Attachment, sexual assertiveness, and sexual outcomes in women with provoked vestibulodynia and their partners: A mediation model

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ABSTRACT

Provoked vestibulodynia (PVD) is a prevalent women's sexual pain disorder, which is associated with sexual function difficulties. Attachment theory has been used to understand adult sexual outcomes, providing a useful framework for examining sexual adaptation in couples confronted with PVD. Research to date indicates that anxious and avoidant attachment dimensions correlate with worse sexual outcomes in community and clinical samples. The present study examined the association between attachment, pain, sexual function and sexual satisfaction in a sample of 101 couples in which the women presented with PVD. The Actor-Partner Interdependence Model was used in order to investigate both actor and partner effects. This study also examined the role of sexual assertiveness as a mediator of these associations via structural equation modeling. Women completed measures of pain intensity and both members of the couple completed measures of romantic attachment, sexual assertiveness, sexual function and satisfaction. Results indicated that attachment dimensions did not predict pain intensity. Both anxious and avoidant attachment were associated with lower sexual satisfaction. Only attachment avoidance predicted lower sexual function in women. Partner effects indicated that higher sexual assertiveness in men predicted better sexual function in women, while higher sexual assertiveness in women predicted higher sexual satisfaction in men. Finally, women's sexual assertiveness was found to be a significant mediator of the relationship between their attachment dimensions, sexual function and satisfaction. Findings highlight the importance of examining how anxious and avoidant attachment may lead to difficulties in sexual assertiveness and to less satisfying sexual interactions in couples where women suffer from PVD.

KEY WORDS

Provoked Vestibulodynia; Attachment; Sexual Assertiveness; Sexual Function; Sexual Satisfaction

INTRODUCTION

Provoked vestibulodynia (PVD), a subset of vulvodynia, is a frequent cause of dyspareunia, or pain during intercourse (Meana & Binik, 1994). Defined as pain located at the vulvar vestibule, PVD affects 12 % of women in the general population (Harlow, Wise, & Stewart, 2001). Beyond the experience of pain, PVD is associated with sexual functioning impairments such as low sexual desire, diminished sexual arousal, impaired orgasmic capacity and reduced sexual satisfaction (Desrochers, Bergeron, Landry, & Jodoin, 2008). According to a recent etiological model (Zolnoun et al., 2006), PVD could result from the convergence of a variety of pathophysiological mechanisms including the modulation of pain by psychosocial variables. A growing body of research suggests that interpersonal variables such as couple functioning and partner responses are associated with pain intensity and pain behaviors (Kiecolt-Glaser & Newton, 2001). To date, only a handful of studies have explored these associations among women with vulvo-vaginal pain. Despite the fact that PVD is not necessarily associated with general relationship maladjustment (Smith & Pukall, 2011), two cross-sectional studies have shown that specific partner responses toward pain, such as increased solicitousness and negative responses, can predict higher pain intensity and modulate sexual satisfaction (Desrosiers et al., 2008; Rosen, Bergeron, Leclerc, Lambert, & Steben, 2010).

One important interpersonal aspect of PVD is the negotiation of sexual intercourse with the partner. Qualitative research suggests that many women are torn between their desire to meet their partner's sexual needs and their desire to avoid the emotional and physical suffering of enduring painful intercourse (Ayling & Ussher, 2008). Despite the pain and limited satisfaction they derive from intercourse, studies

indicate that the majority of women with vulvar pain choose to continue engaging in vaginal penetration (Gordon, Panahian-Jand, McComb, Melegari, & Sharp, 2003; Hallam-Jones, Wylie, Osborne-Cribb, Harrington, & Walters, 2001). Unfortunately, engaging in unwanted painful sexual intercourse on a regular basis may promote the development of chronic pain in women with PVD, since it is now recognized that repetitive pain experiences contribute to the sensitization of nociceptors (Gebhart, 2007; Harper & Schug, 2007; Mense & Schaible, 2007).

Attachment theory can provide a useful framework for understanding why women consent to painful sexual experiences. Attachment patterns are constructed within early experiences with primary caregivers, who then become attachment figures (Mikulincer & Goodman, 2006). Hazan and Shaver (1987) have extended attachment theory to the context of romantic love and recent studies suggest that attachment patterns are closely linked to adult sexual cognitions, emotions and behaviors (Cooper et al., 2006; Dewitte, 2012). Adult attachment styles are conceptualized as regions in a continuous two-dimensional space resulting in four styles of attachment (Brennan, Clark, & Shaver, 1998). Attachment anxiety and attachment avoidance are the two main dimensions of insecure attachment. Based on these two dimensions, four attachment styles can be derived: (1) secure attachment, which is a combination of low anxiety and low avoidance, (2) fearful attachment, which is a combination of high anxiety and high avoidance, (3) preoccupied attachment (high anxiety and low avoidance), and (4) dismissing attachment (high avoidance and low anxiety). The present research focuses on anxious and avoidant attachment dimensions (anxiety about rejection and avoidance of intimacy) and their link

with pain and sexual outcomes in a sample of women with PVD. It also investigates the potential role of sexual assertiveness in the mediation of these associations.

Anxiously attached individuals are hypersensitive to cues that could signify the loss of the partner (Fraley & Shaver, 1997). Attachment theory makes the assumption that the attachment system will be triggered when an individual perceives a threat to a relationship with an attachment figure (Davis, Shaver, & Vernon, 2003; Mikulincer, Gillath, & Shaver, 2002). Negative sexual experiences are particularly likely to be interpreted as a relationship threat by anxiously attached individuals. Birnbaum, Reis, Mikulincer, Gillath and Orpaz (2006) observed that anxiously attached individuals have a marked tendency to adopt the belief that sexuality serves as a barometer of the romantic relationship. Therefore, they are more susceptible to develop doubts about their relationship when confronted with negative sexual experiences. Because PVD is associated with deficits regarding sexual functioning and satisfaction, it could contribute to trigger interpersonal insecurities among individuals who are particularly sensitive to experiences of interpersonal loss. Interestingly, a web-based survey conducted among 428 women with vulvar pain found that 76.6 % of participants feared that their pain might ruin their relationship, which suggests that PVD might be a trigger for attachment insecurities (Gordon et al., 2003).

