

Are depressive symptoms and attachment styles associated with observed and perceived partner responsiveness in couples coping with genito-pelvic pain?

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Abstract

Partner responsiveness is thought to facilitate relationship adjustment in couples coping with genito-pelvic pain, such as provoked vestibulodynia (PVD). However, recent studies suggest that attachment and depressive symptoms may act as a filter in the perception of partner responsiveness, and a barrier to the capacity of being responsive to a partner. Given studies suggesting higher depressive symptoms and relationship insecurities in women experiencing genito-pelvic pain, investigating the role of these factors in partner responsiveness may help couples improve their sexual and relational wellbeing in the challenging context of PVD. The aim of this study was to examine the associations between depressive symptoms, attachment, and perceived and observed partner responsiveness in 50 couples coping with PVD. Participants took part in a videotaped discussion assessing observed responsiveness and completed self-report measures of depressive symptoms, attachment, and perceived partner responsiveness. Based on the Actor-Partner Interdependence Model, results indicated that when women and partners reported greater depressive symptoms and anxious attachment, they perceived each other as being less responsive. When partners experienced greater depressive symptoms, women and partners were observed as being less responsive to each other. Targeting depressive symptoms and relationship insecurity in couple therapy could increase responsiveness in couples coping with PVD.

Are Depressive Symptoms and Attachment Styles Associated with Observed and Perceived Partner Responsiveness in Couples Coping with Genito-Pelvic Pain ?

Partner Responsiveness is central to creating intimacy within a couple and arises from an interactive process in which partners are understanding, validating, supportive, and mutually sensitive to each other's goals, needs, dispositions, and values (Reis, Clark, & Holmes, 2004). Perceived partner responsiveness (PPR) refers to feeling validated, understood and cared for by the partner and observed responsiveness (OR), to the ability of being responsive to the partner, that is, the ability to communicate empathy (Cano & Williams, 2010; Reis & Shaver, 2004). Both perceived and observed partner responsiveness are associated with positive outcomes in couples with cancer or chronic pain, such as provoked vestibulodynia (PVD) (e.g., Bois et al., 2016; Bois, Bergeron, Rosen, McDuff, & Grégoire, 2013; Edlund, Carlsson, Linton, Fruzzetti, & Tillfors, 2015; Fekete, Stephens, Mickelson, & Druley, 2007; Manne et al., 2004; Cano & Leong, 2012; Porter et al., 2009; Rosen et al., 2016). Recent research indicates that interpersonal factors, such as attachment, and intrapersonal factors, such as depressive symptoms, may act as a filter affecting the perception of self and others in social interactions and may also alter responsiveness to others (e.g., Calvo, Palmieri, Marinelli, Bianco, & Kleinbub, 2014; Cusi, MacQueen, Spreng, & McKinnon, 2011; Derntl, Seidel, Schneider, & Habel, 2012; Gilbert, McEwan, Matos, & Ravis, 2011; Hoffman et al., 2016; Mikulincer & Shaver, 2005; Mikulincer, Shaver, Gillath, & Nitzberg, 2005). Yet, no study to date has examined whether depressive symptoms and attachment may be associated with perceived and observed partner responsiveness in couples coping with PVD. Given studies suggesting higher depressive symptoms and relationship insecurities in women with genito-pelvic pain (Ayling et Usher,

2008; Sheppard, Hallam-Jones et Wylie, 2008; Granot M, Zisman-Ilani Y, Ram E, Goldstick O, Yovell Y, 2011; Khandker et al., 2011; Nylanderlundqvist E, Bergdahl J, 2003), examining depressive symptoms and attachment in association with perceived and observed responsiveness may help women and their partners improve their sexual and relational wellbeing.

Perceived partner responsiveness in couples grappling with chronic disease and chronic pain has been associated with greater marital satisfaction, less depressive symptoms, less feelings of helplessness as well as less negative affect and catastrophizing (Holtzman & DeLongis, 2007; Fekete et al., 2007). In contrast, feeling discarded and invalidated by the partner was associated with greater impairment in one's daily activities due to pain (Wernicke, de Witt Huberts, & Wippert, 2017). Similarly, observed responsiveness in such couples has been associated with less negative affect and distress and greater relationship quality (Edlund et al., 2015; Manne et al., 2004 ; Porter et al., 2009). However, partners' observed invalidation was associated with greater anxiety, affective distress about pain, and catastrophizing (Cano et al., 2012). Taken together, these findings indicate that both perceived and observed partner responsiveness are associated with positive outcomes in couples facing chronic illness and pain.

