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A Dyadic Perspective on Genito-Pelvic Pain: Trauma Antecedents and Treatment Effectiveness

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Résumé

La vestibulodynie provoquée (VP) est la forme la plus répandue de douleur génito-pelvienne/trouble de la pénétration et la cause la plus fréquente de douleur vaginale chez les femmes pré-ménopausées. Les femmes qui en souffrent rapportent plus de détresse psychologique ainsi qu'un fonctionnement sexuel appauvri, une diminution de la fréquence des activités sexuelles et du plaisir, et plus d'attitudes négatives à l'égard de la sexualité. Les recherches portant sur les couples souffrant de VP ont montré le rôle prépondérant des variables relationnelles dans la modulation des conséquences sexuelles et psychologiques pour les femmes et leurs partenaires. Cependant, aucune analyse dyadique n'a été appliquée au facteur de risque étiologique le plus robuste, soit la maltraitance durant l'enfance. Par ailleurs, malgré des recommandations répétées pour inclure le partenaire dans le traitement psychologique pour la VP, aucune étude à ce jour n'a examiné l'efficacité d'une psychothérapie qui inclut systématiquement le partenaire et dont la cible est le couple. L'objectif général de cette thèse a été d'utiliser une perspective dyadique afin d'examiner les antécédents de maltraitance et l'efficacité d'une intervention conçue pour améliorer les issues des couples souffrant de VP.

Le premier article vise à examiner les liens entre la maltraitance durant l'enfance des femmes souffrant de VP et leurs partenaires, et leur fonctionnement sexuel, leur ajustement psychologique, leur satisfaction conjugale et enfin avec la douleur rapportée par les femmes durant les relations sexuelles. Quarante-neuf couples souffrant de VP ont complété des questionnaires auto-rapportés. La maltraitance durant l'enfance chez les femmes était associée à un fonctionnement sexuel plus faible chez les femmes et les hommes, une augmentation de l'anxiété chez les femmes seulement, et une douleur affective accrue durant les relations sexuelles. La maltraitance durant l'enfance chez les hommes était associée à un fonctionnement sexuel plus

faible, moins de satisfaction conjugale, plus d'anxiété chez les femmes et les hommes, et une douleur affective accrue durant les relations sexuelles rapportée par les femmes.

En se basant sur les recommandations issues des études empiriques, une thérapie cognitive et comportementale pour les couples (TCCC) souffrant de VP a été développée. Le deuxième article présente les résultats d'une étude pilote testant son efficacité, fidélité et faisabilité potentielles. Neuf couples ont complété des questionnaires auto-rapportés pré- et post-traitement. La TCCC de 12 rencontres était manualisée. Les femmes ont rapporté une amélioration significative de la douleur, du fonctionnement et de la satisfaction sexuels, et les partenaires ont rapporté une amélioration significative de leur satisfaction sexuelle. Les couples ont rapporté des niveaux élevés de satisfaction quant à la psychothérapie, et les psychothérapeutes ont rapporté suivre le manuel de traitement de manière fidèle.

Le troisième article, s'appuyant sur les résultats prometteurs de l'étude pilote, décrit le protocole de recherche pour un essai clinique randomisé mesurant l'efficacité de la TCCC comparée à une intervention médicale de première ligne, la lidocaïne topique, pour le traitement de la VP. Enfin, les implications cliniques et théoriques de la thèse sont discutées.

Mots-Clés: Douleur génito-pelvienne/trouble de la pénétration, dyspareunie, vulvodynie, vestibulodynie provoquée, thérapie de couple, thérapie cognitive et comportementale, fonctionnement sexuel, satisfaction sexuelle, maltraitance durant l'enfance, satisfaction conjugale.

Abstract

Provoked vestibulodynia (PVD), a chronic, recurrent pain elicited via pressure to the vulvar vestibule or attempted vaginal penetration, is the most common form of pain during intercourse (genito-pelvic pain/penetration disorder), and the most frequent cause of vulvar pain in pre-menopausal women. Because of its deleterious impact on sexuality, it carries a heavy psychosexual burden for afflicted women, who report impoverished sexual function, decreased sexual frequency and pleasure, and more negative attitudes about sex. Research among couples with PVD has demonstrated the prominent role of partner variables in the modulation of PVD-associated consequences for women, and the negative sexual and psychological consequences experienced by partners. Yet, a dyadic analysis has not been applied to the most robust etiological risk factor for adult-onset PVD, childhood trauma or maltreatment. Furthermore, despite repeated recommendations to include the partner in psychological treatment of PVD, no study to date has examined the effectiveness of a treatment that systematically includes the partner and targets the couple. The overarching goal of this thesis was to use a dyadic perspective in examining trauma antecedents of PVD and treatment effectiveness of an intervention designed to improve outcomes for couples with PVD.

The first article aimed to examine associations between childhood maltreatment of both women with PVD and their partners and their sexual functioning, psychological adjustment and couple satisfaction, as well as women's reported pain during sexual intercourse. Forty-nine couples with PVD completed self-report questionnaires. Women's childhood maltreatment was associated with lower sexual functioning for women and men, increased anxiety for women only, and increased affective pain during sexual intercourse. Male partners' childhood maltreatment was

associated with lower sexual functioning, decreased couple satisfaction and increased anxiety for women and men, and higher affective pain reported by women during sexual intercourse.

Drawing from the recommendations in the empirical literature, a Cognitive-Behavioural Couple Therapy (CBCT) for PVD was developed. The second article presents the results from its pilot testing for potential effectiveness, reliability and feasibility. Nine couples completed pre- and post-treatment self-report measures following the 12-session, manualized intervention. Women reported significant improvements in pain, sexual function and satisfaction, and partners reported significant improvements in sexual satisfaction. Exploratory analyses revealed improvements in anxiety, depression and pain-related cognitions, such as pain catastrophizing, for both women and partners. Couples reported high rates of treatment satisfaction and therapists reported good treatment reliability.

The third article, building on the promising pilot study results, describes the research protocol for a randomized clinical trial to assess the efficacy of CBCT compared to a first-line medical intervention, topical lidocaine, for the treatment of PVD. In this ongoing trial, couples with PVD are randomized to one of the two treatment options. The clinical and theoretical implications of the thesis are discussed.

Keywords: Genito-pelvic pain/penetration disorder, dyspareunia, vulvodynia, provoked vestibulodynia, couple therapy, cognitive-behavioural therapy, sexual function, sexual satisfaction, childhood maltreatment, couple satisfaction.

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Article 1

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List of abbreviations

APIM: Actor Partner Interdependence Model

BDI-II: Beck Depression Inventory-II

CBCT: Cognitive-Behavioural Couple Therapy

CBT: Cognitive-Behavioural Therapy

CSI: Couple Satisfaction Index

CTQ: Childhood Trauma Questionnaire

DISF-SR: Derogatis Interview for Sexual Functioning – Self-Report

DSM-IV-TR: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Revised

DSM-5: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition

FSFI: Female Sexual Function Index

GMSEX: Global Measure of Sexual Satisfaction

GPPPD/GPPD: Genito-Pelvic Pain/Penetration Disorder

IIEF: International Index of Erectile Function

IMMPACT: Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials

MPQ: McGill Pain Questionnaire

NRS: Numerical Rating Scale

PCS: Pain Catastrophizing Scale

PISES: Painful Intercourse Self-Efficacy Scale

PVD: Provoked Vestibulodynia

RCT: Randomized Clinical Trial

STAI: State-Trait Anxiety Inventory

VAS: Visual Analog Scale

Introduction

A well-known contemporary American author, Kurt Vonnegut Jr., is quoted as having said, "Make love when you can. It's good for you" (Vonnegut, 1966). Under the best circumstances, Vonnegut may have it right. Sexual intercourse is linked to lower blood pressure and stress reduction (Brody, 2006) and is certainly an important aspect of physical intimacy for the couple, allowing them to maximize proximity and find pleasure in each other's bodies. For some women and their partners, however, the pleasure and intimacy of sexual activity is interrupted and dampened by recurrent genito-pelvic pain.

Genito-Pelvic Pain/Penetration Disorder (GPPPD)

Previously classified as dyspareunia and vaginismus in the Diagnostic and Statistical Manual of Mental Disorders-IV-TR (DSM-IV-TR; American Psychiatric Association, 2000) and currently classified as dyspareunia in the International Classification of Diseases (World Health Organization, 1992), sexual pain disorders range in prevalence from 14 to 34% among young women and 6.5 to 45% among older women (Harlow et al., 2014). In the DSM-5, these disorders are now classified under the single term of genito-pelvic pain/penetration disorder (GPPPD; American Psychiatric Association, 2013). The diagnostic criteria for GPPPD include one or more of the following for at least six months, which results in clinically significant distress: (1) persistent or recurrent difficulty with vaginal penetration during sexual intercourse, (2) marked vulvovaginal or pelvic pain during vaginal intercourse or attempted vaginal penetration, (3) marked fear or anxiety regarding vulvovaginal or pelvic pain in anticipation of, during, or resultant from vaginal penetration, and (4) marked tensing or tightening of the pelvic floor muscles during attempted vaginal penetration (American Psychiatric Association, 2013).

Provoked Vestibulodynia

Vulvodynia is a chronic, recurrent unexplained vulvar pain persisting at least 3 months, associated with (Bornstein et al., 2016) superficial or introital dyspareunia and pelvic floor muscle dysfunction (Moyal-Barracco & Lynch, 2004). Population-based research indicates a prevalence of 8% (Harlow et al., 2014). Provoked vestibulodynia (PVD) is an acute recurrent pain localized at the vulvar vestibule experienced primarily during sexual intercourse, and is believed to be the most frequent form of vulvodynia and GPPPD in premenopausal women (Meana, Binik, Khalife, & Cohen, 1997).

PVD is associated with significant sexual and psychosocial impairment for both the woman experiencing the pain and her partner (Bergeron, Corsini-Munt, Aerts, Rancourt, & Rosen, 2015; Rosen, Rancourt, Corsini-Munt, & Bergeron, 2013). Etiological studies often consider the role of women's childhood trauma in adult-onset vulvodynia (Harlow & Stewart, 2005; Khandker, Brady, Stewart, & Harlow, 2014), with no consideration of the partner's history of trauma. Treatment protocols and research often present treatment options focusing on pain outcomes and the pain patient, often to the exclusion of outcomes pertinent to the couple and partner (Bergeron et al., 2015). Increasingly, however, empirical research demonstrates the role of the partner in the pain experience and associated sexual impairments, as well as the impact of pain on the partner (Rosen, Bergeron, Lambert, & Steben, 2013; Smith & Pukall, 2014). Despite these advances and repeated recommendations in the literature, no treatment option has systematically included the partner, nor specifically addressed the management of partner outcomes.

Consequences of PVD for women. Women with PVD and their partners experience a range of consequences on psychological, sexual and relationship levels. Similar to many chronic and recurrent pain conditions, the impact of PVD extends beyond the pain itself, impairing function and quality of life. Controlled cross-sectional research demonstrates that

women with PVD report increased psychological distress, such as increased anxiety and depression symptoms, lower self-esteem and more body image concerns (Desrochers, Bergeron, Landry, & Jodoin, 2008; Gates & Galask, 2001; Granot & Lavee, 2005; Lundqvist & Bergdahl, 2003; Maillé, Bergeron, & Lambert, 2014; Masheb, Wang, Lozano, & Kerns, 2005). In a community-based study, women with vulvodynia reported significantly higher rates of depression and anxiety disorders consequent to the pain when compared to healthy controls (Khandker et al., 2011). Comorbid pain conditions, experienced by up to 45% of women with vulvodynia, are associated with higher reports of feeling isolated and invalidated (Nguyen, Ecklund, Maclehose, Veasley, & Harlow, 2012).

Women with PVD report impoverished sexual functioning, such as decreased sexual desire, arousal, sexual satisfaction and frequency of orgasm and intercourse (Brauer, ter Kuile, Laan, & Trimbos, 2009; Cherner & Reissing, 2013; Farmer & Meston, 2007; Meana et al., 1997; Sutton, Pukall, & Chamberlain, 2009). Consistent with this research, women with PVD often report clinically significant sexual dysfunction, including low desire and arousal (Masheb, Lozano-Blanco, Kohorn, Minkin, & Kerns, 2004). Moreover, they also report higher rates of sexual anxiety, increased negative and decreased positive cognitions about vaginal penetration, impaired sexual communication and decreased sexual self-esteem when compared to women without pain (Cherner & Reissing, 2013; Gates & Galask, 2001; Klaassen & Ter Kuile, 2009; Meana et al., 1997; Pazmany, Bergeron, Verhaeghe, Van Oudenhove, & Enzlin, 2014; Reed, Advincula, Fonde, Gorenflo, & Haefner, 2003). They are also more likely to perceive sexual stimuli as negative (i.e., erotophobia; Brauer, ter Kuile, Janssen, & Laan, 2007), which can create challenges for the couple's shared sexuality.

Consequences of PVD for the couple and male partners. Many couples with PVD report overall satisfaction with their relationship, yet some research has found that women with GPPPD report lower couple satisfaction than those without pain (Brauer et al., 2009; Hallam-

Jones, Wylie, Osborne-Cribb, Harrington, & Walters, 2001; Masheb, Brondolo, & Kerns, 2002). Given that sexual intimacy is an important aspect of a couple's relationship (Byers, 2005), it is not surprising that couples report a negative impact of the pain on their sexuality (Blair, Pukall, Smith, & Cappell, 2014). In fact, 73% of male partners report negative consequences to the relationship because of PVD (Smith & Pukall, 2014), and women with GPPPD report that the pain makes it difficult for them to feel close to and show affection toward their partners (Ponte, Klemperer, Sahay, & Chren, 2009). Using qualitative designs, researchers have identified themes of guilt and shame, and fears of losing one's partner because of the pain among the narratives of women with PVD (Elmerstig, Wijma, & Bertero, 2008; Sheppard, Hallam-Jones, & Wylie, 2008). Couples with PVD also report decreased sexual communication when compared to pain-free couples (Pazmany et al., 2014; Smith & Pukall, 2014; Smith, Pukall, & Chamberlain, 2013). Decreased sexual communication is thought to be a contributing factor to the negative sequelae that accompanies PVD. For example, decreased sexual communication and insecure romantic attachments among couples with PVD are associated with women's greater sexual distress, and couples' lower sexual function, lower sexual satisfaction and decreased relationship satisfaction (Leclerc et al., 2015; Pazmany, Bergeron, Verhaeghe, Van Oudenhove, & Enzlin, 2015).

In addition to the consequences to the relationship, the male partners of women experiencing PVD also experience consequences to their wellbeing and functioning. For example, a controlled comparison showed that male partners of women with PVD report more depressive symptoms (Nylanderlundqvist & Bergdahl, 2003). While other studies have not replicated this finding, male partners of women with PVD report lower sexual satisfaction and higher rates of sexual difficulties, such as erectile dysfunction, when compared to male partners of women without PVD (Pazmany et al., 2014; Smith & Pukall, 2014).

Taken together, these studies highlight the toll PVD can have on the couple's relationship. Understanding the consequences of the pain on the psychological, sexual and interpersonal functioning of couples with PVD is important to help determine the direction of clinical intervention. Understanding the risk factors and potential etiologic pathways that contribute to PVD is equally integral to focusing the direction of future research and treatment. The literature makes little mention of how to address partner and couple consequences of PVD among current treatment options. Increasingly, however, partner and couple variables are the focus of etiological research and the implications of these findings may provide important clinical direction.

Etiology

Biomedical etiology. Several biological correlates of PVD have been identified, such as injury or changes to the affected tissue. Repeated candida vulvovaginitis infections have been proposed as a possible initiating factor in the development of PVD (Bazin et al., 1994; Nyirjesy, 2000; Ventolini & Baggish, 2004). Other risk factors include hormonal alterations such as the early and prolonged use of oral contraceptives (Bazin et al., 1994; Bouchard, Brisson, Fortier, Morin, & Blanchette, 2002; Greenstein et al., 2007), early menarche (younger than or equal to 11 years of age) and pain with first tampon use (Harlow, Wise, & Stewart, 2001), pelvic floor muscle dysfunction (Reissing, Brown, Lord, Binik, & Khalife, 2005; White, Jantos, & Glazer, 1997), and genetic predisposition (Gerber, Bongiovanni, Ledger, & Witkin, 2003).

Neuropathic mechanisms are theorized to be involved in the pathophysiology of PVD. Normally, pain perception is triggered by a noxious stimulus such as disease or injury. With neuropathic pain, reduced nociceptor (i.e., pain receptor) threshold results in a "peripheral sensitization" (Weijmar Schultz et al., 2005). This sensitization gives way to allodynia (i.e., nociceptor response to non-noxious stimuli) and hyperalgesia (i.e., an intensified response to

painful stimuli). A brain imaging study comparing women with and without PVD demonstrated that women with PVD showed an increased perception of pressure on the vulvar vestibule, with non-noxious pressure levels often being perceived as unpleasant or painful (Pukall et al., 2005). Concomitant with these perceptions, women with PVD showed increases in pressure-evoked neural activity in brain regions consistent with neuropathic pain, while similar activity was not observed upon equal stimulation among control women. The brain activation patterns during pain stimulation for women with PVD were similar to those demonstrated by individuals with other chronic pain disorders such as fibromyalgia, idiopathic lower back pain, irritable bowel syndrome, and other neuropathic pain patients (Pukall et al., 2005).

As far as understanding the development of neuropathic pain in the context of PVD, it could be that nerve injury leads to changes in the pain pathways (Bohm-Starke, Hilliges, Brodda-Jansen, Rylander, & Torebjork, 2001), or is related to impairment in the descending endogenous analgesia pathways (Johannesson, de Boussard, Brodda Jansen, & Bohm-Starke, 2007). The essential result is that the pain modulation process is less efficient for women with PVD, thereby contributing to hypersensitivity and chronic neuropathic alterations (van Lankveld et al., 2010). Nevertheless, PVD's multifactorial nature urges one to consider this condition beyond the physical lens. A biopsychosocial framework stands to offer a more comprehensive understanding of the etiology, course and management of PVD.

Psychosocial etiology. In a population-based sample, the odds of GPPPD were four times more likely among women with antecedent depression or anxiety compared to women without – with depression and anxiety also significantly more prevalent as consequences of GPPPD (Khandker et al., 2011). Similarly, a review of controlled studies concluded that women with GPPPD reported higher rates of depression and anxiety (Desrochers et al., 2008), as also showed more recent controlled studies (Brauer et al., 2009; Pazmany et al., 2014), whereas a small number of studies have not found any significant association between GPPPD and

depressive symptoms (Aikens, Reed, Gorenflo, & Haefner, 2003; Meana et al., 1997; Payne et al., 2007). Despite conflicting findings, there is overwhelming evidence that women with PVD report psychological distress and lower quality of life (Masheb et al., 2005; Nguyen et al., 2012; Nylanderlundqvist & Bergdahl, 2003; Ponte et al., 2009).

In a population-based epidemiological study, women with PVD were four times as likely to report experiencing severe physical abuse during childhood and over six times more likely to report experiencing sexual abuse compared to healthy controls (Harlow & Stewart, 2005). Cross-sectional research shows that female adolescents reporting pain during sexual intercourse were also more likely to report a history of sexual abuse, fear of physical abuse, trait anxiety and potentially detrimental vulvar hygiene behaviours (Landry & Bergeron, 2011). Moreover, this same research revealed that adolescents reporting a lifetime occurrence of sexual abuse were 1.9 times more likely to also report pain during sex compared to those reporting no sexual abuse (Landry & Bergeron, 2011). In a case-control study examining the role of psychosocial stressors in the etiology of GPPPD, women with GPPPD were approximately three times more likely to have experienced severe childhood physical or sexual abuse, or to have lived in severe fear of any type of abuse as a child (Khandker et al., 2014). A preliminary examination of physical and sexual abuse on current functioning of women with GPPPD demonstrated that those reporting histories of sexual abuse reported significantly decreased sexual functioning and psychological adjustment compared to women reporting no sexual abuse (Leclerc, Bergeron, Binik, & Khalife, 2010). None of these studies however have examined or controlled for concomitant forms of maltreatment, such as emotional and physical neglect. Given the established co-occurrence of different types of maltreatment (Dong et al., 2004), future research should account for forms of maltreatment beyond sexual and physical abuse. Despite the association between childhood sexual and physical abuse and adult onset of vulvar pain, and its association with decreased sexual and psychological functioning for women

with PVD, there has been no investigation of the associations between childhood maltreatment and interpersonal outcomes such as couple satisfaction. An examination of the associations between the partner's maltreatment history and the relationship, or the couple's maltreatment history and both woman and partner outcomes, is also lacking. Further understanding of the association between maltreatment history and functioning for women with PVD *and their partners* will highlight important considerations for treatment.

Maintenance and Modulation Factors for PVD

Behavioural factors. Given the interpersonal context in which PVD pain is often triggered, there has been an increased focus on relationship factors in the modulation and maintenance of pain and associated difficulties. Understanding the dyadic context of PVD, which includes the partners' pain cognitions and affective and behavioural responses to the pain, provides important insight into how women and their partners influence their own and each other's pain-related experiences. Partners' behavioural responses to women's pain have received the most empirical attention. Partner responses to pain are categorized as negative (e.g., anger and hostility), solicitous (e.g., sympathy and attention) and facilitative (e.g., encouragement of adaptive coping). Cross-sectional and daily diary studies show associations between greater facilitative partner responses to pain and women's decreased pain during sexual intercourse (Rosen, Bergeron, Glowacka, Delisle, & Baxter, 2012; Rosen, Muise, Bergeron, Delisle, & Baxter, 2015), women's increased sexual functioning (Rosen, Bergeron, Sadikaj, Glowacka, Delisle, et al., 2014), and couples' increased relationship and sexual satisfaction (Rosen et al., 2012; Rosen, Muise, Bergeron, Delisle, et al., 2015). Rosen and colleagues suggest that facilitative responses help promote adaptive coping and emotion regulation during pain experiences. In contrast, negative and solicitous partner responses to pain are associated with increased pain (Desrosiers et al., 2008; Rosen et al., 2012; Rosen, Bergeron, et al., 2013; Rosen, Bergeron, Leclerc, Lambert, & Steben, 2010), depressive

symptoms (Rosen, Bergeron, Sadikaj, Glowacka, Baxter, et al., 2014), couple's decreased sexual functioning (Rosen, Bergeron, Sadikaj, Glowacka, Delisle, et al., 2014) and relationship and sexual satisfaction (Rosen, Muise, Bergeron, Delisle, et al., 2015). It is theorized that solicitous and negative partner responses to pain may encourage avoidance of pain and sexual activity, and therefore undermine pain-related coping and emotion regulation. Addressing behavioural responses to pain for women with PVD and their partners may represent an important addition to therapeutic work with these couples, in addition to addressing their cognitions and affective experiences.

Cognitive factors. Negative cognitive interpretations such as pessimistic attributions or beliefs about the pain are associated with increased pain intensity (Jodoin et al., 2011), and therefore may represent an important avenue for pain management. Women with PVD express more pain catastrophizing (e.g., more rumination and hopelessness about the pain), as well as increased hypervigilance towards the pain compared to neutral stimuli (Payne, Binik, Amsel, & Khalifé, 2005; Payne et al., 2007; Pukall, Binik, Khalife, Amsel, & Abbott, 2002). Increased catastrophizing, fear of pain, hypervigilance, and decreased pain self-efficacy (i.e., decreased belief in one's ability to cope with the pain) all correlate with increased pain in women with PVD, while increased anxiety and avoidance, and decreased pain self-efficacy are associated with higher rates of sexual dysfunction (Desrochers, Bergeron, Khalifé, Dupuis, & Jodoin, 2009). Furthermore, there exists evidence for a prospective link between cognitive variables and PVD in terms of treatment outcome, with higher pain catastrophizing and lower pain self-efficacy predicting worse treatment outcomes (Desrochers, Bergeron, Khalifé, Dupuis, & Jodoin, 2010). In a large-scale prospective study, increases in pain self-efficacy over a two-year period were associated with improved pain, sexual function and sexual satisfaction outcomes (Davis et al., 2015). Taken together, these findings support targeting pain-related cognitions in addition to the pain itself when treating PVD.

Consistent with the role played by partners' behavioural interactions in modulating pain and other outcomes for women with PVD, partners' cognitive interpretations and appraisals of the pain also demonstrate associations with pain, psychological and sexual outcomes. For example, partners' beliefs regarding women's pain have an impact on their own outcomes, with partners' higher negative attributions about the pain (e.g., believing the pain is the woman's fault, will remain stable, and globally impairs other areas of function) being associated with their own greater psychological distress, and decreased sexual and relationship satisfaction in the presence of women's greater pain intensity during intercourse (Jodoin et al., 2008). In contrast, partners' lower pain catastrophizing is significantly correlated with women's lower pain ratings during sexual intercourse (Lemieux, Bergeron, Steben, & Lambert, 2013). Moreover, partners' greater pain acceptance is associated with their own decreased depressive symptoms (Boerner & Rosen, 2015).

Affective factors. Regarding affective factors, couples' increased ambivalence over emotional expression, a marker of poor emotion regulation, is associated with decreased sexual function and satisfaction, psychological adjustment and couple satisfaction (Awada, Bergeron, Steben, Hainault, & McDuff, 2014). Similarly, PVD couples' greater intimacy, both self-reported and observed, is associated with increased sexual satisfaction, sexual function, pain self-efficacy, and lower sexual distress (Bois et al., 2015; Bois, Bergeron, Rosen, McDuff, & Grégoire, 2013). How couples express emotions, communicate validation and empathy, and how they feel about the relationship all represent important treatment avenues to improve sexual and psychological distress. Findings from these studies underscore how partners' pain-related experiences directly and indirectly affect women's pain and outcomes for the couple. While the inclusion of the partner in the treatment of PVD is a frequent recommendation (Bergeron, Likes, & Steben, 2014) a major limitation in the current treatment literature is the focus placed solely on the woman with PVD to the exclusion of the partner.

Treatment

Despite the wide variety of medical treatment options for PVD, there is a dearth of randomized clinical trials (RCTs) assessing their efficacy (Bornstein, Tuma, Farajun, Azran, & Zarfati, 2010; Foster et al., 2010; Nyirjesy et al., 2001; Petersen, Giraldi, Lundvall, & Kristensen, 2009), and consequently many treatment options stem from retrospective analyses, case-reports and clinical recommendations. Further complicating the assessment of treatment success is pain improvement reported by up to 40% of women with PVD over a two-year period with no reported treatment (Davis, Bergeron, Binik, & Lambert, 2013). This underscores the importance of developing treatment options founded in empirical evidence and looking to treatment-as-usual moving forward when assessing the efficacy of treatment.

Biomedical interventions. Epidemiological research indicates that 30-48% of women who report GPPPD never seek treatment for their pain, and of those that do access healthcare for their pain, over 50% never receive a formal diagnosis (Harlow et al., 2014). A web-based survey of women with vulvodynia showed that 32.5% had consulted as many as four to six doctors for their problem (Gordon, Panahian-Jand, McComb, Melegari, & Sharp, 2003). The first stop for answers and relief for women with PVD is often a primary care physician, and thus many proposed and tested treatments are medical. Systemic interventions include oral medication such as low-dose antidepressants (Reed, Caron, Gorenflo, & Haefner, 2006) and anticonvulsants (Harris, Horowitz, & Borgida, 2007). Localized interventions include topical lidocaine (Haefner et al., 2005; Zolnoun, Hartmann, & Steege, 2003), electromyographic (EMG) biofeedback (Danielsson, Torstensson, Brodda-Jansen, & Bohm-Starke, 2006), botulinum toxin A injections (Gunter, Brewer, & Tawfik, 2004; Romito et al., 2004), and vestibulectomy (i.e., surgical excision). These local treatments yield varied success rates, with vestibulectomy demonstrating the most successful outcomes in an initial review (Bergeron et al., 1997). Vestibulectomy has demonstrated 60 to 90% treatment success rates (Landry,

Bergeron, Dupuis, & Desrochers, 2008), with treatment gains maintained at 2.5-year follow-up (Bergeron, Khalife, Glazer, & Binik, 2008). Despite significant reductions in pain, the extent to which vestibulectomy may improve sexual functioning remains unknown. Given insufficient data regarding complication rates and the invasive nature of surgery, vestibulectomy is often not considered a first line treatment for PVD (Stockdale & Lawson, 2014).

