

# Interpersonal Goals and Well-Being in Couples Coping with Genito-Pelvic Pain

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**Abstract** In the context of genito-pelvic pain, consideration of interpersonal goals is particularly relevant given that couples' distress is often predicated upon the relational setting. However, relationship goals have not been examined in this population. We investigated (1) the associations between relationship goals and women's pain during intercourse as well as the sexual, relational, and psychological well-being of women with provoked vestibulodynia (PVD) and their partners and (2) the moderating role of sexual goals in these associations. Women with PVD ( $N = 134$ ) and their partners completed measures of relationship goals, sexual goals, sexual satisfaction, relationship satisfaction, and depressive symptoms. Women also reported on their average pain intensity during intercourse. Women with stronger relationship approach goals reported more sexual satisfaction. When the partner pursued more relationship approach goals, both women and partners reported more sexual and relationship satisfaction and partners reported less depression. Stronger relationship avoidance goals in the partner were associated with less sexual satisfaction in women. Several significant interactions showed that the combination of relationship and sexual approach goals was associated with greater relationship and sexual satisfaction, and

fewer depressive symptoms, whereas the combination of relationship and sexual avoidance goals was related to lower relationship satisfaction as well as to greater pain during intercourse for women. Targeting relationship approach and avoidance goals as well as those goals specific to sexual activity may improve the quality and efficacy of couples-based psychological interventions for PVD.

**Keywords** Relationship goals · Sexual goals · Provoked vestibulodynia · Vulvodynia · Genito-pelvic pain

## Introduction

Provoked vestibulodynia (PVD) has an estimated prevalence of 7–12 %, making it the most frequent cause of unexplained genito-pelvic pain in premenopausal women (Harlow et al., 2014; Harlow, Wise, & Stewart, 2001). Women with PVD experience an acute, recurrent pain localized in the vulvar vestibule and triggered by both sexual and non-sexual activities. The etiology is multifactorial with biological, psychological, and interpersonal factors implicated in the development and maintenance of this condition (Bergeron, Corsini-Munt, Aarts, Rancourt, & Rosen, 2015). PVD interferes with not only the sexual relationship of affected couples, but also their overall relationship and psychological well-being. Specifically, women with PVD and their male partners report lower sexual satisfaction compared to pain-free controls or scale norms (Smith & Pukall, 2011, 2014), as well as negative consequences to their romantic relationships such as feelings of shame, inadequacy, and fears of relationship dissolution because of the pain (Ayling & Ussher, 2008; Elmerstig, Wijma, & Bertero, 2008). In addition, controlled studies have found that both women with PVD and partners report increased rates of psychological distress, such as depressive symptoms (Gates & Galask, 2001; Nylanderlundqvist & Bergdahl, 2003).

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There is growing evidence that interpersonal factors such as couple intimacy, attachment style, sexual communication, and partner responses to painful intercourse are linked to women's pain and the well-being of both members of the couple (Bois et al., 2015; Leclerc et al., 2015; Rancourt, Rosen, Bergeron, & Neilis, 2016; Rosen et al., 2014). In several of these studies, partner-reported variables such as partner pain catastrophizing, acceptance, and solicitousness (i.e., expressions of sympathy and support) were found to directly influence women's level of functioning (Boerner & Rosen, 2015; Lemieux, Bergeron, Steben, & Lambert, 2013; Rosen, Bergeron, Leclerc, Lambert, & Steben, 2010). In the current study, we draw on an approach-avoidance motivational framework (Gable, 2006) to understand variations in women's pain during intercourse as well as the well-being of couples coping with PVD.

Examining the role of motivation in PVD comes at the heels of several studies demonstrating that goals—a desired end state that drives voluntary action—figure prominently in how individuals with chronic pain adapt to their conditions (Affleck et al., 1998; Karsdorp & Vlaeyen, 2011; Massey, Garnefski, & Gebhardt, 2009a). For example, strong reasons for either persisting with a painful task or avoiding pain are each associated with increased pain intensity and disability in individuals with chronic musculoskeletal pain (Karsdorp & Vlaeyen, 2011). A significant gap in the motivation and pain literature is an examination of interpersonal goals. This omission is striking given the recent emphasis on incorporating the social context of pain (Hadjistavropoulos et al., 2011), as well as the fact that many goals of individuals with pain are interpersonally driven, such as a desire for support. In the context of genito-pelvic pain, the consideration of interpersonal goals is particularly relevant given that couples' distress is often predicated upon the relational setting and partner responses (Rosen et al., 2014).

### Relationship and Sexual Approach and Avoidance Goals

According to the approach-avoidance theoretical framework, individuals can be focused on pursuing a desirable (i.e., an approach goal) or avoiding an aversive (i.e., avoidance goal) outcome (Gable, 2006). The approach system activates behavior in response to signals of reward, whereas the avoidance system inhibits behavior in response to signals of punishment and novelty (Gray, 1987). Applied to romantic relationships, approach goals focus on the pursuit of positive experiences in one's relationship such as fun, growth, and development, whereas avoidance goals focus on avoiding negative experiences such as disagreements and conflict. Similarly, in the sexual domain—that is, reasons for having sex with a partner—examples of sexual approach goals would be increased intimacy or partner happiness, and sexual avoidance goals might be partner's loss of interest in sex or disappointment. Approach and avoidance goals are *not* mutually

exclusive; that is, individuals can be pursuing both types of goals in their relationship or in any given sexual interaction (Gable, 2006). Thus, individuals who report higher levels of approach goals do not necessarily report lower (or higher) levels of avoidance goals and vice versa. This finding indicates the need to consider the unique role of both approach and avoidance goals in predicting relational and sexual outcome variables.