Perceived and observed partner responsiveness may be even more important in couples coping with genito-pelvic pain, such as PVD, as the pain occurs mainly in an intimate and interpersonal context (Bois et al., 2016; Bois et al., 2013). With a prevalence of 8%, PVD is the most common subtype of genito-pelvic pain (Harlow et al., 2014) and is characterized by a burning pain when pressure is applied to the vulvar vestibule (i.e., the entrance of the vagina), such as during sexual intercourse (Bergeron, Corsini-Munt, Aerts, Rancourt, & Rosen, 2015). Studies have shown that perceived and observed partner responsiveness among couples with PVD is important for the individual and couple's well-being. Two observational and self-report

studies, using the same sample of 50 couples coping with PVD, indicated that greater observed responsiveness was associated with women's greater quality of life, and that both greater observed responsiveness and greater perceived partner responsiveness were associated with greater relationship adjustment and sexual satisfaction, and less sexual distress for both partners (Bois et al., 2016; Rosen et al., 2016). In a cross-sectional study conducted among 90 couples with PVD, women's greater self-reported relationship intimacy, including perceived partner responsiveness, was associated with their greater sexual function (Bois et al., 2013). In a study by Gordon, Panahian-Jand, McComb, Melegari, and Sharp (2003) among a mixed sample of 428 women with genito-pelvic pain, 65% reported that having an understanding partner was the most helpful factor in regulating the emotions associated with their pain. These studies highlight the protective effect of perceived and observed partner responsiveness on the sexual and relationship outcomes of couples coping with PVD/genito-pelvic pain.

Several studies indicated that interpersonal factors, such as attachment, and intrapersonal factors, such as depressive symptoms, may influence one's perception of others in social interactions and may interfere with one's capacity of being responsive to others (Cusi et al., 2011; Derntl et al., 2012). However, whereas partner responsiveness is an interpersonal construct, most of these studies were conducted among samples of individuals, used self-report measures and lacked a theoretical model of partner responsiveness. These shortcomings limit the understanding of the role of depressive symptoms and attachment on partner responsiveness, specifically in more distressed clinical populations and dyadic contexts, such as couples coping with PVD.

Bowlby's attachment theory suggests that early in their development, individuals form cognitive representations about the availability and responsiveness of key attachment figures

(Bowlby, 1969). These representations guide the expectations towards oneself and others in later relationships throughout one's lifetime. Some individuals may develop secure cognitive representations of their attachment figures, and thus hold beliefs that external help is caring and safe and refer to these secure representations when they face obstacles in their everyday life (i.e., secure attachment). Others may develop insecure cognitive representations and thus, hold beliefs that external help is defaulting and adopt behavioral strategies aimed at achieving internal security (i.e., insecure attachment). Although there are multiple ways of conceptualizing attachment, Ainsworth and colleagues (1978) identified two types of insecure attachment along a continuum. At one pole is anxious attachment (i.e., fear of abandonment) and at the other, avoidant attachment (i.e., fear of intimacy), with secure attachment being in the middle of the continuum and representing low fears of intimacy and abandonment. Individuals with an anxious attachment crave intimacy and tend to worry about their partner's ability to love them back, suggesting an inherent fear of rejection or abandonment. In contrast, individuals with an avoidant attachment tend to feel uncomfortable with intimacy and may fail to develop a sense of closeness, which prevents them from being fully committed in romantic relationships (Hazan & Shaver, 1987).

Several studies conducted among community samples, but also with clinical populations, indicated that attachment may influence one's interpretation and perception of social stimuli (Mikulincer & Shaver, 2005; Milan, Wortel, Ramirez, & Oshin, 2017; Pegman, Beesley, Holcombe, Mendick, & Salmon, 2011). Indeed, a study by Fraley, Niedenthal, Marks, Brumbaugh, and Vicary (2006) found that individuals with an anxious attachment were more hypervigilant to negative signals of others, which was detrimental to the accuracy of interpreting facial expressions of emotions. In addition, recent findings from neuroimaging studies suggested

that the activation in the brain associated with evaluation of affects was diminished in individuals with an avoidant attachment and increased in individuals with an anxious attachment (Vrticka & Vuilleumier, 2012). In two cross-sectional studies investigating the role of attachment on perceived partner responsiveness within community couples, results showed that insecurely attached individuals were less likely than secure individuals to perceive responsiveness from their partner (Shallcross, Howland, Bemis, Simpson, and Frazier, 2011; Rodriguez, 2018).