When fear of losing the partner activates the attachment system, anxiously attached individuals tend to manifest certain behaviors in order to attenuate their fear. In the face of relationship threat, they adopt behaviors that promote relationship maintenance such as excessive proximity seeking or clinging (Cooper et al., 2006; Mikulincer & Shaver, 2007; Shaver & Mikulincer, 2006). Birnbaum, Weisberg and

Simpson (2010) have found that anxiously attached individuals rely heavily on sex to meet their attachment needs. In the face of relationship threat, they are particularly prone to use sex to repair the threatened relationship (Birnbaum et al., 2010). Agreeing to continue practicing vaginal penetration despite pain and not being assertive about their sexual preferences could well serve as strategies aimed at maintaining the romantic relationship in women with PVD. By accepting painful penetration, the woman would promote the sexual satisfaction of her partner and at the same time reassure her own fear that pain could lead to the eventual loss of her partner. However, in a long-term perspective, these non-assertive behaviors may have detrimental effects on pain, sexual functioning and satisfaction. Correlational studies already show that attachment anxiety is associated with poorer sexual experiences (Birnbaum, 2007; Brassard, Peloquin, Dupuy, Wright, & Shaver, 2012; Butzer & Campbell, 2008; Costa & Brody, 2011; Davis et al., 2006; Gentzler & Kerns, 2004) and greater sex-related worries (Birnbaum et al., 2006; Davis et al., 2006). Two studies using a dyadic approach have shown interesting partner effects indicating that an individual's attachment can predict their partner's sexual outcome (Brassard et al., 2012; Butzer & Campbell, 2008). More specifically, Brassard et al. (2012) found that men's attachment anxiety was associated with higher sexual dissatisfaction in women.

In contrast to anxiously attached individuals, avoidant individuals manifest inhibited proximity seeking behaviors, resulting in an independent and self-reliant style of coping. They generally feel uncomfortable with intimacy and prefer to keep emotional distance from attachment figures, leading to low investment in interpersonal relationships (Hazan & Shaver, 1994; Mikulincer & Shaver, 2007; Shaver & Mikulincer, 2006). Their

motivations for engaging in sexual interactions are less related to interpersonal aspects of sexuality (Schachner & Shaver, 2004). Research has begun to show that avoidant attachment is also associated with a tendency to be less assertive sexually and to comply with unwanted sex, although motivation underlying this behavior would be different (Gentzler & Kerns, 2004; Impett & Peplau, 2002). Evidence shows that individuals higher in avoidant attachment report less sex-related pleasure (Birnbaum et al., 2006; Tracy, Shaver, Albino, & Cooper, 2003), are more likely to manifest aversive sexual affects and cognitions (Birnbaum, 2007; Birnbaum et al., 2006), and are generally less satisfied with their sexual interactions (Brassard et al., 2012; Butzer & Campbell, 2008; Davis et al., 2006; Fricker & Moore, 2002). Further, two dyadic studies indicated that partners of individuals with higher attachment avoidance report lower sexual satisfaction (Brassard et al., 2012; Butzer & Campbell, 2008).

Because PVD is a sexual problem that impacts both members of the couple and that each manifests his or her own responses to adapt to this challenging condition, we adopted a dyadic approach. The responses of each partner can interact and create relationship dynamics that cannot be captured when assessing only the perspective of one member of the couple. Attachment styles of both partners are likely to contribute to the couple's sexual adaptation. Until now, very few studies investigating the sex-attachment link have included both partners' perspectives, which is considered to be an important limitation according to Mikulincer and Shaver (2007), who recommend conducting dyadic studies to better reflect the interactional dynamic between partners' attachment insecurities. Recent efforts to elaborate a theoretical perspective on the sex-attachment link have also criticized the fact that research has been limited to studying this association

in a descriptive manner (Dewitte, 2012). Pathways that mediate the sex-attachment link need to be identified. Moreover, few studies have investigated this association in samples comprising individuals who present with actual sexual difficulties. This research aims to fill these gaps by adopting a dyadic approach and proposing a new mediator that could potentially explain how attachment might be associated with sexual outcomes in a sample of women with PVD and their partners, namely sexual assertiveness.

It is plausible that sexual assertiveness could mediate the relationship between attachment insecurities and sexual impairments. The concept of sexual assertiveness refers to the ability to communicate openly about sexual matters including the initiation of sexual activity, refusal of unwanted sexual activities, communication of sexual preferences and negotiation of desirable sexual behavior such as contraceptive use and safer-sex behavior (Morokoff et al., 1997; Pierce & Hurlbert, 1999). The ability to assert one's sexual preferences seems to be impaired in women with attachment anxiety, who may be more likely to respond to their partners' sexual needs rather than to their own (Davis et al., 2006). The assertion of one's sexual limits, which refers to the capacity to refuse to engage in unwanted sexual practices, also seems to be impaired in women with attachment anxiety as seen in sexual compliance studies (Gentzler & Kerns, 2004; Impett & Peplau, 2002). Sexual assertiveness is considered an essential skill for the healthy development of sexuality, protecting individuals from risky sexual behavior (Morokoff et al., 1997). It is also associated with better sexual functioning and satisfaction (Hurlbert, 1991). In the context of vulvo-vaginal pain, the ability to assert one's sexual limits and to communicate sexual preferences might be an important factor in determining the

experience of pain and the sexual adaptation of couples who are confronted with this challenging condition.