Current treatment algorithms state that topical lidocaine represents an effective first-line intervention for PVD (Mariani, 2002; Nunns et al., 2010; Ventolini, 2011). Local anesthetic and/or local measures such as lidocaine were identified as the most common interventions in two physician surveys (89 and 83.8% respectively, with 52% of surveyed physicians reporting lidocaine as the first-line therapy for vulvodynia) (Reed, Haefner, & Edwards, 2008; Updike & Wiesenfeld, 2005). Lidocaine is hypothesized to reduce nociceptor sensitization, therefore acting peripherally (Foster et al., 2010). A prospective study found that nightly application of 5% lidocaine resulted in pre- to post-treatment significant improvements in pain and a significant increase in frequency of sexual intercourse. The long-term, overnight application of lidocaine is thought to minimize pain feedback amplification (Zolnoun et al., 2003).

Foster and colleagues (Foster et al., 2010) conducted a randomized, double-blinded, placebo controlled trial examining topical lidocaine and desipramine for the treatment of vulvodynia. Using the tampon-test (i.e., change in pain experience during the insertion and removal of a tampon, where pain is measured on a scale of 0 to 10), they found that none of the active treatment arms demonstrated significantly greater pain reductions than the placebo condition, with all conditions resulting in pre- to post-treatment pain decreases (Foster et al., 2010). Initially these results seem discouraging for professionals treating women with vulvodynia, however, certain limitations should be considered. First, sample sizes were smaller than statistically recommended, perhaps clouding accurate treatment effect due to lack of power. Another important caveat relates to 21-38% of women across treatment arms reporting

no sexual activity during the 12-week trial, which suggests that this sample may not be representative of partnered women who remain sexually active despite vulvar pain. Moreover, it can be argued that the tampon-test, as a pain measure, is not representative of the pain a woman experiences during intercourse with a partner, given that intercourse involves an emotional dimension and the presence of another person. Future trials should consider assessing representative pain using recommended measures for pain trials (Dworkin et al., 2005), such as a visual analog scale (VAS) of pain during sexual intercourse.

Physical therapy interventions. Pelvic floor physical therapy is a popular treatment with demonstrated effectiveness (Bergeron, Morin, & Lord, 2010). Physical therapy interventions include education, electromyographic (EMG) biofeedback, manual and guided insertion techniques, and stretching and myofascial techniques. The latter are believed to aid with muscle relaxation, tone normalization and blood circulation, as well as increasing the vaginal opening and facilitating desensitization in the area (FitzGerald & Kotarinos, 2003; Rosenbaum & Owens, 2008). EMG biofeedback was popularized as a potential intervention for PVD following Glazer's retrospective evaluation of its effectiveness, in which 52% of treated women reported no pain at 6-month follow-up (Glazer, Rodke, Swencionis, Hertz, & Young, 1995). A randomized trial comparing topical lidocaine and biofeedback yielded significant improvements in pain, sexual functioning and psychological adjustment across both interventions, with no significant differences between groups (Danielsson et al., 2006). In the first randomized clinical trial (RCT) conducted with women with PVD (Bergeron et al., 2001; Bergeron et al., 2008), biofeedback, vestibulectomy and group cognitive-behavioural therapy (GCBT) were compared. While findings indicated that vestibulectomy resulted in significant decreased pain outcomes among participants, all three interventions showed equally enhanced sexual function and psychological adjustment outcomes (Bergeron et al., 2001). Participants in the GCBT condition were also more satisfied with their treatment than the biofeedback group

(Bergeron et al., 2001). Moreover, at 2.5-year follow-up, there was no significant difference in pain intensity during intercourse between vestibulectomy and GCBT (Bergeron et al., 2008), with GCBT representing a relatively non-invasive, but equally efficacious treatment option at long-term follow-up. In summary, no medical or physical therapy intervention other than surgery has demonstrated efficacy via a RCT design. Additionally, medical and physical treatment options for PVD do not target the psychological and interpersonal dimensions of PVD.

Psychological interventions. Given the multifactorial etiology, maintaining factors and consequences of PVD, an intervention that can address pain, psychological, sexual and interpersonal components may demonstrate more favorable outcomes than those targeting only pain. Cognitive-behavioural therapy (CBT) represents such a framework, which can encompass the interaction of psychological antecedents, relational and partner factors, maintaining factors and consequences, and sexual functioning of women and their partners (Dunkley & Brotto, 2016). For example, goals of CBT for PVD include addressing negative self-schemas, maladaptive cognitions such as catastrophizing and negative pain attributions, avoidant behaviours and distressing affect, as well as interpersonal factors such as decreased sexual communication (Smith & Pukall, 2011).

Bergeron and colleagues' GCBT (Bergeron et al., 2001) is an eight-session group CBT program comprised of psychoeducation, exposure exercises, pain journaling, cognitive restructuring, progressive muscle relaxation, facilitation of sexual desire and arousal, identification of sexual needs and bibliotherapy. This same GCBT was compared to a topical steroid in a separate RCT for the treatment of PVD (Bergeron, Khalife, Dupuis, & McDuff, 2016). In this trial, both interventions demonstrated significant improvements for pain, sexual functioning and psychological adjustment, with GCBT demonstrating significantly better improvement for pain and sexual functioning at 6-month follow-up (Bergeron et al., 2016). A

randomized trial examining the efficacy of individual CBT for PVD compared to a supportive psychotherapy demonstrated that CBT resulted in significantly greater improvement in pain severity and sexual function from pre- to post-treatment, with gains maintained at one-year follow-up (Masheb, Kerns, Lozano, Minkin, & Richman, 2009). Results of these studies demonstrate the efficacy and tolerability of psychosocial interventions for PVD, and highlight how an active CBT treatment contributes to greater treatment outcomes and patient satisfaction compared to the supportive treatment offered as a control (Masheb et al., 2009). CBT represents an encouraging non-invasive intervention that can target pain reduction as well as psychosexual consequences experienced by the woman and her partner.

Mindfulness has been applied to the management of other forms of chronic and recurrent pain (Kabat-Zinn, Lipworth, & Burney, 1985; McCracken, Carson, Eccleston, & Keefe, 2004). In its application to PVD, researchers developed a mindfulness-based cognitive behavioural group therapy conducted over four, two-hour sessions which included PVD psychoeducation, meditation for thoughts and emotions associated with the pain, progressive muscle relaxation and mindfulness, and sex therapy focused on non-penetrative pleasure (Brotto, Basson, Carlson, & Zhu, 2013). Qualitative analyses of women's experiences during and after therapy revealed themes of 1) women feeling normalized as part of the group and an increased sense of control over their pain, 2) women reporting decreased psychological distress, and 3) understanding the impact of supporting and uncooperative partners (Brotto et al., 2013). Compared to a wait-list control, this mindfulness-based group-therapy demonstrated significant pre- and post-treatment, and pre-treatment to 6-month follow-up improvements in pain catastrophizing, pain hypervigilance, sexual distress and cotton-swab provoked allodynia, but not for pain during sexual intercourse (Brotto, Basson, Smith, Driscoll, & Sadownik, 2014). Therefore, mindfulness-based approaches may represent important tools in managing PVD-related distress.

Taken together, the results of treatment studies examining psychological interventions targeting the multi-factorial nature of PVD highlight the potential benefit for treatment outcome and patient satisfaction. Given the interpersonal context in which PVD is experienced and the negative consequences to the woman and her partner, it is no surprise that the inclusion of the partner in therapy is a repeated recommendation (Awada et al., 2014; Boerner & Rosen, 2015; Bois et al., 2013; Rosen, Muise, Bergeron, Delisle, et al., 2015). Along with the challenge of including the partner, an important consideration for future trials will be to compare experimental interventions to standard forms of care.

Summary and Limitations

The many proposed biomedical underpinnings of PVD make it difficult to delineate the exact cause of the pain for each woman with PVD. Therefore a multifactorial consideration of potential risk factors is often employed to understand the onset of PVD. Given the dearth of long-term prospective research, much of what is known about the etiology of PVD is based on cross-sectional and retrospective reporting. There is strong empirical evidence supporting the role of early psychological stressors, of which, childhood sexual and physical abuse and fear of abuse are the most studied (Bergeron et al., 2015). Additionally, sexual and physical abuse is associated with worse sexual and psychological functioning in women with GPPPD (Leclerc et al., 2010). Given that these forms of abuse often co-occur with other forms of maltreatment (Dong et al., 2004), such as emotional abuse and neglect, a broader examination of childhood maltreatment's association with sexual and psychological outcomes is lacking. Moreover, trauma research among couples and secondary trauma theory underscore how the trauma of one member of the couple can have an effect on the other (Maltas & Shay, 1995; Nelson & Wampler, 2000). This implies an examination of the partner's childhood maltreatment history, as a dyadic perspective on maltreatment may enrich the current understanding of PVD pain symptoms and related sequelae. Dyadic models of analyses are being increasingly applied to

areas of research in which both members of the couple are implicated. One such model, the Actor-Partner Interdependence Model (APIM; Kenny, Kashy, & Cook, 2006) accounts for the interdependence of variables for women and their partners. Continued inclusion of the partner in the study of PVD and its treatment will contribute to the growing body of literature that considers outcomes for couples living with PVD (Rosen, Rancourt, et al., 2013) and other forms of sexual dysfunction (Fisher et al., 2005). Understanding the role of childhood maltreatment in the current functioning of couples coping with PVD will help elucidate important clinical considerations when providing treatment. All forms of childhood maltreatment are associated with negative consequences for adult sexual functioning (Schloredt & Heiman, 2003), and the prevalence of childhood sexual abuse among men and women (37-56%) consulting for sexual problems underscores recommendations for assessment and treatment adaptation (Berthelot, Godbout, Hebert, Goulet, & Bergeron, 2014). Specifically, the severity of abuse may imply presentation of more severe symptoms such as couple functioning difficulties (Berthelot et al., 2014), pointing towards the need to tailor interventions for abuse severity and its impact on relationship interactions, such as deficits in emotion regulation. Moreover, drawing from a population-based sample of couples, one member of the couple reporting childhood physical abuse increased the likelihood by 2.4 times that the other member also reported childhood physical abuse (Whisman, 2014), which should cue the clinician to consider both members of the couple when assessing childhood maltreatment. Taken together, these findings and recommendations point to the potential importance of investigating the association between childhood maltreatment for both members of the couple with PVD and current functioning.

Unfortunately, the inclusion of the partner in the treatment of PVD has been neglected, despite the pain experience occurring in a dyadic context and being associated with consequences to the relationship and the partner. Limitations of previous published PVD

treatment research include poor participant selection, limited follow-up and a dearth of RCTs (Nunns et al., 2010). Few randomized studies have evaluated behavioural and cognitive-behavioural interventions compared to standard forms of care. PVD treatment research has had a tendency to neglect the biopsychosocial approach presently utilized in the area of persistent pain (Hadjistavropoulos et al., 2011; Turk & Okifuji, 2002) and to omit couple therapy. A systematic review of CBT studies for women's genito-pelvic pain highlighted that few studies assessing CBT incorporated the relationship component into their interventions (Lofrisco, 2011). Targeting relationship factors in future treatment research may contribute to enhance the quality of interventions, their efficacy, in addition to patient satisfaction with treatment.

Thesis Objectives

The first objective of this thesis is to address the limitations in the *etiological* research conducted among women with PVD and their partners by 1) examining both the woman and partner's childhood maltreatment to better understand its contribution to current functioning for both members of the couple; and 2) using a dyadic analysis approach such as the APIM (Kenny et al., 2006). Similarly, the second objective of this thesis is to address limitations in the *treatment* research on PVD by 1) developing and testing a psychological intervention, Cognitive-Behavioural Couple Therapy (CBCT), that systematically *includes the partner*; 2) considering treatment outcomes relevant to both members of the couple; and 3) utilizing recommended treatment research methodology to prepare and launch a randomized clinical trial to compare the efficacy of CBCT to a first-line, standard medical intervention, topical lidocaine.

The first thesis article examines the associations between childhood maltreatment reported by women and their partners and sexual functioning, couple satisfaction, anxiety and women's self-reported sensory and affective pain during sexual intercourse. Use of dyadic analysis allows for the consideration of the associations between couples' respective histories

of childhood maltreatment and their own and their partner's current sexual, relational, psychological and pain functioning (see Article 1). Understanding the role of childhood maltreatment in current functioning may inform the development of targeted psychological interventions for women with PVD and their partners. This article is published in *The Journal of Sex Research*. The second thesis article reports the results of pilot-testing CBCT in couples coping with PVD (see Article 2). Pilot testing of CBCT includes assessing effectiveness in reducing women's pain reported during sexual intercourse, and improving sexual functioning and satisfaction for both members of the couple using pre- and post-treatment comparisons. Additionally, preliminary testing of this nature also allows for examining the feasibility of administering CBCT in terms of treatment reliability, participant adhesion and acceptability, and treatment satisfaction. Pilot-testing represents an important first step in the development of a new intervention, and informs potential adaptations and future large-scale trials (Leon, Davis, & Kraemer, 2011). This article is published in *The Journal of Sexual Medicine*. Based on the findings of the second thesis paper, the third thesis article presents the research protocol for an ongoing RCT in which the efficacy of CBCT is being compared to topical lidocaine. Couples in which the woman is diagnosed with PVD are randomized to one of these two treatment conditions. The RCT design, which has come to represent the standard in clinical testing because of its ability to control and reduce bias (Meldrum, 2000), incorporates recommendations from the PVD, pain and sexual health literature (Bergeron et al., 2015; Dewitte, 2014; Dworkin et al., 2005; Rosen, Rancourt, et al., 2013). This article is published in *Trials*. These three thesis articles apply a dyadic perspective to the study of childhood maltreatment in couples with PVD, and to psychological interventions for PVD, to provide empirical findings pertinent to the treatment of both members of the couple, extending beyond the pain experience to integrate sexuality and relationship outcomes.

Article 1

A Dyadic Perspective on Childhood Maltreatment for Women with Provoked Vestibulodynia and Their Partners: Associations with Pain, Sexual and Psychosocial Functioning

Corsini-Munt, S., Bergeron, S., Rosen, N.O., Beaulieu, N., & Steben, M. (2016). A Dyadic Perspective on Childhood Maltreatment for Women with Provoked Vestibulodynia and Their Partners: Associations with Pain, Sexual and Psychosocial Functioning. *Journal of Sex Research*. DOI: 10.1080/00224499.2016.1158229

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A Dyadic Perspective on Childhood Maltreatment for Women with Provoked Vestibulodynia and Their Partners: Associations with Pain, Sexual and Psychosocial Functioning

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Abstract

Childhood maltreatment is robustly associated with adult-onset vulvodynia, a common form of female genito-pelvic pain/penetration disorder. However, little is known about the impact of childhood maltreatment on current sexual, psychological and relationship adaptation for couples with provoked vestibulodynia (PVD). This study examined the associations between childhood maltreatment and pain, sexual and psychosocial functioning in women with PVD, the most common subtype of vulvodynia, and their partners. Forty-nine couples (M_{age} *women* = 27.80, *SD* = 6.05; M_{age} *men* = 30.04; *SD* = 6.48) with PVD completed the Childhood Trauma Questionnaire, as well as measures of sexual functioning, couple satisfaction and anxiety. Women also reported on their pain during intercourse. Analyses were guided by the Actor Partner Interdependence Model. Women's higher reports of childhood maltreatment were associated with their lower sexual functioning and higher anxiety. Partners' higher reports of childhood maltreatment were associated with their lower sexual functioning, couple satisfaction and higher anxiety, as well as women's lower couple satisfaction, and higher anxiety. Both women and partners' higher reports of childhood maltreatment were associated with higher affective pain for women. Findings suggest childhood maltreatment experienced by women with PVD and their partners should be considered as part of treatment planning.

Introduction

Genito-pelvic pain/penetration disorder (GPPD) is frequently characterized by pain experienced during sexual intercourse (American Psychiatric Association, 2013). Vulvodynia, an inclusive term for vulvar pain of unknown origin, can contribute to GPPD and affects 8% of women in general population samples (Harlow et al., 2014). The most common cause of vulvodynia among premenopausal women is provoked vestibulodynia (PVD), an acute recurrent pain located within the vulvar vestibule (Moyal-Barracco & Lynch, 2004). Studies have found that women with PVD report significantly lower sexual satisfaction, sexual desire, arousal and lower frequency of orgasm and sexual intercourse compared to healthy controls (Desrochers, Bergeron, Landry, & Jodoin, 2008). Additionally, increased anxiety and depression are precursors and consequences of the pain among women with vulvodynia (Khandker et al., 2011). Partners of women with PVD also report decreased sexual satisfaction and higher rates of sexual difficulties (e.g., erectile dysfunction for men) when compared to partners of women without PVD (Pazmany, Bergeron, Verhaeghe, Van Oudenhove, & Enzlin, 2014; Smith & Pukall, 2014).

Among the large number of psychosocial factors associated with vulvodynia, childhood trauma is one of the more robust correlates. Case-control, population-based studies have shown that women with vulvodynia are more likely to have experienced sexual and physical abuse during childhood compared to pain-free controls (Harlow & Stewart, 2005; Khandker, Brady, Stewart, & Harlow, 2014). However, little is known about the extent to which women and partners' childhood maltreatment may be associated with their current pain experience and sexual, psychological and relationship adaptation to PVD.

Couples with PVD face at once a pain condition and a sexual dysfunction, with negative consequences for each partner and the relationship. Women with PVD report that the pain has made it difficult for them to feel close to their partners (Ponte, Klemperer, Sahay, & Chren,

2009). Similarly, controlled studies have found that male partners report significantly less relational cohesion and lower expression of affection (Smith & Pukall, 2014). According to the empathy model of pain, observing the patient's pain results in one's own affective responses, such as anxiety and sympathy for the pain patient (Goubert et al., 2005). One partner's individual experience of PVD may also affect that of the other.

Cross-sectional and daily diary studies demonstrate that women's and spouses' attempts to cope with PVD are associated with both women's and spouses' outcomes, highlighting the importance of the dyadic context of couples' adjustment to pain (Rosen, Rancourt, Corsini-Munt, & Bergeron, 2013). For example, when couples with PVD report poorer emotion regulation, both partners report decreased sexual satisfaction, psychological wellbeing and couple satisfaction (Awada, Bergeron, Steben, Hainault, & McDuff, 2014). Additionally, male spouses' cognitions and behaviours may impact women's outcomes, given spouses' lower pain catastrophizing and higher facilitative responses to the pain are associated with women reporting less pain during intercourse and greater sexual satisfaction (Lemieux, Bergeron, Steben, & Lambert, 2013; Rosen, Bergeron, Glowacka, Delisle, & Baxter, 2012; Rosen, Muise, Bergeron, Delisle, & Baxter, 2015).

In a community-based sample, women with vulvodynia were 4.1 times more likely to report severe childhood physical abuse and 6.5 times more likely to report childhood sexual abuse (Harlow & Stewart, 2005). In another population-based study, women with adult-onset vulvodynia had almost three times the odds of reporting experiences of either severe childhood physical and sexual abuse when compared to women without adult-onset vulvodynia (Khandker et al., 2014). Similarly, in a large-scale cross-sectional study, female adolescents experiencing painful sex lasting at least six months were more likely to report a history of sexual abuse compared to girls reporting no pain (Landry & Bergeron, 2011). In a preliminary examination of the effects of physical and sexual abuse history on current functioning among

women with GPPD, survivors of childhood sexual abuse reported significantly decreased sexual functioning and psychological wellbeing compared to women reporting no sexual abuse (Leclerc, Bergeron, Binik, & Khalife, 2010). The two groups did not differ on pain severity, and physical abuse showed no correlations with current functioning in this same sample. Given that the sample included women with different types of GPPD, specificity to PVD may be limited. The dichotomous measure of abuse in this study, assessing its occurrence or non-occurrence, may also have led to its underestimation and a reduced ability to capture variance in this phenomenon. Moreover, while physical and sexual abuse were examined, other forms of abuse, such as physical and emotional neglect, which are thought to be just as damaging, were not included (Hildyard & Wolfe, 2002). Finally, partners were not included in this study.

In a population-based sample of couples, one partner reporting childhood physical abuse increased the likelihood by 2.4 times that the other partner also reported childhood physical abuse (Whisman, 2014). Moreover, in this study, childhood physical abuse was associated with the other partner perceiving fewer positive marital exchanges. In a comparison of couples presenting for clinical consultation with and without childhood abuse, couples in which one or both partners reported childhood abuse also reported significantly decreased relationship satisfaction and higher stress symptoms (Nelson & Wampler, 2000). A study conducted with individuals consulting for sex therapy revealed that 37% of men and 56% of women reported a history of childhood sexual abuse, and a high positive correlation between childhood sexual abuse and anxiety and depression (Berthelot, Godbout, Hebert, Goulet, & Bergeron, 2014). In a qualitative examination of the effects of disclosing childhood sexual abuse to one's romantic partners, participants reported at least one experience in which disclosure had a negative impact on their sexual relationship (Del Castillo & Wright, 2009). According to secondary trauma theory, those exposed to the story of and/or the symptoms of another individual's trauma may themselves develop emotional distress and related impairments in functioning (Figley, 1995).

These findings point to the negative impact of childhood maltreatment on couples' romantic and sexual relationships.

Aims

Childhood maltreatment is a risk factor for the development of adult-onset GPPD (Khandker et al., 2014), and has been associated with decreased sexual functioning and psychological adjustment (Leclerc et al., 2011). Recent research has highlighted the relevance of the sexual partner in women's pain experience, both in the impact the pain has on the partner (Smith & Pukall, 2014) and vice versa (Rosen et al., 2012), with no consideration of the partner's trauma history. Moreover, positive associations of childhood abuse and maltreatment with romantic couples' distress and decreased relationship satisfaction are reported in community samples (Nelson & Wampler, 2000). This raises the question of how childhood trauma for both members of the couple is associated with current functioning for couples with PVD. This study aimed to examine the associations between childhood maltreatment reported by women with PVD and their partners, and their sexual, relational and psychological functioning, as well as women's pain during intercourse. It was expected that women and partners' increased reports of childhood maltreatment would be associated with their own impaired sexual functioning, lower couple satisfaction and increased anxiety, and with higher pain for women. Given the dyadic aspects of PVD highlighted in the literature, it was hypothesized that women's history of maltreatment would also affect partners' outcomes, and vice versa.

Method

Participants

The present sample was drawn from a sample of couples participating in a bi-center randomized clinical trial from 2014-2015 (Corsini-Munt et al., 2014) comparing the efficacy of cognitive behavioural couple therapy or topical lidocaine for the treatment of PVD. Couples

were assessed for eligibility across three levels of screening: a telephone interview, an in-person assessment session, and a gynecological examination. At the first level, women and their partners were eligible if they met the following criteria: (i) the woman was experiencing pain during sexual intercourse for at least six months and which occurred during 80% of intercourse attempts; (ii) the pain was limited to sexual intercourse or activities that put pressure on the vulvar vestibule; (iii) couples reported being sexually active in the past three months with some attempted vaginal penetration; (iv) couples had been together for at least six months and were cohabitating or had at least four in-person contacts per week; (v) women were aged between 18-45 years, and partners were at least 18 years of age. The second level of eligibility screening involved a brief structured interview and the administration of validated, self-report questionnaires to women and partners. At the third level of screening, women underwent a comprehensive gynecologic examination with one of the study's collaborating physicians, which included the standardized cotton-swab test (Bergeron et al., 2001). This test involves using a dry cotton-swab to palpate the 3-, 6-, and 9-o'clock positions of the vulvar vestibule while the woman provides pain ratings on a numerical rating scale of 0-10 for each location. They were eligible if they received a diagnosis of PVD with pain operationalized as a minimum rating of 4 on the 0-10 rating scale.

Across all three levels, participants were excluded if the following were reported or found to be present: (i) unprovoked vulvar pain; (ii) the presence of a) active infection, b) vaginismus (as defined by DSM-IV-TR) (American Psychiatric Association, 2000), c) dermatologic lesion/diagnosis, d) pregnancy or planning a pregnancy, and e) menopause; (iii) receiving treatment for PVD; and (iv) presence of major medical and/or psychiatric illness in either partner.

Measures

Demographics. Participants provided demographic information during a brief structured interview, including age, cultural background, education level, relationship status, duration of relationship, and information regarding pain and gynecologic history.

Childhood maltreatment. Childhood maltreatment was measured using the Childhood Trauma Questionnaire (CTQ-28), which has demonstrated good criterion-related validity (Bernstein et al., 2003). This 28-item questionnaire uses a 5-point Likert scale from 1 (*never true)* to 5 (*very often true*), and captures five forms of childhood maltreatment. Subscales assess emotional, physical and sexual abuse, as well as emotional and physical neglect. Total scores range from 25 to 125, with higher scores indicating greater severity of abuse and neglect. Both women and their male partners completed this measure (Cronbach's $\alpha = 0.92$ for women and 0.87 for men).

Main Outcome Measures

Sexual function. The Female Sexual Function Index (FSFI; Rosen et al., 2000), used to measure women's sexual function, is a 19-item measure that assesses sexual desire, arousal, orgasm, sexual satisfaction and pain/discomfort experienced during sexual activity and intercourse. Total scores range from 2 to 36, with lower scores indicating worse sexual function. This measure demonstrated high internal consistency and validity across several samples of women with sexual difficulties (Meston, 2003; Rosen et al., 2000; Wiegel, Meston, & Rosen, 2005), and had a Cronbach's alpha of 0.93 in the present sample. Men's sexual functioning was measured using the well-validated and widely used International Index of Erectile Function (IIEF; Rosen et al., 1997), a 15-item self-report questionnaire, which assesses erectile function, orgasm, sexual desire, intercourse satisfaction, and overall sexual satisfaction. Scores range from 0 to 75, with lower scores indicating worse sexual function. The Cronbach's alpha in the current sample of men was 0.89. Given that the FSFI and IIEF have different score

ranges, a transformation was performed to allow for descriptive comparison (see Adjusted FSFI score in Table 1). The total FSFI scores were scaled to match the total IIEF scores through an algebraic multiplication [(*x*-2)*(75/34)].

Couple satisfaction. Couple satisfaction was measured using the Couple Satisfaction Index (CSI; Funk & Rogge, 2007). This 32-item measure can be used with couples spanning the relationship spectrum (e.g., dating, engaged, married) and demonstrates good convergent validity with other relationship adjustment scales (Funk & Rogge, 2007). Scores range from 0 to 161, with higher scores indicating higher satisfaction with one's relationship. For the current sample, the Cronbach's alpha was 0.94 for women and 0.96 for men.

Anxiety. Women and male partners' anxiety was measured by the well-validated trait subscale of the State-Trait Anxiety Inventory (STAI-T) (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). This 20-item measure asks participants to rate each item on a 4-point Likert scale from 1 (*almost never*) to 4 (*almost always*). Total scores can range from 20 to 80, with higher scores indicating greater anxiety. Cronbach's alphas in the present sample were 0.90 for women and 0.92 for men.

Women's pain during sexual intercourse. Women's vulvovaginal pain during sexual intercourse was measured using the McGill Pain Questionnaire – Short Form (MPQ-SF), a questionnaire which measures the multidimensional aspects of the pain experience, including sensory and affective components (Melzack, 1987). The MPQ-SF is a reliable and valid measure (Grafton, Foster, & Wright, 2005; Melzack & Katz, 2007) that assesses qualitative and quantitative aspects of pain through 15 pain-related adjectives, each of which is rated for intensity on a four-point scale ranging from 0 (*none*) to 3 (*severe*). It is comprised of two scales assessing the sensory (MPQ-SEN) and affective (MPQ-AFF) components of pain, which are calculated by summing the intensity scores for each. For example, *throbbing* is a sensory

adjective and *fearful* is an affective adjective. For the present sample, the Cronbach's alpha was 0.76.

Procedure

Women and their partners were recruited in two large Canadian cities. Data were collected during the pre-treatment baseline assessment of couples prior to their randomization as part of their participation in a randomized clinical trial (Corsini-Munt et al., 2014). During this assessment, couples met with a research assistant at one of the two research sites and provided informed consent. Following a brief structured interview, women and partners independently completed a series of questionnaires, each on separate tablet computers. Couples were remunerated for the time and travel related to study participation. This study received approval from the institutional research ethics boards of each research site.