Studies have shown that intrapersonal factors, such as depressive symptoms, may also act as a perceptual filter in social interactions (e.g., Mattern et al., 2015; Moritz & Roberts, 2017; Moser, Huppert, Foa, & Simons, 2012). In agreement with Beck's cognitive theory (Beck, 1967; Beck, 1979), results of a meta-analysis indicated that depressive individuals had significantly greater attentional bias to negative information than non-depressive individuals (Peckham, McHugh, & Otto, 2010). In addition, a recent study found that individuals who reported greater depression perceived less positive emotions when facing ambiguous emotional states from others, suggesting that depression may reduce the perception of positive social cues (Sanchez, Romero, Maurage, & De Raedt, 2017). More specifically, a study by Pence and colleagues (2006) conducted among individuals with musculoskeletal pain and their partners found that greater depressive symptoms in those with pain were associated with greater perception that the partner was using negative responses to pain (e.g., ignoring the spouse or/and expressions of anger, irritation, frustration toward the spouse). Similar results were found in a study by Cano et al. (2004) conducted with 101 couples where one member reported a chronic musculoskeletal back or neck pain. Results indicated that depressed patients reported that their partner was using more negative responses to pain than non-depressed patients, although partners of depressed patients and non-depressed patients did not differ significantly when reporting on their own

responses. These findings suggest that depressive symptoms may affect the perception of the partner's behavior, regardless of the actual behavior.

In addition to findings showing associations between depressive symptoms, attachment and the perception of others' responsiveness, several studies suggest that depressive symptoms and attachment are also associated with the capacity of being responsive to others. Whereas individuals with a secure attachment may have care-oriented feelings and caregiving behaviors toward their romantic partner, those with an insecure attachment may be less able to be responsive, empathic, and compassionate toward the partner (Calvo et al., 2014; Feeney & Collins, 2001; Mikulincer et al., 2005; Shallcross et al., 2011). To feel loved, individuals with an anxious attachment can be overly concerned about being helpful and compassionate, and thus adopt compulsive, overinvolved and controlling caregiving attitudes toward their partner. On the other hand, individuals with an avoidant attachment can be uncomfortable facing the partner's distress and thus, be unresponsive and distant (Gilbert et al., 2011; Feeney & Collins, 2001).

Several studies conducted with individuals showed that depressive symptoms may also interfere with the capacity of being responsive. Hoffman et al. (2016) found that patients with major depression used more egocentric bias in their empathic judgments and, therefore, were less able to detach from their own emotional state and to empathically relate to others' emotional state. Studies also indicated that symptom severity in major depression patients was associated with lower affective responsiveness, empathic responding, perspective taking and empathic concerns (Cusi et al., 2011; Derntl et al., 2012). In a study conducted by Cao, Dingle, Chan, and Cunnington (2017), when facing others' distress, individuals with a sad mood were more likely to feel distressed and used more unhelpful behaviors (e.g., social withdrawal and avoidance), compared to individuals with a neutral mood.

It remains unclear how these findings translate to couples coping with PVD. Studies have shown that women experiencing genito-pelvic pain reported greater depressive symptoms than healthy controls (Khandker et al., 2011; Nylanderlundqvist & Bergdahl, 2003). Qualitative studies have shown that they felt guilty and scared of losing or deceiving their partner due to their pain (Ayling et Usher, 2008; Sheppard, Hallam-Jones et Wylie, 2008) and one quantitative study indicated that they were more likely to have insecure attachment styles than controls (Granot, Zisman-Ilani, Ram, Goldstick, Yovell, 2011). Investigating the role of these factors in perceived and observed responsiveness may help couples improve their sexual and relational wellbeing in the challenging context of PVD. The aim of this dyadic study was to examine associations between depressive symptoms, attachment, and perceived and observed partner responsiveness in couples coping with PVD. We expected that women and partners' greater depressive symptoms and greater avoidant and anxious attachment would be associated with their own lower perceived partner responsiveness and lower observed responsiveness (actor effects) and with the other's lower perceived partner responsiveness and lower observed responsiveness (partner effects).

Method

Participants

The current study used data collected from a larger study, of which two papers were published focusing on the associations between intimacy and sexual and relational outcomes (blinded). A total of 50 couples were included in the study. Of the final sample, 32 (64%) were recruited via website advertisements, newspapers, and university listservs, 13 (26%) were referred by a physician collaborating in this study, 4 (8%) were recruited via appointments to other health professionals, and 1 (2%) were recruited via word of mouth in a large Canadian

city between December 2011 and April 2013. There were no significant differences in terms of sociodemographic characteristics (age, pain, educational level, marital status, relationship length and couple's annual income) between all four recruitment types.