The present study examined the associations between attachment dimensions, sexual assertiveness, pain as well as sexual function and satisfaction in a sample of couples in which the woman suffers from PVD. We used the Actor-Partner Interdependence Model (Kenny, Kashy, & Cook, 2006) because it has the advantage of positioning the couple as the unit of analysis, enables the assessment of actor and partner effects, and controls for the non-independence of the dyadic data. More specifically, we hypothesized that higher degrees of anxious and avoidant attachment would be associated with higher levels of women's pain and lower levels of sexual functioning and satisfaction in both members of the couple (actor effects). We also predicted that higher degrees of anxious and avoidant attachment in one partner would be associated with worse sexual outcomes in the other partner (partner effects). We further hypothesized that the typical fears that characterize attachment anxiety and avoidance could bring women with PVD to exhibit difficulties regarding sexual assertiveness, which in turn would be related to their pain and sexuality outcomes. Thus, we examined whether sexual assertiveness mediated the relationship between attachment dimensions, pain, sexual functioning and sexual satisfaction in women with PVD.

METHOD

Participants

Women were recruited from July 2006 through July 2009 via different means such as gynecologists' referrals, local media advertisements (newspapers, magazines targeting adult female readers, and references from other research teams studying a

similar population). Women recruited in gynecological clinics met with a research assistant who explained what study participation entailed. Women who were recruited via advertisements contacted a research assistant by telephone. A research assistant conducted a structured interview in order to screen women for eligibility. The screening interview aimed to ensure that the women's symptoms corresponded to PVD. Women who met the inclusion criteria were then asked to solicit the participation of their sexual partner. Partners who agreed to participate were included in the study as male participants. All couples were heterosexual. The sample of couples included 41 % recruited at visits to physicians, 7 % recruited at visits to other health professionals (e.g., psychologist, physiotherapist), 44 % recruited through advertisements, 7 % recruited via participation in another PVD study, and 1 % unknown. The gynecologist confirmed the diagnosis of PVD with the cotton- swab test when women were recruited in medical clinics. Paired t-tests revealed that women whose diagnosis was confirmed with a gynecological exam were not significantly different from the rest of the sample in terms of pain intensity (t = -.619, p = .946), sexual functioning (t = .639, p = .172), sexual satisfaction (t = -.657, p = .584) and sexual assertiveness (t = .267, p = .755). A total of 143 couples were recruited and 126 of them returned both questionnaires, a response rate of 88 %. Ten couples were eliminated because of missing data, and 15 couples were eliminated because they had not been sexually active in the last four weeks, for a final sample size of 101 couples.

The study sample consisted of 101 heterosexual couples engaged in a committed relationship for at least six months, in which the woman presented with PVD. Women's inclusion criteria were the following: (a) 18 years of age or older, (b) pain of a minimal

duration of six months and occurring during at least 75 % of vaginal penetration attempts, (c) presence of pain located in the vulvo-vaginal area (i.e. entrance of the vagina), (d) pain intensity of at least 4 on a scale of 0–10. Women who had continuous (or unprovoked pain) were excluded, as well as women whose pain was not located in the vulvo-vaginal region (e.g. deep dyspareunia). Finally, women who were pregnant, who presented an active vaginal infection, vaginismus, or a major medical and/or psychiatric illness were also excluded. There was no inclusion criterion for the partner and the only exclusion criterion was age less than 18 years. Non-sexually active couples were excluded.

Measures

Pain Intensity

Pain intensity during intercourse was measured using a horizontal analog scale ranging from 0 to 10. Women were invited to circle on paper the number that best corresponded to the average pain intensity they felt during the last 6 months. The validity of this type of scale is well documented (Jensen & Karoly, 2001). It correlates positively and significantly with other pain intensity measures (Jensen & Karoly, 2001). Only women answered the pain intensity scale.

Romantic Attachment

The two dimensions of romantic attachment were measured using the Experiences in Close Relationships Scale-Revised (ECR-R) (Fraley, Waller, & Brennan, 2000). This 36-item scale consists of two 18-item subscales assessing anxiety about rejection and avoidance of intimacy. Both members of the couple indicated to which extent they agreed with each item according to a 7-point Likert scale ranging from 1 (strongly disagree) to 7

(strongly agree). One score for each dimension was computed by averaging items of each subscale, higher scores indicating higher attachment anxiety and avoidance. Fraley et al. (2000) have provided evidence for the reliability and validity of the ECR-R. In the current sample, Cronbach's alphas were .90 and .83 for the anxiety subscale, and .86 and .81 for the avoidant subscale, for women and men respectively.

Sexual Assertiveness

We assessed our participants' ability to assert themselves in sexual situations using the 25-item Hurlbert Index of Sexual Assertiveness (Hurlbert, 1991). Participants were asked to rate how strongly they agree to each statement with a 5-point Likert scale ranging from 1 (none of the time) to 5 (all of the time). The summation of each item provides a global score of sexual assertiveness ranging from 0 to 100, higher scores representing a better capacity to be assertive with sexual partners. Reliability and validity have been well demonstrated (Apt & Hurlbert, 1992; Hurlbert, 1991; Pierce & Hurlbert, 1999). In the current sample, Cronbach's alphas were .91 and .89 respectively for women and men.

Women's Sexual Functioning

Women's sexual functioning was assessed using the Female Sexual Function Index (Rosen et al., 2000). Its 19 items were designed to assess six domains of sexual function: sexual desire, subjective arousal, lubrication, orgasm, sexual satisfaction, as well as pain. Higher scores indicate healthier sexual functioning. Several studies have demonstrated the excellent reliability and validity of this self-report measure (Meston, 2003; Rosen et al., 2000; ter Kuile, Brauer, & Laan, 2006; Wiegel, Meston, & Rosen, 2005). In addition, the FSFI's psychometric properties have been specifically validated in

a sample of women with vulvodynia, a broader category of genital pain encompassing provoked vestibulodynia (Masheb, Lozano-Blanco, Kohorn, Minkin, & Kerns, 2004). In this sample, Cronbach's alpha was .85.