In community samples, holding stronger relationship approach goals has been linked to greater relationship satisfaction and sexual desire, whereas stronger relationship avoidance goals have been associated with lower relationship satisfaction (Impett et al., 2010; Muise, Impett, & Desmarais, 2013). Importantly, in a daily experience study, individuals who held stronger sexual approach goals were able to maintain sexual desire on days when they experienced relationship conflict with their partners (Impett, Strachman, Finkel, & Gable, 2008). These findings illustrate the potential positive buffer that relationship approach goals might provide when couples are faced with challenges, such as a sexual dysfunction, or more specifically pain during intercourse. Sexual goals have mirrored these patterns: In community samples, higher sexual approach goals are related to greater relationship and sexual satisfaction as well as more positive emotions, whereas higher sexual avoidance goals are related to lower satisfaction and more relationship conflict and negative emotions (Impett, Peplau, & Gable, 2005; Muise et al., 2013). This prior work on interpersonal goals and sexuality has involved student populations and community couples who were highly sexually satisfied and not experiencing any sexual dysfunction. Thus, there is very limited knowledge concerning how these findings may translate for couples who are experiencing sexual problems, and how interpersonal goals are linked to clinically relevant outcomes such as pain and psychological distress.

Given the systemic interaction between partners, it is likely that an individual's goals will have the potential to directly influence their partner's experience. This notion has been supported by a series of daily experience studies showing that when one person had higher sexual approach goals, their *partner* experienced higher sexual and relationship satisfaction, and when one person had higher sexual avoidance goals, their *partner* reported lower satisfaction (Impett et al., 2010; Muise et al., 2013). This prior research illustrates the important role of both relationship and sexual goals in the well-being of couples and the importance of including both partners' perspectives when examining the association between goals and well-being.

Although there is likely to be some bidirectionality in the relationships between interpersonal goals and couples' well-being, it is important to note that in studies of community couples, the detrimental consequences of avoidance goals have shown more consistent effects over time, in comparison with the benefits of approach goals. For example, in one study, both sexual approach and avoidance goals were associated with sexual satisfaction for both partners in the context of a given sexual interaction (i.e., on the day sex occurred). However, only sexual avoidance

goals predicted declines in relationship quality 1 month later (Impett et al., 2005). The relative power of avoidance goals is consistent with a large body of research showing that negative relationship experiences have a more significant impact than positive ones (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Such findings are particularly relevant to the context of sexual dysfunction wherein both relationship and sexual avoidance goals might be especially salient. Indeed, a comparison of the sexual goals in community samples to those of couples coping with PVD indicates that while the level of approach goals is high across both samples, women with PVD and their partners reported significantly higher avoidance goals compared to typical scores in community samples of couples (Impett, Muise, & Rosen, 2015).

### Interpersonal Goals in the Context of PVD

A previous study by Dewitte, Van Lankveld, and Crombez (2010) suggested that motivation plays a key role in genito-pelvic pain disorders in an attempt to understand the high rates (over 80 %; Reed et al., 2012) of women with PVD who continue to engage in painful intercourse despite pain. They suggested that this behavior is interpersonally driven by motives that map onto approach and avoidance sexual goals including desires to pursue intimacy, please a partner, or avoid conflict or loss of a relationship, reasons for sexual activity that have previously been reported in qualitative studies with this population (Elmerstig et al., 2008). Providing empirical support for this assertion, Rosen et al. (2015) found that when women with PVD reported higher avoidance goals for sex, they also reported lower sexual and relationship satisfaction and higher depressive symptoms. When partners of women reported higher sexual avoidance goals, they reported lower relationship satisfaction. In contrast, when women reported higher approach sexual goals, they also reported higher sexual and relationship satisfaction. Rosen et al. did not find significant associations between sexual goals and women's pain during intercourse, suggesting that sexual goals *may* be more relevant to the relational experiences of affected couples, rather than the pain itself. Still, one study has shown that avoidance social goals are associated with more reports of physical health symptoms (Elliot, Gable, & Mapes, 2006), and strong evidence from other chronic pain populations demonstrating significant associations between individuals' goals and pain intensity (Affleck et al., 1998; Hardy, Crofford, & Segerstrom, 2011; Karoly, Okun, Ruehlman, & Pugliese, 2008; Massey, Garnefski, Winifred, Gebhardt, & van der Leeden, 2009b) suggests that this relationship warrants further investigation. So far, empirical evidence on the role of motives in genito-pelvic pain has been limited to exploring sexual goals. Approach and avoidance *relationship* goals have not previously been examined. However, both women with PVD and their partners have indicated that the

pain takes a significant toll on their overall relationship (Ayling & Ussher, 2008; Smith & Pukall, 2014), suggesting that more general goals for their relationship may be important to consider.

Although researchers have found that relationship approach and sexual approach goals are positively correlated in community samples (corresponding correlations for avoidance goals have not been reported), they have not previously examined how these goals interact. In one such study, sexual approach goals mediated the association between holding stronger relationship approach goals and greater daily sexual desire (Impett et al., 2008). However, it may also be that approach sexual goals bolster the beneficial effects of approach relationship goals, whereas the combination of avoidance relationship and sexual goals proves more detrimental. People who pursue positive relationship experiences may be more likely to view sexual activity (and not necessarily penetrative intercourse) as one more way to create a positive intimate experience with their partner (Impett et al., 2008). They may therefore be able to foster greater intimacy with their partner, both in the bedroom and beyond, leading to better psychosexual and relational outcomes for both members of the couple and lower pain for women. In contrast, the chronic pursuit of avoidance-oriented goals in one's relationship and in a sexual context may actually exacerbate the negative experiences individuals are trying to avoid (e.g., couple conflict, anxiety), resulting in more pain and poorer well-being. Similarly, avoidance goals may interfere with sexual arousal and enhance pelvic muscle tension, leading to greater pain. Thus, the combined effects of relationship and sexual goals are salient in the context of PVD whereby couples are challenged to maintain their well-being despite the interference of genito-pelvic pain to both their general romantic relationship and their more specific sexual relationship.

### The Current Study

The first aim of this study was to examine the associations between relationship approach and avoidance goals and women's pain during intercourse as well as the sexual, relational, and psychological well-being of women with PVD and their partners. The second aim was to examine the moderating role of sexual approach and avoidance goals in these associations. Given that relationship goals tap into the broader context and touch upon different aspects of the relationship, whereas sexual goals tap into only one aspect of the relationship, we examined sexual goals as the moderating variable. It was hypothesized that women's and partners' higher relationship approach goals and lower relationship avoidance goals would be associated with their own and their partner's greater sexual satisfaction and relationship satisfaction, as well as lower depressive symptoms. It was further hypothesized that women's and partners' higher relationship approach goals and lower relationship avoidance goals would be

associated with women's lower pain intensity during intercourse. Finally, it was hypothesized that holding stronger sexual approach goals would strengthen the positive benefits of relationship approach goals, and holding stronger sexual avoidance goals would strengthen the detrimental effects of these goals.

