast cancer. *Communication Monographs*, *77*, 231–256. doi:10.1080/03637751003758219.
- Edlund, S. M., Carlsson, M. L., Linton, S. J., Fruzzetti, A. E., & Tillfors, M. (2015). I see you’re in pain—The effects of partner validation on emotions in people with chronic pain. *Scandinavian Journal of Pain*, *6*, 16–21. doi:10.1016/j.sjpain.2014.07.003.
- Edmund, S. N., & Keefe, F. J. (2015). Validating pain communication: Current state of the science. *Pain*, *156*, 215–219. doi:10.1097/01.j.pain.0000460301.18207.c2.
- Elmerstig, E., Wijma, B., & Bertero, R. N. T. (2008). Why do young women continue to have sexual intercourse despite pain? *Journal of Adolescent Health*, *43*, 357–363. doi:10.1016/j.jadohealth.2008.02.011.
- Fekete, E. M., Stephens, M. A. P., Parris, A., Mickelson, K. D., & Druley, J. A. (2007). Couples’ support provision during illness: The role of perceived emotional responsiveness. *Families, Systems, & Health*, *25*, 204–217. doi:10.1037/1091-7527.25.2.204.
- Fordyce, W. E. (1976). *Behavioral methods for chronic pain and illness*. St. Louis, MO: CV Mosby.

- Fruzzetti, A. E., & Iverson, K. M. (2006a). Intervening with couples and families to treat emotion dysregulation and psychopathology. In D. K. Snyder, J. A. Simpson, & J. N. Hughes (Eds.), *Emotional regulation in couples and families: Pathways to dysfunction and health* (pp. 249–267). Washington, DC: American Psychological Association.
- Fruzzetti, A. E., & Iverson, K. M. (2006b). Mindfulness, acceptance, validation, and “individual” psychotherapy in couples. In D. R. Snyder, J. A. Simpson, & J. A. Hughes (Eds.), *Emotion regulation in couples and families: Pathways to dysfunction and health* (pp. 249–267). Washington, DC: American Psychological Association.
- Gordon, A. S., Panahian-Jand, M., McComb, F., Melegari, C., & Sharp, S. (2003). Characteristics of women with vulvar pain disorders: Responses to a web-based survey. *Journal of Sex and Marital Therapy*, 29(Suppl. 1), 45–58. doi:10.1080/713847126.
- Goubert, L., Craig, K. D., Vervoort, T., Morley, S., Sullivan, M. J. L., Williams, A. C., ... Crombez, G. (2005). Facing others in pain: The effects of empathy. *Pain*, 118, 285–288. doi: 10.1016/j.pain.2005.10.025.
- Hadjistavropoulos, T., Craig, K. D., Duck, S., Cano, A., Goubert, L., Jackson, P., ... Fitzgerald, T. D. (2011). A biopsychosocial formulation of pain communication. *Psychological Bulletin*, 137, 910–939. doi: 10.1037/a0023876.
- Harlow, B. L., Kunitz, C. G., Nguyen, R. H., Rydell, S. A., Turner, R. M., & MacLehose, R. F. (2014). Prevalence of symptoms consistent with a diagnosis of vulvodynia: Population based estimates from 2 geographical regions. *American Journal of Obstetrics and Gynecology*, 210, e1–e8. doi:10.1016/j.ajog.2013.09.033.
- Hjermstad, M. J., Fayers, P. M., Haugen, D. F., Caraceni, A., Hanks, G. W., Loge, J. H., ... Kaasa, S. (2011). Studies comparing Numerical Rating Scales, Verbal Rating Scales, and Visual Analogue Scales for assessment of pain intensity in adults: A systematic literature review. *Journal of Pain and Symptom Management*, 41, 1073–1093. doi: 10.1016/j.jpainsymman.2010.08.016.