Partner's Sexual Functioning

The men's version of the Sexual History Form was used to investigate partners' sexual functioning (Nowinski & LoPiccolo, 1979). This self-report measure consists of 28 multiple choice questions referring to various areas of sexual function such as frequency of sexual activity, sexual desire, arousal, orgasm, pain and sexual satisfaction. A global summary score can be calculated by averaging 12 selected items reflecting overall level of sexual functioning. This global score varies between 0 and 1, with higher scores representing greater dysfunction. Research has shown that the SHF global score possessed good temporal stability in addition to adequate internal consistency coefficients (Creti et al., 1998). Regarding discriminant validity, the SHF can distinguish between sexually dysfunctional and healthy men (Creti et al., 1998). Some items refer to the attainment of orgasm through vaginal penetration. Considering that a significant proportion of women with PVD are unable to practice vaginal penetration, the scale needed to be adapted to the current population. Therefore, two items were deleted to improve the internal consistency of the scale. The Cronbach alpha in this sample was .68.

Sexual Satisfaction

The Global measure of Sexual Satisfaction (GMSEX) developed by Lawrance and Byers (1995, 1998) was used to assess satisfaction with the sexual relationship. Both members of the couple were asked to describe their sexual relationship based on the following bipolar adjectives scale: good-bad, pleasant-unpleasant, positive-negative,

satisfying-unsatisfying, valuable-worthless. Ratings were given according to a 7-point Likert scale for each pairs of adjectives ranging from 7 (good, pleasant, positive, etc.) to 1 (bad, unpleasant, negative, etc.). Higher scores indicate greater satisfaction, with possible scores ranging between 5 and 35. The GMSEX has been shown to have good test-retest reliability, high internal consistency, as well as adequate convergent validity (Byers & MacNeil, 2006; Lawrance & Byers, 1995, 1998). In the present study, Cronbach's alphas were respectively .89 and .88 for women and men.

Procedure

Women recruited in gynecology clinics who were eligible and consented to participate in the study were given two different envelopes, one for them and one for the partner. Couples who were recruited by advertisements and contacted by phone were sent the same packages by mail. Each package contained consent forms, the previously described questionnaires, as well as basic sociodemographic questions. Couples were asked to answer questionnaires separately and to refrain from consulting each other's answers. Follow-up phone calls were made every two weeks to facilitate a higher return rate of questionnaires, up to a maximum of six calls. Once couples had returned both questionnaires, they were offered compensation for their participation, which consisted of a 30-minute telephone consultation with a clinical sexologist on our research team. Couples who were unavailable for the telephone consultation received written documents containing equivalent information. This study was approved by the Institutional review boards of the university and university hospital where the research took place.

Data Analyses

Because of the dyadic nature of our sample, which implies non-independence of the data, The Actor-Partner Interdependence Model (Kenny et al., 2006) was used to examine associations between attachment dimensions, pain, and two different sexual outcomes: sexual satisfaction and sexual functioning. Choosing APIM instead of usual regression strategies prevented us from making type I or type II errors, which is a risk when performing traditional regressions with non-independent data. SPSS was used to conduct APIM analyses. Attachment anxiety and avoidance figured as independent variables. Each dimension of attachment was used to predict two sexual outcomes: sexual satisfaction and sexual function. First, actor and partners' effects were examined. Actor effects are the association between the individual's independent variable and his or her own outcomes, while partner effects are the associations between an individual's independent variable and his or her partner's outcomes.

Because we used two different questionnaires to measure sexual functioning in men and women, a transformation was applied to men's scores to make them comparable to women's scores (see Adjusted score of sexual functioning in Table 1). We created a dyad-structure data set from an individual-structure data set by merging records. Then, data were standardized and gender was recoded: women (-1) and men (1). Attachment variables from both partners of the dyad were correlated as well as error terms of outcomes. Separate analyses were performed for anxiety and avoidance dimensions. Second, mediation analyses using the AMOS structural equation modeling program were performed to investigate whether sexual assertiveness could mediate the relationship between attachment dimensions and sexual outcomes. The AMOS structure equation modeling is also based on APIM and takes into account the non-independence of the

data.

RESULTS

Descriptive Statistics

Women's mean pain intensity during intercourse was 7.3 on a 0 to 10 scale. The majority of couples were cohabitating (84.5 %) and 31.0 % reported being married. Mean age was similar for men and women with a mean of 35 years for women and 37 for men. Years of education were also similar with a mean of 16 years for both partners, which corresponds to a bachelor degree. The couple median annual income fell within the category ranging from 60,000 and 70,000$CDN. Participants were mostly Canadians. Means and standard deviations for attachment dimensions and outcome variables are shown in Table 1. Men and women's attachment scores did not differ significantly according to a paired *t* test. Each variable was examined for normality of distribution. The following variables required corrective transformations to restore skewness: pain intensity, attachment for women and men, sexual functioning for women and men, and sexual satisfaction for men. Kurtosis was normal for all variables.

Zero-order Correlations

Correlations between attachment dimensions, sexual function, sexual satisfaction and sexual assertiveness can be found in Table 2. Zero-order correlations between attachment variables showed that women's attachment anxiety and avoidance dimensions were positively related, indicating that women who tend to be anxiously attached also tend to report higher attachment avoidance. Men's scores displayed the same pattern: men's attachment anxiety scores were positively related to men's attachment avoidance. Women's attachment anxiety was not related to partners' attachment dimensions,

however their avoidance scores were positively related to both of the partners' attachment dimensions. Higher attachment avoidance in women was associated with higher attachment anxiety in men. Higher attachment avoidance in women was also associated with higher attachment avoidance in mal participants. This result highlights the non-independence of our data therefore justifying the necessity of choosing a statistical procedure that controls for this phenomenon. Zero order correlations were computed between pain intensity scores and both dimensions of attachment. Results indicated that neither attachment anxiety or attachment avoidance scores were correlated with pain intensity. Therefore, no further analyses involving pain were conducted. Zero-order correlations were also computed between socio-demographic variables and main outcomes. Correlations were all below .30 and therefore no covariate needed to be included in the main analyses.