## Method

### Participants

The final sample included 134 couples. The inclusion criteria were as follows: (1) pain during intercourse lasting 6 months and occurring on at least 75 % of intercourse attempts, (2) pain limited to activities involving pressure to the vulvar vestibule, (3) cohabitating and/or in a committed relationship for at least 6 months, (4) currently sexually active with a partner (engaged in manual, oral, or intercourse sexual activities at least once in the previous 4 weeks), and (5) age between 18 and 45 years (i.e., premenopausal, due to the hormonal influences that may affect pain in peri- or postmenopause). Exclusion criteria included presence of one of the following: active yeast infection (temporary exclusion), undergoing PVD treatment (due to longitudinal nature of the larger studies within which this study was embedded), and current pregnancy. Partners had to be over the age of 18. Eligible women were asked to confirm their partner's participation. Of 315 potential participants who contacted us, 163 (51.8 %) were ineligible at screening: 57 (18.1 %) were not in a committed relationship, 32 (10.2 %) partners declined participation, 17 (5.4 %) had pain characteristics that were inconsistent with PVD, 26 (8.3 %) had pain for <6 months or during <75 % of intercourse attempts, and 31 (9.8 %) were ineligible for other reasons (e.g., older than 45, undergoing PVD treatment, recent surgery, no sexual activity in previous 4 weeks, pregnancy). Of the 152 women who were eligible after initial screening, 11 (3.5 %) did not receive a diagnosis of PVD from the gynecologist and 7 couples (2.2 %) dropped out during the laboratory session, resulting in the final sample size of 134 couples. One couple was in a same-sex relationship, and all remaining couples were in cross-sex relationships.

### Measures

#### Demographics

Information on participants' age, relationship status, relationship duration, pain duration, and the shared income of the couple was collected through self-report questionnaires. Presence of male sexual dysfunction was assessed with the Derogatis Interview for Sexual Function (self-report)—Male Version (Derogatis, 1997).

#### Relationship Goals

Relationship goals were assessed with an eight-item measure developed by Elliot et al. (2006) for use in close relationships generally and adapted for use in romantic relationships (Impett et al., 2010). Participants rated four approach (e.g., "I generally try to deepen my relationship with my romantic partner") and four avoidance (e.g., "I generally try to avoid disagreements and conflicts with my romantic partner") goals on a 7-point scale (1 = *not at all important* to 7 = *extremely important*). Higher scores indicated higher approach and avoidance goals and are represented as mean scores. Cronbach's alpha for relationship avoidance goals was  $\alpha = .66$  for women and .64 for partners and for approach goals was  $\alpha = .84$  for women and .92 for partners.

#### Sexual Goals

A 15-item measure (adapted from Cooper, Shapiro, & Powers, 1998) was administered to assess goals for engaging in sexual activity. Nine items assessed approach goals (e.g., "to feel closer to my partner") and six items assessed avoidance goals (e.g., "to prevent my partner from becoming upset"). Participants rated the importance of each goal in influencing their decision to engage in sex on a 7-point scale (1 = *not at all important* to 7 = *extremely important*). Higher scores indicated higher approach and avoidance goals and are represented as mean scores. Cronbach's alpha for sexual avoidance goals was  $\alpha = .87$  for women and .90 for partners and for approach goals was  $\alpha = .81$  for women and .85 for partners.

#### Sexual Satisfaction

Sexual satisfaction was assessed using the Global Measure of Sexual Satisfaction scale (Lawrance & Byers, 1995). This well-validated measure consists of five bipolar items (e.g., unpleasant-pleasant, unsatisfying-satisfying) that participants respond to on a 7-point scale. Total scores can range from 5 to 35, and higher scores indicate higher sexual satisfaction. Cronbach's alpha was  $\alpha = .91$  for women and  $\alpha = .93$  for partners.

#### Relationship Well-being

Relationship well-being was assessed using two well-validated measures of relationship satisfaction depending on which of the two studies couples participated in: (1) the Couple Satisfaction Index (CSI; Funk & Rogge, 2007) was completed by 63 couples (47 %), or (2) the Revised Dyadic Adjustment Scale (R-DAS; Busby, Christensen, Crane, & Larson, 1995) was completed by 63 couples (47 %). Eight (6 %) couples did not complete the R-DAS because they were not living together at the time of participation (a criterion for the validity of the R-DAS). The CSI consists of 32 items, and total scores can range from 0 to 160. The

R-DAS consists of 14 items, and total scores can range from 0 to 70. Scores were standardized for both the CSI and the R-DAS. Higher scores indicate greater relationship satisfaction for both measures. For the CSI, Cronbach's alpha was  $\alpha = .96$  for women and  $\alpha = .97$  for partners. For the R-DAS, Cronbach's alpha was  $\alpha = .85$  for women and  $\alpha = .89$  for partners.

### *Depressive Symptoms*

The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) was administered to assess depressive symptoms. The BDI-II has excellent psychometric properties and has been validated for use in populations with chronic pain (Turner & Romano, 1984). The measure consists of 21 items that are rated on a 4-point Likert scale from 0 to 3 (with the exception of items 16 and 18, which are rated on 7-point scales in order to indicate an increase or decrease in sleep and appetite). Total scores can range from 0 to 63, and higher scores indicate greater depressive symptoms. Cronbach's alpha was  $\alpha = .94$  for women and  $\alpha = .93$  for partners.

### *Pain During Intercourse*

Pain intensity for women with PVD was measured with a numerical rating scale assessing pain during intercourse in the last 6 months (0 = *no pain* to 10 = *worst pain ever*). This measure demonstrates a significant positive correlation with other measures of pain intensity (Jensen & Karoly, 2001) including in PVD samples (Desrochers, Bergeron, Khalifé, Dupuis, & Jodoin, 2009). Higher scores indicate greater pain intensity during intercourse.