Data analytic strategy

Significant covariates for subsequent analyses were identified using correlations (e.g., participant demographics). Intercorrelations between the dependent and independent variables were examined. Analyses examining associations between women's and partners' childhood maltreatment and couples' sexual function, relationship satisfaction, anxiety and pain during intercourse were guided by the Actor-Partner Interdependence Model (APIM; Kenny, Kashy, & Cook, 2006), using one model per outcome. Multilevel modeling was used to account for the theorized and observed interdependence (i.e., non-independence) between variables. Individual data (level 1) were nested within couple dyads (level 2) to create a two-level model with between-person analyses and between-dyad analyses at the second level. Hierarchical regression analyses were conducted to examine the relative contributions of women's and men's childhood maltreatment to women's self-reported sensory, as well as affective vulvovaginal pain. Analyses were conducting using SPSS version 21 (IBM & Corp., Released 2012).

Results

Demographics. Couples were recruited from community, hospital, college and university posters and bulletin boards (18%), internal university email listservs (6%), online ads and articles (14%), health and mental health care provider referrals (20%), advertisements in local newspapers (4%), and from previous participation in research studies conducted by the authors (37%). All couples enrolled in the current study were in cross-sex relationships. Demographic characteristics of the 98 study participants (49 couples) and mean scores for study variables are presented in Table 1, as well as original and scaled scores for the FSFI and IIEF. Research Site A recruited 28 couples and Research Site B recruited 21 couples.

Differences between research sites across independent and dependent variables were found for men's sexual functioning ($F(1,47) = 5.62$, $P < 0.05$) and women's couple satisfaction ($F(1,47) = 4.65$, $P < 0.05$), and therefore research site was included as a covariate in related analyses. Paired-sample *t*-tests showed that women and men's CTQ scores did not significantly differ ($t(48) = 1.77$, $P = 0.08$). Moreover, consistent with previous research conducted with couples affected with PVD, women in the present sample reported significantly higher scores on the STAI-T ($t(48) = 3.46$, $P < 0.01$) and lower sexual functioning than men ($t(48) = -9.37$, $P < 0.001$) (Awada et al., 2014).

Correlations. Of the demographic variables, men's greater level of education was significantly correlated with their lower sexual function ($r = -0.28$, $P < 0.05$). Therefore, level of education was included as a covariate in analyses involving sexual function. Table 2 displays correlations between women and men's childhood maltreatment and all outcome variables.

Associations between childhood maltreatment and sexual function, couple satisfaction and anxiety. Table 3 shows the actor and partner effects for each outcome, and Figure 1 visually displays the significant actor and partner effects. Significant actor effects refer to the association between an individual's own childhood maltreatment experiences and

his/her own outcomes while controlling for their partner's childhood maltreatment experiences. Significant partner effects refer to the association between an individual's childhood maltreatment experiences and his/her partner's outcomes, controlling for the partner's childhood maltreatment experiences.

In terms of sexual functioning, a significant actor effect was found for the association between women's childhood maltreatment and their own sexual function, indicating that women's higher reports of childhood maltreatment were related to their lower sexual functioning. There was also a significant actor effect for men, indicating that men's increased childhood maltreatment was related to their own lower sexual functioning.

In regards to couple satisfaction, a significant actor effect for men was found, indicating that their childhood maltreatment was related to their own lower couple satisfaction. A partner effect for women was also found, such that men's greater reports of childhood maltreatment were also associated with women's lower couple satisfaction.

For anxiety, significant actor effects were found for both women and men: more severe childhood maltreatment for each individual was related to their own higher anxiety. Additionally, there was a significant partner effect of men's childhood maltreatment on women's anxiety, with higher reports of men's childhood maltreatment being associated with women's increased anxiety. No partner effects were found for women's childhood maltreatment on men's anxiety.

Associations between childhood maltreatment and women's pain during sexual intercourse. Women and men's childhood maltreatment were not significantly associated with women's sensory pain during intercourse. Therefore, a hierarchical regression analysis was conducted to examine the relative contribution of women and men's childhood maltreatment to women's self-reported pain during sexual intercourse, for affective pain only (Table 4). Both women and men's greater childhood maltreatment were associated with more severe affective

reports of pain during intercourse ($B = 0.39$, $t(48) = 3.08$, $P < 0.01$). The model was significant ($F(1, 46) = 8.21$, $P < 0.01$) and accounted for 26% of the variance in women's affective pain intensity during intercourse, with 15% of the variance specifically accounted for by women's maltreatment and 11% accounted for by men's maltreatment.

Discussion

In a sample of couples coping with PVD, the present study examined the associations between women and men's childhood maltreatment and their sexual functioning, couple satisfaction and anxiety, as well as women's pain during intercourse. Hypotheses were partially confirmed with women and men's higher reports of childhood maltreatment being associated with their respective lower sexual functioning. Men's childhood maltreatment was negatively associated with their own couple satisfaction and with their female partners' couple satisfaction. Additionally, men's childhood maltreatment was associated with increased anxiety for men and women, whereas women's maltreatment was associated with increased anxiety only for women. Finally, both women and men's childhood maltreatment were associated with higher reports of affective pain for women, but not sensory pain.

Women's higher levels of childhood maltreatment were related to their lower sexual functioning, similar to the association found between penetrative childhood sexual abuse and impairments in sexual functioning among a sample of women with GPPD (Leclerc et al., 2010). Likewise, men's higher levels of childhood maltreatment were associated with their own lower sexual functioning. These findings are consistent with links between childhood abuse and decreased sexual functioning across both clinical and non-clinical samples of female and male participants (Berthelot et al., 2014; Najman, Dunne, Purdie, Boyle, & Coxeter, 2005). Research with childhood sexual abuse survivors has demonstrated that sexual self-schemas, or how one perceives oneself in relation to sexuality, mediate the association between childhood sexual abuse and negative emotional states during sex with a partner (Meston, Rellini, & Heiman,

2006). Previous experiences of childhood abuse and neglect often amount to disrespecting the child's personal boundaries and needs, and may result in the development of negative attitudes about his or her body (Didie et al., 2006) and intimacy needs (Maltz, 2002). Past maltreatment may account for part of the sexual impairment experienced by some women with PVD and sexual consequences reported by partners over and above the impact of the pain. The absence of association between an individual's childhood maltreatment and his or her partner's sexual functioning may relate to the sample studied. Specifically, women in this sample presented with clinical levels of sexual dysfunction, presumably because of their PVD diagnosis. In contrast, men, despite an association between their own childhood maltreatment and sexual functioning, did not report any clinically significant sexual dysfunction, presumably because of their young age and pain-free profile. More research involving different populations is needed to examine further if and how an individual's childhood maltreatment is associated with his or her partner's sexual functioning

Increased reporting of childhood maltreatment for men was related to their own lower couple satisfaction, as well as to women's lower couple satisfaction, consistent with previous research highlighting that childhood maltreatment has demonstrated stronger links to men's levels of marital dissatisfaction compared to women (DiLillo et al., 2009). The association between couples' experiences of childhood trauma and lower marital quality can be understood through their perception of fewer positive and more negative exchanges in their marital relationship (Whisman, 2014). Moreover, self-reported childhood maltreatment has demonstrated associations with poorer emotion regulation in adulthood (Carvalho Fernando et al., 2014). Couples facing PVD reporting ambivalence over emotional expression, a marker of poor emotion regulation, also report lower couple satisfaction (Awada et al., 2014). It may be that among couples with PVD in which the male partner has experienced maltreatment, higher

perceived frequency of negative exchanges and impaired emotion regulation contributed to lower couple satisfaction for men and women.

Consistent with established correlations between childhood trauma and increased psychological distress (Penza, Heim, & Nemeroff, 2003) and secondary trauma effects on romantic partners (Nelson & Wampler, 2000), both women and men's higher reporting of childhood maltreatment were associated with their own increased anxiety. These findings are congruent with the current understanding of how childhood maltreatment can influence neurotransmitter systems (e.g., corticotropin releasing factor) involved in stress response, thus priming survivors of childhood abuse to be more vulnerable to anxiety and other forms of psychological distress in the future (Heim & Nemeroff, 2001). Additionally, the present study found that men's childhood maltreatment was associated with increased reports of anxiety for women. This is consistent with a qualitative investigation of the impact of men's childhood sexual abuse disclosure on their female partners, in which women reported increased anxiety and depression (Jacob & Veach, 2005). Women with PVD may be vulnerable to similar psychological distress when partnered with men with histories of childhood maltreatment. Moreover, this vulnerability may also be understood in the context of women with PVD expressing overall anxiety, as well as anxiety and hypervigilance about their pain and associated sexual difficulties (Granot & Lavee, 2005; Khandker et al., 2011; Payne et al., 2007). Established gender differences may explain why men's childhood maltreatment was associated with women's increased anxiety, but not the reverse. Men are less likely to disclose childhood sexual abuse at the time of occurrence and take longer to discuss it later in life compared to women (O'Leary & Barber, 2008). This finding may imply that male childhood abuse survivors have sought less access to treatment and therefore may require more care from female partners, thus heightening the woman's anxiety.

Both women and men's increased reporting of childhood maltreatment were related to increases in women's affective ratings of pain during intercourse, but not sensory pain. Women with PVD and their male partners' previous experience of childhood maltreatment may affect the emotional valence or unpleasantness associated with pain during intercourse, but may not result in increased pain sensation. This is consistent with the distinct neural mechanisms that have been identified for sensory pain versus unpleasantness (Price, 2000). In animal models, fear learning was associated with affective pain pathways in the anterior cingulate cortex (Jeon et al., 2010). The affective pathways for pain may be developed prior to pain onset for some women in relation to learning during childhood traumatic experiences. Therefore, couples affected with PVD who have experienced childhood maltreatment may be more likely to discuss and describe their pain using affective adjectives rather than sensory. This is consistent with the empathy model of pain, in which the observer's affective responses and his or her knowledge/understanding of the pain operate in a bidirectional manner (Goubert et al., 2005), and how the partner's affective and behavioural responses also exert an influence on the woman's pain experience (Hadjistavropoulos et al., 2011; Rosen et al., 2013). For example, the association between men's childhood maltreatment and women's affective pain experience may be explained via mechanisms of catastrophizing (Loggia, Mogil, & Bushnell, 2008). The communal coping model posits that catastrophizing is a coping strategy via which the individual communicates about the pain to obtain support or attention from others (Sullivan, Martel, Tripp, Savard, & Crombez, 2006). In a sample of adult internal medicine outpatients, self-reported childhood trauma was associated with increased catastrophizing about pain (Sansone, Watts, & Wiederman, 2013). Among couples with PVD, independent of women's pain catastrophizing, partners' pain catastrophizing was associated with women's increased reports of sensory pain during intercourse (Lemieux et al., 2013). Although partners of women with PVD do not experience pain themselves during intercourse, their early experiences of

trauma may predispose them to increased catastophizing, and therefore may play a role in women's current pain experience.

The present study has several strengths. First, the measure used to assess childhood maltreatment captured several forms of abuse and neglect, along a continuum, rather than a dichotomous assessment of absence or presence of physical and sexual abuse. Importantly, the dyadic design of this study provided data which highlights the role of the partner's history, in addition to the patient's history, in shaping each individual's adaptation to PVD, thus adding support to the inclusion of partners in etiologic studies and treatment protocols for sexual dysfunction. Theoretically, findings support empathy and communication models of pain (Goubert et al., 2005; Hadjistavropoulos et al., 2011) and calls to move beyond intra-individual models of coping to frameworks taking into account the social context of pain (Keefe, Rumble, Scipio, Giordano, & Perri, 2004), sexuality (Dewitte, 2014) and childhood maltreatment (Davis & Petretic-Jackson, 2000).

While childhood maltreatment measured in this study included several forms of abuse and neglect, use of a global score precluded our ability to determine if one specific form of abuse and/or neglect was driving the reported associations. Other limitations should also be considered. Although participants reported on maltreatment experienced during childhood, the data is cross-sectional and therefore does not allow for the confirmation of causal relationships. Further, retrospective reports of maltreatment may be subject to memory bias (Williams, 1994). The present sample comprised couples recruited for participation in a treatment study, which may limit generalizability of findings to non-treatment-seeking couples experiencing PVD. While the measure of childhood maltreatment used in the present study captured several forms of childhood abuse and neglect, future research should consider longitudinal designs that would examine the impact of current forms of trauma given recent findings showing a link between intimate partner violence and dyspareunia among postpartum women (McDonald, Gartland,

Small, & Brown, 2015). Finally, inter-partner disclosure about childhood maltreatment was not examined in the current study. It is recommended that future research examining the influence of maltreatment within couples consider whether or not childhood maltreatment was disclosed.

While the present results are discussed in the context of PVD, they may represent patterns present in couples not experiencing GPPD. Survivors of childhood sexual abuse often report increased distress and lower relationship satisfaction (DiLillo & Long, 1999), difficulty with romantic attachment (Godbout, Sabourin & Lussier, 2009) and sexual problems (Leonard & Follette, 2002) compared to those reporting no childhood sexual abuse. Therefore, in terms of clinical implications, the present findings underscore the importance of considering childhood maltreatment when working with couples in general. Given that couples with GPPD present at an intersection of sexual dysfunction and pain condition, there are many factors to which the clinician must attend during assessment and treatment. This study's results highlight the importance of assessing the history of *both* members of the couple, even when only one presents with the sexual dysfunction, and of flexibility to adapt treatment plans that accommodate histories of trauma for both partners. For example, adapting treatment planning to the patient's trauma history may include the use of body maps in assessment and in adjusting therapeutic exercises assigned to couples (Zoldbrod, 2015). Specifically, identifying parts of the body that childhood maltreatment survivors are uncomfortable with in the therapeutic context may demonstrate important sensitivity to the survivor's experience and encourage partner awareness.

Conclusions

The main contribution of the present study is the consideration of both partners' childhood abuse and neglect in the context of PVD and the impact of women and partners' trauma history on current functioning for both members of the couple. Results demonstrated that childhood maltreatment of both partners was associated with increased affective pain for

women, as well as decreased sexual functioning and couple satisfaction, and increased anxiety for both partners. Results suggest that childhood maltreatment of both the patient experiencing sexual dysfunction and his or her partner are important in conceptualizing the presenting sexual difficulties, psychological and interpersonal distress, and in planning the appropriate course and pace of treatment.

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Table 1

Descriptive Statistics of the Sample

Characteristics	Women (n = 49) *M or N*	*SD or %*	Partners (n = 49) *M or N*	*SD or %*
Age (years)	27.80 (19-43)	6.05	30.04 (19-52)	6.48
Cultural background				
English-Canadian	18	36.7	21	42.9
French-Canadian	19	38.8	12	24.5
Other	11	22.4	16	32.7
Did not disclose	1	2.0	-	-
Education (years)	17.06 (11-22)	2.06	16.65 (10-23)	2.75
Couple annual income				
$0 – 19,999	6	12.2	-	-
$20,000 – 39,999	10	20.4	-	-
$40,000 – 59,999	6	12.2	-	-
>$60,000	26	53.1	-	-
Did not disclose	1	2.0	-	-
Duration of pain (years)	6.74 (0.58-26)	5.21		
Duration of relationship (years)	6.29 (0.5-20)	4.61	-	-
Current relationship status				
Not living together	9	18.4	-	-
Cohabiting, not married	20	40.8	-	-
Married	20	40.8	-	-
Independent variable				
Childhood Maltreatment (CTQ)	36.49 (25-86)	13.57	32.35 (25-60)	8.37
Dependent variables				
Sensory Pain (MPQ-SEN)	16.06 (6-26)	5.09	-	-
Affective Pain (MPQ-AFF)	4.10 (0-11)	3.20	-	-
Sexual functioning (Original FSFI)	18.27 (2-27.9)	6.09	-	-
(Adjusted FSFI & IIEF)	35.88 (0-57.1)	13.43	55.41 (10-73)	12.80
Relationship adjustment (CSI)	127.45 (76-157)	18.14	125.12 (76-159)	21.79
Anxiety (STAI-T)	42.98 (25-61)	9.83	36.59 (21-60)	9.93

Note. Other cultural backgrounds include: First Nations, American, African, Asian, Middle Eastern, Latin or South American, Caribbean, Western European, Eastern European, Australian or specified other.
CTQ = Childhood Trauma Questionnaire; MPQ-SEN = Sensory subscale of McGill Pain Questionnaire short form; MPQ-AFF = Affective subscale of McGill Pain Questionnaire short form; FSFI = Female Sexual Function Index; IIEF = International Index of Erectile Function; CSI = Couple Satisfaction Index; STAI-T = State-Trait Anxiety Inventory Trait Subscale.

Table 2

Correlations Between Childhood Maltreatment and Outcome Variables for Women with PVD and Their Partners

	1	2	3	4	5	6	7	8	9	10
1. Women's childhood maltreatment (CTQ)	--	-0.07	-0.32*	-0.28*	0.18	-0.12	0.30*	0.08	0.08	0.37**
2. Partner's childhood maltreatment (CTQ)		--	-0.18	-0.30*	-0.25	-0.28	0.34*	0.29*	-0.08	0.33*
3. Women's sexual functioning (FSFI)			--	0.38**	0.10	0.26	-0.30*	-0.06	-0.09	-0.38**
4. Partner's sexual functioning (IIEF)				--	0.34*	0.44**	-0.18	-0.37**	-0.23	-0.41**
5. Women's couple satisfaction (CSI)					--	0.43**	-0.17	-0.23	-0.12	-0.25
6. Partner's couple satisfaction (CSI)						--	-0.17	-0.61**	-0.03	-0.23
7. Women's anxiety (STAI-T)							--	0.15	-0.05	0.30*
8. Partner's anxiety (STAI-T)								--	-0.09	0.09
9. Women's sensory pain (MPQ-SEN)									--	0.55**
10. Women's affective pain (MPQ-AFF)										--

Note. * $P < 0.05$; ** $P < 0.01$.

CTQ = Childhood Trauma Questionnaire; MPQ-SEN = Sensory subscale of McGill Pain Questionnaire short form; MPQ-AFF = Affective subscale of McGill Pain Questionnaire short form; FSFI = Female Sexual Function Index; IIEF = International Index of Erectile Function; CSI = Couple Satisfaction Index; STAI-T = State-Trait Anxiety Inventory Trait Subscale.

Table 3

Actor-Partner Interdependence Model with Childhood Maltreatment as the Independent Variable and Sexual Functioning, Couple Satisfaction and Anxiety as Outcome Variables

	b	*Standard Error*	*df*	*t*	*P*
Sexual Function*					
Actor-by-gender	-0.28	0.23	78.49	-1.19	0.23
Partner-by-gender	0.14	0.25	67.54	0.58	0.57
Actor effects					
Women	**-0.28**	**0.14**	**44.01**	**-2.03**	**<0.05**
Men	**-0.55**	**0.19**	**44.03**	**-2.95**	**<0.01**
Partner effects					
Women	-0.37	0.22	44.02	-1.74	0.09
Men	-0.23	0.12	44.04	-1.96	0.06
Couple Satisfaction+					
Actor-by-gender	**-1.16**	**0.40**	**62.11**	**-2.86**	**<0.01**
Partner-by-gender	0.47	0.36	77.77	1.30	0.20
Actor effects					
Women	0.36	0.18	45	1.99	0.05
Men	**-0.80**	**0.36**	**45**	**-2.18**	**<0.05**
Partner effects					
Women	**-0.62**	**0.28**	**45**	**-2.17**	**<0.05**
Men	-0.14	0.23	45	-0.61	0.55
Anxiety					
Actor-by-gender	0.12	0.19	72.76	0.62	0.54
Partner-by-gender	-0.35	0.18	80.21	-1.88	0.06
Actor effects					
Women	**0.24**	**0.09**	**46**	**2.51**	**<0.05**
Men	**0.36**	**0.17**	**46**	**2.14**	**<0.05**
Partner effects					
Women	**0.42**	**0.15**	**46**	**2.74**	**<0.01**
Men	0.07	0.10	46	0.71	0.48

Note. *Analyses involving sexual function were conducted controlling for research site and level of education.
+Analyses involving couple satisfaction were conducted controlling for research site.
Significant effects are bolded. Unstandardized beta (*b*) are presented in the first column.
Sexual Function = Female Sexual Function Index and International Index of Erectile Function; Anxiety = State-Trait Anxiety Inventory Trait Subscale.

Table 4
Results of Hierarchical Regression Analysis for Childhood Maltreatment Predicting Affective Pain

	Women's self-reported pain during intercourse		
	b	*Standard error*	*B*
Affective Pain			
Step 1			
Partner's CTQ	0.13	0.05	0.33*
Step 2			
Partner's CTQ	0.14	0.05	0.36**
Women's CTQ	0.09	0.03	0.39**

Note. * $P<0.05$; ** $P<0.01$.
CTQ = Childhood Trauma Questionnaire.

Figure 1

Summary of Actor and Partner Effects of Childhood Maltreatment on Sexual, Psychosocial and Affective Pain Outcomes

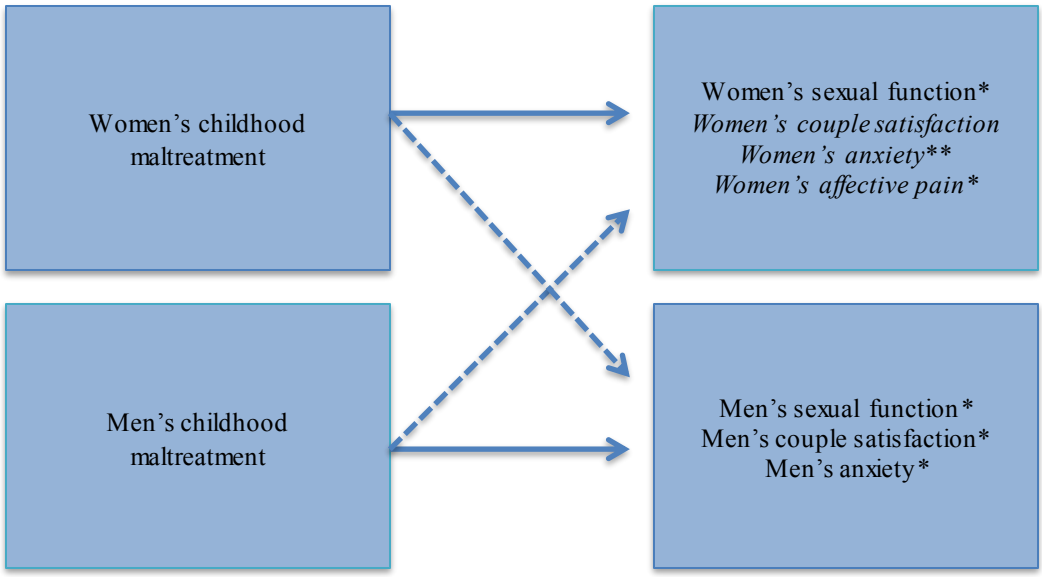

Figure 1. Only significant effects are displayed in the figure. Solid line/roman font indicates actor effects and dashed line/italic font indicates partner effects. *$P < 0.05$; **$P < 0.01$.

Article 2

Feasibility and preliminary effectiveness of a novel cognitive-behavioral couple therapy for provoked vestibulodynia: A pilot study

Corsini-Munt, S. Bergeron, S., Rosen, N. O., Mayrand, M-H., & Delisle, I. (2014). Feasibility and preliminary effectiveness of a novel cognitive-behavioral couple therapy for provoked vestibulodynia: A pilot study. *The Journal of Sexual Medicine, 11*(10), 2515-27. DOI: 10.1111/jsm.12646

Running head: COGNITIVE-BEHAVIORAL COUPLE THERAPY PILOT FOR PVD

TITLE:

Feasibility and preliminary effectiveness of a novel cognitive-behavioral couple therapy for provoked vestibulodynia: A pilot study

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Abstract

Introduction. Provoked vestibulodynia (PVD), a recurrent, localized vulvo-vaginal pain problem, carries a significant psychosexual burden for afflicted women, who report impoverished sexual function, and decreased frequency of sexual activity and pleasure. Interpersonal factors such as partner responses to pain, partner distress, and attachment style are associated with pain outcomes for women, and sexuality outcomes for both women and partners. Despite these findings, no treatment for PVD has systematically included the partner.

Aims. This study pilot-tested the feasibility and potential efficacy of a novel cognitive-behavioural couple therapy (CBCT) for couples coping with PVD.

Methods. Couples (women and their partners) in which the woman was diagnosed with PVD (n=9) took part in a 12-session, manualized CBCT intervention and completed outcome measures pre- and post-treatment.

Main Outcome Measures. The primary outcome measure was women's pain intensity during intercourse using a numerical rating scale. Secondary outcomes included sexual functioning and satisfaction for both partners. Exploratory outcomes included pain-related cognitions, psychological outcomes, and treatment satisfaction, feasibility and reliability.

Results. One couple separated before the end of therapy. Paired t-test comparisons involving the remaining 8 couples demonstrated significant improvements in women's pain, and sexuality outcomes for both women and partners. Exploratory analyses indicated improvements in pain-related cognitions, as well as anxiety and depression symptoms for both members of the couple. Therapists' reported high treatment reliability, and participating couples' reported high participation rates and treatment satisfaction indicate adequate feasibility.

Conclusions. Treatment outcomes along with treatment satisfaction ratings confirm the preliminary success of CBCT in reducing pain and psychosexual burden for women with PVD and their partners. Further large-scale randomized controlled trials are necessary to examine the efficacy of CBCT compared to, and in conjunction with first-line biomedical interventions for PVD.

Introduction

Vulvodynia, or idiopathic, recurrent vulvo-vaginal pain, has a prevalence of 4 to 28% (Bachmann et al., 2006; Harlow et al., 2013; Reed, Crawford, Couper, Cave, & Haefner, 2004). Vulvo-vaginal pain, often misunderstood and potentially underreported (Harlow & Stewart, 2003), carries stigma for many women (Nguyen, Turner, Rydell, Maclehose, & Harlow, 2013), and can have deleterious consequences for women's sexual functioning and quality of life (Arnold, Bachmann, Rosen, Kelly, & Rhoads, 2006). Provoked vestibulodynia (PVD), the most frequent form of vulvodynia among pre-menopausal women, is characterized as a recurrent, sharp or burning pain triggered by contact to the vulvar vestibule, such as during vaginal sexual intercourse (Moyal-Barracco & Lynch, 2004). Extending beyond the mechanics of sexual function, women with PVD also report decreased sexual satisfaction (Smith, Pukall, & Chamberlain, 2013), and less positive sexual self-schema (Pazmany, Bergeron, Van Oudenhove, Verhaeghe, & Enzlin, 2013). Epidemiological research indicates that anxiety and depression symptoms are significantly more frequent as antecedent conditions and as consequences to vulvodynia, in comparison to healthy controls (Khandker et al., 2011). Both women with vulvodynia and their partners report increased rates of depressive symptoms relative to a control sample (Nylanderlundqvist & Bergdahl, 2003). While these women do not report significant differences in relationship satisfaction when compared to control women (Reissing, Binik, Khalifé, Cohen, & Amsel, 2003), qualitative studies suggest that women with vulvodynia report that the pain can have a damaging effect on the couple's relationship, and fear losing their partner because of the pain (Sheppard, Hallam-Jones, & Wylie, 2008). Recent research also highlights the significant positive correlation between intimacy and sexual function and satisfaction for women with PVD (Bois, Bergeron, Rosen, McDuff, & Grégoire, 2013), and the influence of attachment styles on pain and sexuality outcomes for both

women and partners (Leclerc et al., in revision). Despite the growing evidence for the bidirectional associations between PVD and romantic relationship factors, current treatments typically focus solely on the woman, and no empirically-tested treatment has systematically included the partner.

Fueled by a biopsychosocial, multidimensional understanding of pain, there is a recent increase in the number of studies that have examined cognitive, affective, and behavioural factors related to PVD, and their associations with sexuality outcomes in afflicted women and their partners. With regard to cognitive factors, increased woman-reported PVD pain, and negative pain attributions made by the partner, have been associated with increased partner psychological distress (Jodoin et al., 2008). Pain attributions refer to one's personal theory or explanation for the pain. In this scenario, partners may be less likely to utilize healthy forms of coping and may feel more helpless in the face of their female partners' pain. For example, higher use of partner internal and global attributions, or beliefs that the pain is a result of the woman's responsibility and that it affects other areas of the partner's life, were associated with lower couple satisfaction. Moreover, partners' attributions that the pain was global and stable predicted lower partner sexual satisfaction (Jodoin et al., 2008). Thus the meaning that partners give to the woman's pain problem may impact partners' adaptation to the pain.