Attachment in Relation to Sexual Outcomes

With regard to sexual satisfaction, actor effects were observed for both dimensions of attachment. An actor effect was detected for the anxiety dimension in women only. Higher attachment anxiety scores were associated with lower levels of sexual satisfaction in women (β = -.23, p = .01). No actor effect was observed for men with regard to attachment anxiety (β = -.07, p = .55). An actor effect was found between attachment avoidance and sexual satisfaction for women (β = -.20, p = .04) and men (β = -.24, p = .02). Specifically, higher avoidance scores were associated with lower sexual satisfaction in men and women. With regard to sexual functioning, only an actor effect was found for the avoidant dimension in women (β = -.20, p = .02). Higher avoidant scores were associated with lower levels of sexual functioning in women.

As for sexual assertiveness, APIM analyses revealed actor effects for both dimensions of attachment, meaning that individual levels of attachment anxiety and avoidance were associated with individual levels of sexual assertiveness. Higher attachment anxiety in men (β = -.26, p = .01) and women (β = -.22, p = .02) was associated with their own lower levels of sexual assertiveness. The same pattern was observed regarding the avoidance dimension of attachment for men (β = -.36, p = .01) and women (β = -.36, p = .01). Actor effects showed that higher individual levels of attachment avoidance were associated with lower individual levels of sexual assertiveness, in both men and women.

Mediation of Sexual Outcomes by Sexual Assertiveness

As a preliminary condition to perform mediation analysis, we also investigated whether sexual assertiveness would be a significant predictor of sexual outcomes. Actor effects were detected for both sexual function and satisfaction with regard to sexual assertiveness as the independent variable. Higher sexual assertiveness predicted better sexual functioning in both men (β = .16, p = .01) and women (β = .39, p = .001). Higher sexual assertiveness predicted better sexual satisfaction in women only (β = .53, p = .001). One partner effect was detected in the associations between sexual assertiveness and sexual outcomes. Higher scores of sexual assertiveness in women predicted higher sexual satisfaction in men (β = .35, p = .001).

Preliminary APIM results provided adequate support for sexual assertiveness being a potential mediator of the association between attachment dimensions and the two remaining sexual outcomes: sexual satisfaction and functioning. Four path analyses using AMOS were conducted to test the mediational role of assertiveness. To determine

whether the indirect path through the mediator was significant, we computed 90 % confidence intervals around the estimates using 1000 bootstrapping samples (Preacher & Hayes, 2008). We required a χ^2/df ratio below 3, a comparative fit index (CFI) equal to or greater than .90, and a root mean square error approximation (RMSEA) lower than .08. Results revealed that sexual assertiveness completely mediated the association between: (a) attachment anxiety and sexual satisfaction in women (β = -.13 [-.21; -.05], p = .004); (b) attachment avoidance and sexual satisfaction in women (β = -.22 [-.34; -.11], p = .002); and (c) attachment avoidance and sexual functioning in women (β = -.19 [-.30; -.09], p = .002). Mediation figures are presented in Figure 1 and 2 with goodness of fit indices.

DISCUSSION

Using a dyadic approach, the primary goal of the present study was to examine associations between attachment dimensions, pain and sexual outcomes in a sample of women with PVD and their partners. A secondary objective was to identify a potential mediator of these associations – sexual assertiveness. The data yielded five main findings: (a) Attachment dimensions did not predict pain intensity; (b) Higher attachment anxiety and avoidance both predicted lower sexual satisfaction; (c) Only the avoidance dimension predicted lower sexual functioning in women; (d) One partner effect was detected in the relation between sexual assertiveness and sexual outcomes; (e) Women's sexual assertiveness was found to be a significant mediator of the relationship between their attachment dimensions and sexual outcomes.

Results showed no association between attachment dimensions and pain intensity, in contrast to those of Granot, Zisman-Ilani, Ram, Goldstick, & Yovell (2011), who

found that higher avoidance scores predicted higher pain intensity. Our results also contrast with those of studies among other chronic pain populations, which suggest that attachment insecurities would be linked to higher pain ratings (MacDonald & Kingsbury, 2006; McWilliams, Cox, & Enns, 2000; Meredith, Strong, & Feeney, 2006). A small variance in pain intensity scores might explain why pain does not co-vary with attachment variables in our sample. Studies also differ in the way they measure attachment dimensions as well as pain intensity.

In terms of sexuality outcomes, higher attachment anxiety and avoidance both predicted lower sexual satisfaction in couples with PVD. These results are similar to the ones found in community sample studies (Birnbaum, 2007; Butzer & Campbell, 2008; Davis et al., 2006; Fricker & Moore, 2002) as well as in studies of clinically distressed couples (Brassard et al., 2012). Many reasons can explain why anxiously attached women with PVD are less satisfied with their sexual experiences. Fear of losing the partner might bring anxiously attached women to focus on the satisfaction of their partner's need to the point that they forget to pay attention to their own sexual sensations. Accordingly, anxiously attached individuals are less likely to approach sexuality with a hedonistic attitude, suggesting that they might not have access to high levels of sexual pleasure. This might be even truer in the context of PVD where pain limits the potential for sexual pleasure. Moreover, the presence of PVD might exacerbate the tendency of anxiously attached women to carry on sex-related worries. The experience of worries during sexual interactions and an overinvestment in the partner's experience might occupy a large proportion of the attentional field, leaving little space to focus on physical sensations of pleasure, which seems essential in building heightened experiences of pleasure

(Kleinplatz & Menard, 2007). In the case of avoidant individuals, the intimate context of sexual intercourse coupled with the challenges brought upon by the pain might explain why avoidant attachment also predicts lower sexual satisfaction. Avoidantly attached men and women may lack the communication skills and capacity for intimacy needed to ensure satisfying sexual interactions in spite of the pain.