Couples interested in participating were screened for eligibility using a structured telephone interview. The inclusion criteria for women were the following: (a) pain during vaginal intercourse that was subjectively distressing, occurred on 75% of intercourse attempts in the last 6 months; (b) pain located in the vulvovaginal area (i.e., at the entrance of the vagina); (c) pain limited to intercourse and other activities involving pressure to the vestibule (e.g., bicycling); and (d) involved in a committed romantic relationship for at least 6 months. The exclusion criteria were the following: (a) vulvar pain not clearly linked to intercourse or pressure applied to the vestibule; (b) deep dyspareunia or ongoing treatment for dyspareunia; (c) absence of sexual activity (defined as manual or oral stimulation, masturbation and vaginal intercourse) with the partner in the last month; (d) presence of active infection previously diagnosed by a physician or self-reported infection, vaginismus (as defined by DSM-IV-TR), or pregnancy; (e) presence of major medical and/or psychiatric illness; (f) presence of dermatologic lesion; and (g) women's age below 18 or greater than 45 years and partner's age below 18. Eligible women underwent a gynecological examination to confirm the provoked vestibulodynia diagnosis. Gynecologists in this study were selected based on their expertise in women's genito-pelvic pain. Three (6%) women did not attend their gynecological appointment. Therefore, those who did not attend their gynecological appointment were selected exclusively based on the structured interview. There were no significant differences on sociodemographic characteristics between women who self-reported their vulvo-vaginal pain and those diagnosed by a gynecologist. The gynecological examination consisted of a validated and standardized cotton swab test which

involved probing at three places surrounding the vulvar vestibule (three-six-nine hours); women rated their pain on a scale of 0 (*no pain*) to 10 (*worst pain*) (Bergeron, Binik, Khalifé, Pagidas, & Glazer, 2001; Goldstein et al., 2016).

Initially, 140 couples contacted us to participate in the study. Of the 140 couples, 87 were ineligible. Reasons for ineligibility were the following: 24 (28%) were not in a romantic relationship, 20 (23%) lived too far away to come to the laboratory, 19 (22%) had partners who did not want to participate, and 24 (28%) were ineligible because of other exclusion criteria (i.e., chronic vaginal infections, pregnancy, or fibromyalgia). Of the 53 (38%) eligible couples, three couples (6%) did not complete the study. As a result, the final sample was comprised of 50 couples (one same-sex couple and 49 mixed-sex couples). There were no significant differences on sociodemographic characteristics or on vulvo-vaginal pain intensity between women who participated in the study and the three women who were eligible but did not participate.

In the sample, women with PVD were aged between 18 and 34 years old ($M = 24.50$, $SD = 4.03$) and partners were aged between 19 and 46 years old ($M = 26.10$, $SD = 5.70$). On average, women with PVD had 15.92 years of education ($SD = 2.06$) and partners, 15.54 years ($SD = 2.42$). Concerning marital status, 26 couples (52%) were cohabitating, three (6%) were married and 21 (42%) were committed but not living together. The relationship length was, on average, 3.45 years ($SD = 2.99$). Women's pain intensity averaged 6.95 on a numerical rating scale of 0 to 10 ($SD = 1.35$) and the duration of pain averaged 51.50 months ($SD = 43.34$). More than half of the sample (58%, $n = 29$) had an average annual income above \$40,000.

Procedure

All 50 couples attended a three-hour laboratory session at the investigators' university where they provided informed written consent and (a) completed measures assessing sociodemographic characteristics as well as depressive symptoms and attachment; (b) participated in a videotaped discussion and (c) completed a post-discussion questionnaire assessing perceived partner responsiveness. As a warm-up task, couples engaged in a 5-minute discussion about something they had recently seen on television or read in the newspapers (Manne et al., 2004). In the main discussion, each member of the couple was asked to focus on how PVD affected their own life. The discussion task lasted 30 min and members of each couple took turns being a speaker for 10 to 15 min and a listener for 10 to 15 min alternately. Then, couples rated on a 5-point Likert scale from 1 (*not at all*) to 5 (*very much*) the extent to which the discussion they had with their partner resembled typical conversations they would have at home. Women's ($M = 3.96, SD = 0.92$) and partners' ratings ($M = 3.92, SD = 0.99$) indicated that they perceived their discussions to be realistic. Each couple received a compensation of \$50 and a list of referrals to health professionals who had expertise in vulvovaginal pain.