Among women with PVD, higher levels of pain-related catastrophizing and lower pain self-efficacy are significantly correlated with higher ratings of pain during sexual intercourse, while greater pain self-efficacy is associated with women's improved sexual functioning (Desrochers, Bergeron, Khalifé, Dupuis, & Jodoin, 2010). Recent consideration of the impact of partner cognitive variables in the context of PVD has revealed that higher partner pain catastrophizing significantly contributes to the variance in women's reported higher pain intensity (Lemieux, Bergeron, Steben, & Lambert, 2013). For example, partner pain catastrophizing may be manifested

by a partner's belief that the woman's PVD pain will never end, or that it may get worse. According to the Communal Coping Model, pain catastrophizing represents a coping strategy through which the individual uses communication about the pain to solicit support and attention from others (Sullivan, Martel, Tripp, Savard, & Crombez, 2006), whereas pain self-efficacy refers to one's belief in their ability to cope with and control the pain. These two cognitive factors may be associated with pain intensity and functioning by promoting or interfering with adaptive coping mechanisms.

Consistent with data from the chronic pain literature, a cross-sectional association between partner responses to the woman's PVD-related pain and pain intensity during intercourse has been reported (Desrosiers et al., 2008). Moreover, cognitive pain-related variables, such as pain catastrophizing, have been shown to significantly mediate the relation between solicitous (attention and concern) partner pain responding and increased pain intensity for women (Rosen, Bergeron, Steben, & Lambert, 2013). Findings from a dyadic daily diary study showed that sexual functioning improved for women with PVD when they perceived higher facilitative (encourages adaptive coping), and lower solicitous (attention and concern) and negative (frustration and anger) responses to pain from their male partners, and partners' sexual functioning decreased when they responded to pain in a more solicitous and negative manner (Rosen et al., 2013). Further research into behavioural factors relevant to the couple's navigation of the pain experience has demonstrated that higher sexual assertiveness in partners is associated with higher sexual functioning among women with PVD, while higher sexual assertiveness among women is related to increased sexual satisfaction in partners (Leclerc et al., in revision). These results, taken together, highlight how romantic relationship factors may influence the pain and sexual outcomes of couples coping with PVD.

Recent examination of the affective aspect of interpersonal factors related to PVD indicates that women's ratings of higher relationship intimacy (self- and partner-perceived disclosure and responsiveness) is associated with better sexual functioning, and that higher sexual intimacy (self-disclosure, perceived partner-disclosure and partner responsiveness relating to sexual activity) are associated with increased sexual satisfaction, sexual functioning, and pain self-efficacy (Bois et al., 2013). In keeping with emotional disclosure being an important aspect of intimacy, couples with PVD demonstrating lower ambivalence over emotional expression report higher sexual satisfaction and sexual functioning, higher dyadic adjustment, and fewer depressive symptoms (Awada, Bergeron, Hainault, & Steben, 2014). Couples unburdened by ambivalence when it comes to emotional expression may report increased functioning because of more optimal communication resources to address sexual negotiation, conflict resolution or problem-solving, and adjustments to their sexual repertoire.

The couple's interactions on cognitive, behavioural, and affective levels and their associations with the vulvo-vaginal pain, as well as their shared sexual experience, highlight several avenues for intervention. Despite this, no study has examined the efficacy of a treatment for PVD that systematically includes the partner. Inclusion of the partner may help target the related cognitive, affective and sexuality dimensions, in addition to pain intensity.

Of the women with PVD who seek medical help, the first stop for answers and relief is often a primary care physician, and thus many treatments target the pain symptoms. Despite the wide variety of treatment options, which range from localized interventions such as topical ointments, physical therapy, and surgery to systemic interventions such as tricyclic antidepressants (Landry, Bergeron, Dupuis, & Desrochers, 2008), there is a dearth of prospective studies assessing their efficacy. Given the multifaceted nature of PVD's etiology and impact, a treatment model that

can target pain, as well as its associated psychological, sexual and relationship consequences may represent an advantageous addition to current treatment options for PVD.

Cognitive behavioural therapy (CBT) consists of a useful framework through which one can understand the interplay of interpersonal factors, sexual functioning, and sexual dissatisfaction in women with PVD. A long-term follow-up of women with PVD who had participated in a randomized controlled trial comparing vestibulectomy, biofeedback, and group CBT revealed treatment gains that were maintained at 2.5 years for improvements in pain and sexual functioning (Bergeron, Khalifé, Glazer, & Binik, 2008). When considering self-reported pain during intercourse, vestibulectomy did not outperform CBT at long-term follow-up, highlighting the efficacy of CBT, a less invasive intervention that aims to target pain symptoms as well as the psychological, sexual, and relational sequelae of PVD. Further, a randomized trial examining the efficacy of individual CBT for vulvodynia compared to a supportive psychotherapy demonstrated that CBT resulted in significantly greater improvement in pain severity and sexual function from pre- to post-treatment, with gains being maintained at one-year follow-up (Masheb, Kerns, Lozano, Minkin, & Richman, 2009). These results demonstrate the efficacy and tolerability of psychosocial interventions for PVD while also indicating the potential benefit for improved treatment outcome and patient satisfaction associated with a more directed psychological treatment approach. Traditionally, the woman diagnosed with PVD is treated on her own, representing a missed opportunity to target partner variables that can influence pain and sexuality outcomes for the woman, as well as partner outcomes. Repeated recommendations that a psychological intervention for PVD include the partner (Barsky Reese, 2009), along with a dearth of manualized interventions that can be tested and disseminated to clinicians, prompted the development of a cognitive-behavioural couple therapy (CBCT) for couples experiencing PVD.

Aims

The goal of this study was to pilot test a novel, manualized, cognitive-behavioural couple therapy (CBCT) for women with PVD and their partners for initial effectiveness and feasibility. It was hypothesized that following CBCT, women would report significant pre- to post-treatment improvements in pain intensity experienced during intercourse, and that couples would report significant pre- to post-treatment increases in sexual functioning and satisfaction for both partners. In addition to these hypotheses, another goal of this pilot study was to conduct an exploratory examination of changes for women and partners' pain self-efficacy, pain catastrophizing, relationship satisfaction, anxiety and depression. It was also hypothesized that couples would report strong treatment satisfaction, and that CBCT would demonstrate adequate feasibility and reliability measured by couples' participation in interventions and homework exercises and therapists' ability to administer planned interventions.

Methods

Participants

Women diagnosed with PVD and their partners were recruited in two large metropolitan areas. Women (and their partners) were contacted using a databank of participants from other non-treatment studies from the authors' laboratories, and couples who contacted these laboratories or who contacted collaborating health care professionals for information about ongoing research projects were also informed about this pilot study. Inclusion criteria for women with PVD were: (1) pain during intercourse which was reported as subjectively distressing and occurred at least during 80% of intercourse attempts, and had been present for at least one year; (2) pain limited to intercourse and other activities involving pressure to the vulvar vestibule; (3) significant pain in one or more locations of the vestibule during the gynecological examination, operationalized as a

minimum average patient pain rating of 4 on a scale of 0 to 10; 4) a diagnosis of PVD following the gynecological examination; 5) sexually active as a couple in the last three months (intercourse, manual, or oral stimulation); 6) in a committed monogamous relationship with a partner for at least six months. Pain was assessed using the cotton-swab test, in which a cotton-swab is placed along the exterior or edge of the vestibule using point palpation. The authors' research laboratories and collaborating physicians are familiar with this test, which has been standardized for research purposes. This procedure has been used successfully in previous research in the field, and demonstrates good inter-rater reliability between physicians (Bergeron, Binik, Khalifé, et al., 2001). PVD participants were excluded if: (1) vulvar pain was not clearly linked to intercourse or pressure applied to the vulvar vestibule; (2) one of the following was present: (a) major medical and/or psychiatric illness, (b) active infection, (c) deep dyspareunia, (d) vaginismus (as defined by Diagnostic and Statistical Manual of Mental Disorders-IV), (e) dermatologic lesion, (f) pregnancy or planning a pregnancy; (3) age less than 18 or greater than 45; (4) involved in ongoing couple therapy, and (5) currently being treated for PVD and unable/unwilling to cease treatment. Couples were also deemed ineligible if they did not live in the same city, and could not attend 12 weekly sessions, and if partners had: (1) a major medical and/or psychiatric illness, and (2) were less than 18 years of age. These eligibility criteria were chosen to ensure selection of a relatively homogeneous sample of sexually active couples in which the woman was suffering exclusively from PVD.

Procedure

The women and their partners were informed via telephone about the nature of the study, its anticipated schedule in terms of treatment and assessment, and the potential risks and benefits of participation. Across both research sites, a total of 39 women were approached and spoke

directly with the research coordinator to receive information about the study. Of these, 10 were ineligible to participate for the following reasons: not currently partnered, no longer experiencing pain, currently pregnant, received an alternate diagnosis, currently living in separate cities, currently receiving treatment for PVD and unable/unwilling to cease this treatment, or currently undergoing psychotherapy, individually or as a couple. Of the remaining 29 eligible couples, 20 refused to participate. Reasons for refusal included: unable to make the time commitment, not currently interested but may be in the future, not interested in treatment, not interested in couple therapy, and no longer interested in taking part in a research study. Couples who did not wish to participate were referred to other treatment resources if interested. Nine couples consented to participate, were scheduled for pre-treatment assessment, and began treatment immediately following pre-treatment assessment (31.0% acceptance).

Intervention: Cognitive-behavioural couple therapy (CBCT). The CBCT intervention was delivered as 12 one-hour sessions. The treatment manual was adapted to reflect a similar content as that of Bergeron and colleagues' empirically-tested cognitive-behavioural group therapy (Bergeron, Binik, & Larouche, 2001), with pertinent interventions added to reflect recent research regarding dyadic factors and PVD, and the incorporation of materials that emphasize the interpersonal dynamics of PVD. Overarching goals of the CBCT intervention were to enable couples to: (1) re-conceptualize PVD as a multidimensional pain problem influenced by a variety of factors including thoughts, emotions, behaviours, and couple interactions; (2) understand PVD as a couple problem in which both members affect and are affected by the pain; (3) identify and problem-solve about factors associated with pain during sexual activity with a view to increasing adaptive coping, for example, by increasing self-efficacy and decreasing catastrophizing in each partner, with a goal to decrease pain intensity; (4) improve the quality of the couple's sexual

functioning using communication skills training, working on sexual approach and avoidance goals, and modifying the sexual script; (5) consolidate skills developed during the treatment. Examples of the specific CBCT interventions include psychoeducation about pain, communication skills training, discussion and expansion on the couple's sexual narratives, mindfulness and cognitive defusion exercises, and pain journaling. Interventions were rooted in third generation cognitive-behavioural approaches, including an Acceptance and Commitment Therapy (ACT) approach, with an emphasis on engaging both partners, reducing experiential and behavioural avoidance, and identifying relevant relational patterns of the couple. A selection of the interventions across the 12 sessions is presented in Table 1.

Therapists. Two therapists, one per site, were trained to use the CBCT manual. Each therapist underwent a training to familiarize themselves with the interventions, and worked with the manual's authors to develop a detailed understanding of the interventions comprised in CBCT, as well as the rationale for each intervention. To help increase treatment-reliability, the CBCT manual's interventions were structured and detailed, and included the empirical rationale behind the interventions. Therapists completed intervention checklists following each session to provide an indication of treatment reliability. Both therapists received weekly supervision from the CBCT manual's senior authors (SB and NR). Sessions were DVD-recorded. This study was reviewed and approved by the Institutional Review Boards of the University of Montreal's Faculty of Arts and Science and the IWK Health Centre. All participants provided written informed consent.

Outcome Measures

Couples completed standardized self-report measures and took part in brief semi-structured interviews conducted by a research assistant pre- and post-treatment. The pre-treatment brief interview served to assess demographic information and pain history. The post-treatment interview

was delivered to assess perceived progress, satisfaction with treatment, and invite couples to provide their feedback about the treatment.

Main outcome measure – pain.

Pain intensity. Pain intensity during sexual intercourse was assessed using a numerical rating scale (NRS), ranging from 0 to 10, where 0 is no pain at all, and 10 is the worst pain ever, as recommended by the IMMPACT guidelines for chronic pain clinical trials (Dworkin et al., 2005). This method for measuring pain has been shown to detect significant treatment effects in women with PVD and demonstrates a significant positive correlation with other pain intensity measures (Jensen & Karoly, 2001).

Quality of pain. Vulvo-vaginal pain was also measured using the McGill Pain Questionnaire (MPQ; (Melzack, 1975), a measure of the multidimensional aspects of the pain experience, including its sensory, affective and evaluative components. The MPQ is a widely used adjective checklist, which assesses both qualitative and quantitative aspects of pain. The Pain Rating Index Total (PRI) scale was used, and demonstrated good internal consistency for the present sample (pre-treatment: $\alpha = 0.81$; post-treatment: $\alpha = 0.88$).

Secondary outcome measures – sexuality outcomes for women and partners.

Sexual function. Sexual function was measured using the Derogatis Interview for Sexual Functioning - Self-Report (DISF-SR), a 25-item self-report version of a semi-structured interview designed to assess sexual function in both men and women (Derogatis, 1997). It measures five dimensions of sexuality: sexual cognition/fantasy, sexual arousal, sexual behaviour/experience, orgasm, and sexual drive/relationship. Scores can be calculated for each dimension and for global sexual functioning. The DISF-SR boasts good internal consistency and reliability, specifically with women experiencing sexual dysfunction. It was chosen because it can be administered to both

women and men. In the present study, the coefficient alpha for women with PVD was 0.86 pre-treatment, and 0.91 post-treatment, and 0.87 and 0.92 for partners.

Sexual satisfaction. Sexual satisfaction was assessed using the Global Measure of Sexual Satisfaction Scale (GMSEX), which consists of 5 items assessing global sexual satisfaction. The GMSEX has high internal consistency and test-retest reliability (Lawrance & Byers, 1995). The coefficient alpha for the present sample of women with PVD was 0.81 and 0.82, at pre-treatment and post-treatment respectively, and 0.56 and 0.94 for partners. The irregular alpha coefficient for partners at pre-treatment may be a product of the small sample size in the present study.

Exploratory outcome measures.

Pain catastrophizing. The Pain Catastrophizing Scale (PCS) is a 13-item scale that measures exaggerated negative perceptions and emotions regarding pain. Higher scores point to higher catastrophizing (range: 0-52). The PCS (Sullivan, Bishop, & Pivik 1995) has been tested for reliability and validity (Osman et al., 2000). The partner version is also validated (Cano, Leonard, & Franz, 2005). The PCS demonstrated good internal consistency in the present study (pre-treatment for women and partners respectively: $\alpha = 0.72$ and 0.86; post-treatment: $\alpha = 0.91$ and 0.88).

Pain self-efficacy. Pain self-efficacy, or the pain patient's belief in her capacity to cope and deal with the pain across different situations, was measured using the Painful Intercourse Self-Efficacy Scale (PISES). The PISES (Desrochers, Bergeron, Khalifé, Dupuis, & Jodoin, 2009) is 20-item scale adapted from the Arthritis Self-Efficacy Scale (Lorig, Chastain, Ung, Shoor, & Holman, 1989). The adapted version demonstrates identical factor structure to the original scale (Desrochers et al., 2009), for which reliability and validity have been established (Lorig et al., 1989). The partner version assesses the partner's perception of the pain patient's self-efficacy. The

coefficient alpha for women in the present study was 0.64 pre-treatment, and 0.71 post-treatment for women with PVD, and 0.83 and 0.92 for partners for pre- and post-treatment respectively.

Relationship satisfaction. The 32-item version of the Couple Satisfaction Index (CSI) (Funk & Rogge, 2007) was used to measure relationship satisfaction. Compared to other well-known relationship satisfaction measures (e.g., Dyadic Adjustment Scale (Spanier, 1976); and the Marital Adjustment Test (Locke & Wallace, 1959)) it demonstrates strong convergent validity, and a higher precision and power for detecting distinctions in satisfaction levels. Moreover, unlike similar relationship satisfaction scales, the CSI has been tested with a sample of participants spanning the relationship spectrum (e.g., dating, engaged, married). The CSI demonstrated good internal consistency in the present study (pre-treatment for women and partners: $\alpha = 0.97$; post-treatment: $\alpha = 0.97$).

Anxiety. Anxiety was assessed using the Spielberger State-Trait Anxiety Inventory (STAI). The STAI (Spielberger, Gorsuch, & Lushene, 1970) is a widely used 40-item measure of state and trait anxiety. The 20 items assessing trait anxiety was used for this study. Cronbach alpha scores for women in the present study were 0.86 and 0.86 at pre- and post-treatment, and 0.96 and 0.94 for partners.

Depression. The Beck Depression Inventory-II (BDI-II) was used to measure symptoms of depression. The BDI-II is comprised of 21 items, with scores for most items ranging from 0 (low intensity) to 3 (high intensity) (Beck, Steer, & Brown, 1996; Beck, Steer, & Garvin, 1988). This measure of depression has been validated for use in chronic pain populations (Turner & Romano, 1984). In the present study, the small sample size resulted in irregular Cronbach alpha values for this measure, which otherwise demonstrates good internal consistency (pre-treatment for women and partners respectively: $\alpha = 0.52$ and 0.96; post-treatment: $\alpha = 0.70$ and 0.44).

Participant ratings of global improvement. In order to measure the clinical significance of the findings and as recommended by IMMPACT guidelines (Dworkin et al., 2005), women with PVD and partners each rated perceived global improvements in pain and sexuality at post-treatment by selecting one of the following five options: Great improvement, moderate improvement, small improvement, no improvement, or deterioration.

Treatment Satisfaction, Feasibility and Reliability

At post-treatment, couples were asked to rate their satisfaction with the treatment on a NRS of 0 to10, with 0 being completely dissatisfied, and 10 being completely satisfied. Both members of the couple were also asked to each identify which components of the treatment they found most helpful, and least helpful. At each session, couples reported on completion of at-home interventions (i.e., homework), and therapists completed an intervention checklist for each session to indicate whether planned in-session exercises were completed or not. If not, therapists indicated if time-overage occurred, and if the exercise could be conducted in the following session to help the authors improve the use of the treatment manual; time overages or interventions moved to following sessions were coded as not completed. Homework completion rates were determined based on homework completed during the week it was assigned; homework completed at a later time was not coded as completed. A treatment manual-reliability score was computed based on the number of planned interventions that were completed divided by the total number of interventions assigned for that particular session.

Data Analysis

Treatment outcomes for primary and secondary outcomes – pain and sexuality measures – were determined by pre- and post-treatment differences calculated using two-tailed, paired-samples t-tests for all outcome variables. All tests used a significance level of alpha = 0.05. Only parametric

test results are presented given that Wilcoxon signed-rank tests were conducted to control for non-normality, and yielded similar conclusions to paired-sample t-tests. General linear model (GLM) contrasts were conducted between sites for primary and secondary outcome variables. Original standard deviations were used to compute Cohen's d, or effect size values, given the likelihood that pooled standard deviations are corrected for correlation between measures, and therefore yield overestimated values for effect size (Dunlop, Cortina, Vaslow, & Burke, 1996). Effect sizes of 0.20, 0.50, and 0.80 or larger are respectively classified as small, medium, and large (Cohen, 1988). Exploratory analyses were conducted using percent change analyses of sample means for pain self-efficacy, pain catastrophizing, relationship satisfaction, anxiety, and depression. Treatment satisfaction, and treatment-manual reliability and homework completion scores were averaged across participants.

Results

Sample Characteristics

Participants' characteristics are displayed in Table 2. All recruited couples were heterosexual. The mean (M) age of women with PVD was 26.11 years (R = 19-35), and the average age of male partners was 28.44 years (R = 21-45). Couples had been in their relationship for an average of 4.4 years (SD = 2.8), with the pain often pre-dating the relationship for an average pain history of 6.72 years (SD = 4.16). The majority of the couples had post-secondary education (M = 16.17 years; SD = 2.46) and the sample was homogeneous in terms of ethnicity. While participants were asked not to use other treatments during their participation in this study, one participant saw a physical therapist twice during the course of the 12 sessions. Of the nine couples recruited, eight attended all 12 sessions of CBCT. One couple separated before completing all 12 sessions. This couple was not included in analyses.

Means and standard deviations for pain and sexuality outcomes are found in Table 3. Percent change values for exploratory variables are found in Table 4.

Primary Outcome (n=8)

Pain. There was a significant decrease in pain during intercourse from pre- to post-treatment, t (7) = 3.89, P = 0.006, d = 2.05. No significant difference was found between sites ($F_{1,6}$ = 1.433, P = 0.276). Using the MPQ PRI Total score, there was also a significant decrease in women's reported multidimensional aspects of pain, t (7) = 2.64, P = 0.034, d = 0.45, with no significant difference between sites ($F_{1,6}$ = 0.68, P = 0.803).

Secondary Outcomes (n=8)

Sexuality outcomes. From pre- to post-treatment, women with PVD reported significant improvements in sexual functioning, t (7) = -3.47, P = 0.010, d = 0.72, and sexual satisfaction, t (7) = -3.06, P = 0.018, d = 1.28. There were no significant differences between sites (sexual function: $F_{1,6}$ = 0.323, P = 0.968; sexual satisfaction: $F_{1,6}$ = 1.263, P = 0.304). Male partners also reported significant increases in sexual satisfaction, t (7) = -3.78, P = 0.007, d = 1.90, but increases in sexual functioning were not statistically significant, t (7) = -1.41, P = 0.202, d = 0.21. There was no significant difference in sexuality outcomes for partners between sites (sexual function: $F_{1,6}$ = 1.473, P = 0.270; sexual satisfaction: $F_{1,6}$ = 0.165, P = 0.699).

Exploratory Outcomes (n=8)

Pain-related cognitions. In terms of pain-related factors, both women and partners demonstrated pre- to post-treatment decreases in pain catastrophizing (Women, 54.97% decrease, d = 2.03; Partners, 58.33% decrease, d = 1.86), and both women and partner perceptions of women's pain self-efficacy showed increases from pre- to post-treatment (Women, 23.64% increase, d = 1.69; Partners, 36.29% increase, d = 1.88).

Relationship satisfaction. Women and partners both reported small increases in relationship satisfaction following treatment (Women, 6.31% increase, d = 0.33; Partners, 6.46% increase, d = 0.32).

Psychological outcomes. Women reported decreased trait anxiety, 12.02% decrease, d = 0.69, and a large decrease in self-reported depression symptoms following treatment, 45.28% decrease, d = 1.41. Male partners also reported a decrease in anxiety, 9.96% decrease, d = 0.32, and in depression symptoms, 50.77% decrease, d = 0.56.

Participant ratings of global improvement. Across couples, 75% reported "moderate progress" to "complete resolution" of the woman's pain following treatment. And for both women and partners, 100% reported "moderate" to "a lot" of progress in their sexual life after taking part in treatment.

Treatment Satisfaction, Feasibility and Reliability

In terms of treatment satisfaction, the mean rating from women was 9.0 out of 10 (*SD* = 1.20), and the mean partner rating was 9.13 (*SD*=1.13). Given that one couple did not complete treatment, the attrition rate was 11%. The average therapist-reported treatment manual reliability across all sessions was 89.8% (*range* 87.0 % to 99.0%). Women with PVD who completed all 12 sessions of treatment reported a mean of 64.8% for completion of at-home interventions (*range* 50.0% to 77.8%), and the average for male partners who completed all 12 sessions of treatment was 59.3% (*range* 28.6% to 76.9%). No adverse events occurred during the study. Interventions identified as most helpful or most liked included emotional disclosure and building (sexual) communication as part of communication skills training, the progressive approach of all interventions, sensate focus or shared sensual and non-sensual massage, and cognitive defusion exercises. Certain couples also reported that it was beneficial and appreciated that each session

focused on both the woman and the partner. The interventions that were reported as least helpful or liked were pain journaling, mindfulness body scan, and PVD psychoeducation. Some couples reported that the time required to complete at-home interventions was challenging.

Discussion

This study aimed to pilot test the effectiveness of CBCT in improving pain and sexuality, as well as to explore its potential usefulness in addressing psychological outcomes associated with PVD in women and their partners. Results of the present preliminary study suggest that CBCT is a promising treatment option for couples experiencing PVD. All participants who completed the 12 sessions of CBCT reported improvement across the targeted outcomes, and indicated high treatment satisfaction.

As hypothesized, there was a significant decrease in women's pain intensity during sexual intercourse as measured using the NRS and the McGill Pain Questionnaire's PRI. Specifically, women reported a 51% decrease in pain from pre- to post-treatment. The IMMPACT guidelines for clinical trials in chronic pain indicate that changes in self-reported pain of more than 30% from baseline on a NRS represent moderately important clinical differences (Dworkin et al., 2005), suggesting that the changes in the present sample are clinically significant. Further, all couples reported moderate improvement to complete resolution of the pain in the post-treatment interview. These results are consistent with or superior to those of previous treatment studies examining CBT interventions for PVD (Bergeron, Binik, Khalifé, et al., 2001; Masheb et al., 2009). Given the multidimensional aspect of pain, it is possible that CBCT contributed to reduce pain during intercourse by helping couples better understand its multifactorial aspects, develop a shared awareness of the thoughts, emotions and couple interactions that trigger and maintain it, and gradually become more efficient at managing this challenging experience together. For example,

the pain-journaling coupled with newly acquired communication skills may have enabled couples to better navigate pain triggers, and problem-solve before or during a painful experience to reduce pain.

Women reported significant improvement in sexual functioning, and both members of the couple reported significant increases in sexual satisfaction. This significant increase in sexual functioning for women following treatment corroborates findings from previous treatment studies for PVD, which show that a CBT intervention contributes to improving sexual function (Bergeron, Binik, Khalifé, et al., 2001; Masheb et al., 2009). The increase in sexual functioning reported by partners was not significant, likely because partners did not report difficulties with sexual functioning at pre-treatment. This is not surprising in light of the fact that the mean age of these men was 28 years. There was, however, a significant increase in sexual satisfaction for both women and partners at post-treatment, which highlights the subjective improvement in the couple's shared sexuality following treatment. There are many factors that contribute to one's subjective evaluation of his or her sexual experiences. A capacity to attend more to the eroticism and pleasure associated with their sexual activity may constitute one of the benefits of treating the couple together. Additionally, the focus CBCT places on mindfulness, sexual communication, expansion of the couple's sexual narrative and building of their sexual repertoire may have helped participants develop more positive sexual experiences. This may have worked by decreasing distress related to previously unspoken needs, and increasing focus on the pleasure associated with sexual activity, rather than the pressure and premium often associated with the mechanics of sexual intercourse. This interpretation is consistent with McCarthy and Wald's (McCarthy & Wald, 2013) premise that mindfulness and the encouragement of Good Enough Sex (e.g., lessened focus on erection maintenance and orgasm achievement as indicators of sexual success) help foster sexual

desire and satisfaction, two key components of healthy sexuality for the couple (McCarthy & Wald, 2012).

The exploration of pre- to post-treatment changes in pain-related cognitions, relationship satisfaction, and psychological outcomes may contribute to elucidate other potential treatment gains of CBCT. Both members of the couple reported a large decrease in pain catastrophizing, which is the composite of rumination, magnification, and feelings of helplessness about the pain (Sullivan et al., 1995). This improvement may derive from CBCT's emphasis on facilitating validation and empathic understanding of each other's experience of the pain that is fostered during therapy and for the couple. Targeting thoughts via cognitive defusion may be another mechanism by which couples' view of the pain may begin to change. The Communal Coping Model of Pain posits that catastrophizing represents a form of coping by communicating one's pain to another with the intention of increasing proximity and soliciting support and empathy (Sullivan et al., 2001). Therefore, women and partners' decrease in catastrophizing could reflect the acquisition of new coping strategies developed during therapy, and a shift toward more adaptive ways of communicating support needs in relation to the pain. Similarly, women's pain self-efficacy increased following treatment, as well as partners' perceptions of women's pain self-efficacy. As with the decrease in catastrophizing, an increase in pain self-efficacy may be indicative of the woman's exposure to and development of proactive, approach strategies for coping with her pain, which could lead to a better sense of her capacity to manage the pain. Moreover, CBCT incorporates components of third generation cognitive-behavioural therapy such as ACT, a form of treatment that has been empirically demonstrated to help reduce pain and pain-related cognitive-affective factors for patients with chronic pain (Vowles, McCracken, & Zhao O'Brien, 2011).