Our results corroborated those of other studies showing that attachment avoidance, but not anxiety, predicts aspects of sexual functioning (Brassard, Shaver, & Lussier, 2007; Cohen & Belsky, 2008). Cohen & Belsky (2008) found that only the avoidant dimension of attachment predicted impairments in orgasmic response in a sample of 323 women from the community. Brassard et al. (2007) also found that only attachment avoidance was associated with more sexual problems in men, and that this association held only when the women also presented avoidance. On the other hand, our results did not replicate previous findings showing that attachment anxiety was associated with lower sexual functioning and impaired orgasmic response in women (Birnbaum, 2007; Costa & Brody, 2011). This divergence might be explained by the fact that our sample was comprised of women who present with a vulvo-vaginal pain problem known to affect all aspects of sexual function, often to clinical levels (Desrochers et al., 2008). Previous studies have used community based or student samples. Scores of sexual functioning might have a greater range of variability in the general population and a smaller range in more homogenous samples such as the present one. Comparisons between studies are further complicated by the fact that researchers have used different ways of measuring sexual functioning. To date, only four studies have explored links between attachment dimensions and various components of sexual functioning and only

Birnbaum (2007) has used a global measure of sexual functioning comprising four components. Two studies have focused on orgasmic response only (Cohen & Belsky, 2008; Costa & Brody, 2011) and the last study investigated the presence of a sexual problem in individuals consulting from the community (Brassard et al., 2007). The association between sexual functioning and attachment avoidance was only significant for women, suggesting that the relationship between attachment and sexual functioning might differ across gender. This highlights the importance of investigating this relationship separately in men and women.

Only one partner effect was significant in this study. Results showed that higher scores of sexual assertiveness in women predicted higher sexual satisfaction in men. This result could be explained by the fact that assertive women are more willing to discuss openly about sexuality, including sexual difficulties. The openness to discuss sexual issues could lead to productive problem solving strategies. This attitude may prevent couple from developing a widespread avoidance of all sexual interactions. More assertive women may try to find creative ways of engaging in sexual activities in which the woman's pain is minimal or absent. Moreover, in the context of PVD, an open dialogue where both partners can express how the woman's pain impacts their sexual lives may favour intimacy, which is a key factor for sexual satisfaction (Bois, Bergeron, Rosen, McDuff, & Grégoire, 2013; Kleinplatz & Menard, 2007). Non-assertive women who are less willing to talk about their pain may create more sexual distance, thereby promoting sexual dissatisfaction among partners.

Our mediation results suggest that sexual assertiveness is an important variable in the understanding of the association between attachment and sexual outcomes. More

specifically, sexual assertiveness completely mediated the association between attachment dimensions and sexual satisfaction, and between attachment avoidance and sexual functioning in women with PVD. This result confirms our prediction that anxiously attached women may lack the ability to assert their sexual preferences, as seen in a study among college students indicating a tendency for anxiously attached individuals to defer their sexual needs over to partners (Davis et al., 2006). Insecurely attached individuals may lack the ability to assert their sexual limits. Studies found that both avoidant and anxious attachment were linked to more sexual compliance, that is the tendency to engage in unwanted but consensual sexual practices (Gentzler & Kerns, 2004; Impett & Peplau, 2002). Our results suggest that these difficulties in asserting both sexual preferences and limits may explain the lower sexual satisfaction and sexual functioning impairments found in insecurely attached individuals. The ability to refuse to engage in unwanted sexual practices is an important aspect of sexual assertiveness, which becomes even more crucial in the context of PVD where vaginal penetration can cause significant pain to women's genitals. In this context, engaging in unwanted sexual interactions could contribute to promote sexual dissatisfaction in anxiously attached women with PVD, as well as in avoidant ones. Moreover, repetitive pain experiences could contribute to the sensitization of nociceptors, thereby promoting the persistence of pain (Harper & Schug, 2007).

Although this study expands our knowledge concerning the sex-attachment link in a sample of couples presenting with sexual difficulties, the correlational nature of our design limits conclusions that can be drawn. Because attachment styles generally origin from early experiences with caregivers, it is likely that attachment patterns could be

positioned as antecedents of sexual dynamics. On the other hand, the experience of orgasm triggers the release of oxytocin, a neuropeptide that is also central in fostering the attachment system (Carmichael, Warburton, Dixen, & Davidson, 1994; Carter, 1998; Diamond, 2003; Fisher, 1998; Fisher, Aron, Mashek, Li, & Brown, 2002). Thereby, it is likely that the sex-attachment link might be bidirectional, both processes reinforcing each other, mediated by a neurobiological substrate such as oxytocin (Dewitte, 2012). In addition, the generalisation of our results is limited. The associations were found in a specific population of heterosexual couples in which women presented with PVD. These findings need to be replicated in couples with other sexual difficulties and in same-sex couples. Our measures were also limited. It would have been interesting to use a measure of sexual satisfaction that distinguishes between satisfaction derived from the physical aspects of sexuality (e.g. genital pleasure) and satisfaction derived from the more affectionate and intimate aspects (e.g. cuddling, kissing), since anxious and avoidant individuals seem to differ in their preferences for these two components of sexual satisfaction (Brennan et al., 1998; Davis et al., 2006; Gentzler & Kerns, 2004; Hazan & Shaver, 1994).