- Hurter, S., Paloyelis, Y., Williams, A. C., & Fotopoulou, A. (2014). Partners’ empathy increases pain ratings: Effects of perceived empathy and attachment style on pain report and display. *Journal of Pain*, 15, 934–944. doi:10.1016/j.jpain.2014.06.004.
- Karademas, E. C., & Tsaousis, I. (2014). The relationship of patient and spouse personality to cardiac patients’ health: Two observational studies of mediation and moderation. *Annals of Behavioral Medicine*, 47, 79–91. doi:10.1007/s12160-013-9523-5.
- Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York: Guilford Press.
- Khandker, M., Brady, S. S., Vitonis, A. F., MacLehose, R. F., Stewart, E. G., & Harlow, B. L. (2011). The influence of depression and anxiety on risk of adult onset vulvodynia. *Journal of Women’s Health*, 20, 1445–1451. doi:10.1089/jwh.2010.2661.
- Latthe, P., Mignini, L., Gray, R., Hills, R., & Khan, K. (2006). Factors predisposing women to chronic pelvic pain: Systematic review. *British Medical Journal*, 332, 749–755. doi:10.1136/bmj.38748.697465.55.
- Laurenceau, J.-P., Barrett, L. F., & Pietromonaco, P. R. (1998). Intimacy as an interpersonal process: The importance of self-disclosure, partner disclosure, and perceived partner responsiveness in interpersonal exchange. *Journal of Personality and Social Psychology*, 74, 1238–1251. doi:10.1037/0022-3514.74.5.1238.
- Linton, S. J., Boersma, K., Vangronsveld, K. L. H., & Fruzzetti, A. E. (2012). Painfully reassuring? The effects of validation on emotions and adherence in a pain test. *European Journal of Pain*, 16, 592–599. doi:10.1016/j.ejpain.2011.07.011.
- Lumley, M. A., Sklar, E. R., & Carty, J. N. (2012). Emotional disclosure interventions for chronic pain: From the laboratory to the clinic. *Translational Behavior Medicine*, 2, 73–81. doi: 10.1007/s13142-011-0085-4.
- Manne, S. L., Ostroff, J., Rini, C., Fox, K., Goldstein, L., & Grana, G. (2004). The interpersonal process model of intimacy: The role of self-disclosure, partner disclosure, and partner responsiveness in interactions between breast cancer patients and their partners. *Journal of Family Psychology*, 18, 589–599. doi:10.1037/0893-3200.18.4.589.
- Manne, S. L., Siegel, S. D., Kashy, D. A., & Heckman, C. J. (2014). Cancer-specific relationship awareness, relationship communication, and intimacy among couples coping with early-stage breast cancer. *Journal of Social and Personal Relationships*, 31, 314–334. doi:10.1177/0265407513494950.
- McCabe, M. (1997). Intimacy and quality of life among sexually dysfunctional men and women. *Journal of Sex and Marital Therapy*, 23, 276–290. doi:10.1080/00926239708403932.
- McNulty, J. K., Wenner, C. A., & Fisher, T. D. (2015). Longitudinal associations among relationship satisfaction, sexual satisfaction, and frequency of sex in early marriage. *Archives of Sexual Behavior*, doi:10.1007/s10508-014-0444-6.
- Ponte, M., Klemperer, E., Sahay, A., & Chren, M. M. (2009). Effects of vulvodynia on quality of life. *Journal of the American Academy of Dermatology*, 60, 70–76. doi:10.1016/j.jaad.2008.06.032.
- Rehman, U. S., Janssen, E., Newhouse, S., Heiman, J. R., Holtzworth-Munroe, A., Fallis, E., & Rafaeli, E. (2011a). Martial satisfaction and communication behaviors during sexual and nonsexual conflict discussions in newlywed couples: A pilot study. *Journal of Sex and Marital Therapy*, 37, 94–103. doi:10.1080/0092623X.2011.547352.
- Rehman, U. S., Rellini, A. H., & Fallis, E. (2011b). The importance of sexual self-disclosure to sexual satisfaction and functioning in committed relationships. *Journal of Sexual Medicine*, 8, 3108–3115. doi:10.1111/j.1743-6109.2011.02439.x.