Although slight, relationship satisfaction for both women and partners showed improvement following treatment. This change is likely small because the couples in the current sample, on average, did not report clinically significant relationship distress at pre-treatment. While decreased relationship satisfaction has been associated with higher pain ratings for women with PVD (Meana, Binik, Khalifé, & Cohen, 1998), previous research has indicated that women with PVD generally do not report significantly different relationship satisfaction than controls (Reissing et al., 2003).

Moreover, women and partners reported an increase in psychological well-being as indicated by reductions in depression and anxiety. Viewing depression in its relation to helplessness (Seligman, 1974), one can infer that CBCT offered support and hope to women with PVD. CBCT may have enabled women and partners to feel less alone through validation and normalization, helped enrich their understanding of the pain and its impact, as well as encouraged the development of more empathy towards themselves. This may have occurred, in part, by reducing negative feelings known to be associated with perceived pain intensity (Rainville, Huynh Bao, & Chrétien, 2005). Therefore, CBCT may have modified negative attributions women and partners may have previously held about their pain, which have been previously associated with negative psychological and psychosexual outcomes for women with PVD (Jodoin et al., 2011). Similarly, the decrease in depression and anxiety symptoms may stem from CBCT offering the couple tools to experience closeness despite the pain, diminishing distress by fostering partner empathy for the spouse with pain (Goubert et al., 2005), and to tackle the pain together, rather than viewing it as a burden for the woman to carry on her own. Through a third generation CBT framework, CBCT aimed to encourage acceptance of the pain problem, which can lead to positive pain and psychological outcomes for chronic pain patients (Vowles et al., 2011). Further

examination of other distress indicators, such as sexual distress, and controlled investigation with larger samples are recommended to replicate this finding.

CBCT capitalizes on empirically established knowledge regarding the relationship factors that play important roles for couples experiencing PVD. Both members of the couple reported high treatment satisfaction ratings, as well as perceived improvement based on their experience in CBCT. It could be surmised that CBCT demonstrated a benefit for both partners because of the inherent nature of PVD's negative impact on the couple's shared sexuality. Previous work including the partner when targeting sexual and intimacy outcomes has yielded effective results for sexual desire problems among women and their partners (Hurlburt, White, Powell, & Apt, 1993; Trudel et al., 2001), for improving functioning among breast cancer patients and their partners (Baucom et al., 2009), and for intimacy building among prostate cancer patients and their partners (Manne et al., 2011). Acceptable homework completion rates and good therapist-reported treatment manual reliability suggest that CBCT can be considered an acceptable, well-received and feasible intervention for couples in which the woman is suffering from PVD. Comparison between sites showed no significant difference for primary and secondary outcomes, which implies a reliability of outcomes across sites. Despite several indicators of feasibility, recruitment for this treatment study yielded high participant refusal rates. While these rates may reflect a low preference for this couple-based therapy, high participant refusal rates may also be related to the recruitment of participants from previous research studies, rather than the use of advertising or clinical referrals meant to target treatment-seeking women and couples with PVD. More research is needed to shed light on this important issue. Nevertheless, given that CBCT demonstrates effectiveness in decreasing pain intensity, as well as improving sexual and psychosocial outcomes, it may represent a worthwhile concurrent or adjuvant treatment to current medical and physical

therapies for PVD, or a potential alternative treatment option for women and partners searching for a less invasive intervention with no physical side effects.

Pilot studies represent a first step, and as such, there are limitations to the conclusions that can be drawn from the present findings (Lancaster, Dodd, & Williamson, 2004; Leon, Davis, & Kraemer, 2011). First, the sample size was small, which limited the power and complexity of the statistical analyses used to detect treatment-related changes. Additionally, given the small sample size, internal consistency was irregular for certain measures, despite these measures' previous validation and demonstration of excellent internal consistency among larger samples of the same population. Clinical implications of this pilot study may be limited because the present sample was comprised of couples that were sexually active throughout the duration of the treatment, which may not be representative of couples having ceased sexual activity due to the pain. The low acceptance rate of participation may represent a further limitation in regards to treatment uptake. This study did not include a control group, so it is not possible to know whether the observed changes in outcomes would have occurred with the passage of time, in the absence of active intervention. Moreover, only heterosexual couples were included in this study's sample. Because participants were not randomized to CBCT, there is a possibility of a self-selection bias for couples in search of a therapeutic intervention for PVD. Lastly, the reported treatment manual reliability may be biased by therapist self-reports. These limitations point to the importance of further testing of CBCT in a randomized clinical trial.

Conclusions

The present study represents a timely integration of the growing body of research highlighting the importance of dyadic factors related to PVD. These preliminary findings show successful treatment outcomes following 12 sessions of CBCT, not only for affected women, but

also for their partners. This suggests that the inclusion of the partner in the treatment of PVD appears beneficial. Taken together with high treatment satisfaction ratings, the lack of adverse events, good treatment reliability ratings provided by therapists, and the high attendance rate, CBCT may represent a potential intervention to reduce pain intensity during intercourse, as well as improve the sexual and psychosocial well-being of women with PVD and their partners.

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Table 1
Selected CBCT interventions

Session	Selected in-session interventions	Selected homework
1	Telling their story	Readings, pain journaling
2	Value clarification exercise re: goals for sex	Breathing – mindfulness and tantric
3	Identifying pain maintenance factors	Pain localization
4	Impact on sex and the relationship; communication	Needs statements; body scan exercise
5	Role of anxiety/anticipation	Kegel exercises *if appropriate
6	Partner (and woman) responses to pain	Sensate focus massage; sharing intimate memories
7	Sex communication; redefining sexual narrative	Dilation exercises * if appropriate
8	Facilitating desire/arousal	Desire list; sensate focus massage
9	Cognitive defusion; attributions	Practice cognitive defusion
10	Revisiting cognitive defusion	Sensate focus massage
11	Assertiveness and avoidance	Couple's choice for homework
12	Progress and setbacks	Tools for the future

Table 2

Sociodemographic characteristics of participants ($N = 9$)

	M or N	SD or %
Characteristic		
Age (years)		
Women	26.11	5.80
Partners	28.44	6.93
Women duration of pain (years)	6.72	4.16
Education level (years)		
Women	15.89	1.76
Partners	16.44	3.09
Marital status		
Cohabitating	4	44.44
Married	2	22.22
Committed but not cohabitating	3	33.33
Duration of the relationship (years)	4.44	2.80
Women's annual income		
$0-39,999	6	66.67
$40,000-59,999	2	22.22
>$60,000	1	11.11
Women's cultural background		
English Canadian	3	33.33
French Canadian	5	55.56
Other	1	11.11
Partner's cultural background		
English Canadian	5	55.56
French Canadian	3	33.33
Other	1	11.11

Table 3
Pain and sexuality outcome measures by assessment time-point

Measure	Pre-treatment		Post-treatment		Change	
	M	SD	M	SD	M	SD
Women with PVD						
Pain						
NRS	6.58	1.69	3.13	1.71	-3.25	2.36
MPQ-PRI	31.50	13.28	25.50	15.18	-6.00	6.44
Sexual Function						
DISF-SR	62.08	14.58	72.78	17.52	10.90	8.97
Sexual Satisfaction						
GMSEX	23.75	6.02	29.75	3.73	6.00	5.55
Male Partners						
Sexual Function						
DISF-SR	96.00	20.63	100.38	24.32	4.38	8.80
Sexual Satisfaction						
GMSEX	16.50	3.89	22.38	3.81	5.88	5.00

Note. NRS = numerical rating scale of pain; MPQ-PRI = McGill Pain Questionnaire – Present Rating Index Total; DISF-SR = Derogatis Interview for Sexual Functioning - Self-Report; GMSEX = Global Measure of Sexual Satisfaction Scale.

Table 4
Percent change and effect sizes for women and partner exploratory outcomes

Measure	Pre-treatment		Post-treatment		Percent change	
	M	SD	M	SD	%	d
Women with PVD						
Pain-Related Cognitive Variables						
PCS	31.38	8.07	14.13	10.03	-54.97	2.03
PISES	1283.00	202.48	1586.25	179.76	23.64	1.69
Couple Satisfaction						
CSI	124.16	29.45	132.00	19.94	6.31	0.33
Psychological Adjustment						
STAI-Trait	46.75	8.92	41.13	8.63	-12.02	0.69
BDI-II	13.25	5.09	7.25	3.96	-45.28	1.41
Male Partners						
Pain-Related Cognitive Variables						
PCS	27.31	10.65	11.38	7.33	-58.33	1.86
PISES	1232.66	264.70	1680.00	243.37	36.29	1.88
Couple Satisfaction						
CSI	114.01	27.68	121.38	21.51	6.46	0.32
Psychological Adjustment						
STAI-Trait	36.93	14.62	33.25	9.98	-9.96	0.32
BDI	9.14	12.15	4.50	2.67	-50.77	0.56

Note. PCS = Pain Catastrophizing Scale; PISES = Painful Intercourse Self-Efficacy Scale; CSI = Couple Satisfaction Index; STAI-Trait = Spielberger State-Trait Anxiety Inventory, Trait subscale; BDI-II = Beck Depression Inventory-II.

Article 3

A comparison of cognitive-behavioural couple therapy and lidocaine in the treatment of provoked vestibulodynia: Study protocol for a randomized clinical trial

Corsini-Munt, S. Bergeron, S., Rosen, N. O., Steben, M., Mayrand, M-H., Delisle, I., McDuff, P., Aerts, L., & Santerre-Baillargeon, M. (2014). A comparison of cognitive-behavioural couple therapy and lidocaine in the treatment of provoked vestibulodynia: study protocol for a randomized clinical trial. *Trials, 15*(506). DOI: 10.1186/1745-6215-15-506.

Running head: RCT PROTOCOL COMPARING CBCT AND LIDOCAINE FOR PVD

TITLE:

A comparison of cognitive-behavioral couple therapy and lidocaine in the treatment of provoked vestibulodynia: study protocol for a randomized clinical trial

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Abstract

Background: Provoked vestibulodynia (PVD), a frequent form of chronic female genital pain, is associated with decreased sexual function for afflicted women, as well as impoverished sexual satisfaction for women and their partners. There is strong evidence for the influence of interpersonal factors on pain and sexuality for couples with PVD, such as patient and partner pain catastrophizing, partner responses to pain, ambivalence over emotional expression, attachment style and perceived relationship and sexual intimacy. Despite recommendations in the literature to include the partner in a cognitive-behavioral therapy targeted at improving pain and sexuality outcomes, no randomized clinical trial has tested the efficacy of this type of intervention and compared it to a first-line medical intervention.

Methods: The present trial is a bi-center, randomized clinical trial designed to examine the efficacy of a cognitive-behavioral couple therapy (CBCT) compared to that of topical lidocaine. It is conducted across two university-hospital centers in Canada. Eligible women diagnosed with PVD and their partners will be randomized to one of the two treatment conditions. Evaluations will be conducted using structured interviews and validated self-report measures at three time points: Pre-treatment (T1: prior to randomization), post-treatment (T2), and 6-month follow-up (T3). The primary outcome is the change in reported pain during intercourse between T1 and T2. The secondary outcomes focus on whether there are significant differences between the two treatments T2 and T3 on (a) the multidimensional aspects of women's pain and (b) women and partners' sexuality (sexual function and satisfaction, frequency of intercourse), psychological adjustment (anxiety, depression, catastrophizing, self-efficacy, attributions and quality of life), relationship factors (partner responses and dyadic adjustment) and self-reported improvement and treatment satisfaction. Following power analysis, and in order to detect an effect size as small as 0.32 for

secondary outcomes, a sample of 170 couples will be recruited (27% dropout expected). A clinically significant decrease in pain is defined as a 30% reduction.

Discussion: The randomized clinical trial design is the most appropriate to examine the efficacy of CBCT, a recently-developed and pilot-tested psychosocial intervention for couples coping with PVD, in comparison to the first-line treatment option, topical lidocaine. Findings from this study will provide important information about empirically supported treatment options for PVD, and inform future treatment development and research for this patient population.

Trial registration: clinicaltrials.gov NCT01935063 (registration date: August 27 2013)

Background

Chronic pain problems involving the female reproductive system represent major health concerns for women. Often misunderstood and misdiagnosed or ignored, gynecologic or genital pain conditions entail a great personal cost to patients and a significant financial cost to society (Walling & Reiter, 1995). Vulvodynia, or chronic unexplained vulvar pain, is an example of female genital pain. Recent population-based surveys suggest that by 40 years of age, 7-8% of women report vulvodynia-like symptoms (Harlow et al., 2014). Provoked vestibulodynia (PVD) – an acute recurrent pain localized within the vulvar vestibule and experienced primarily during intercourse – is suspected to be the most frequent type of vulvodynia in premenopausal women (Friedrich, 1987).

While not one clear etiologic pathway exists for all women with PVD, continuing research points to a multifactorial understanding, with certain factors presenting as more common among women with PVD compared to women without this type of pain These factors include early menarche (younger than or equal to 11 years of age (Harlow, Wise, & Stewart, 2001), repeated yeast infections (Laumann, Paik, & Rosen, 1999), polymorphisms in genes regulating inflammatory response (Gerber, Bongiovanni, Ledger, & Witkin, 2002), nociceptor proliferation and sensitization (Desrochers, Bergeron, Landry, & Jodoin, 2008; Meana, Binik, Khalifé, & Cohen, 1997), lower touch and pain thresholds (Dumoulin, Bourbonnais, & Lemieux, 2003), and pelvic floor muscle dysfunction (Reissing, Brown, Lord, Binik, & Khalife, 2005). The essential result is that the pain modulation process is less efficient in women with PVD (van Lankveld et al., 2010). Extending beyond the biological to accommodate a biopsychosocial model of pain, there is a growing body of research highlighting the significance of psychosocial factors as robust predictors of pain and associated disability.

Cross-sectional research with a sample of women with PVD showed that higher levels of hypervigilance, fear of pain, and catastrophizing significantly predicted increased pain, whereas greater anxiety and avoidance were associated with poorer sexual function, and lower self-efficacy was related to worse pain and sexual function (Desrochers, Bergeron, Khalifé, Dupuis, & Jodoin, 2009). As for interpersonal factors, partner responses to pain are thought to reinforce and perpetuate patients' pain experience (Rosen, Bergeron, Leclerc, Lambert, & Steben, 2010; Rosen, Bergeron, Sadikaj, Glowacka, Baxter, et al., 2014; Rosen, Bergeron, Sadikaj, Glowacka, Delisle, et al., 2014; Rosen, Bergeron, Steben, & Lambert, 2013). The most studied types of partner responses to PVD are solicitous (i.e., demonstrations of sympathy), negative (i.e., demonstrations of anger), and facilitative (i.e., encouraging adaptive coping). Cross-sectional research has shown that increased solicitous and decreased facilitative partner responses are associated with higher pain intensity, and that lower negative and higher facilitative partner responses were associated with increased sexual satisfaction for women (Rosen, Bergeron, Glowacka, Delisle, & Baxter, 2012; Natalie O Rosen et al., 2010). Further examination of these relationships indicated that the associations were respectively mediated by pain catastrophizing and relationship satisfaction (Rosen et al., 2013). Using a daily-diary design, it was found that women reported improved sexual functioning on days when they perceived partner responses to pain as more facilitative (Rosen, Bergeron, Sadikaj, Glowacka, Delisle, et al., 2014). Therefore, cognitions and behaviors relating to pain, such as pain self-efficacy, catastrophizing and partner responses to pain, represent avenues through which interventions might target pain and sexuality outcomes.

More affective interpersonal factors have also shown to be related to pain and sexual outcomes. Among a sample of couples with PVD, women's self-reported relationship and sexual intimacy were significantly associated with their sexual function, sexual satisfaction and pain self-

efficacy, suggesting the potential protective influence of a couple's intimacy for sexual well-being in the context of pain (Bois, Bergeron, Rosen, McDuff, & Grégoire, 2013). Similarly, low ambivalence over emotional expression in both partners, indicating they are comfortable with the way they express emotions, was significantly linked to better psychological, sexual and relational outcomes (Awada, Bergeron, Steben, Hainault, & McDuff, 2014). Further examination of dyadic factors related to PVD has shown that the association between women's insecure attachment style and lower sexual functioning was mediated by lower levels of sexual assertiveness (Leclerc et al., 2014). Taken together, these studies highlight the importance of fostering communication, both expression and assertion, in couples coping with PVD. Although empirical evidence continues to mount in support of the important role of relational variables in the pain and psychosexual sequelae of PVD, many treatment options target the pain primarily and no study to date has examined the efficacy of a treatment that incorporates systematic inclusion of the partner.

Despite the wide variety of treatment options, there is a dearth of prospective, controlled studies assessing their efficacy. Localized interventions include topical lidocaine (Haefner et al., 2005), biofeedback (Danielsson, Torstensson, Brodda-Jansen, & Bohm-Starke, 2006), pelvic floor physical therapy (Goldfinger, Pukall, Gentilcore-Saulnier, McLean, & Chamberlain, 2009), topical use of oestradiol and testosterone compound (Goldstein, Burrows, & Goldstein, 2010) and vestibulectomy (surgery) (Landry, Bergeron, Dupuis, & Desrochers, 2008). Systemic interventions include tricyclic antidepressants (Reed, Caron, Gorenflo, & Haefner, 2006). Psychotherapeutic interventions include cognitive behavioral therapy focusing on reducing pain and improving sexuality (CBT: (Bergeron, Binik, Khalife, et al., 2001)). Topical lidocaine is currently recommended as an effective first-line intervention for PVD (Nunns et al., 2010; Reed, 2006; Ventolini, 2011). Two surveys confirmed that a local anesthetic and/or local measures including

lidocaine, are the most commonly used intervention (89% and 83.8% respectively), with 52% of physicians choosing lidocaine as a first-line therapy (Reed, Haefner, & Edwards, 2008; Updike & Wiesenfeld, 2005). Lidocaine is thought to act peripherally by reducing nociceptor sensitization (Foster et al., 2010). Zolnoun et al. hypothesized that long-term use of overnight topical lidocaine may minimize feedback amplification of pain, and their prospective study found that nightly applications of 5% lidocaine resulted in a significant pre- to post-treatment decrease in self-reported pain and an increase in intercourse frequency (Zolnoun, Hartmann, & Steege, 2003). A randomized trial comparing topical lidocaine and electromyographic (EMG) biofeedback showed that both treatments yielded significant decreases in vestibular pain pressure thresholds and improved sexual functioning (Danielsson et al., 2006). Using the tampon-test (i.e., change in pain experience during the insertion and removal of a tampon, on a scale of 0 to 10), a randomized, double-blinded, placebo controlled trial examining the differential efficacy of lidocaine and the tricyclic antidepressant desipramine, showed that none of the active treatment arms demonstrated significantly greater pain reductions than the placebo, with all treatment arms resulting in pre- to post-treatment pain decreases (Foster et al., 2010). However, the study design had limitations including a sample size smaller than statistically recommended, perhaps obscuring treatment effect. Further, 21-38% of women reported no sexual activity during the 12-week trial (Foster et al., 2010), suggesting that this sample may not be representative of partnered women who remain sexually active. Moreover, the tampon-test is not representative of the pain a woman experiences during intercourse. Given the multifaceted nature of PVD's etiology and impact, a treatment that can target pain and psychological, sexual, and relationship consequences, would have a presumed advantage over one targeting only biomedical aspects of PVD.

In the first randomized clinical trial (RCT) examining treatment for PVD, vestibulectomy demonstrated the most significant reductions in pain during intercourse at post-treatment, however, all interventions, including group-CBT, showed positive outcomes for sexual function and psychological adjustment (Bergeron, Binik, Khalife, et al., 2001). At 2.5 year follow-up, women assigned to CBT did not differ from those assigned to vestibulectomy in terms of pain during intercourse (Bergeron, Khalifé, Glazer, & Binik, 2008). Another RCT examining the efficacy of individual CBT for vulvar pain compared to a supportive psychotherapy demonstrated that CBT yielded significantly greater improvements in pain and sexual function from pre- to post-treatment, with gains maintained at one-year follow-up (Masheb, Kerns, Lozano, Minkin, & Richman, 2009). These findings suggest that CBT may yield a positive impact on more dimensions of PVD than does a first-line medical treatment.

A systematic review of PVD treatment studies concluded that because behavioral treatments yield comparable success to several medical interventions but with no negative side effects, CBT represents an encouraging non-invasive option that can target pain as well as psychosexual consequences experienced by the woman and her partner (Landry et al., 2008). However, CBT has been investigated successfully in a group and in an individual format, but never in a couple format for PVD, which is the most common and recommended way that CBT for sexual dysfunction is delivered in clinical settings, hence the form of CBT that is most representative of clinical reality (Meana & Jones, 2011).

The growing body of work focusing on the interpersonal aspects of PVD has led to the development of a novel, targeted cognitive-behavioural couple therapy (CBCT). CBCT was pilot-tested for feasibility and preliminary effectiveness, showing significant pre- to post-treatment improvements in pain during intercourse and sexual function for women with PVD, and sexual

satisfaction for both members of the couple (Corsini- Munt, Bergeron, Rosen, Mayrand, & Delisle, 2014). Therefore, the primary goal of the present RCT is to evaluate the efficacy of CBCT in comparison to one of the most commonly prescribed first line medical interventions, topical lidocaine, in their reduction of pain during intercourse at post-treatment. Secondary research goals include the examination of differences between the two treatments at post-treatment and 6-month follow-up on (a) the multidimensional aspects of women's pain, (b) women and partners' sexuality (sexual function and satisfaction, frequency of intercourse), (c) psychological adjustment (anxiety, depression, catastrophizing, self-efficacy, attributions and quality of life), (d) relationship factors (partner responses and dyadic adjustment) and (e) self-reported improvement and treatment satisfaction. Childhood trauma and co-morbid pain conditions are being considered as moderators of treatment response.

Methods/Design

Design

The present study is a bi-center trial using an intent-to-treat analysis strategy, designed to compare the efficacy of CBCT and topical lidocaine for the treatment of PVD. This design is based on previously conducted RCTs assessing treatments for PVD and recommendations outlined in the IMMPACT guidelines for chronic pain clinical trials (Dworkin et al., 2005). This trial is comprised of three evaluation points (pre-treatment, post-treatment and 6-month follow-up) carried out via structured interviews and online validated self-report questionnaires.

Research Sites

This research is supported by an operating grant from the Canadian Institutes of Health Research (CIHR), and has ethical approval from the Research Ethics Committee of the Centre Hospitalier de l'Université de Montréal (13.156) and IWK Research Ethics Board (1014930). The

study involves collaborations from researchers from the following institutions: Centre Hospitalier de l'Université de Montréal, the Université de Montréal, the IWK Health Centre, and Dalhousie University.

Participants

Participant eligibility criteria are described in Table 1. These criteria ensure recruitment of a homogeneous sample of sexually active women diagnosed with PVD. As part of the eligibility assessment, a comprehensive gynecologic examination is conducted based on a standardized protocol. This protocol, successfully used in previous a RCT (Bergeron, Binik, Khalife, et al., 2001), is outlined in Table 2. Women with PVD who present with a concomitant infection are treated and then asked to come in again to repeat the gynecologic protocol and determine eligibility.

Treatments

Cognitive-Behavioural Couple Therapy (CBCT). CBCT is delivered to couples over 12-weekly sessions of 75 minutes each. CBCT was adapted from Bergeron and colleagues Cognitive-Behavioural Pain and Sex Therapy (CBPST) manual (Bergeron, Binik, & Larouche, 2001) – a treatment manual outlining a CBT group-therapy for women with PVD – to include recent and pertinent findings about pain-related, sexuality, interpersonal and psychological factors associated with PVD. Throughout the study, CBCT therapists take part in weekly supervision sessions with a psychologist with training and expertise in CBCT for pain and sexuality. Adherence to the treatment manual is monitored via DVD recordings of therapy sessions, which are reviewed on an ongoing basis by the principal investigators. If any deviations are noted, therapists are given additional supervision. CBCT treatment outline of select interventions are provided in Table 3. No adverse reactions associated with CBT for PVD have been noted in the literature, yet all

participants are made instructed to contact research personnel should they experience any adverse events as part of treatment.

Topical lidocaine. Participants perform nightly applications of a 5% lidocaine ointment on the vulvar vestibule, at the entry of the vagina (50mg/g, Lidocaine ointment 5% USP Lidodan, Odan, tubes of 35g) for 12 weeks, as described by Zolnoun et al. (Zolnoun et al., 2003). In addition, the ointment is applied to a cotton square kept on the vestibule via the participant's underwear overnight to ensure continued 7 to 8-hour contact. Appropriate written and oral instructions are provided to participants – presented in Table 4. A research assistant conducts standardized weekly phone calls in order to monitor potential adverse events. Participants are instructed to inform research personnel if they experience any adverse reactions. Potential side effects of lidocaine include: skin irritation such as redness, itching, swelling, burning sensation, and prickling sensation.

Monitoring during treatment. Partner participation is an integral part of the study, independent of treatment arm. For CBCT, overall participant-treatment adherence is measured by monitoring attendance to CBCT sessions and by asking participants at each session to rate the frequency of weekly practice of homework exercises. Participants who attend less than 75% of sessions and do less than 50% of the homework exercises are considered non-compliant. These numbers are based on the fact that therapy sessions are an essential component of treatment whereas it is not clear up to what point homework contributes to outcome (Bergeron, Binik, Khalife, et al., 2001). Therapy attendance and homework completion are standard aspects of couple therapy, addressed actively by the therapist at each session, namely by providing a rationale for each homework exercise and problem-solving before and after taking part in the exercise. Missed therapy sessions are rescheduled at the convenience of the participants. In order to

empirically document therapists' adherence to the treatment manual (treatment reliability), two trained research assistants are independently viewing and coding a random sample of videotapes representing a quarter of all therapy sessions. For the topical lidocaine condition, the weekly phone calls to participants to monitor adverse events are also intended to facilitate compliance with the application and minimize the risk of drop-outs. Participants assigned to this condition also complete a daily diary to document the lidocaine application to determine treatment reliability. Participants who apply the lidocaine less than 75% of the total evenings comprising the treatment period are considered non-compliant.

Recruitment and Follow-up

Participants are being recruited via four centers, all specialized in the assessment and treatment of vulvo-vaginal pain: 1) Centre hospitalier de l'Université de Montréal, pavillon St-Luc, Clinique Vuva, directed by MHM, 2) Clinique A rue McGill, a sexual health clinic directed by MS, 3) the IWK Health Centre in Halifax where ID holds a general gynecology practice, and 4) the Queen Elizabeth II Health Sciences Centre in Halifax where ID directs a specialized gynecology-dermatology vulvar clinic. Additionally, women diagnosed with PVD during clinic visits with collaborating physicians are informed of the study and given the choice to participate after they have been fully informed of other available treatments. Additionally, announcements are being placed online and in Montreal and Halifax newspapers describing the study, and flyers and pamphlets are placed in other gynecology offices of both cities. Women agreeing to participate are asked to confirm their partners' participation and scheduled for a pre-treatment evaluation, including a gynecological examination. Both partners sign the consent form. Following satisfaction of inclusion and exclusion criteria, eligible couples are randomized to one of the two treatment options.

Randomization and Blinding

Randomization takes place shortly before treatment initiation (maximum two-week delay). Participants are screened across three levels (see Table 1) for eligibility criteria and data are entered in the electronic eligibility check web form created using Dacima^{TM} Clinical Suite. Participants meeting eligibility criteria are randomized to either CBCT or lidocaine, such that an approximately equal number of CBCT and lidocaine participants are obtained (i.e., individual level randomization is used with stratification by site). The randomization sequence was written to generate random permuted blocks with block sizes of four, six and eight to make the sequence difficult to predict without leading to a major imbalance in numbers between treatment groups if a block is incomplete at the end of recruitment. Participants found ineligible are excluded and marked as such. To keep interviewers and assessors blind to the treatment condition, participants are instructed not to reveal the treatment to which they were assigned at multiple time points: in the consent form, the information pamphlet provided at randomization and at the time of each assessment.

Outcomes and Moderators

Measures were selected based on the need to assess the multiple dimensions of PVD and the potential impact of treatments on these different dimensions.

Pre-treatment moderators.