### **Procedure**

The data for the current study were collected as part of two larger studies that were each conducted in two cities. Data obtained from the larger studies have been published previously (Anderson, Rosen, Price & Bergeron, 2016; Rancourt et al., 2016), including a study examining sexual (but not relationship) goals (Rosen, Muise, Bergeron, Impett, & Boudreau, 2015), which overlaps with a portion (79.85 %) of the current sample. Note that the current sample included an additional 27 couples who were not included in these previous studies. Couples were recruited through print and online advertising in two Canadian cities from January 2012 to July 2015. Interested participants contacted the research laboratory and a trained research assistant assessed women's initial eligibility via a structured telephone interview, which we have used in prior studies (e.g., Rosen et al., 2010, 2014). Eligible women then attended an examination with a gynecologist who performed a standardized cotton-swab test to diagnose PVD (Bergeron, Binik, Khalifé, Pagidas, & Glazer, 2001). A total of 64 (47.8 %) couples

participated in one city and 70 (52.2 %) participated in the other city. All participants in city one and most participants in city two ( $n = 100$ , 75 %) completed study materials in-person on separate computers in the research laboratory. The remaining participants in city two ( $n = 34$ , 25 %) completed study materials by paper-and-pen (they were instructed to do this separately from each other), which they returned by postal mail. Participants completed a consent form, a questionnaire of their sociodemographics, and standardized measures assessing their relationship and sexual approach and avoidance goals, sexual satisfaction, relationship well-being, and depressive symptoms. Women also completed a measure of their pain intensity during intercourse. Compensation was provided in line with the larger studies in which they were participating. The studies were approved by the research ethics board at the respective institutions.

### **Analyses**

Data were analyzed with multilevel modeling using mixed models in SPSS 20.0 where partners were nested within couples (Kenny, Kashy, & Cook, 2006). Analyses were guided by the Actor Partner Interdependence Model (APIM), which simultaneously estimates the impact of both one's own (i.e., actor effect) and partner's responses (i.e., partner effect) on the outcome variable. Separate models were conducted for each outcome variable. For the analyses on pain intensity, which was reported only by women, we conducted a linear regression analysis where both partners' approach and avoidance goals were tested as independent variables and women's pain was tested as the outcome variable. Since two measures of relationship satisfaction were used, scores were first standardized (see adjusted scores in Table 1). Note that as a result, the mean value is close to equal for women and their partners. We also examined the moderating role of sexual goals in the association between relationship goals and the outcome variables. In case significant interaction effects were found, we conducted simple slope analyses in which the moderator variable was plotted at low ( $-1$  SD) and high ( $+1$  SD) values.

### **Results**

Descriptive characteristics of the sample are shown in Table 1, and correlations between all variables are shown in Table 2. Also reported in Table 1, a series of *t* tests revealed that women and partners significantly differed in the extent to which they pursued sexual avoidance goals, with women reporting higher avoidance goals than partners. We also found a statistically significant difference between their sexual satisfaction and depression scores, with women reporting lower sexual satisfaction and higher depressive symptoms than partners. The correlational table shows that the scores of women and partners are interrelated with respect

**Table 1** Descriptive statistics of sample demographics and key variables for women with PVD and their partners

Variable	Women with PVD N = 134	Partners N = 134	t
Age	27.39 (6.65)	29.44 (8.13)	
Couples shared annual income			
\$0–19,999	22.7 %		
\$20,000–39,999	16.7 %		
\$40,000–59,999	15.1 %		
\$60,000–79,999	18.9 %		
>\$80,000	26.4 %		
Relationship status			
Living together	64.9 %		
Not living together	35.1 %		
Relationship duration (in months)	62.57 (44.26)		
Pain duration (in months)	57.05 (46.20)		
Approach sexual goals	5.23 (.98)	5.35 (1.01)	–1.29
Avoidance sexual goals	4.03 (1.60)	3.56 (1.70)	2.45*
Approach relationship goals	6.20 (.79)	6.04 (.92)	1.64
Avoidance relationship goals	5.43 (1.15)	5.63 (.98)	–1.64
Pain intensity (NRS)	6.58 (1.55)		
Sexual satisfaction (GMSEX)	22.96 (7.26)	24.71 (6.97)	–2.83**
Relationship satisfaction			–.12
R-DAS	50.34 (8.45)	51.64 (8.67)	
CSI	120.86 (24.88)	122.75 (25.48)	
Depression (BDI-II)	14.30 (11.43)	8.68 (9.10)	5.48**

Percentage values are % of total sample; other values are mean (SD)

R-DAS Revised Dyadic Adjustment Scale—Revised, CSI Couple Satisfaction Index, GMSEX Global Measure of Sexual Satisfaction, NRS pain intensity during intercourse as measured on a 0–10 numerical rating scale, BDI-II Beck Depression Inventory-II

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

to all outcome variables, which justifies the use of APIM analyses (Kenny et al., 2006).

### Associations Between Relationship Goals and Outcomes

As shown in Table 3, women with stronger relationship *approach* goals reported more sexual satisfaction. When the partner pursued more relationship *approach* goals, both women and their partners reported more sexual and relationship satisfaction and partners reported less depression. Stronger relationship *avoidance* goals in the partner were associated with less sexual satisfaction in women. None of the other associations were significant.