Despite these limitations, this study expands our knowledge concerning the associations between attachment and sexual outcomes in a sample of women with PVD. Moreover, few studies investigating associations between attachment and sexuality have included both members of the couple. Results shed light on important interpersonal dynamics that can take place in the lives of couples dealing with PVD, and how these dynamics can have implications for sexual satisfaction and function. Findings highlight the importance of exploring attachment orientations and examining how typical

characteristics of attachment anxiety and avoidance may be associated with difficulties in sexual assertiveness and with less satisfying sexual interactions. As advocated by Johnson and Zuccarini (2010), an attachment-oriented approach offers an integrated model of sexuality placed in the context of the couple. More clinical attention toward the negotiation of sexual practices in couples with PVD appears warranted, with a focus toward alleviating the pressure that is often put on intercourse, promoting the development of sexual flexibility, and giving the couple an opportunity to explore together in a more secure context their sexuality while experiences of pain, frustration and disappointment are temporarily minimized.

Table 1 Means and Standard Deviations for Attachment Dimensions and Sexuality Outcomes in Women and Men (N = 101)

	Women		Men	
Variables	*M* (range)	*SD*	*M* (range)	*SD*
Attachment anxiety	2.58 (1-7)	1.09	2.43 (1-7)	.78
Attachment avoidance	2.61 (1-7)	.85	2.45 (1-7)	.70
Sexual assertiveness	84.34 (25-125)	16.85	94.26 (25-125)	13.59
Sexual functioning [a]	17.22 (2-26)	7.28	0.3349 (0.1593-1.000)	.0689
Sexual functioning [b]	N/A	N/A	24.52 (2-26)	2.65
Sexual satisfaction	23.01 (5-35)	6.04	24.43 (5-35)	6.00

[a] Original scores for sexual functioning; [b] Adjusted score for sexual functioning.

Table 2 Correlations between attachment dimensions and main sexual outcomes in women and their partners (N = 101)

Variables	1	2	3	4	5	6	7	8	9	10
1. Anxiety W	-									
2. Avoidance W	.395**	-								
3. Assertiveness W	-.238*	-.426**	-							
4. Satisfaction W	-.236*	-.247**	.532**	-						
5. Functioning W	.044	-.303**	.303**	.377**	-					
6. Anxiety M	.143	.266**	-.060	-.045	.001	-				
7. Avoidance M	.124	.337**	-.242**	-.058	-.121	.472**	-			
8. Assertiveness M	.034	-.154	.146	.056	.294**	-.228*	-.380**	-		
9. Satisfaction W	-.008	-.149	.385**	.484**	.396**	-.058	-.211*	.107	-	
10. Functioning M	.032	-.082	.100	.079	.250**	-.108	-.040	.465**	.159	-

*p < .05, **p <.01. ***p < .001.

Anxiety W = women's attachment anxiety; Avoidance W = women's attachment avoidance; Assertiveness W = women's sexual assertiveness; Satisfaction W = women's sexual satisfaction; Functioning W = women's sexual functioning; Anxiety M = men's attachment anxiety; Avoidance M = men's attachment avoidance; Assertiveness M = men's sexual assertiveness; Satisfaction M = men's sexual satisfaction; Functioning M = men's sexual functioning.