Trauma, a potential moderator of treatment response, is assessed using the Childhood Trauma Questionnaire (CTQ), a 28-item self-report measure focusing on emotional, physical, and sexual abuse, as well as physical and emotional neglect in childhood (Berstein et al., 2003). Scores range from 5 to 25 for each type of abuse and a total severity scale can also be computed.

Co-morbid pain conditions, another potential moderator for participants with PVD, is assessed during the structured interview.

Primary outcome measure.

Pain during intercourse is assessed using a visual analog scale (VAS) ranging from 0 to 10, where 0 is no pain at all, and 10 is the worst pain ever, as recommended by the IMMPACT guidelines for chronic pain clinical trials (Dworkin et al., 2005). Participants report on average pain experienced in the preceding month. This measure has been shown to detect significant treatment effects in women with PVD (Bergeron, Binik, Khalife, et al., 2001) and demonstrates a significant positive correlation with other pain intensity measures. Pain during intercourse is the main symptom of PVD and the one that most interferes with quality of life, hence the most relevant measure of functional outcome.

Secondary outcome measures for participants with PVD only. Sociodemographic and vulvo-vaginal pain characteristics are assessed using a structured interview designed specifically for these purposes and successfully used in previous research (Bergeron, Binik, Khalife, et al., 2001). During this interview, self-reported monthly frequency of intercourse and co-morbid pain conditions are also assessed.

Pain is also assessed using the McGill Pain Questionnaire (MPQ) (Melzack, 1975), a measure of the sensory, affective and evaluative components of pain. The MPQ is a widely used adjective checklist, which assesses both qualitative and quantitative aspects of pain. The Pain Rating Index (PRI) of the MPQ scale is also being used.

Secondary outcome measures for participants with PVD and their partners. Partners are also asked to report on their own experiences, such as anxiety and depression symptoms. When measures relate to pain, such as pain catastrophizing and pain attributions, they are reporting on

their own catastrophizing and attributions about the woman's pain. The only exception is self-efficacy, where the partner rates his or her perception of the woman's self-efficacy vis-à-vis her pain symptoms.

Partner responses to pain from the perspectives of the women with PVD and their partners are measured with the West Haven-Yale Multidimensional Pain Inventory – Significant Other Response Scale (MPI) (Kerns, Turk, & Rudy, 1985), and the Spouse Response Inventory – Facilitative subscale (SRI); (Schwartz, Jensen, & Romano, 2005) which have been adapted to our PVD population and their partners. These include negative responses, solicitous responses, and distracting responses for the MPI and facilitative responses for the SRI. Internal consistency analyses show alphas ranging from .75 to .82 for each subscale of the MPI – partner and patient versions and of .87 for patient and partner versions of the SRI (Rosen et al., 2013). Factor analyses have confirmed that the structures of the adaptations to couples facing PVD are the same as that of the original questionnaires. The reliability and validity of both questionnaires have been widely reported (Kerns & Jacob, 1992; Kerns et al., 1985; Schwartz et al., 2005). A partner version of these scales has recently been validated (Sharp & Nicholas, 2000) and used successfully in recent studies (N. O. Rosen, S. Bergeron, B. Leclerc, B. Lambert, & M. Steben, 2010; Rosen et al., 2013). Each scale is analyzed separately.

Dyadic adjustment is assessed using the Couple Satisfaction Index (CSI), a 32-item measure of relationship satisfaction, which demonstrates strong convergent validity, and high precision and power for detecting distinctions in satisfaction levels (Funk & Rogge, 2007). Moreover, unlike similar relationship satisfaction scales, the CSI has been tested with a sample of participants spanning the relationship spectrum (e.g., dating, engaged, married).

Pain catastrophizing is assessed using the Pain Catastrophizing Scale (PCS) (Sullivan, Bishop, & Pivik, 1995), which consists of 13 items scored on a 5-point scale with the end points (0) *not at all* and (4) *all the time*. The PCS is divided into three subscales: rumination, magnification and helplessness. It is a reliable and valid measure that has demonstrated a stable factorial structure across clinical and general populations (Osman et al., 2000), and the validated partner version also shows excellent psychometric properties (2005).

Pain attributions are measured with the Extended Attributional Style Questionnaire (EASQ (Metalsky, Halberstadt, & Abramson, 1987)), adapted for use with women who experience genital pain, and their partners. The adapted EASQ consists of 12 hypothetical negative situations that occur within a genital pain context, and participants are asked to indicate the major cause of the situation (open-ended), and then rate the cause on the following dimensions: internal, global, and stable on a 7-point Likert scale. The EASQ adapted for genital pain demonstrates good internal consistency (alpha=0.84-0.86) for subscales and total score, as well as a similar factor structure to the original EASQ (Jodoin et al., 2011).

Anxiety is assessed using the Trait Anxiety scale (20-items) of the Spielberger State-Trait Anxiety Inventory (STAI – (Spielberger, Gorsuch, & Lushene, 1970)). The STAI is a 40-item, well-known and widely used measure of state and trait anxiety that has demonstrated very good psychometric properties across populations (Tanaka-Masumi & Kameoka, 1986).

Depression is measured via the Beck Depression Inventory-II (BDI-II), comprised of 21 items, with scores for most items ranging from 0 (low intensity) to 3 (high intensity) (Beck, Steer, & Garvin, 1988). This measure of depression has been validated for use in chronic pain populations (Turner & Romano, 1984).

Pain self-efficacy is assessed using the Painful Intercourse Self-Efficacy Scale (PISES; (Desrochers et al., 2009), which was adapted from the Arthritis Self-Efficacy Scale (Lorig, Chastain, Ung, Shoor, & Holman, 1989). The PISES consists of 20 items with three subscales: self-efficacy for controlling pain during intercourse, for sexual function, and for other symptoms. Participants indicate their perceived ability to carry out sexual activity or to achieve outcomes in pain management by responding on a scale from 10 (*very uncertain*) to 100 (*very certain*). Higher scores indicate greater self-efficacy. The reliability and validity of the original version have been established (Lorig et al., 1989) and the factor structure of the adapted version has been shown to be identical to that of the original (Desrochers et al., 2009). Partners complete an adapted version with reference to their beliefs about the woman's self-efficacy in the same situations.

Quality of life is measured using the Quality Metric™ Short Form 12-question Health Survey (SF-12). The SF-12 is a shortened version of the widely-used SF-36 health survey and assesses physical and mental health and wellness (Ware, Kosinski, & Keller, 1996). The IMMPACT guidelines for pain clinical trials recommend the assessment of quality of life (Dworkin et al., 2005).

Sexual function is assessed using the Derogatis Interview for Sexual Functioning - Self-Report (DISF-SR), a 25-item self-report measure of sexual function for men and women (Derogatis, 1997). It covers five dimensions of sexuality: sexual cognition/fantasy, arousal, sexual behaviour/experience, orgasm, and sexual drive/relationship. Scores can be calculated for each dimension and for global sexual functioning. The DISF-SR boasts good internal consistency and reliability (Daker-White, 2002; Derogatis, 1997).

Sexual satisfaction is assessed using the Global Measure of Sexual Satisfaction scale, which consists of 5 items assessing global sexual satisfaction. Internal consistency of this scale is high (alpha = 0.90), as is test-retest reliability ($r = 0.84$) (Lawrence & Byers, 1998).

Woman and partner self-reported improvement [scale of 0 (worse) to 5 (complete cure)] and **treatment satisfaction** [scale of 0 (completely dissatisfied) to 10 (completely satisfied)] are measured post-treatment and at 6-month follow-up to assess the clinical significance of results.

Data Collection and Management

Evaluation. Using the aforementioned measures, evaluations are conducted at three time points: (1) Pre-treatment (2) Post-treatment (immediately following the end of treatment) and (3) 6-month follow-up. Each time point includes a structured interview and online standardized questionnaires. The structured interview covers demographics, gynecologic history, and includes the measures of self-reported pain during intercourse, frequency of intercourse and co-morbid pain conditions. Participants are monitored for the use of other treatments at each evaluation. Self-report questionnaire data are collected using Qualtrics Research Suite online software, to allow for direct entry of participants' responses to questionnaires. Qualtrics servers are protected by high-end firewall systems, and vulnerability scans are performed regularly. Qualtrics can be used by entities that are required to comply with Health Insurance Portability and Accountability Act (HIPAA) privacy rules.

Compliance. In order to ensure maximum rate of participation in all follow-up evaluations, several strategies are being implemented: (1) participants are reminded of their appointments by a research assistant; (2) participants are asked to provide several points of contact, including phone number(s), e-mail address and mailing address for both women and partners, (3) participants are given a pamphlet highlighting the importance of their continued participation, (4) participants

receive a remuneration of $30.00 at each evaluation for their travel costs; and (4) follow-up appointments are scheduled at each participant's convenience (e.g., on evenings and weekends). These strategies are intended to increase compliance with each phase of the protocol.

Statistical Considerations

Sample size, power, and statistical analysis methods. Sample size calculations were based on realistic effect sizes and average pain reductions yielded by pilot work, previous clinical trials, and observations made during previous studies focusing on different treatments for PVD (Bergeron, Binik, Khalife, et al., 2001; Corsini- Munt et al., 2014). From the published pilot data testing CBCT, the data shows effect sizes as small as d = 0.32. Therefore, using an effect size d = 0.32 (f = 0.16), p. < 0.05, 2 groups, 3 times of measurement and a moderate correlation between repeated measures, a sample size of 124 is necessary to detect this effect with adequate power (95%) for this trial's primary and secondary research questions. Based on previous work, a potential drop-out rate of 27% at the 6-month follow-up has been added to the sample size calculation, resulting in a total sample of 170 participants (124/0.73). Sample size calculations were conducted using GPower 3.1.3 (Faul, Erdfelder, Lang, & Buchner, 2007).

Statistical analyses. Data storage and analyses is conducted using IBM SPSS 21.0 statistical software. The suitability of variables for analyses are first examined by inspecting the univariate and multivariate normality of distributions. An estimator suitable for multivariate abnormality is chosen if necessary (Robust Maximum Likelihood or Weighted Least Squared Estimators). Descriptive statistics of outcome variables are then compiled.

Primary analyses. In accordance with the intent-to-treat design, all participants in their randomized group are included for the primary and secondary analyses. As some attrition is possible in this longitudinal design, missing data is handled using the Full-Information Maximum

likelihood to allow the use of all data available, even incomplete cases. To attain the main objective, which is to compare the efficacy of CBCT versus lidocaine on pain during intercourse post-treatment, a piecewise growth curve modelling approach is used (Chou, Yang, Pentz, & Hser, 2004). In such a model, the change measured over time on the target variable is modeled within a growth curve where two stages are defined (as growth is expected to be different between pre- and post-treatment, than with the follow-up) instead of one like in a typical growth curve model. The dependant variable is then operationalized as the slope and intercept of those same variables for both stages. The model allows for testing the difference between the growth parameters in both treatment arms, and thus permits estimating the difference in change in both treatments with 95% confidence interval.

Secondary analyses. A similar strategy is used to assess the differences between treatment groups post-treatment and at 6-month follow-up for women and partners' sexuality (sexual function and satisfaction, frequency of intercourse), psychological adjustment (anxiety, depression, catastrophizing, self-efficacy, attributions and quality of life), relationship factors (partner responses and dyadic adjustment) and self-reported improvement and treatment satisfaction. A more conservative significance level (alpha of 0.01) is used to account for the increased number of analyses. With the addition of interaction terms, childhood trauma and co-morbid pain conditions are also planned to examine moderation of treatment response. Moreover, it is also planned to use the data from this trial for theory-testing, conducting exploratory analyses examining the extent to which changes in partner responses, catastrophizing and self-efficacy predict changes in pain and sexuality outcomes.

Ethical Aspects

This research study has been evaluated and approved by the respective ethics committees at each recruitment site. Research coordinators for each site are ensuring that the study is maintained in concordance with ethical standards of both sites. All potential participants are informed that their decision to participate or not has no impact on their medical care. Couples who choose not to participate, or who do not satisfy treatment eligibility criteria are referred for appropriate treatment if interested. Informed consent is obtained from all participants. The financial compensation that is offered to participants for their time at evaluation time-points was determined to facilitate attendance, but not to induce compliance. This trial is registered at clinicaltrials.gov NCT01935063.

Discussion

This is the first randomized evaluation of efficacy of a treatment option for PVD in which the partner is included. The study of interpersonal factors in the experience of PVD has been neglected when in fact it is the most 'interpersonal' of pain conditions. Limitations of previously published PVD treatment research include poor participant selection, limited follow-up and a dearth of RCTs (Danielsson et al., 2006; Foster et al., 2010). Few randomized studies have evaluated behavioural and cognitive-behavioural interventions (Bergeron, Binik, Khalife, et al., 2001; Masheb et al., 2009), particularly as compared to standard forms of care. The use of a RCT design will provide a rigorous test of efficacy and high level of evidence. The two interventions being evaluated, CBCT and topical lidocaine, were developed using empirical findings and previously established treatment procedures. Both treatment protocols are standardized to facilitate uniformity in delivery to all participants, and therefore improve treatment reliability.

However, there are some limitations to consider with the present study design. A separation of the psychosocial and biomedical approach to treating PVD contradicts recommendations made in the literature concerning a multimodal approach to care, yet this separation is necessary to determine the efficacy of each intervention and particularly important in the testing of the newly developed CBCT. Similarly, while a homogeneous sample of women with PVD who are sexually active may not be representative of all women and couples experiencing pain during sexual intercourse, it is the homogeneity that allows the interventions to target similar symptoms for all participants and the current sexual activity that allows for the assessment of the primary endpoint, pain experienced during sexual intercourse. Finally, this RCT does not utilize a double-blind procedure, or a control condition. Given the nature of the interventions being compared (psychosocial and biomedical), it is not possible for participants to be blinded to their assigned treatment. Comparing the CBCT to a "placebo therapy" is difficult to conceptualize and would not have been ethical as a "placebo therapy" would have required a substantial time investment from participants with potentially very limited benefits. And while wait-list control conditions were considered, it was thought to be unethical to withhold active treatment from women in pain.

This clinical trial addresses the urgent need for empirically validated treatments for PVD, the most frequent type of vulvodynia. The results will provide PVD couples with scientifically-based treatment options, which may allow them to reduce their pain and improve their sexual functioning, psychological well-being and relationship. Moreover, findings from this study may be applicable to populations coping with sexual dysfunction related to health concerns.

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Table 1
Eligibility Criteria

Level 1	Level 2	Level 3
Inclusion criteria **Participants with PVD** - Pain during intercourse which a) is subjectively distressing, b) occurs on 80% of intercourse attempts, and c) has lasted for at least one year - Pain limited to intercourse and other activities involving pressure to the vestibule - Sexually active as a couple in the last three months (not limited to but must include some attempted vaginal penetration) - Cohabiting and/or been a couple for at least 6 months and have at least 4 in-person contacts per week - Aged 18-45 years **Participants with PVD and Partners** - Read and write in English and/or French, with regular access to internet and email - Age: 18 years or older	**Inclusion Criteria** **Participants with PVD** - Significant pain in one or more locations of the vestibule during the gynecological exam, which is operationalized as a minimum patient pain rating of 4 on a scale of 0 to 10 - Diagnosis of provoked vestibulodynia (PVD)	**Exclusion criteria** **Participants with PVD** - Vulvar pain not clearly linked to intercourse or pressure applied to the vestibule - Presence of one of the following: a) active infection, b) vaginismus (as defined by DSM-IV), e) dermatologic lesion, f) pregnancy or planning a pregnancy, g) known allergy to lidocaine, and h) menopause. - Receiving treatment for PVD Participants with PVD and Partners - Presence of major medical and/or psychiatric illness in either partner - Receiving couple therapy

Note: Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV)

Table 2

Gynecology Examination Protocol

- Brief interview about past medical history, medication, and obstetrical/gynecological history, including painful intercourse
- A one digit single-handed palpation of the following areas: vagina, uterus and adnexa
- A standard bimanual palpation of the uterus and adnexa
- Physician to record participants' pain rating at each site on a scale of 0 (no pain) to 10 (worst pain ever)
- Physician to note any other physical findings, and note diagnosis

Table 3
CBCT Treatment Outline

Session	In-session interventions	Homework exercises
1	Discuss treatment expectations	Pain and sex journaling
2	Psychoeducation re: PVD	Mindfulness breathing
3	Communication: Disclosure and validation	
4	Identifying biopsychosocial factors influencing pain	Pain-localization
5	Role of anxiety for pain and sex	Kegel exercises (if appropriate)
6	Partner and woman responses to pain	Sensate focus
7	Redefining the sexual narrative	Dilatation exercises (if applicable)
8	Facilitating sexual desire and arousal	
9	Psychoeducation re: pain attributions	
10	Cognitive defusion and meditation	Cognitive defusion
11	Importance of self-assertion	Homework choice
12	Discussion: information learned and tools for the future	

Table 4

Lidocaine Application Instructions

At bedtime...

Step 1: First wash hands thoroughly then make sure that targeted region is also clean. Dry by dabbing region with a towel (avoid vigorously rubbing).

Step 2: Apply a small quantity of ointment (the size of a marble) directly on the vulvar vestibule (see the diagram on the next page). Next, fold the cotton gauze in 4 (to make a smaller square) and apply the same amount of ointment on the gauze (size of a marble).

You may want to use a mirror to help guide you.

Step 3: Cotton underwear may help keep the cotton gauze in place overnight while you sleep. You want to try to keep the lidocaine ointment in contact with the painful part of your vulvar vestibule for about 8 hours. Remove it when you wake up.

Step 4: Wash hands immediately to avoid spreading ointment on unwanted areas.

Step 5: Repeat these steps everyday for 12 weeks and fill out your *Daily Lidocaine Log* everyday!

Note: If you have to use the washroom during the night, repeat these steps to ensure that the ointment is present for the rest of the night.

General Discussion

Summary of Objectives

The overarching objective of this thesis and its three articles was to examine the role of relationship factors in etiology and treatment of the most common form of genito-pelvic pain – PVD. The study of PVD is at the intersection of sexuality, pain and interpersonal aspects of health and illness. As such, relevant literature from sexuality, pain and health psychology was included, as well as the application of a dyadic model to account for the interdependence of factors for couples. To examine social processes in psychology and health, models and analyses must move beyond the individual lens (Ackerman, Ledermann, & Kenny, 2010). Given the novel examination of the histories of childhood maltreatment for couples facing PVD and the inclusion of the partner in treatment, this research adds to the growing body of dyadic literature conducted with couples coping with sexual difficulties, pain and chronic illness (Rosen, Rancourt, et al., 2013), and addresses repeated recommendations to include the partner in research and treatment for genito-pelvic pain (Awada et al., 2014; Boerner & Rosen, 2015; Bois et al., 2015; Bois et al., 2013; Landry et al., 2008; Rancourt, Rosen, Bergeron, & Nealis, 2016; Rosen, Muise, Bergeron, Delisle, et al., 2015; Rosen, Muise, Bergeron, Impett, & Boudreau, 2015).

Article 1

Using the Actor-Partner Interdependence Model (APIM; Kenny et al., 2006), the first thesis article examined the associations between the couple's respective childhood maltreatment histories and their reported sexual functioning, psychological adjustment, couple satisfaction, and women's sensory and affective reports of pain during sexual intercourse. It was hypothesized that higher levels of childhood maltreatment would be associated with one's own and one's partner's decreased sexual functioning, lower couple satisfaction and increased anxiety. It was also hypothesized that women and men's childhood maltreatment histories

would be positively correlated with women's sensory and affective reports of pain.

Women and men's higher levels of childhood maltreatment demonstrated a significant association with their own lower sexual functioning, but not with the other's sexual functioning. Men's childhood maltreatment was negatively associated with their own couple satisfaction and with their female partners' couple satisfaction, but not women's childhood maltreatment. Men's increased childhood maltreatment was associated with increased anxiety for men and women, whereas women's childhood maltreatment was only associated with their own increased anxiety. Women and men's childhood maltreatment were both associated with increased affective pain during intercourse reported by women, but not sensory pain. These results highlight that both women and men's childhood maltreatment histories are associated with current functioning for couples with PVD. The results are consistent with trauma contagion theory (Maltas & Shay, 1995), also known as secondary trauma theory (Nelson & Wampler, 2000), which proposes that those close to the trauma survivor also experience psychological and emotional distress. The first thesis article underscores the importance of considering the trauma history of both members of the couple in the clinical context when working with couples with genito-pelvic pain, and more broadly, couples with sexual and relationship problems.

Article 2

The second thesis article addressed the application of a dyadic perspective to the treatment of PVD. Following repeated recommendations to include the partner in a psychological intervention for PVD, and based on accumulating evidence supporting the role of the partner in the experience of pain and associated sexual difficulties, such an intervention was developed. This intervention, CBCT, is a couple therapy that systematically includes the partner throughout treatment. Using a prospective pilot-study design, this study tested the potential effectiveness of CBCT in improving pain and sexuality outcomes. Additionally,

exploratory analyses were conducted to assess pre- to post-treatment changes in pain-related cognitions such as pain catastrophizing and pain self-efficacy, and psychological adjustment endpoints, such as depression and anxiety. Treatment reliability and feasibility were also assessed. Planned comparisons between pre-and post-treatment self-report measures indicated a significant decrease in women's pain during sexual intercourse, a significant increase in women's sexual functioning, and a significant increase in sexual satisfaction for both women and their male partners. Pain and sexuality are often the main outcomes in PVD treatment research (Bergeron et al., 2001; Masheb et al., 2009). The IMPACCT pain trial guidelines (Dworkin et al., 2005) recommend assessing both pain during the activity with which it interferes the most, and the main area of functioning that is impacted by the pain – sexual functioning in the case of PVD. The significant improvements in pain and sexuality outcomes found in the pilot study represented the first step in demonstrating potential effectiveness of CBCT. However, CBCT was also designed to address pain-related distress for the individual members of the couple and for the couple as a whole.

Exploratory analyses revealed decreases in pain catastrophizing for both women and their male partners and increases in women and men's perception of women's pain self-efficacy. Given demonstrated associations between pain and pain cognitions, such as pain catastrophizing and pain self-efficacy, in women with PVD (Davis et al., 2015; Desrochers et al., 2009) and among other pain patients (Severeijns, Vlaeyen, van den Hout, & Weber, 2001), the concurrent improvements in pain and pain-related cognitions in the pilot study are consistent with the PVD and broader pain literature. Exploratory analyses also revealed decreases in psychological distress, specifically decreases in depression and anxiety, and modest increases in couple satisfaction for women and their male partners. Based on the effect sizes, the results described in the second thesis article conform with and surpass those of previous treatment research assessing CBT for women with PVD (Bergeron et al., 2001;

Masheb et al., 2009). However they warrant replication in a larger-scale trial. In addition to providing pain management strategies for women with PVD, CBCT may have yielded reductions in pain by providing couples with information about the multifactorial nature of pain, allowing identification and navigation of pain modulators, such as anxiety and depression (Khandker et al., 2011; Nylanderlundqvist & Bergdahl, 2003), and pain attributions (Jodoin et al., 2008, 2011). CBCT may also have helped the couple join together in addressing pain-related behaviours, cognitions and emotions that trigger and maintain pain, sexual impairment and psychological distress. Therefore, CBCT may have offered strategies to experience closeness in the relationship, and practice empathy and perspective-taking, helping the partner understand the woman's pain experience (Goubert et al., 2005) and helping women understand the partner's experience. Moreover, the third generation CBT framework included in CBCT may have promoted acceptance of the pain problem, which is associated with positive pain and psychological outcomes among other chronic pain populations (Vowles, McCracken, & Zhao O'Brien, 2011). In addition to demonstrating improvement in target outcomes, CBCT also demonstrated high treatment reliability, reasonable treatment adherence (i.e., treatment attendance and homework completion), and high treatment satisfaction reported by participating couples. Results suggest that CBCT is a promising treatment for couples coping with PVD. However, future testing would benefit from a comparison, as well as longer-term follow-up.

Article 3

The third thesis article described the research protocol for a randomized clinical trial (RCT), and thus built upon the findings yielded by the second thesis article. In this ongoing trial, eligible couples are randomized to one of two treatment options, either CBCT or topical lidocaine. This article outlined the rationale for using the RCT design, citing the dearth in randomized trial designs in the area of PVD treatment research (Landry et al., 2008) and the

importance of comparing a newly developed treatment to a first-line medical intervention, given how few treatment options for PVD are empirically validated. The RCT design provides a rigorous framework to test efficacy and a high level of evidence. This protocol addressed previous limitations of varied patient selection (Danielsson et al., 2006; Foster et al., 2010) by using detailed eligibility criteria to select a homogeneous population of couples with PVD and a low probability of presenting with other health and mental health difficulties. Additionally, randomization helps control for self-selection bias. Target outcomes were chosen based on their empirically established association with PVD. Maintaining important empirical standards, the two interventions being tested, CBCT and topical lidocaine, were developed drawing from empirically-based recommendations and results, as well as integrating previously established treatment regimens (Bergeron et al., 2001; Morin et al., 2016; Zolnoun et al., 2003). For the purposes of the RCT, future replication and clinical uptake, both treatment protocols were standardized to promote treatment reliability, and were structured for delivery across a period of 12 weeks. This third thesis article was included to highlight the process of CBCT development and testing, with the goal of determining and providing empirically validated treatment options for couples with PVD.

Implications

Given that both women with PVD and their partners experience the negative consequences generated by PVD (Pazmany et al., 2015; Rosen, Rancourt, et al., 2013; Smith & Pukall, 2011, 2014), the use of dyadic models is important to shed greater light on etiologic and therapeutic processes. Kenny, Kashy & Cook (2006) describe the standard dyadic design as one where data are collected from dyads where the interaction between the dyad is the focal point, such as couples. The most widely used dyadic model of analysis, APIM (Kenny et al., 2006), takes into account the correlation between a predictor variable and the individual's own outcomes (i.e., the actor effect) and the relationship between an individual's predictor variable

and their partner's outcomes (i.e., the partner effect). The actor and partner effects discovered in the first thesis article highlight the importance of continued application of dyadic analysis to PVD and other sexual dysfunctions. The results confirm that genito-pelvic pain should be seen as a couple's problem, and not just a woman's problem.

In addition to having applied a dyadic model of health to enrich etiological understanding, this thesis built upon the dyadic research previously conducted with couples facing PVD by integrating its findings to inform the three completed manuscripts. Therefore, the present doctoral work yields implications for how couples with PVD might be assessed for trauma antecedents and how the inclusion of the partner in treatment can contribute to clinical improvement for both members of the couple.

Implications: Childhood maltreatment and sexual functioning. In the first article, a significant association was found between childhood maltreatment and each partners' decreased sexual functioning. This finding is consistent with the body of research that has identified links between childhood maltreatment (abuse and neglect) and decreased sexual functioning in clinical samples presenting at a sex therapy clinic (Berthelot et al., 2014) and in a population-based sample (Najman, Dunne, Purdie, Boyle, & Coxeter, 2005). Sexual self-schema, or one's perception of oneself in relation to his or her own sexuality, have been identified as a potential mediating mechanism of the association between childhood sexual abuse and negative emotional states experienced during adult partnered sex (Meston, Rellini, & Heiman, 2006). The disrespect of personal boundaries and negation of one's needs inherent in abuse and neglect may contribute to developing negative attitudes and feelings about one's body (Didie et al., 2006). Furthermore, the severity or accumulation of childhood sexual abuse has shown associations with the symptom severity of adult onset sexual difficulties (Berthelot et al., 2014; Briere, Kaltman, & Green, 2008), and childhood neglect is theorized to potentiate the impact of childhood sexual and physical abuse on later sexuality development (Zoldbrod,

2015). Taken together, the implication is that higher levels of childhood maltreatment are associated with worse outcomes. The finding that childhood maltreatment is associated with impaired sexual functioning among couples with PVD is also consistent with results of a study conducted in women with GPPPD (Leclerc et al., 2010), although partners were not included. The results showed that women who experienced childhood sexual abuse that included penetration reported poorer sexual functioning, increased psychological distress, and that when they perceived a link between their pain and past sexual abuse, they also reported lower sexual functioning (Leclerc et al., 2010). Moreover, this association corroborates similar patterns found in clinical and non-clinical samples (Berthelot et al., 2014; Bigras, Daspe, Godbout, Briere, & Sabourin, 2016; Rellini, Vujanovic, Gilbert, & Zvolensky, 2012), which indicate that childhood maltreatment is associated with sexual dysfunction.