This discussion task was based on standard observation studies (e.g., Gottman, 1979), feedback from couples who participated in a pilot study (unpublished study) and on researchers' recommendations (Cano & Williams, 2010). The topic of discussion was chosen to assess couples' degree of responsiveness on a subject in which they encounter difficulties, that is, PVD.

Observational Measure

Observed responsiveness. Responsiveness of women with PVD and their partners was measured by a questionnaire developed for this study: Empathic Response Card-Sort (ERCS). The questionnaire was created as part of a pilot study (unpublished data) with couples from the same population in which a variety of possible empathic behaviors were captured. The ERCS

consists of 44 items and measures the degree of responsiveness, i.e., the degree of validation, caring and empathy toward the partner, in both members of the couple during verbal interactions. This measurement tool was developed according to the Intimacy model (Reis et al., 2004), based on observational studies of couples coping with chronic pain or illness (Cano & Williams 2010; Manne et al., 2004) and with the collaboration of experienced clinical psychologists with expertise in couple therapy. The ERCS questionnaire includes items endorsing potentially empathic behaviors (e.g., “minimal empathic verbal attention”, “empathic attempt to understand the other by asking questions about his or her behaviors and/or personal experiences”) and potentially non-empathic behaviors (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”). Items were sorted by a trained observer into five piles according to the degree to which the listener endorsed the different possible behaviors during the interaction (-2 = *very unlike her/his behavior* and 2 = *very similar to her/his behavior*). Videotaped discussions were rated once by a trained observer and a randomly selected 20% of videotaped discussions were rated by two different observers. Observers received practical and theoretical training regarding the use of the ERCS. As illustrated by the intraclass correlation coefficient (ICC = .85), the interrater reliability was adequate. Cronbach's alphas (women: $\alpha = 0.91$ and partners: $\alpha = 0.88$) indicated good internal consistency. Higher scores indicate greater observed responsiveness, and the total score can range from -88 to 88.

Self-Report Measures

Perceived partner responsiveness. Based on the Intimacy model (Reis et al., 2004) and Laurenceau’s empirical work on the importance of perceived partner responsiveness in intimacy processes (Laurenceau, Barrett, & Pietromonaco, 1998), couples completed a 3-item

questionnaire measuring how much they felt accepted (During the discussion, "to what degree did you feel accepted by your partner?"), cared for (During the discussion, "to what degree did you feel cared for by your partner?") and understood (During the discussion, "to what degree did you feel understood by your partner?"). Ratings were made on a 5-point Likert scale (1 = *not at all* and 5 = *very much*). The internal consistency of this measure in the present sample was good (women: $\alpha = 0.82$ and partners: $\alpha = 0.88$). Higher scores indicate greater perceived partner responsiveness and the total score can range from 3 to 15.

Depressive symptoms. Women with PVD and their partners completed the widely used and well validated Beck Depression Inventory – II, which consists of 21 items assessing common depressive symptoms in the past 2 weeks (Beck, Steer, & Brown, 1996). Cronbach's alphas indicated excellent internal consistency (women: $\alpha = 0.91$ and partners: $\alpha = 0.95$). Higher scores indicate greater depressive symptoms, and the total score can range from 0 to 63.

Adult attachment style. Women with PVD and their partners completed the Experiences in Close Relationships Scale (ECL; Brennan, Clark, & Shaver, 1998), which consists of 36 items assessing the two dimensions of adult attachment: anxiety (e.g., "I need a lot of reassurance that I am loved by my partner") and avoidance (e.g., "I get uncomfortable when a romantic partner wants to be very close"). These two dimensions were comprised of 18 items, each assessing how couples generally experienced their relationships on a 7-point Likert scale (1 = *Strongly disagree* and 7 = *Strongly agree*). Cronbach's alphas indicated adequate internal consistency (women: $\alpha = 0.67$ and partners: $\alpha = 0.70$). Higher scores on both dimensions indicate greater attachment-related anxiety or avoidance. Lower scores on both dimensions indicate greater secure attachment. The total mean score of each scale can range from 1 to 7.