### Associations Between Relationship Goals and Outcomes Moderated by Sexual Goals

We also examined whether the association between relationship goals and relevant outcome variables would be moderated by

sexual goals. We first calculated the interrelationships between relationship and sexual goals. Relationship and sexual approach goals were positively correlated for both women ( $r = .38, p < .01$ ) and partners ( $r = .28, p < .01$ ). Relationship and sexual avoidance goals were positively correlated for women ( $r = .25, p < .01$ ), but not partners ( $r = .13, p > .10$ ). Given the observed interrelations, we mean-centered the predictor variables to reduce potential problems of multicollinearity. The interactions between approach versus avoidance and relationship versus sexual goals within and across partners are manifold, thereby increasing the risk of spurious effects and multiple testing errors. We therefore examined only the interactions between matching relationship and sex goals (i.e., approach–approach, avoid–avoid) within individuals. Several significant effects emerged, and only the significant slopes are reported here. (1) The pursuit of sexual approach goals in the partner moderated the association between relationship approach goals and sexual satisfaction in the woman,  $B = 1.29, t(1, 124) = 1.99, p < .05$ . Simple slope analyses revealed that stronger relationship approach goals in the partner were associated with more sexual satisfaction in the

**Table 2** Correlations between relationship goals and outcome variables for women with PVD and their partners

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Approach goals (W)	—	.26**	.20*	.21*	.02	.20*	.24**	.10	.26**	-.03	.01
2. Avoidance goals (W)		—	.02	.20*	.02	.12	.13	-.10	.05	.07	.08
3. Approach goals (P)			—	.52**	-.08	.12	.39**	.26**	.53**	-.24**	-.24**
4. Avoidance goals (P)				—	.07	-.10	.11	-.02	.24**	-.08	-.02
5. Pain intensity					—	-.36**	-.19*	-.15	-.08	.25**	.14
6. Sex satisfaction (W)						—	.49**	.34**	.27**	-.32**	-.08
7. Sex satisfaction (P)							—	.28**	.53**	-.25**	-.24**
8. Rel satisfaction (W)								—	.64**	-.39**	-.42**
9. Rel satisfaction (P)									—	-.33	-.50**
10. Depression (W)										—	.35**
11. Depression (P)											—

W women's reports, P partner's reports

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

woman when the partner pursued more sexual approach goals as well (Fig. 1). (2) Stronger relationship approach goals in women predicted more relationship satisfaction in their partner,  $B = .30$ ,  $t(1, 116) = 2.85$ ,  $p < .01$ , when she pursued more sexual approach goals (Fig. 2). (3) Partners' reports of relationship satisfaction also increased as a function of their lower relationship avoidance goals in combination with lower sex avoidance goals,  $B = .14$ ,  $t(1, 124) = 2.57$ ,  $p < .01$  (Fig. 3). (4) Furthermore, the interaction between relationship approach goals and sexual approach goals in the partner predicted depression scores in both the woman,  $B = -2.77$ ,  $t(1, 124) = -2.76$ ,  $p < .01$ , and the partner,  $B = -1.72$ ,  $t(1, 124) = 2.02$ ,  $p < .05$ . Thus, stronger relationship approach goals in the partner were associated with less depression in both the woman and the partner when he pursued more sexual approach goals as well (Figs. 4, 5). (5) Finally, the association between relationship avoidance goals and pain depended on the level of sexual avoidance goals women pursued,  $B = .76$ ,  $t(1, 124) = 4.75$ ,  $p < .01$ . Women with stronger relationship avoidance goals reported more pain during intercourse when pursuing more sexual avoidance goals as well, while the combination of lower relationship avoidance and lower sexual avoidance goals was linked to less pain (Fig. 6). None of the other moderation effects were significant.

### Covariate Analyses

We conducted an additional set of analyses to test whether our findings were influenced by participant age, household income, relationship duration, relationship status, women's pain duration, presence of male sexual dysfunction, recruitment site, or which original study the couple participated in. We found that living together was associated with more pain,  $B = .48$ ,  $p < .05$ ; less sexual satisfaction in women,  $B = -5.26$ ,  $p < .01$ , and their partner,  $B = -3.20$ ,  $p < .05$ ; and more depression in women,  $B = 5.54$ ,  $p < .05$ . Also relationship duration was associated with less pain,  $B = -.01$ ,  $p < .05$ , and less depression in women,  $B = -.06$ ,  $p < .05$ . Higher income was associated with less sexual satisfaction in the partner,  $B = -.58$ ,  $p < .01$ . Finally, women recruited from city two reported more sexual satisfaction ( $M = 23.89$ ;  $SD = 6.03$ ),  $F(1, 106) = 5.02$ ,  $p < .05$ , and less depression ( $M = 12.26$ ;  $SD = 9.75$ ),  $F(1, 106) = 6.60$ ,  $p < .01$ , compared to city one ( $M = 20.93$ ;  $SD = 8.10$  for sexual satisfaction;  $M = 17.52$ ;  $SD = 12.26$  for depression). To control for these effects, we entered the relevant variables as covariates in the respective analyses. All of the previously reported effects remained significant. Because we used two different measures of relationship satisfaction depending on which original study the couples participated in, we also included "study" as a covariate in our analyses and this did not change the pattern of results, suggesting that the effects were the same for both measures of relationship adjustment. Finally, scores on the male sexual dysfunction measure were generally high, suggesting good sexual function in the male partners. Inclusion of this covariate did not change the pattern of results, indicating that the observed relationships were not modulated by male sexual dysfunction.

**Table 3** Associations between relationship goals and outcome variables

Outcome variable	Women's relationship approach goals		Women's relationship avoid goals		Partner's relationship approach goals		Partner's relationship avoid goals	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Women's pain intensity	.06	.51	-.05	-.57	-.13	-1.12	.12	1.02
Women's sexual satisfaction	1.63	1.99*	-.83	1.47	1.85	2.27*	-2.19	-2.74**
Partner's sexual satisfaction	1.44	1.92	.68	1.31	3.40	4.57**	-1.29	-1.76
Women's relationship satisfaction	.12	1.01	-.08	-.95	.37	3.23**	-.20	-1.78
Partner's relationship satisfaction	.18	1.78	.02	.35	.58	5.55**	-.08	-.80
Women's depression	.13	.10	.57	.62	-2.99	-2.27	.15	.11
Partner's depression	.46	.44	.41	.56	-2.99	-2.86**	1.02	.99

*b* = unstandardized estimates; dfs range from 117 to 126

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

Therefore, results are reported for the most parsimonious models (i.e., without covariates).