Couples with PVD are at once facing a sexual difficulty and a pain condition, and therefore already may exhibit feelings of guilt, shame and injustice, or negative feelings about their bodies (Ayling & Ussher, 2008; Maillé et al., 2014; Paquet et al., 2016) – women for experiencing pain, and men for being the potential cause of the pain. Therefore, PVD treatment must already assume sensitivity to women's potential negative attitudes about their sexuality and body, given that certain treatment strategies may induce or augment feelings of embarrassment and shame, or be met with resistance. The aforementioned associations between childhood maltreatment and decreased sexual functioning for couples with PVD underscore the importance of adapting sexual therapy treatments to patients' history of maltreatment, as well as the importance of assessing the partners' trauma or maltreatment histories, even when there is an identified patient. Traditionally, women with PVD have been treated on their own because they are the ones experiencing pain symptoms. The growing body of dyadic research supporting the role of the partner in women's pain and associated sexual difficulties for both members of the couple, as well as the partner's distress underscore the need to involve the

partner in treatment (Pazmany et al., 2014; Smith & Pukall, 2014). Adapting treatment and assessment to a history of maltreatment might include breaking down certain interventions into smaller gradual steps, taking a progressive approach, and incorporating more emotion regulation skills, with special emphasis on the therapeutic relationship, given trust may be more difficult to establish with victims of childhood maltreatment (MacIntosh & Johnson, 2008). An example of adapting treatment to sexual abuse survivors in particular is body-mapping, which asks patients to identify zones of their body that trigger discomfort, and these zones are respected with the exercises assigned to the individual or couple (Zoldbrod, 2015).

Implications: Childhood maltreatment and pain. This thesis identified a link between women and men's childhood maltreatment and women's affective pain ratings, but not sensory pain. Previous research among women with GPPPD did not identify associations between pain ratings and childhood sexual and physical abuse (Leclerc et al., 2010), yet this study did not separate sensory from affective pain. Affective pain is distinct from sensory pain in that it captures the emotional valence or unpleasantness associated with pain versus its quantitative or intensity aspects (Price, 2000). The empathy model of pain describes a process whereby the observer's responses to pain are influenced by empathic understanding of the pain, or by the bidirectional interaction of his emotional reaction to, and his knowledge about, the pain (Goubert et al., 2005). Applied to PVD, this model dictates that the partner's knowledge of the woman's pain experience will influence how he feels about her pain, and how he feels about her pain will have an impact on his knowledge. For example, a partner unaware of the woman's pain will not have an emotional response, or his emotional response may limit how he can understand the pain or attend to it. The partner's knowledge of the pain experience is influenced by the shared knowledge and experience of the pain within the couple, comprised of the partner's previous experiences with pain and cues from the woman about her pain, such as facial and verbal pain expressions (Goubert et al., 2005). The affective component of pain

becomes particularly important when the pain occurs in the intimate context of the couple's sexuality, an area where both individuals often feel vulnerable. Therefore if a history of childhood maltreatment is associated with increased affective pain, and the pain occurs within a context where there is a higher potential for emotional reactivity, knowledge about maltreatment history becomes particularly important. Knowing about the childhood maltreatment histories of both partners may cue the treating clinician to target pain unpleasantness in addition to pain intensity. This is consistent with recommendations in the general pain literature, which encourage clinicians and researchers to move beyond the use of a one item scale of pain (i.e., pain measured on a scale of 0 to 10) to include qualitative descriptions and distress associated with pain (Younger, McCue, & Mackey, 2009).

Implications: Women's childhood maltreatment and male partners' outcomes. As demonstrated by this thesis, there is an association between women and men's childhood maltreatment histories and their own increased anxiety. As outlined, this is consistent with how childhood trauma is correlated with increased psychological distress (Penza, Heim, & Nemeroff, 2003), and with secondary trauma theory, which underscores associations between psychological distress and the trauma experienced by one's romantic partner (Nelson & Wampler, 2000). However, there were no partner effects found for women's childhood maltreatment. Specifically, men's childhood trauma demonstrated an association with women's anxiety but women's childhood maltreatment did not show a significant association with men's anxiety. While this might be understood from the higher rates of anxiety and pain hypervigilance among women with PVD (Khandker et al., 2011; Payne et al., 2005), it might also be understood through the trauma literature. Gender differences in trauma disclosure are such that men are less likely to disclose, and take a longer time to discuss, past childhood abuse than women (O'Leary & Barber, 2008), which implies that male childhood abuse survivors may be less likely to seek treatment and may ask more of their female partners, thus

contributing to women's anxiety. In terms of clinical implications, the findings seem to repeatedly reinforce the need to assess both partners when interacting with a couple. Moreover, this finding points to the possibility that women's psychological distress is related to factors other than the pain. This represents an important distinction for future research to examine when reporting on psychological distress among women with PVD.

Similarly, no partner effect was found between women's childhood maltreatment and men's couple satisfaction. This result is consistent with the stronger association found between men's childhood maltreatment and their own marital dissatisfaction, compared to women (DiLillo et al., 2009). DiLillo and colleagues (2009) identified potential mechanisms through which husband's decreased marital satisfaction was mediated, such as decreased sexual activity, more severe trauma symptoms and increased aggression. While couples with PVD do not report significantly more relationship dissatisfaction than couples without PVD (Reed et al., 2000; Smith & Pukall, 2014), the relationship distress reported by couples with PVD may not always relate back to the PVD, or identified problem. The results of this thesis add to the growing body of research highlighting the multifactorial nature of PVD. The differences in the partner effects of childhood maltreatment point to the continued importance of applying dyadic analysis to studying couples with genito-pelvic pain.

Implications: Including the partner in treatment. The results of the second article of this thesis demonstrated that CBCT is a potentially effective form of treatment for couples with PVD. The 51% decrease in pain during sexual intercourse from pre- to post-treatment surpasses the clinical difference threshold of 30% recommended by the IMMPACT guidelines for pain clinical trials (Dworkin et al., 2005). Coupled with the self-reported improvement reported by couples following treatment (i.e., moderate to complete resolution), it is clear that CBCT resulted in pain improvements – matching or outperforming pain improvements reported in other studies examining CBT for PVD (Bergeron et al., 2001; Brotto et al., 2014; Masheb et al.,

2009). While CBCT shares pain management strategies with other CBT protocols (e.g., psychoeducation, relaxation training), CBCT distinguishes itself from other treatment regimens by including the partner and asking the couple to work together to better understand and face the PVD and its impact on their sexuality. Again, consistent with previous treatment research (Bergeron et al., 2001; Masheb et al., 2009), CBCT resulted in significant increases in women's sexual functioning, which highlights that targeting sexual functioning in addition to pain management allows CBCT to take a multi-angled approach to clinical improvement.

Another marker of clinical improvement was the reported significant increase in sexual satisfaction by both women and their male partners, indicating significant increases in their subjective sexual pleasure. Assessing sexual satisfaction for both partners carries important implications regarding the shared pleasure associated with sexuality. Treating the couple together allows the couple to disclose feelings, concerns and preferences in the presence of the other, and therefore work in concert on their sexuality, starting in-session. This is consistent with an examination of intimacy among couples with PVD, in which it was demonstrated that women and partners reported higher sexual satisfaction when they perceived greater disclosure from their partner (Bois et al., 2015). CBCT extends the focus of treatment beyond symptom management and functioning. In treating the couple together, the subjective pleasure of each member of the sexual dyad can be addressed.

In terms of the exploratory analyses conducted as part of the pilot study, the marked improvement in pain-related cognitions, pain catastrophizing for both members of the couple and pain self-efficacy reported by both women and men, provided further evidence of the potential effectiveness of CBCT. Pain catastrophizing is a theorized form of coping (i.e., Communal Coping Model) by which the individual expresses one's pain to another to solicit closeness, support and empathy (Sullivan, Martel, Tripp, Savard, & Crombez, 2006; Sullivan et al., 2001). Working with both members of the dyad allows for the direct targeting of the

couple's communication patterns and support needs in relation to the pain, and may have helped couples develop more adaptive ways of coping with the pain together, as a unit.

The aforementioned decreases in depression and anxiety presented in the second article signify the potential of CBCT to reduce psychological distress. PVD, like other forms of pain, is associated with decreased psychological adjustment (Bergeron et al., 2014; Desrochers et al., 2008). This research builds on that integrating partners in other populations and for other difficulties, such as targeting relationship factors among women with hypoactive sexual desire disorder (Trudel et al., 2001) and among breast cancer patients (Baucom et al., 2009), intimacy for prostate cancer patients (Manne et al., 2011), and posttraumatic stress disorder (PTSD) symptoms and relationship satisfaction for patients with PTSD (Monson et al., 2012). In addition to including the partner to better target outcomes for the identified patient, improvement in partners' outcomes found in the pilot study suggest that the inclusion of the partner may have the added benefit of addressing his/her distress as well. Results from pilot testing indicated that outcomes for both women and partners could be addressed.

Implications: RCT design. Few treatment options discussed in the genito-pelvic pain literature are empirically validated, and therefore this RCT addresses the urgent need to provide evidence-based treatments to women and their partners. Commonly touted as the "gold standard" in evidence-based medicine (Meldrum, 2000), the randomized clinical design has been criticized for trading in relevance for control (Grossman & Mackenzie, 2005; Kaptchuk, 2001). However, it is precisely the rigor and control in its design that contributed to the importance of applying it to the examination of treatment efficacy for couples with PVD. Moreover, this specific RCT boasts considerations made to preserve ecological validity while maintaining internal validity when possible. However, in favoring internal validity, there is often a risk to external and ecological validity. Specifically, the choice of topical lidocaine represented a decision to offer a comparison group representative of the treatment options most

often available and prescribed to women with PVD. Therefore, the use of this comparison group intends to provide pertinent data regarding the efficacy of the newly developed intervention, CBCT, in comparison to an often-prescribed intervention for PVD, thus preserving ecological validity. Internal validity is preserved by the use of randomization between groups. This helps manage potential biases such as self-selection to psychosocial interventions versus biomedical interventions, and allows for determining which couples are most benefitted by which form of treatment. Internal validity is further protected by the RCT's use of treatment protocols, which dictates parameters for the administration of CBCT and topical lidocaine for future replication and to provide clinicians with direct access to the treatment protocol. Moreover, the intention-to-treat analysis used in the RCT design further promotes internal validity by avoiding the artifact of participants dropping out of one intervention more than the other. Finally, treatment outcomes were selected based on their functional relevance for the patients, such as pain during intercourse and sexual function. The consideration of internal versus ecological validity underscores the balance involved in clinical research, where method and protocol must be preserved but a conscious consideration of how the results will be applied to real-life treatment settings must not be forgotten.

Contributions

By drawing from dyadic conceptualizations of trauma (e.g., Nelson & Wampler, 2000), the growing body of PVD research that includes interpersonal factors (Rosen, Rancourt, et al., 2013), and models that focus on the social context of pain (Goubert et al., 2005; Sullivan et al., 2001), this thesis integrated dyadic theory from several fields of research to address clinically and theoretically relevant questions in the area of genito-pelvic pain. This integration represents an important contribution to the study and treatment of PVD, and more generally to couples living with a pain condition or a sexual difficulty. Similarly, the results of this thesis provide support for broadening intra-individual models of pain (Keefe, Rumble, Scipio, Giordano, &

Perri, 2004), childhood maltreatment (Davis & Petretic-Jackson, 2000), and sexuality (Dewitte, 2014). Including the social context within which these phenomena occur has been recommended in these distinct literatures for the last decade. Specifically, Keefe and colleagues addressed the psychological, behavioral and psychosocial factors associated with persistent pain, and identified the inclusion of the spouse or partner in chronic pain treatment protocols as beneficial not only to the pain patient but for the spouse (Keefe et al., 2004). Similarly, drawing from a review of the literature, Davis and Petretic-Jackson recommended that researchers consider interpersonal consequences, such as intimacy and sexuality, for survivors of childhood abuse (Davis & Petretic-Jackson, 2000). Further, Dewitte (2014) proposed models of sexuality which include emotion regulation processes and interpersonal features as determinants of sexual functioning. Emotion regulation was presented as an avenue for understanding motivational components in one's sexuality, and partner features (e.g., partner responses) were considered as interactive determinants of sexual functioning. Dewitte's review of empirical research and sexuality theory urged researchers to consider the interpersonal aspects of sexuality both in conceptualization by considering the partner's role, and in units of analysis by collecting data from both members of the dyad (Dewitte, 2014). Indeed, the woman with genito-pelvic pain, individual with a history of trauma or the person with a sexual difficulty exists in and in interaction with the interpersonal context. This thesis thus provides a timely response to models proposing the inclusion of the partner in the conceptualization and treatment of genito-pelvic pain and other sexual, pain and health problems.

The main methodological contribution of this thesis is the initial empirical testing of a novel treatment for genito-pelvic pain, a condition at the intersection of pain and sexuality for which there are few empirically validated treatment options. This is particularly true for the treatment of sexual difficulties given that empirically validated treatments are scarce (Gunzler & Berner, 2012).

Additionally, as the overarching goal of the thesis was to take a dyadic perspective, it contributes to the growing trend to challenge the status quo and include the partner in pain and sexuality research, where the focus is often placed on the individual (Bergeron, Rosen, & Morin, 2011; Rosen, Rancourt, et al., 2013). In Article 1, the APIM analyses considered women and their male partners as the unit of statistical analysis and the interdependence of the data given the likelihood of co-occurrence of trauma histories in couples (Nelson & Wampler, 2000). Collecting and analyzing data from both members of the couple provides a holistic understanding of what influences sexual and psychological wellbeing for women with PVD and their partners.

Articles 2 and 3 represented Phases II and III of CBCT's clinical testing, and therefore contribute to PVD treatment research by setting a standard for the requisite steps to determine the efficacy of a newly developed treatment protocol. Similarly, this thesis adhered to recommendations from the pain treatment literature (IMMPACT; Dworkin et al., 2005), and extended the regular endpoints beyond pain and functioning to include partner variables, and variables approximating subjective pleasure such as sexual satisfaction. This thesis also considered the couple in all phases of planning and assessment, by applying eligibility criteria to partners and including endpoints for women and partners. Given the intersectionality of genito-pelvic pain, this thesis contributed to several fields of study.

Women and men's childhood maltreatment histories demonstrated associations with current functioning and adjustment for women *and* partners. Therefore, in terms of clinical contributions, this thesis provided empirical evidence suggesting that the assessment of childhood trauma histories is important to conduct with both members of the couple. This is particularly important because assessment informs the clinician's decision-making regarding treatment recommendations. The pilot study demonstrated that including the partner is feasible and shows promising effectiveness. When couple factors are made known to treating clinicians,

referral for a psychological intervention including both members of the couple may be warranted. Moreover, the findings of this research point to the importance of signaling clinicians to assess and attend to the interpersonal domain of women presenting with genito-pelvic pain. This contribution may extend beyond the demonstrated benefits for couples with PVD, highlighting the value in including both members of the couple when conducting sex therapy aimed at improving their shared sexuality, rather than solely focusing on one member of the couple. Just as sex therapy is a recommended part of couple therapy (McCarthy & Thestrup, 2008), couple therapy might also be recommended as a part of sex therapy. Unfortunately, very few models of integrated sex and couple therapy exist, with a few notable exceptions, such as Schnarch's Sexual Crucible approach (Schnarch, 1991) and Metz and McCarthy's Good-Enough Sex model, which identifies the couple as a team in their sexuality (Metz & McCarthy, 2007). Future research might examine the adaptation of the CBCT protocol to other sexual difficulties, or health conditions impacting the couple's sexuality.

Limitations

The three articles comprised in this thesis have certain methodological limitations. Across all three papers, homogeneous samples of sexually active couples with PVD were recruited and this may not be representative of all couples experiencing genito-pelvic pain. While the homogeneity permits targeting similar symptoms across participants and ensures internal validity, it may limit generalization of the findings. Moreover, despite eligibility criteria being inclusive of same-sex couples, the samples in Articles 1 and 2 included only heterosexual couples. Therefore, generalization of the findings may be limited to heterosexual couples. Further, given the clinical focus of the studies, all couples were seeking treatment and prepared to engage in a couple's psychological intervention for PVD. Therefore, couples unwilling to participate in a couple therapy or women not prepared to start treatment for PVD were not included in this research. On one hand this offers insight into the associations relevant to draw

clinical implications for couples seeking treatment, and on the other hand the results and interpretations may not generalize to all couples living with PVD. In fact, 30-48% of women with PVD-like symptoms do not seek treatment (Harlow et al., 2014). Moreover, both empirical studies included small sample sizes, necessitating replication of the associations with childhood maltreatment in larger samples, and large-scale testing of CBCT. There are limits to the conclusions that can be drawn from pilot studies (Lancaster, Dodd, & Williamson, 2004; Leon et al., 2011), however, a pilot study represents a necessary step (Phase II) to confirm potential effectiveness of a treatment to address target outcomes, as well as an opportunity to examine feasibility of its administration before going on to Phase III efficacy studies, such as the one described in the third article.

In the first thesis article, childhood maltreatment was retrospectively reported, and the methodology remains correlational, and therefore cannot specifically determine directions of causality and effects of memory bias. Given recent correlations between intimate partner violence and GPPPD found among a sample of postpartum women (McDonald, Gartland, Small, & Brown, 2015), future research should include longitudinal designs and the inclusion of other forms of trauma. In the second thesis article, pilot testing of CBCT did not include a comparison group and thus this study was not able to determine if couples would have demonstrated similar improvements with another intervention, or with no intervention at all. There is evidence to suggest that, independent of treatment, women's symptoms improve over time (Davis et al., 2013). While the RCT protocol addresses limitations of the pilot study, it also presents limitations. These limitations include the separation of the psychological from the biomedical in terms of treatment. This contradicts recommendations in the literature to use a multimodal approach (Bergeron et al., 2015), yet is a necessary step to determine the effects of each treatment option separate from other active therapeutic factors. Moreover, the nature of the two treatments being compared does not allow for blinding participants and use of the

double-blind procedure. Lastly, the RCT did not utilize a placebo - or wait-list – control because it was deemed unethical to require couples participate in a "placebo-therapy" or for treatment to be withheld when active treatments were available. This limits the examination of the potential placebo effect of providing any form of intervention to couples with PVD.

Conclusion

This thesis furthered the understanding of the dyadic associations between childhood maltreatment and current functioning of couples with PVD. Specifically, it highlighted that childhood maltreatment of both the patient experiencing sexual dysfunction and his or her partner are important in conceptualizing the presenting sexual difficulties, psychological and interpersonal distress, and in planning the appropriate course and pace of treatment. This thesis also extended treatment considerations beyond the intra-individual lens currently utilized in genito-pelvic pain, and more broadly, in sex therapy and research. The development of CBCT represents the timely integration of a growing body of research highlighting the importance of the interpersonal context of pain and sexuality, and the necessity to target outcomes for the woman, her partner and the couple. In doing so, this thesis examined sexuality and sexual dysfunction as shared within the couple. CBCT appears to be a beneficial and potentially effective form of treatment for PVD that is tolerated well and yields high satisfaction ratings, and patient-reported clinical improvement. Given its capacity to address outcomes beyond pain reduction, CBCT represents an important contribution to the potential treatment of couples living with genito-pelvic pain. The RCT protocol/study constitutes a significant contribution to the field of genito-pelvic pain, as well as to the field of sexuality, where rigorous assessment of treatment is sorely lacking. The RCT holds the ongoing investigation of CBCT to a rigorous standard. This thesis demonstrated that a dyadic approach to the understanding and treatment of genito-pelvic pain is warranted, feasible and effective.

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Appendix A

Cognitive-Behavioral Couple Therapy (CBCT)

Treatment Manual

Serena Corsini-Munt, M.A., Natalie O. Rosen, Ph.D., & Sophie Bergeron, Ph.D.

This manual was adapted from Bergeron and colleagues Cognitive-Behavioral Pain and Sex Therapy (CBPST) manual (Bergeron et al., 2001), a validated and widely used psychological treatment modality for women with provoked vestibulodynia (e.g., Bergeron, Rosen & Pukall, in press). Relevant elements from Trudel and colleagues' empirically-tested group couples-based intervention for HSDD (Trudel et al., 2001; Trudel et al., 1996) were considered to aid with this manual's structure. Recent research regarding interpersonal factors relevant for couples struggling with provoked vestibulodynia were utilized to develop intervention components. The past decade has seen an increase in research focusing on dyadic factors for couples experiencing pain during sexuality activity, and the interventions included in this manual take these findings into account. Moreover, reflecting recent successful research and practice with pain patients and couples, elements from Acceptance and Commitment Therapy (ACT), a cognitive-behavioral approach, have also been incorporated into this manual.

The authors of the CBCT Treatment Manual would like to express their extreme gratitude to Sheila MacNeil, PhD, for the insights she has shared with us to help refine this treatment manual.

Introduction

Cognitive-Behavioral Couple Therapy (CBCT), which targets pain and sex for the couple, is comprised of two major therapeutic approaches: cognitive-behavioral pain management, and sex therapy for couples. This targeted intervention is unique in its intention to include the partner in treatment for provoked vestibulodynia (PVD). This treatment should be considered and implemented only after diagnosis of PVD by a trained gynecologist.

This treatment protocol involves 12 treatment sessions conducted over 12 weeks. The personnel required include a clinician with familiarity and expertise with Cognitive-Behavioral Therapy (CBT) for pain management and sexual difficulties specific to PVD. Each session will last approximately 50 minutes. CBT has been demonstrated as an effective individual and group therapy for women with PVD (Bergeron et al., 2001; Masheb, Kerns, Lozano, Minkin & Richman, 2009), and couple-focused CBT has been demonstrated as an effective treatment for couples with sexual dysfunctions (Trudel et al., 2001; Hurlbert, White, Powell & Apt, 1993). Moreover, aspects of Acceptance and Commitment Therapy (ACT) have been built into this treatment manual. ACT as a treatment for chronic pain patients has demonstrated significant improvements in pain, and social and physical functioning (McCracken, Vowles & Eccleston, 2005).

Clinicians working with couples experiencing sexual impairment must be comfortable broaching and discussing sexuality and related issues, particularly relational contexts and pain experienced during intercourse. Moreover, clinicians working with couples experiencing PVD should also be familiar with basic psychological pain management interventions (Landry, Bergeron, Dupuis & Desrochers, 2008). During the course of this treatment, the clinician will be supervised weekly with one of the study supervisors.

Therapeutic process

Given the intention to evaluate the efficacy of this treatment manual, it is important that the clinician adhere to the goals and 'session by session' instructions described below. Clinicians are encouraged, however, to use clinical judgment and flexibility in adapting to each couple, such that they tailor the treatment to the couple's experience (e.g., spending more, or less time on certain topics).

Each clinician will conduct her or himself ethically and professionally, as indicated by their professional guidelines. Moreover, each clinician will respect the following guidelines:

1) Engender rapport and a collaborative working relationship with both members of the couple.
2) Use targeted interventions that support each member of the couple, and the couple as a unit (e.g., praise adherence and progress, and validate after each partner reveals or discloses something).
3) Clarify misconceptions and misunderstandings regarding pain, sex and the relationship by highlighting and discussing them.
4) Use the couple's experiences as examples or illustrations of various concepts introduced in treatment (e.g., how thoughts can influence pain perception).
5) Validate and challenge both partners' perspectives on the woman's pain experience (e.g., "It is completely normal to feel that way, many others report feeling that way…" and "What would be another way of thinking or interpreting the problem?").

Therapeutic frameworks

- CBT, as used for managing chronic pain, aims at changing behaviors, thoughts and emotions with the overall goal of improving the patient's functioning. CBT serves to help lessen the impact pain can have in the person's life, and therefore can often result in reducing perceived pain (Thorn & Dixon, 2007).
- ACT shares many of the principles of CBT, but extends them to help the client to use acceptance as a form of coping with their difficulties, to determine their values, and to act in concordance with these values. ACT involves providing support to the client to help achieve this goal.

Working with couples

Working with couples can be challenging given the multiple relationships that the clinician must contend with during therapy. One must respect the relationship between the members of the couple, the relationship the clinician establishes with the couple, and with each member of the couple. Three preliminary principles have been proposed to help the clinician treating couples in distress (Meana, 2010):

1) The clinician should help the couple accept that there are things outside of their control and may not be changed during therapy. Finding points of accordance and promoting acceptance will help unite the couple.
2) The clinician should engender the notion that each partner take responsibility for their current distress. They share in the problem and its consequences.
3) The clinician can be an agent for positive change. By modeling validation, acceptance and empathy towards each member of the couple, the clinician can promote hope and help the couple develop the skills to change.

The overarching goal of couple sex therapy is to facilitate the development of a satisfying sexuality for both members of the couple. Moreover, this sexuality should be expressed and experienced in a climate of trust where each member can explore and develop their sexuality and intimacy with one another (Bergeron, Benazon, Jodoin & Brousseau, 2008). Challenges of working with couples experiencing sexual problems may include: establishing the role of sexuality within the couple's intimate exchanges, that sexual difficulties can be accompanied by other dissatisfactions with the romantic relationship, and couples often have difficulty, even with one another, discussing their sexual lives, although they are often relieved when a health professional takes the initiative to do so (Bergeron et al., 2008).

Therapeutic objectives include motivating and validating both partners, which is not always easy when one member of the couple is identified as the one with the problem, or as the "patient". The partner without the sexual dysfunction, or sexual difficulty, may not understand his or her role in therapy, or appreciate how therapy applies to him or her. An example of how to implicate and include the partner in therapy might be, "Neither one of you are responsible or the cause of the PVD, which contributes to the pain experienced during intercourse, but you both play a role in the decline or success of your sexual relationship through the way that you relate to the pain and to each other in this context. For example, avoiding the problem can make it worse, but incorporating other types of non-painful sexual activities can heighten your intimacy, sexual desires and satisfaction. This is not to lay blame or guilt, but to acknowledge what can make the pain worse and to highlight your capacity, both of you, to improve your intimate life together."

Assessment

An accurate assessment is crucial to knowing the presenting difficulties of the couple with whom the therapist is working. If the couple presents with significant relational distress, or is

attempting to resolve ambivalence about the status of their romantic bond, it can add another layer of complexity to the administration of the outlined interventions in this manual. Knowing more about the couple's romantic context and interactions, and having access to their "story" will help the therapist in approaching CBCT interventions. To help the clinician with this task, an assessment session has been built into this therapy.

Tailoring interventions to each couple
In addition to the information gathered during the assessment session, the therapist will also have access to the information couples provided during their completion of self-report measures for the research portion of this project. For example, couples will have completed the Beck Depression Inventory (BDI-II), and other validated measures pertaining to couple satisfaction, sexual function, pain self-efficacy, childhood trauma, and select questions from measures that assess the presense of abuse in the current relationship. If the self-report measures indicate clinically significant levels of distress in certain areas, the therapist may have several actionable items. For example, if depression is reported as clinically significant, the therapist may speak with this member of the couple and suggest referal for individual consultation. Moreover, if partners report distress in relation to sexual function, the therapist should be mindful of this when discussing sexual response cycles with the couple in Session 4. Being aware of information from the self-report measures does not necessarily indicate that the therapist should confront the client(s) to confirm, but can use the knowledge and awareness of the information to tailor and navigate the CBCT interventions to each couple based on their history, and current levels of distress. This may change the way certain interventions are presented, or the time spent on each intervention.

Using homework (or, in-between-session exercises)
An important aspect of a cognitive-behavioral approach is the assignment of homework. Homework in the therapeutic context allows the client to be engaged in the therapeutic work, to implement techniques or concepts learned during therapy, and to work in between and following the therapy sessions. The specific goals of the homework that are recommended to the clients are:

1) To identify, modify and/or accept thoughts, emotions, and behaviors related to pain and sexual function for the couple, as well as the intimate relationship and how these aspects influence and are influenced by the pain problem. This may also include determining physical/muscular aspects of the woman's pain and sexual function.
2) To allow clients to identify and examine typical psychosocial and biological responses to pain, as well as the responses of their significant others.
3) To increase awareness of factors that can exacerbate or alleviate pain and sexual problems.
4) To identify maladaptive responses (both the woman's and her partner's) to painful intercourse, and help the couple develop more emotional attunement during this frustrating experience.
5) To practice and consolidate adaptive coping strategies discussed during therapy sessions.
6) To record progress in pain management and sexual exploration.
7) To reinforce self-efficacy and empowerment on the part of the clients (both members of the couple) in achieving treatment goals.