Data Analytic Strategy

Main analyses were conducted using the Actor-Partner Interdependence Model (APIM) (Kenny, Kashy, & Cook, 2006) to account for the interdependence of the dyadic data. This model assumes that one person's independent variable can have an effect on their own dependent variable (i.e., actor effect) or on their partner's dependent variable (i.e., partner effect). For example, this model assumes that one's depressive symptoms (independent variable) may have an effect on one's own observed responsiveness (dependent variable - actor effect) and on one's partner's observed responsiveness (dependent variable - partner effect). As depressive symptoms, an intrapersonal factor, and attachment, an interpersonal factor, are conceptually two different constructs, as well as for power considerations given a sample of 50 couples, two APIM models were tested. Both perceived partner responsiveness and observed responsiveness (i.e., entered together) were included as the dependent variables in distinct models. Depressive symptoms of both members of the couple were included as the independent variables in the first model and attachment of both members were included as the independent variables in the second model. Amos (Version 19.0.0; Arbuckle, 2010) was used to estimate the models.

Results

Descriptive Statistics

Means (*M*), standard deviations (*SD*) and correlations between the study variables are presented in Table 1. A set of preliminary analyses were conducted to examine the correlations between outcomes and participants' age, education level, couples' annual income, relationship length, and women's pain duration. Women and partners' age, education level, relationship length and women's pain duration were not associated with the outcomes. Couples' annual income was positively associated with partners' perceived partner responsiveness ($r = 0.37, p =$

.009). Therefore, we conducted subsequent analyses with couples' annual income as a covariate.

Paired *t*-tests revealed that mean scores for women's perceived partner responsiveness were significantly higher than mean scores for partners' observed responsiveness ($t(49) = 8.86, p < .001$). Mean scores for partners' perceived partner responsiveness were significantly higher than mean scores for women's observed responsiveness ($t(49) = 8.73, p < .001$). Thus, both women and partners perceived higher responsiveness from the other than the observers did. Mean scores for women's depressive symptoms were significantly higher than mean scores for partners' depressive symptoms ($t(49) = 3.96, p < .001$). There were no significant differences between mean scores for women and partners' attachment.

Associations Between Depressive Symptoms and Observed and Perceived Partner Responsiveness

As presented in Figure 1, when controlling for couple's annual income, greater women's depressive symptoms ($b = -.12, SE = .03, p < .001$) and partners' depressive symptoms ($b = -.01, SE = .03, p < .001$) were associated with their own lower perceived partner responsiveness, indicating that one's depressive symptoms were associated with a lower perception that the other had been responsive, and this, for women and partners. There were no partner effects, meaning that one's depressive symptoms were not associated with his/her own responsiveness as perceived by the other (partner's perceived partner responsiveness).

Greater partners' depressive symptoms were associated with women's lower observed responsiveness ($b = -1.20, SE = .30, p < .001$) and partners' lower observed responsiveness ($b = -0.85, SE = .28, p = .002$), suggesting that partners' depressive symptoms were associated with less observed responsiveness, in both women and partners.

There were no associations between women's depressive symptoms and women's observed responsiveness nor between women's depressive symptoms and partners' observed responsiveness, meaning that women's depressive symptoms were not associated with observed responsiveness, in both women and partners. This model had an excellent fit to the data, $\chi^2(2) = 0.44, p = .80$; RMSEA = .00; CFI = 1.00.

Associations Between Attachment and Observed and Perceived Partner Responsiveness

As presented in Figure 2, when controlling for couple's annual income, greater women's anxious attachment ($b = -.67, SE = .28, p = .02$) and partners' anxious attachment ($b = -.83, SE = .31, p = .009$) were associated with their own lower perceived partner responsiveness, indicating that one's anxious attachment was associated with a lower perception that the other had been responsive, and this, for women and partners. There were no partner effects, meaning that one's anxious adult attachment was not associated with his/her own responsiveness as perceived by the other (partner's perceived partner responsiveness).

There were no associations between women's or partner's anxious attachment and women' or partners' observed responsiveness. There were no associations between avoidant attachment of both members of the couple and perceived and observed partner responsiveness. Covariance between the covariable, couple's annual income, and partners' avoidant attachment were added based on modification indices. This modification provided a better fit to the data $\chi^2(2) = 1.41, p = .70$; RMSEA = .00 ; CFI = 1.00.

Discussion

This dyadic study examined associations between depressive symptoms, attachment and perceived and observed partner responsiveness in couples coping with PVD. Findings indicated

that greater women and partners' depressive symptoms were associated with their own lower perceived partner responsiveness. Partners' greater depressive symptoms were also associated with their own and women's lower observed responsiveness. Greater women and partners' anxious (but not avoidant) attachment were associated with their own lower perceived partner responsiveness, but not observed responsiveness. These associations were significant above and beyond the effects of the other member of the couple's depressive symptoms and attachment. Findings support the hypotheses that attachment and depressive symptoms may act as perceptual filters and alter responsiveness to others in this clinical population.