## Discussion

Couples coping with PVD experience deleterious consequences to several aspects of their lives and relationships. In this study, we examined the associations between relationship approach and avoidance goals and women's pain during intercourse as well as the sexual, relational, and psychological well-being of women with PVD and their partners. Furthermore, we investigated the moderating role of sexual approach and avoidance goals in these associations to test whether the pursuit of interpersonal goals in general as well as in the sexual relationship might combine to predict better or worse outcomes for affected couples. Findings from this study contribute to a growing field of research focusing on approach-avoidance motivation and close relationships and sexuality (Impett et al., 2010, 2015), while also extending its application to couples struggling with a sexual dysfunction (see also Rosen et al., 2015).

### Interpersonal Goals and Sexual and Relationship Satisfaction

With regard to sexual satisfaction, both women's and partners' stronger *relationship approach* goals were associated with women's greater sexual satisfaction. When women with PVD and their partners focus on growing and enjoying their romantic relationships, this may build greater intimacy, resulting in enhanced sexual satisfaction. Indeed, a growing body of work on the interpersonal aspects of sexuality links greater intimacy to enhanced sexual satisfaction for both women and their partners (Bois et al., 2015; Rehman, Rellini, & Fallis, 2011; Rubin &

Campbell, 2012). Interestingly, although partners' relationship approach goals predicted their own greater sexual satisfaction, the association between relationship approach goals in the partner and sexual satisfaction in the woman depended on how much the partner pursued sexual approach goals as well. Partners who generally strive for positive outcomes in their relationships and engage in sexual activity for positive reasons, such as feelings of closeness, may be more willing and able to adapt their expectations and consequently their sexual behaviors to accommodate the pain. For example, they may initiate or be more receptive to engaging in less penetration-focused, non-painful sexual activities, which are presumably more satisfying for women. Such activities could also be more satisfying for the partners themselves because they might be better able to focus on pleasurable sensations when they are less concerned with the possibility of pain. Future studies should examine whether couples who hold stronger approach goals indeed engage in more varied and less-penetrative sexual activities.

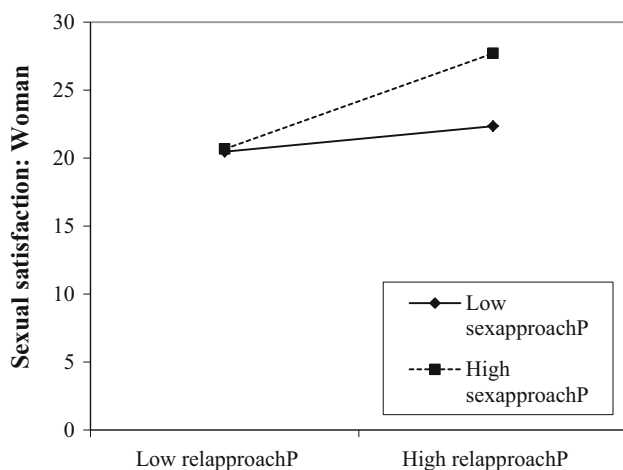
In contrast, another dyadic (partner) effect revealed that partners' stronger *relationship avoidance* goals were associated with less sexual satisfaction in women. Accordingly, when partners are chronically focused on avoiding negative relationship experiences such as conflict, this may ultimately erode the woman's evaluation of the sexual relationship. Such findings are consistent with prior research indicating that holding stronger relationship avoidance goals has detrimental consequences for one's romantic partner. Women with PVD whose partners are higher in relationship avoidance goals may perceive these partners to be less responsive to their sexual and pain-related needs. Indeed, a prior study with a community sample supports this assertion (Impett et al., 2010).

With regard to relationship satisfaction, partners' stronger *relationship approach* goals were associated with their own and women's greater relationship satisfaction. The association between women's *relationship approach* goals and relationship

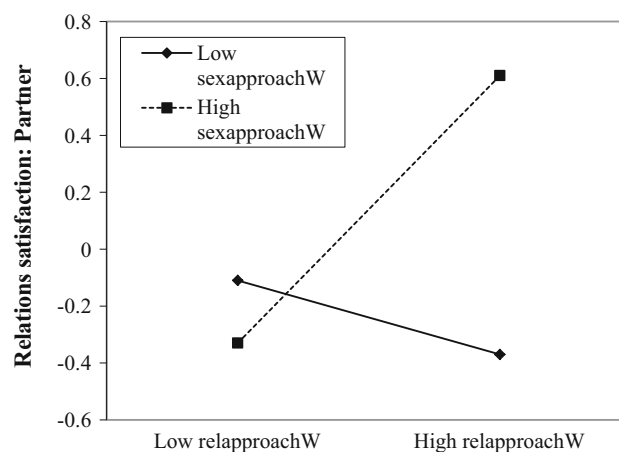


satisfaction in their partner depended on whether she pursued more *sexual approach* goals as well. Women with PVD and their partners are often avoidant of painful sexual activities, but this avoidance also generalizes to non-painful sexual activities and displays of affection (Ponte, Klemperer, Sahay, & Chren, 2009; Sutherland, 2012), which may contribute to relationship difficulties. Relationship approach goals, which emphasize growth, fun, and development as a couple, may protect against the generalization of this extensive avoidance, allowing both women and partners to continue to feel connected to each other physically and emotionally. Focusing on the positive aspects of one's relationship may also create feelings of safety and security, and this sense of secure attachment might promote more relationship approach goals. Secure relationship attachment styles are positively correlated with greater relationship quality (Simpson, 1990). When women also hold stronger approach goals for sex, this appears to further strengthen the benefits to their partners' relationship satisfaction.