- Reis, H. T., & Shaver, P. (1988). Intimacy as an interpersonal process. In S. W. Duck (Ed.), *Handbook of personal relationships* (pp. 367–389). Chichester, UK: Wiley.
- Romano, J. M., Turner, J. A., Friedman, L. S., Bulcroft, R. A., Jensen, M. A., Hops, H., & Wright, S. F. (1992). Sequential analysis of chronic pain behaviors and spouse responses. *Journal of Consulting and Clinical Psychology*, 60, 777–782. doi:10.1037/0022-006X.60.5.777.
- Rosen, N. O., Bergeron, S., Steban, M., & Lambert, B. (2013). Provoked vestibulodynia: Mediators of the associations between partner responses, pain and sexual satisfaction. *Archives of Sexual Behavior*, 42, 129–141. doi:10.1007/s10508-012-9905-y.
- Rosen, N. O., Muise, A., Bergeron, S., Delisle, I., & Baxter, M. (2015). Daily associations between partner responses and sexual and relationship satisfaction in couples coping with provoked vestibulodynia. *Journal of Sexual Medicine*, 12, 1028–1039. doi:10.1111/jsm.12840.
- Rosen, N. O., Rancourt, K., Bergeron, S., & Corsini-Munt, S. (2014). Beyond a “woman’s problem”: The role of relationship processes in genital pain. *Current Sexual Health Reports*, 6, 1–10. doi:10.1007/s11930-013-0006-2.
- Sabourin, S., Valois, P., & Lussier, Y. (2005). Development and validation of a brief version of the dyadic adjustment scale with a nonparametric item analysis model. *Psychological Assessment*, 17, 15–27. doi:10.1037/1040-3590.17.1.15.
- Schnarch, D. M. (1991). *Constructing the sexual crucible: An integration of sexual and marital therapy*. New York: W.W. Norton & Company.
- Shenk, C. E., & Fruzzetti, A. E. (2011). The impact of validating and invalidating responses on emotional reactivity. *Journal of Social and Clinical Psychology*, 30, 163–183. doi:10.1521/jscp.2011.30.2.163.
- Simpson, J. A. (1990). Influence of attachment styles on romantic relationships. *Journal of Personality and Social Psychology*, 59, 971–980. doi:10.1037/0022-3514.59.5.971.
- Smith, K. B., & Pukall, C. F. (2011). A systematic review of relationship adjustment and sexual satisfaction among women with provoked vestibulodynia. *Journal of Sex Research*, 48, 166–191. doi:10.1080/00224499.2011.555016.

- Smith, K. B., & Pukall, C. F. (2014). Sexual function, relationship adjustment, and the relational impact of pain in male partners of women with provoked vulvar pain. *Journal of Sexual Medicine, 11*, 1283–1293. doi:[10.1111/jsm.12484](https://doi.org/10.1111/jsm.12484).
- Stephenson, K. R., & Meston, C. M. (2010). When are sexual difficulties distressing for women? The selective protective value of intimate relationships. *Journal of Sexual Medicine, 7*, 3683–3694. doi:[10.1111/j.1743-6109.2010.01958.x](https://doi.org/10.1111/j.1743-6109.2010.01958.x).
- Sullivan, M. J. L. (2012). The communal coping model of pain catastrophizing: Clinical and research implications. *Canadian Psychology, 53*, 32–41. doi:[10.1037/a0026726](https://doi.org/10.1037/a0026726).
- Vangronsveld, K. L. H., & Linton, S. J. (2011). The effect of validating and invalidating communication on satisfaction, pain and affect in nurses suffering from low back pain during a semi-structured interview. *European Journal of Pain, 16*, 239–246. doi:[10.1016/j.ejpain.2011.07.009](https://doi.org/10.1016/j.ejpain.2011.07.009).