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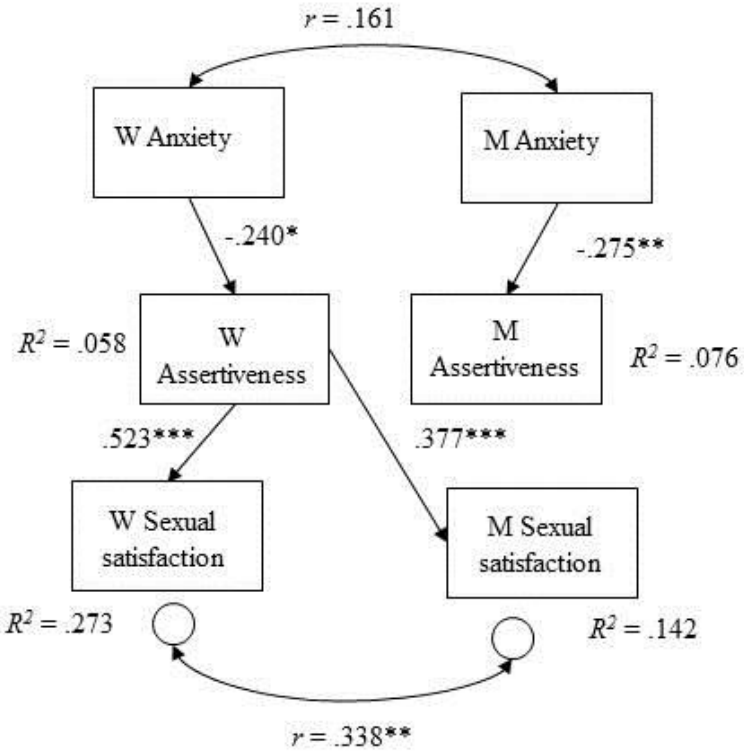
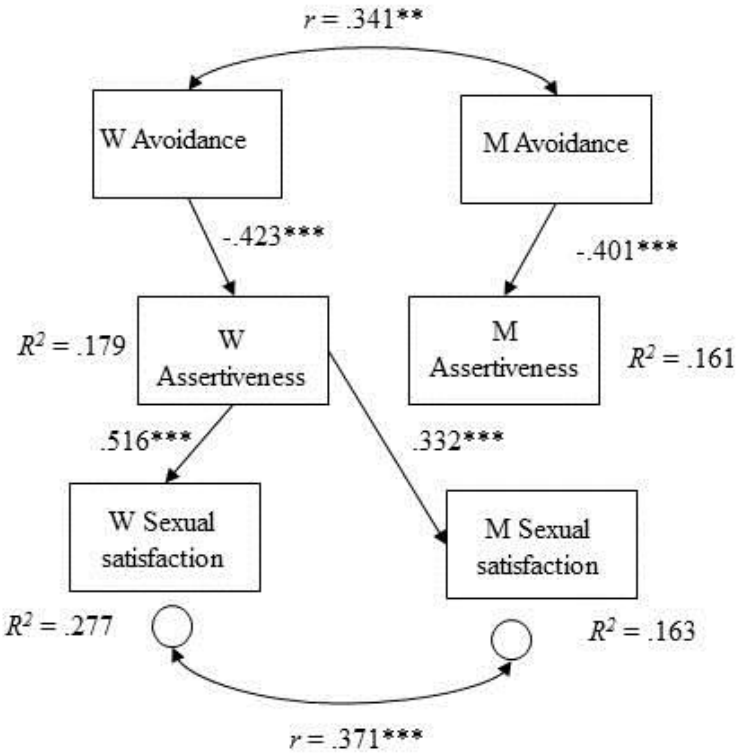
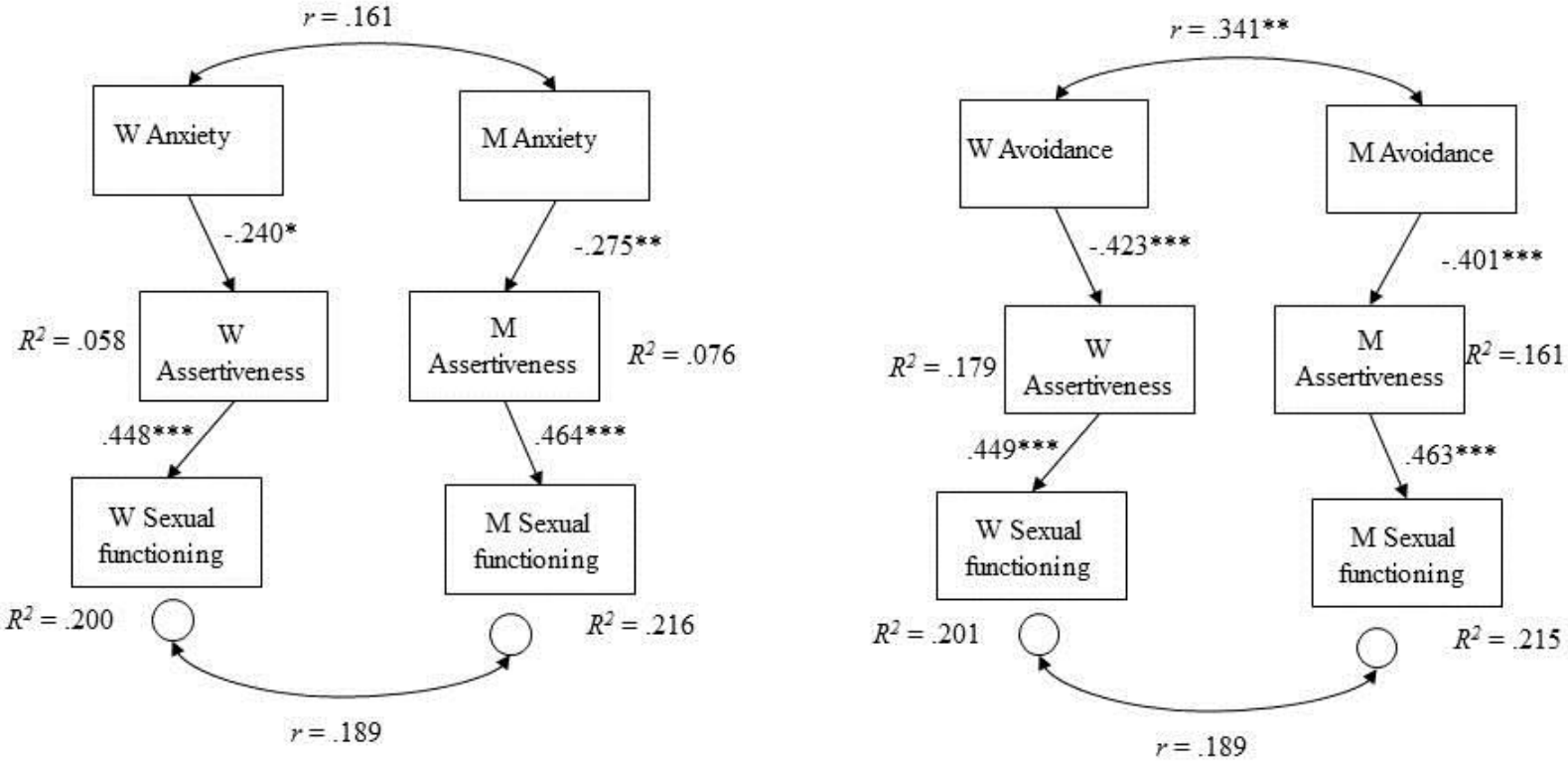


χ^2/df = .989, CFI = 1.00, NFI = .911,
RMSEA = .000 [.000; .116]
Note. W = Women. M = Men



χ^2/df = 1.529, CFI = .980, NFI = .950,
RMSEA = .073 [.000; .180]
Note. W = Women. M = Men

Figure 1. Sexual assertiveness as a mediator in the relationship between attachment and sexual satisfaction.



χ^2/df = .178, CFI = 1.00, NFI = .983,
RMSEA = .000 [.000; .000]
Note. W = Women. M = Men

χ^2/df = .753, CFI = 1.00, NFI = .951,
RMSEA = .000 [.000; .103]
Note. W = Women. M = Men

Figure 2. Sexual assertiveness as a mediator in the relationship between attachment and sexual functioning.

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