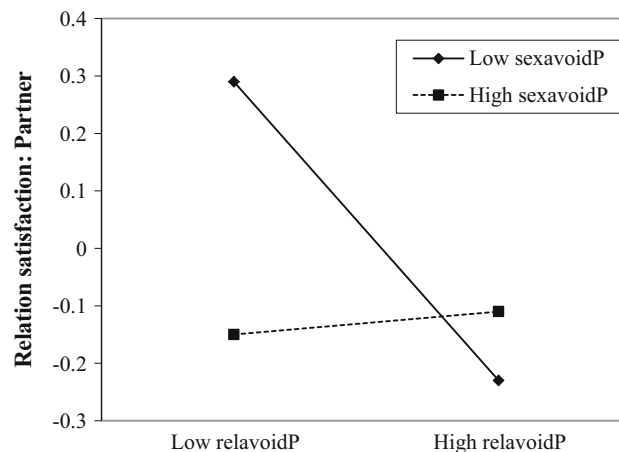
In contrast, the association between *relationship avoidance* goals and relationship satisfaction in partners was conditional on whether they pursued avoidance goals in their sexual relationship as well. Thus, while the combination of relationship and sexual approach goals for partners heightened women's sexual satisfaction, this combination of avoidance goals was especially detrimental to partners' evaluation of the overall relationship. A prior study found that partners of women with PVD who endorsed greater avoidance goals for having sex also reported lower relationship satisfaction (Rosen et al., 2015). In PVD, trying to avoid negative outcomes in the (sexual) relationship might focus attention toward the negative impact of the pain condition on the couple's life, resulting in lower relationship satisfaction. Given that one study found that approximately 73 % of partners of women with PVD reported a negative toll to their relation-



**Fig. 1** Sexual satisfaction in women as a function of low ( $-1$  SD) and high ( $+1$  SD) values of relationship and sexual approach goals with sexual goals as the moderator variable. *W* women's reports, *P* partner's reports



**Fig. 2** Relationship satisfaction in partner as a function of low ( $-1$  SD) and high ( $+1$  SD) values of relationship and sex approach goals with sex goals as the moderator variable. *W* women's reports, *P* partner's reports

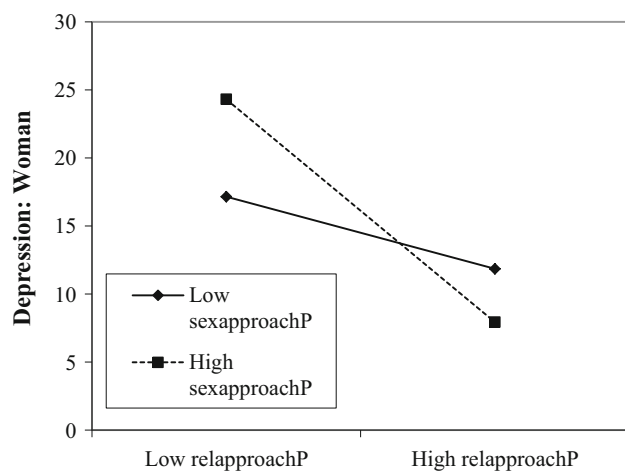


**Fig. 3** Relationship satisfaction in partner as a function of low ( $-1$  SD) and high ( $+1$  SD) values of relationship and sexual avoidance goals with sexual goals as the moderator variable. *W* women's reports, *P* partner's reports

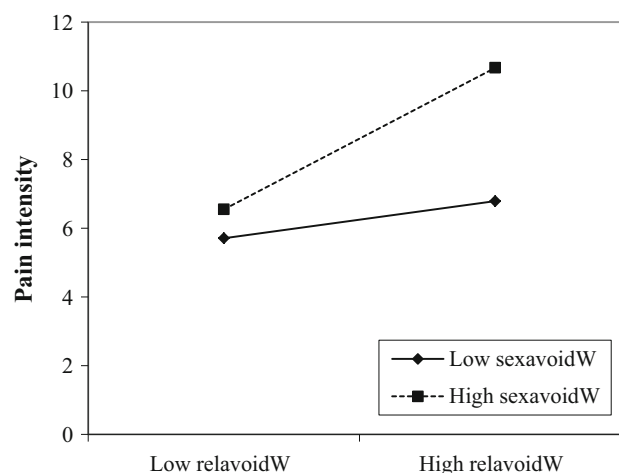
ships (Smith & Pukall, 2014), this heightened awareness of avoiding negative outcomes could function as a self-fulfilling prophecy.

When taking a closer look at the associations between interpersonal goals and sexual and relationship well-being in women and their partners, some interesting patterns emerged.

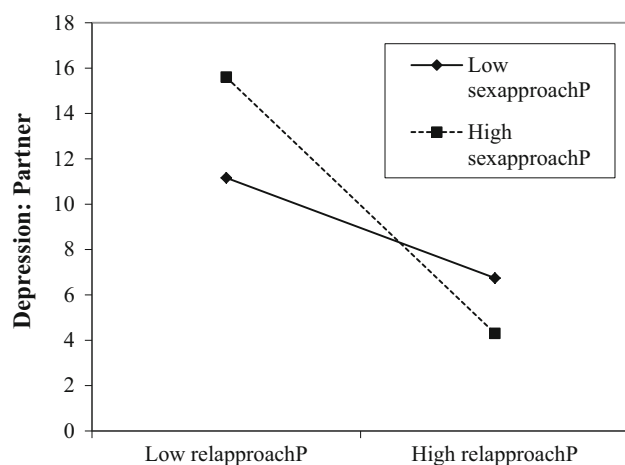
Partners' relationship satisfaction depended on the combined pursuit of relationship and sexual goals, whereas women's relationship satisfaction was uniquely predicted by the relationship goals of her partner. Given that all but one partner in the current study were male, this finding supports the general idea that men place greater emphasis on the sexual relationship for evaluating the affective bond with their partner, whereas in women, relationship variables take precedence (Baumeister, Catanese, & Vohs, 2001; Oliver & Hyde, 1993). Another interesting observation is that women's well-being depended more on the interpersonal



**Fig. 4** Depression in women as a function of low ( $-1$  SD) and high ( $+1$  SD) values of relationship and sexual approach goals with sexual goals as the moderator variable. *W* women's reports, *P* partner's reports



**Fig. 6** Pain intensity as a function of low ( $-1$  SD) and high ( $+1$  SD) values of relationship and sexual avoidance goals with sexual goals as the moderator variable. *W* women's reports, *P* partner's reports



**Fig. 5** Depression in partner as a function of low ( $-1$  SD) and high ( $+1$  SD) values of relationship and sex approach goals with sex goals as the moderator variable. *W* women's reports, *P* partner's reports

goals of their partner, while partners' outcomes were mainly predicted by their own interpersonal goals. This result implies that partners' adjustment to PVD is determined more by what they themselves pursue in their general and sexual relationship. Furthermore, the majority of associations between interpersonal goals and sexual and relationship well-being in women involved sexual satisfaction, whereas, for the men, it was mainly their relationship satisfaction that depended on whether they pursued positive or negative outcomes in their (sexual) relationship. Taken together, these patterns are consistent with theoretical conceptualizations of women's sexuality, including models of genito-pelvic pain, as being conditional on relationship and partner-related dynamics (Basson, 2001; Bergeron, Rosen, & Morin, 2011; Laan & Both, 2008).