Consistent with our hypothesis, both partners' higher depressive symptoms were associated with their own lower perceived partner responsiveness. Thus, the more depressed one member of the couple was, the less he or she experienced the other as accepting, caring and understanding during a discussion on how PVD affected their own life. These results corroborate those from the literature suggesting that depressive symptoms may act as a perceptual filter leading to attentional bias to negative stimuli rather than positive stimuli in social interactions (Peckham et al., 2010; Sanchez et al., 2017). They also need to be interpreted in the context of PVD, whereby afflicted women are more vulnerable to depression. Indeed, they report significantly more depression as both antecedent and consequence of their condition (Khandker et al., 2011), and their higher levels of daily depressive symptoms were associated with their greater pain and lower sexual function, and with greater sexual distress in both partners (Pâquet et al., 2018). Thus, higher levels of depressive symptoms combined with their potential role as a perceptual filter may create a negative cognitive bias, such that women may find it difficult to feel supported by their partners in their pain experience. This perceived lack of support may in turn accentuate depressive symptoms, and perpetuate couples in a negative

thinking loop, which could prevent them from seeking support from each other and/or could lead them to engage in less effective communication patterns. These findings suggest that both partners' depressive symptoms should be taken into consideration in clinical settings as they may be associated with the couple's responsiveness toward each other, and could lead to negative sexual and relational consequences for both partners.

As for observed responsiveness, we hypothesized that depressive symptoms would be negatively associated with the observation of one's capacity of being responsive. This hypothesis was partially confirmed. Indeed, our results showed that partners' depressive symptoms were negatively associated with their own and women's observed responsiveness, whereas women's depressive symptoms were not associated with their own or their partner's observed responsiveness. First, these findings suggest that partners' greater depressive symptoms may pose a barrier to being responsive to women with PVD. Prior studies with individuals indicated that one's depressive symptoms were associated with lower affective responsiveness, empathic responding, perspective taking and empathic concerns, and were associated with the use of social withdrawal and avoidance as coping strategies to face others' distress (Cao et al., 2017; Cusi et al., 2011; Derntl et al., 2012; Hoffman et al., 2016). Although partners' depressive symptoms were associated with their own and women's lower observed responsiveness, they were not associated with women's perception of their level of responsiveness. This discrepancy in results could potentially be explained by the observers' measure. Indeed, the Empathic Response Card-Sort (ERCS) consisting of 44 items, may have been more sensitive to responsiveness behaviors than the 3 self-reported items used by couples. However, these findings may also suggest that women with PVD tend to perceive their partner as more responsive than they actually are (as observed by trained observers). This would be surprising considering that they

tend to feel guilty and afraid to lose or disappoint their partner due to pain (Ayling & Ussher, 2008), which may lead them to being more sensitive to the partner's reaction. Other studies should investigate this question by using measures with approximately the same level of sensitivity to be able to draw conclusions.

Second, our findings suggest that when partners reported feeling more depressed, women were observed as being less responsive to them. It is possible that given women are the ones who suffer from the pain condition, well-known to be associated with psychological distress (Maillé, Bergeron, & Lambert, 2015; Nylanderlundqvist & Bergdahl, 2003), they may not be predisposed to take into consideration the partner's distress, as they may feel that they should be the one receiving care, empathy and attention. This pattern was also found in a sample of women survivors of breast cancer, showing women tended to prioritise their own needs, sometimes at the expense of their partners' needs (Keesing, Rosenwax, & McNamara, 2016). Alternatively, their guilt and shame about their pain condition may render them less attuned to their partner's distress.

Third, our results indicated that women's depressive symptoms were not associated with their own or their partner's observed responsiveness. As women with PVD often report feelings of guilt and fear of losing their partner (Ayling & Ussher, 2008; Sheppard, Hallam-Jones, & Wylie, 2008) and that depressive symptoms may accentuate those feelings (DSM-5), it is possible that women displayed more efforts to be understanding and responsive towards their partners despite their depressive symptoms. Future studies should further investigate the association between partners' distress and women's observed responsiveness in couples coping with PVD.