### Interpersonal Goals and Depression

In addition to relational and sexual well-being, the pursuit of interpersonal goals also predicted the emotional well-being of both couple members. Results showed that partners' stronger *relationship approach* goals predicted lower depressive symptoms for both themselves and women with PVD, particularly when partners also held stronger *sexual approach* goals. These findings suggest that partner's approach goals may serve as a protective buffer to the negative psychological consequences reported by women with PVD and their partners (Gates & Galask, 2001; Nylanderlundqvist & Bergdahl, 2003). Holding stronger relationship and sexual approach goals might translate into engaging in relationship-enhancing behaviors such as demonstrations of affection and a willingness to adapt their sexual scripts to accommodate the pain. Such behaviors might counter women's feelings of inadequacy and fears of losing their partner because of the pain (Elmerstig et al., 2008; Gordon, Panahian-Jand, McComb, Melegari, & Sharp, 2003; Sheppard, Hallam-Jones, & Wylie, 2008), which are likely linked to more depressive symptoms. It is also possible that partners' pursuit of positive outcomes in the general relationship and in a sexual context may promote more facilitative partner responses to the pain during or after sexual activity, or in other words, the encouragement of more adaptive coping with the pain. According to intimacy models of chronic pain (Cano & Williams, 2010), such facilitative partner responses enhance adaptive emotion regulation, resulting in lower depressive symptoms in women with PVD (Rosen et al., 2014).

### Interpersonal Goals and Women's Pain Intensity

In line with our hypotheses, controlling for the partner's level of goals, women's stronger *relationship avoidance* goals predicted more pain during intercourse when they were also pursuing

more *sexual avoidance* goals. This finding is consistent with the only prior study linking interpersonal goals to physical health, which found that avoidance social goals (i.e., friendship rather than relationship goals) were associated with more reports of physical health symptoms 3.5 months later (Elliot et al., 2006). Recent evidence suggests that women with self-reported symptoms of PVD are more likely to engage in sex out of obligation to their partner or to protect their partner, compared to women without this condition (Brauer, Lakeman, van Lunsen, & Laan, 2014). This tendency to focus on avoiding negative outcomes—both generally in the relationship and in a sexual context—may draw women’s attention toward negative aspects of the sexual experience, such as pain, and its interference to the overall relationship. In turn, such negative attentional focus may exacerbate the negative outcomes that women are trying to avoid (e.g., greater anxiety, conflict with her partner), resulting in greater pain (Dewitte et al., 2010). Given that avoidance increases task-related anxiety (Vlaeyen & Linton, 2012), avoidance goals are also likely to increase women with PVD’s anxiety, hypervigilance, and fear of pain—all correlates of increased pain intensity (Desrochers et al., 2009). In addition, women’s lower relationship avoidance predicted less pain during intercourse when pursuing less sexual avoidance goals, suggesting that the combination of lower avoidance goals may be beneficial. It is noteworthy that the associations with pain involved only women’s interpersonal goals, suggesting that the experience of pain appears to be more individually determined. More studies are needed to better understand the contribution of the partner’s goals, in particular using longitudinal designs.

### Limitations and Conclusions

Although the present findings are novel and promising, some limitations exist. The present study included mainly couples in mixed-sex relationships and we did not formally assess women’s menopausal status, which limits the generalizability to all couples with PVD. Results can also not be generalized to community populations. In addition, couples completed two different measures of relationship satisfaction depending on the original larger study in which they were participating. There were also differences in sexual satisfaction and depressive symptoms between the two recruitment sites, suggesting that there may have been additional differences between the two groups that were not considered in the present study. Finally, this study was correlational and causal conclusions cannot be drawn. It remains possible that couples struggling with greater pain or poorer sexual and relationship functioning may endorse higher avoidance goals, or the reverse for approach goals. However, recent longitudinal and experimental studies of approach and avoidance goals in community samples (Impett et al., 2008; Muise, Boudreau, & Rosen, 2016; Muise et al., 2013; Strachman & Gable, 2006), and goals in chronic pain (Verhoeven et al., 2010), lend support to the theoretically based direction of the associations.

The results from this study support Dewitte et al. (2010) cognitive-motivational model of genito-pelvic pain, which posits that relational motives are central to women’s pain experience and well-being. Moreover, the findings contribute to a more nuanced understanding of the role of sexual motivation in genito-pelvic pain by demonstrating interactions between the pursuit of relationship and sexual goals. Our findings imply that a solid understanding of sexual responding in couples with PVD requires taking into account the relational dynamics of the couple. It should be noted that some of the moderation analyses were not significant, and future replications are needed involving more sophisticated study designs in order to draw firmer conclusions. With the exception of a small number of studies in genito-pelvic pain including the current one (Brauer et al., 2014; Elmerstig et al., 2008; Rosen et al., 2015), there is little knowledge of the motivations of individuals with sexual disorders. This will be an important avenue for sex researchers to pursue in the future.

In conclusion, the current findings suggest that the relationship goals of women with PVD and their partners may contribute to their interpersonal adaptation to genito-pelvic pain, such that approach goals facilitate positive adjustment and avoidance goals are detrimental. Further, in some cases, and particularly for partners, these associations are stronger when pursuing approach and avoidance goals in the sexual relationship as well. Couples-based interventions for PVD, for which there is promising preliminary evidence (Corsini-Munt, Bergeron, Rosen, Mayrand, & Delisle, 2014), should target interpersonal goals with regard to the overall relationship as well as specific to reasons for engaging in sexual activity.

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### Compliance with Ethical Standards

**Conflict of interest** The authors have no conflict of interest to declare.

**Ethical Standards** 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** Informed consent was obtained from all individual participants included in the study.

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