Further, consistent with our hypothesis, results showed that when women and partners reported greater levels of anxious attachment, they perceived each other as being less responsive. This result is consistent with prior studies indicating that individuals with an anxious attachment style tend to be hypervigilant to negative cues (Fraley et al., 2006) and to be more sensitive to others' emotions, thus, altering their perceptions (Vrticka & Vuilleumier, 2012). Considering that PVD occurs mainly during sexual intercourse and alters sexual function and satisfaction, it could easily trigger attachment insecurities, particularly among individuals with fear of abandonment (Cherner & Reissing, 2013; Farmer & Meston, 2007; Leclerc et al., 2015). Indeed, anxious attached individuals have a tendency to perceive their negative sexual experiences as relationship threats (Birnbaum, Reis, Mikulincer, Gillath, & Orpaz, 2006). In addition, more than 76% of women with genito-pelvic pain report being afraid that the pain could ruin their relationship (Gordon et al., 2003). Thus, our results suggest that anxiously attached individuals are less likely to perceive their partner as understanding and supportive, which may in turn, increase insecurities and fear related to their relationship that may already be present given the context of PVD.

Contrary to our hypothesis, no significant associations were found between avoidant attachment and perceived partner responsiveness. According to a study conducted by Mikulincer et al. (2005), facing partners' negative behaviors, an individual with an avoidant attachment will tend to suppress his anger, resentment and hostility and will tend to be indifferent and detached when facing partners' positive behaviors. Thus, such emotional suppression or indifference facing partners' behaviors, may explain the lack of results. In fact, these emotional reactions may have been reflected in our results by a neutral perception of partner responsiveness.

Similarly, contrary to our hypotheses, women and partners' anxious and avoidant attachment were not associated with observed responsiveness. This result is not consistent with those of prior studies among community samples showing that anxious and avoidant attachment were associated with less responsiveness and empathic behaviors (Calvo et al., 2014; Collins & Feeney, 2000; Feeney & Collins, 2001; Gilbert et al., 2011; Mikulincer et al., 2005; Shallcross et al., 2011). Nevertheless, only two other studies used an observational dyadic design to examine associations between attachment and observed responsiveness and these were in community couples and not in couples with chronic pain, such as PVD. Collins and Feeney (2000) found that only an anxious attachment was negatively associated with observed responsiveness, while Shallcross et al. (2011), found that only an avoidant attachment was negatively associated with observed responsiveness. The contexts in which these two studies were conducted may also explain the discrepancies in results. One study asked couples to disclose a stressful situation to the partner, and the other one asked to disclose a positive event. In the present study couples were recruited from a clinical population and were asked to disclose a shared experience – the impact of PVD on their life. It is possible that the impact of PVD in their life had already been discussed at home, and that both partners may have already known what the other was disclosing, above and beyond their attachment. Their shared experience may have also rendered them more responsive to one another. Alternatively, this result may be explained by the fact that only a minority of participants in this study had high scores on anxiety and avoidance attachment scales. Thus, the level of insecure attachment style in this sample may not have been high enough to capture an association with the observation of each member's responsiveness.

Strengths and Limitations

This study had some limitations. First, its correlational and cross-sectional design does not allow us to draw any causal conclusions. Second, given our sample was composed mainly of young heterosexual couples, the generalization of the results is restricted to this population. Finally, although participants indicated that the discussion they had in the laboratory resembled typical conversations they would have had at home, the procedure did not foster a high ecological validity. Thus, participants' observed responsiveness might have been different during the discussion task compared to their daily life. Despite these limitations, this study was the first dyadic observational study to examine depressive symptoms and attachment as a perceptual filter of, and a barrier to, responsiveness, in a clinical sample – couples coping with PVD. The use of both observed and self-report measures is one of the major strengths of this study as it allowed us to distinguish between what was associated with perceived and observed partner responsiveness. However, observed responsiveness was assessed with the Empathic Response Card-Sort (ERCS), a questionnaire developed for this study and only partially validated (Bois et al., 2016).

Conclusion

Findings from this study have several clinical and methodological implications. First, results reveal that depressive symptoms and anxious attachment may act as perceptual filters to partner's responsiveness. Consequently, behaviors that could be objectively classified as having been understanding and validating may not be perceived as such by each member of the couple. Assessing and targeting depressive symptoms, in addition to the presence of relationship insecurity in couple therapy could increase perception of partner responsiveness in each member of the couple. In turn, this could enhance their sexual and relational lives, knowing the important role partner responsiveness plays for couples coping with PVD (Bois et al., 2016; Bois et al., 2013; Rosen et al., 2016). Second, results suggest that the partners' depressive symptoms could

interfere with both partners' capacity to be responsive to each other. Thus, although women carry a higher burden from the pain condition, clinicians should not underestimate the presence of depressive symptoms in their partners. Finally, future studies examining partner responsiveness should consider these interpersonal and intrapersonal factors as they are associated with one's perception and may alter one's capacity of being responsive to others.

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