The clinician will provide a rationale and explanation (oral and written to take home) for each homework exercise. With each exercise, the clinician will inquire if the clients have any questions and address any potential challenges or difficulties related to the homework. When

reviewing homework, the clinician should emphasize the importance of continued effort, consider with the clients what may have contributed to a lack of success, and reinforce their efforts, as well as success. Clients will be asked to complete homework diary sheets throughout therapy to assess homework compliance.

Expected Treatment Outcomes

When working with couples experiencing PVD, it is important for the clinician to have realistic expectations regarding treatment outcomes, as well as to help establish realistic expectations for the couple. The clinician or therapist should work with couples while considering the following treatment outcomes:

- Treatment gains continue to occur even after treatment ceases.
- Sexual function may improve, but remain in the clinical range (i.e., may still be categorized as problematic).
- Treatment gains may be more pronounced in areas such as increased sexual satisfaction, reductions in sexual distress, expansion of sexual repertoire, lower distress, increased connection with core values relating to the couple's sexuality and relationship, improvement in communication and intimacy, and acceptance of pain (e.g., working towards the goal of finding and improving sexual intimacy rather than pain-free intercourse).
- There may be a rollercoaster of treatment gains and losses: Initial gains may result in joy and optimism, and enhanced expectations for continued improvements. Reminding the couple of realistic goals and that not all gains will be large, and that setbacks may occur will be important in mitigating the potential for disappointment and discouragement.

Treatment Goals

The purpose of this manual is to provide clear guidelines for how to conduct CBCT with couples experiencing PVD, as well as a means for systematic assessment of the intervention's efficacy. Treatment goals are to:

- Provide clear and accurate information about PVD, pain management, sexual function and dyadic factors.
- Re-conceptualize PVD as a multidimensional pain disorder that is influenced by thoughts, emotions, behaviors, and the relationship, among other factors (e.g., biomedical).

Approach PVD from a couples perspective - shifting the perspective from the woman as the pain patient to the couple as a unit or system in which both members are affected by and affect the pain.
Understand, modify and/or accept (as appropriate) the thoughts, feelings, behaviors and couple interactions associated with painful intercourse in order to increase adaptive coping strategies and decrease maladaptive coping mechanisms (e.g., woman and partner catastrophizing).
Improve the couple communication process regarding pain during intercourse and its consequences
Facilitate the experience of pleasurable sexual experiences
Strengthen relationship intimacy (e.g. disclosure, empathy, validation)
Consolidate couple and individual skills learned during therapy and maintain changes.

Session-by-Session Outline

Assessment
Introduction of the clinician to the couple Introduction of the couple to the clinician: Telling their story

Treatment (Sessions 1-12)	
1	Explanation of the treatment plan Opening the dialogue regarding treatment expectations Setting a schedule Homework: *PVD readings* *Pain and sex journaling*
2	Review of homework Information about PVD Psychoeducation: Dispelling myths about pain ACT Value Clarification Exercise: Card Sorting Discussion: Treatment expectations and goals Homework: *Mindfulness breathing* *Tantric breathing for two*
3	Review of homework Intervention: Facilitating emotional disclosure and subsequent validating responses Intervention: Communication exercise for both partners Homework: *"I" statements and continuation of disclosure and validation exercises* *Continuation of pain journaling* *Continuation of breathing exercises*
4	Review of homework Re-conceptualizing pain and PVD as multifactorial (Gate-control theory of pain) In-session exercise: Start identifying biopsychosocial factors that can influence pain specific to the couplet Psychoeducation regarding sexuality and models of sexual response Understanding how pain can impact upon sexuality and the relationship for both members of the couple and encouraging their self-disclosure to one another about this issue Homework: *Pain localization and 'discomfort desensitization'* *Body-scan relaxation / meditation*
5	Review of homework The role of anxiety/anticipation in pain and sex Discussion: Attitudes towards genitals for him and her and ways to approach Homework: *Kegel exercises (discuss with partner)*
6	Review of homework Discussion and psychoeducation: Role of the partner and partner responses in

	women's pain experience and sexual satisfaction Discussion: Partner and woman responses in relation to sexual satisfaction Continuing communication and facilitating the quality of the relationship (e.g., brief communication skills training) Homework: *Giving and receiving (Step 1 – Relaxing together and non-sexual massage)* *Disclosing favourite intimate moments (sexual intimacy)*
7	Review of homework Psychoeducation and discussion: Sexual communication Discussion: Defining/redefining the sexual narrative in the context of pain, and "Outercourse" Homework: *Relaxation breathing with visualization and dilatation* *Involving the partner in dilatation exercises*
8	Review of homework Discussion: Problem solving – what's working and what's not working Psychoeducation and discussion: Facilitating sexual desire and arousal Introduction: Cognitive defusion Homework: *Facilitating sexual desire and arousal* *Continuation of giving and receiving (Step 2 – Relaxing together and non-sexual massage)* *Continuation of pain and sex journaling*
9	Review of homework Following up: Sexual desire and arousal Cognitive defusion intervention: Defusing negative thoughts, beliefs and cognitive distortions related to pain (catastrophizing, hypervigilance, attributions, self-efficacy, etc.), the relationship and sex. Psychoeducation and discussion: Attributions about pain Follow-up: Pain and sex journaling check in – Any revelations to share? Homework: *Practice cognitive defusion*
10	Review of homework Intervention and follow-up: Cognitive defusion revisited Homework: *Continue practicing cognitive defusion* *Continuation of giving and receiving (Step 3 – Sexual touching and potential to focus on orgasm)*
11	Review of homework Discussion: Asserting oneself with one's partner Psychoeducation and discussion: Avoidance of sexual activities Homework: *Homework exercises revisited*
12	Review of homework Discussion: Progress and setbacks Discussion: Summarizing information learned Psychoeducation and discussion: Tools for the future

Material covered during Assessment

- Introduction of the clinician to the couple
- Introduction of the couple to the clinician: Telling their story
- Setting a schedule

Pilot testing of this manual has yielded several important insights, one of which emphasizes the importance of taking the opportunity to assess the couple, or get to know the couple before launching into CBCT. If the couple has reported a history of childhood trauma, the therapist should be conscious of the information, but appreciate that these previous experiences may not be open for discussion as part of their CBCT. An awareness of this history will help the therapist navigate future discussions and hone her sensitivity to certain reactions from the couple.

Important considerations to make regarding the use of information presented from the self-report measures, and the assessment session are:

- Certain topics may get opened, but not resolved during this session. The therapist can suggest that some topics may be tabled for a future therapy, or tabled until the woman, partner, or couple are ready to broach them in therapy.
- How might the issues raised have an impact on expectations for the woman, for the partner, and for the couple?
- How will these issues play into therapy?

Introductions between the clinician and both members of the couple

The therapist will introduce herself to the couple and explain that she understands that they have received a diagnosis of PVD, and that they have been randomized to this form of treatment. She will explain the limits of confidentiality, and remind the couple that they have the right to withdraw at any time. The therapist will acknowledge that this experience (i.e., therapy) may be new and different, and that they are welcome to ask questions at any point. She will encourage them to collaborate with her throughout the process. She will emphasize that the therapy aims to ameliorate the pain and sexual function. The therapist will also mention that this session is an assessment session where she will be trying to get to know the couple so that she "personalize" the planned interventions as much as possible.

Introduction of the couple to the clinician: Telling their story

The therapist will ask the couple to introduce themselves to her. The therapist will start by asking the couples to share similar information they would have shared in their pre-treatment, brief, structured interview (duration of the relationship, current and past sexual functioning or sex life, frequency of sexual activity, intercourse, desire, etc.). Following this, the therapist can start by asking the couple to tell her about the story of their couple, and their current relationship dynamic. This is often a familiar and shared story for the couple. For example, the therapist can suggest the couple tell her about themselves, how they met, what first attracted them to one another, how they get along on a good day, a regular day, and during a crisis. In addition to helping the therapist determine the couple's current state of the relationship, this will also be an important contribution to forming rapport with the couple given the the opportunity for the therapist to listen and reflect on their story.

The impact PVD has had on their relationship

The therapist can also encourage the couple to share information about the PVD **and** their relationship, while concurrently validating their disclosure. The therapist will also confirm and gather additional information about the couple's experience with the PVD pain as it occurs within their sexual relationship. Specifically, the duration of the pain, prior treatments that have been attempted, and the impact the pain has had for each partner (in brief). The clinician will facilitate disclosure or turn-taking from both partners by directing open-ended questions to each partner. Some couples may be more prepared to disclose and elaborate on their experiences, whereas others may be more reticent. In both cases, the therapist should indicate that she is taking a few minutes to confirm these important pieces of information. If more time is needed, she can indicate that there will be more opportunities to discuss the impact the PVD has had on their sex life and their relationship. If the couple is slow to open up, the therapist will remember that other opportunities will present themselves to confirm this information during the course of treatment.

Given that the priority of this session is to assess the couple to better serve the therapist in future interactions with the couple, please note that there should be space during "Session 1" to continue the discussion of the impact PVD has had on their relationship.

Material covered in Session 1

- Explanation of the treatment plan
- Opening the dialogue regarding treatment expectations

Homework:
PVD readings
Pain and sex journaling

Getting settled
The therapist will explain the transition from the portion of the first session (i.e., assessment) that was devoted to getting to know them better to the beginning of the interventions. The therapist may share a copy of the treatment outline with the couple at this point, and state that this session (i.e., Session 1) is about looking over the treatment plan, hearing more about their experiences with PVD (if there is more to discuss from the assessment session), and starting a discussion about the couple's expectations and goals for treatment.

Explanation of the treatment plan
The therapist will explain the treatment program by providing specific examples of how pain management functions (i.e., that thoughts, emotions, behaviors and the pelvic floor musculature play important roles in pain perception). She will highlight the credibility of the interventions included in the treatment plan (e.g., "The information, treatment strategies and exercises all follow those that have been used effectively in practice and research.").

The clinician can validate previous experiences and dispell misconceptions couples may have heard from other health care professionals. "Many women and couples report having been to as many as four to six physicians in search of an explanation for their pain. Some have been told that the pain is all in their head, which is unfortunately a common misconception and is nonsense. It is not true and it is not helpful. Your pain is real. The proper question is, what are the factors that influence the pain? At one time we used to think that pain was a simple matter: Something hurt your body and you felt pain. But it is just not that simple. Many different things affect the pain experience (e.g., surgery under hypnosis, athletes and dancers who do not feel pain until the end of a performance, people who walk on hot coals, etc.).

"Newer research has also shown that the partner can impact upon the woman's pain experience (both negatively and positively), and there are also consequences to the partner and to the relationship. Throughout this treatment, we will examine all the things that may be related to your pain so that we can select the best set of strategies to be used to reduce your pain and can help you have a more satisfactory and pleasant sex life. Some women and couples will improve by 50%, others by 75%; it will vary. Even if your pain doesn't go away completely, you'll be able to do more. To achieve these goals, it is important for you to understand that we do not have any magical techniques or procedures that will immediately take away your pain. Instead, we will work together to develop pain management tools. Some of these tools may include methods for controlling the pain, while others will help you integrate and accept the pain into your life, and still others will help you process your emotional reactions to the pain. You will be able to use all of the tools in your everyday life to better understand and eventually alleviate the pain."

The therapist will establish that both partners will be working together, and that both will be involved throughout the process. For example, "This therapy and the strategies we will be using are developed for the couple, and not just for the woman experiencing pain. It has been shown that including the partner for sexual difficulties is beneficial for the person experiencing the difficulty and for the couple."

The therapist will refer to the copy of the treatment outline and remind couples that they can look to the outline to understand what to expect in upcoming sessions. She will ask the couple about their expectations of the treatment program (e.g., concerns, reservations, skepticism, doubts, hopes, etc.). The therapist should promote realistic goals (e.g., moving beyond unrealistic goals such as completely pain-free sex).

The therapist will answer any questions about the nature of the treatment outline, as well as clear up any misunderstandings.

Opening the dialogue regarding treatment expectations
The therapist will suggest that the couple take a few minutes during the week to discuss their respective expectations and goals for treatment, to be discussed in more depth during the next session. If the couple is prepared to discuss some of their expectations, and there is sufficient time, she can open the dialogue with the couple with the understanding that the couple might still take some time to discuss their expectations with one another between sessions.

Setting a schedule
The therapist will confirm the time and date of the next session with the couple. Ideally, the couple will keep the same time each week.

Homework

PVD readings Pain and sex journaling

PVD readings – an activity for both partners
The therapist will provide each member of the couple with copies of the PVD articles to read during the next week. She will explain that the information is meant to complement the information discussed during the session, and that she will be happy to answer any questions they may have.

Bergeron, S., Rosen, N. O., & Morin, M. (2011). Genital pain in women: Beyond interference with intercourse. *Pain,* 152, 1223-1225.

Sheppard, C., Hallam-Jones, R., & Wylie, K. (2008). Why have you both come? Emotional, relationship, sexual and social issues raised by heterosexual couples seeking sexual therapy (in women referred to a sexual difficulties clinic with a history of vulval pain). *Sexual and Relationship Therapy, 23*(3), 217-226.

Pain and sex journaling – an activity for both partners
The therapist will provide each member of the couple with the Pain and sex journaling handout. She will explain the rationale for the journaling exercise: to better understand the pain and what factors both partners perceive as influencing the pain, as well as how their shared sexual experiences are also contributing to the pain experience, and their feelings about sex as well.

Self-monitoring of the pain will allow each member of the couple to recognize if the perceived pain intensity follows any particular relational, cognitive, emotional, and behavioural patterns. Reflection about their sexual activities can also help them be more mindful of what is happening for them in these intimate moments. They may each have causal theories about the pain, but the therapist will explain that journaling will make the phenomenon of the pain more clear and concrete, and will help when implementing future therapeutic strategies. **The therapist will ask the couples to complete these journals following each experience of pain, and/or after each sexual experience.** The therapist will explain that the woman with PVD will likely have more entries than her partner given that she will be more aware of her own pain, and that the partner may only complete a journal if he or she is made aware of or witnesses the pain. The therapist will collaborate with the couple to determine how best to remember journal completion (e.g., strategic placing on the nightstand, kitchen counter, cellphone or smartphone alarms, etc.). The therapist will explain how to complete the journal, and will answer any questions the couple has.

Study-related issue:

The therapist should email the RA for the study to let them know that the couple has completed the first session of CBCT (Week 1). The therapist can remind the couple that they will have online questionnaires to complete at home for the study within the next couple days.

SESSION 1 HANDOUT #1

Pain and sex journaling for the woman with PVD

The pain and sex journal constitutes a tool that will help you better understand your pain and the factors that influence it, as well as how you and your partner feel about your sexual activity. The journal will also help you measure your progress in the weeks to come. We will use the pain and sex journal regularly in our discussions. Fill in a journal form **immediately** following each event having caused you pain, or soon after a sexual experience.

1. Day: _____ 2. Time: _____
3. Time of menstrual cycle _____ 4. Pain intensity (0 to 10): _____
5. Cause of the pain _____ 6. Duration of the pain: _____
7. Where were you? _____
8. Describe your thoughts, feelings, and behaviours before, during, and after the pain experience:

	Before	During	After
Thoughts			
Feelings			
Behaviours			

If the pain was experienced during sexual activity:
Describe your thoughts, feelings, and behaviours before, during, and after the sexual experience:

	Before	During	After
Thoughts			
Feelings			
Behaviours			

9. *How satisfying was your sexual experience (0-10)?* _____
10. *How much time did you spend on sexual foreplay?* _____
11. *How aroused were you (0 to 10)?* _____
12. *How lubricated were you (0 to 10)?* _____
13. *Up to what point were you in the mood for sex (0 to 10)?* _____
14. *What was your reaction to your pain?* _____
15. *What was your partner's reaction to your pain?* _____
16. How relaxed did you feel (0 to 10)? _____
17. What did you or your partner do to try to reduce the pain? _____
18. How effective was this? (Circle the appropriate number).

0 = did not help at all 1 = helped very little 2 = helped somewhat
3 = helped a lot 4 = stopped the pain

SESSION 1 HANDOUT #2

Pain and sex journaling for the partner

The pain and sex journal constitutes a tool that will help you better understand your perception and experience of your partner's pain and the factors that influence it, as well as how you think and feel about the pain and how you and your partner feel about your sexual activity. The journal will also help you assess changes in her pain and your perception of her pain. We will use the pain and sex journal regularly in our discussions. Fill in a journal form **immediately** following each event that caused your partner pain, or shortly after a sexual experience with your partner.

1. Day: _____ 2. Time: _____
3. Perceived Pain intensity (0 to 10): _____
4. Cause of the pain _____ 5. Duration of the pain: _____
6. Where were you? _____

7. Describe your thoughts, feelings, and behaviours before, during, and after her pain experience:

	Before	During	After
Thoughts			
Feelings			
Behaviours			

If the pain was experienced during sexual activity:
Describe your thoughts, feelings, and behaviours before, during, and after the sexual experience:

	Before	During	After
Thoughts			
Feelings			
Behaviours*			

How satisfying was your sexual experience (0-10)? _____
8. How much time did you spend on sexual foreplay? _____
9. What was your reaction to her pain? _____
10. What was your partner's reaction to her pain? _____
11. What did you or she do to try to reduce the pain? _____

12. How effective was this? (Circle the appropriate number).
0 = did not help at all 1 = helped very little 2 = helped somewhat
3 = helped a lot 4 = stopped the pain

Material covered in Session 2

- Review of homework
- Information about PVD
  - Psychoeducation: Dispelling myths about pain
- ACT value clarification exercise: Card sorting
- Discussion: Treatment expectations and goals

Homework:
Mindfulness breathing
Tantric breathing for two

Review of homework
The clinician should check with the couple that they understand the pain and sex journal, and answer any questions. She should address lingering or new questions regarding PVD. If clients have not been able to do their homework, the clinician should adhere to the guidelines listed above (page 5), take a few minutes to identify obstacles to homework completion, and identify factors that could dissolve these barriers.

When answering questions the couple may have about the articles provided to them in the previous session, the therapist should integrate (rather than teaching) the below information "PVD" and "Dispelling myths about pain".

Information about PVD

Rationale for provision of information about PVD
(Research information for the clinician)

Many women are often not aware that their pain is even a disorder. As difficult as it is for women to conceptualize their pain as a disorder or a diagnosable pain problem, it may be equally or more difficult for the partner (who does not experience the pain first-hand) to understand PVD. Debunking myths and providing accurate information about PVD will help foster an understanding of the pain, and help normalize what these couples are experiencing. The provision of statistics can often be reassuring, so that they know they are not alone, and that others experience this problem.

The therapeutic power of providing accurate information to women with PVD was demonstrated in a study of women with PVD who participated in three 1-hour educational seminars. The results indicated significant improvements in depression and anxiety, as well as sexual functioning, and reductions in sexual distress. The decrease in psychological symptoms associated with the provision of accurate information about PVD may serve to reduce catastrophizing about the pain and set the stage for subsequent pain management options, such as psychological therapy (Brotto, Sadownik & Thomson, 2010).

Information to provide:
- Definition (symptoms and diagnostic criteria) of dyspareunia and PVD
  - Cotton-swab test, pain during other activities
- Statistics and rates:
  - Mostly experienced among women between 18 and 30

    - Prevalence rates up to 15-20%
- Etiology and course:
    - Can begin from first intercourse, or later on, following repeated yeast infections, or other trauma to the area, and for no apparent reason
    - Likely multifactorial in nature (yeast infections, past trauma, hormonal - early and prolonged use of contraceptives, neuropathic - change in nerve pathways like in other chronic pain conditions and increased sensitivity to pain, increased pelvic floor muscle tension)
    - History of consulting many doctors - many women think they are not normal, are ashamed and have a hard time talking about it with many people
- Impact and consequences to sexual functioning (diminished desire, arousal and frequency of orgasm and intercourse), and consequences to the relationship
- Recent epidemiological research (the study of patterns, course, causes, and effects of health problems, or diseases) has shown that women with PVD are more likely to score higher on anxiety and depression symptoms, as well as women with anxiety and depression disorders are more likely to report PVD (Khandker et al., 2011).

The therapist will ask the couple if any of the information rings true to them, and ask about their reactions to this information. She will normalize their thoughts and feelings.

Dispelling myths about pain
Understanding the mechanisms of pain will help clarify the experience of PVD for the woman and her partner. As part of this component of treatment, the clinician will briefly explain and discuss how chronic pain is believed to occur, and help clarify and repudiate any myths concerning pain. A more in-depth discussion of how pain works is planned for Session 3.

"Pain is multifactorial and can be something we do not consider too deeply. For example, pain is often thought of our body's way of telling us something is harmful and is usually felt acutely. Unfortunately for some people, pain can become chronic and start to interfere with functioning, and then it can become problematic. There are various ideas or myths about pain that patients and their significant others often have. I am not sure if you believe these, but they are worth our going over and considering where they fit and do not fit with your own notions."

MYTHS: If physicians can't cure your pain or find out exactly what is causing it, then your pain must be in your imagination (Malec, Glasgow, Ely & King, 1977). FALSE. If you can make your pain less by psychological self-control, then the pain was "all in your head" to begin with (Malec et al., 1977). FALSE.

The therapist can say something along the lines of the following: Besides, looking at it another way, all pain is "in your head." After all, your brain is in your head. The brain is what tells you if you hurt, how much you hurt, where you hurt, and what to do about it. Even when you hurt because you hit your thumb with a hammer, the pain is "in your head." This is why psychological methods of pain management work, because they involve your brain, which is the one who perceives pain. You can learn to keep pain from bothering you as much. This is different than the notion of completely blocking pain signals from traveling to your brain. In short, the pain is real, but we can learn ways to help it not take so much space in your life, and to minimize its negative consequences.

The therapist can also add that: Although some of the outward signs of pain may be visible, pain is a private, individual experience. And because it is so private, so individual, no two people undergo exactly the same feelings of pain from the same source. Many things beside the *intensity of the stimulation* contribute to the experience of pain. On two different occasions, you may experience quite different pain from exactly the same external stimulation (e.g. differences in pain ratings from the same stimulation, penile penetration and thrusting). For example, you may stub your toe on one day, and keep on walking, whereas another time, all forces being equal but perhaps you are more tired, or distracted with work, and the pain can feel much more intense.

The therapist will have the couple generate examples of their own to support the contention that pain is more than a consequence of the specific so-called physical cause. The therapist, via discussion, will begin to get the couple thinking about how different factors affect the pain experience and highlight the variations in their current pain. **At this point the intention is more to raise issues than to find solutions – this discussion can continue in Session 4 when discussing the Gate-control theory of pain.** The therapists' probes will be designed to begin the reconceptualization process in which the woman (and her partner) plays an active role in contributing to her presenting problems and is not a helpless bystander or victim of the pain. As this reconceptualization emerges, one implication is that something could be done to change the behaviors, feelings, and thoughts that affect the pain experience.

E.g. "Can you think of any examples of when your pain varied and what might have contributed to this?" Additional prompts if they can't think of anything: "Have you ever noticed that the pain varies depending on how aroused you are, how lubricated you are, how you and partner feel about one another just before, how anxious you are, etc."

ACT value clarification exercise: Card sorting

The therapist will introduce the Value clarification exercise by explaining the goal of the exercise: The aim of value clarification is to help the couple to identify and realize what is important in their lives, particularly with respect to their sexual and relational functioning, with the intention of acting and living in concordance with these values. Part of this process is also establishing a hierarchy of these values.

The therapist will begin by asking the couple some open-ended questions: Why is it important for them to connect sexually? How does it fit with their values? The couple will begin to examine their values, which may include values relating to sex and the relationship, as well as goals and reasons for having or wanting sex. Specifically, these may include:

- being intimate with my partner
- having an orgasm
- pain-free sex
- feeling emotionally close to my partner
- avoiding conflict with my partner
- pleasuring my partner
- experiencing pleasure myself
- expressing love for my partner
- wanting to feel desirable
- avoiding problems in the relationship

- sharing a pleasurable experience with my partner
- avoiding being hurt by my partner
- preventing my partner from leaving me
- avoiding feeling guilty or saying no to my partner
- relieving stress
- and many others…

The goal of this exercise is to shift toward the idea that being sexually intimate with one's partner is an important aspect of sex, and possibly more important than penetration/intercourse or pain-free sex.

Another aim of this exercise is to shift toward "approach" and "acceptance" themed goals as opposed to "avoidance" type goals. For example, "To be close to my partner." relates to approaching one's partner and accepting one's value that a goal of sex is to increase closeness and intimacy. Whereas, "To avoid a conflict" has to do with engaging in the behavior to avoid a negative response from the other, or a negative outcome, and may not allow the person to be acting in acceptance with the values they hold for sex and their relationship.

Card sorting task – How to do it:
Have each member of the couple write a reason or goal for having or not having sex on a separate index card. Remind them that goals can include reasons for having sex, and other goals can relate to pain reduction or finding sexual activities that do not induce as much pain (e.g., these may relate to their reasons for seeking treatment). By the end, they should have a small stack of cards. The therapist will ask them to share the reasons with one another. She will then ask them to put the cards in order of importance with the most important reason (i.e., the value that they hold most dear) at the top of the stack. If the value at the top is avoidance-oriented (e.g., avoiding conflict) or pain-focused (e.g., pain-free intercourse), ask them what it would be like to move a different value to the top (e.g., being intimate with partner/expressing love for partner). The therapist will explore with the couple how it feels to make that value more important. "What would it take to bring this value to the top of the pile?" Consistent with ACT's intention of helping the clients live consistently with their core values, the therapist can also ask the following questions: How does this value fit in with your core values? How would it feel to act in concordance with this value? How would your attitudes or behaviors have to change? What would be difficult about this behavior change? What would be the benefits?

Discussion of treatment expectations and goals
From the card-sorting task, the therapist will have a better idea of the couple's goals and intentions for treatment. She will assist the couple in identifying treatment goals for both partners and for them as a couple. "Knowing a bit more about PVD, having made the decision to take part in treatment together, what are some of your expectations and goals for treatment?"

During the discussion, the therapist will revisit the importance of establishing realistic expectations and goals. "In starting to view PVD as a chronic pain problem, we have begun to appreciate that there will be times where you may experience less pain and others where it seems increased. What we can do with treatment is develop ways to manage the pain so that it does not hurt your relationship or capacity to be sexually intimate with one another."

Homework:

Relaxation and diaphragmatic breathing exercises

Mindfulness breathing
Tantric breathing for two

Relaxation and diaphragmatic breathing exercises
Nearing the end of the session, the therapist will introduce the *breathing exercise*, starting with its **rationale**: "as you may have noticed, the anticipation of pain creates anxiety, which has two consequences: (a) it inhibits arousal, which in turn inhibits lubrication, which increases the pain upon penetration; (b) it often contributes to an involuntary contraction of the vaginal muscles, which again, makes penetration a lot more painful, and sometimes impossible. For these reasons, an important part of the treatment is to learn to reduce anxiety. One major way in which they will learn to do this is via breathing/relaxation techniques.

This exercise is twofold, in that it aims to bring about a relaxation response, and serve as a mindfulness exercise. She can explain that mindfulness refers to being present and purposeful in one's experience in a way that allows one to pay attention to the moment, and what is felt, thought and experienced in that moment. Part of being mindful is paying attention to any interfering, distracting, thoughts as they come into your mind, acknowledging those thoughts, but then redirecting your attention back to the present experience. The therapist will explain that it is normal for unrelated or irrelevant thoughts to intrude during this and other experiences. Again, being mindful is acknowledging these thoughts, and then focusing your attention back to your current experience.

For centuries humankind has been provided with instructions for bringing about a quieting response (the contrary of a stress response), called the 'relaxation response' (RR). This natural bodily reflex however does not happen automatically. It requires practice with certain mental techniques before it can be called upon to counter anxiety. Many techniques can bring about this natural response, although two simple steps are common to all of them: (a) focusing one's mind on a repetitive phrase, word, breath, or action; (b) adopting a passive (accepting) attitude toward the thoughts that go through one's head. The physical effects of the RR can be divided into: (a) immediate changes, which occur while a person is focusing on a repetitive word, phrase, breath or action, and (b) long-term changes, which occur after repeated practice for at least a month, and are present even when a person is not sitting quietly practicing an RR technique. People report a decrease in anxiety and depression, as well as an ability to cope with life stressors. The key to bringing about RR is focused awareness. Your breathing can be the object of that focus. Normal breathing patterns can be disrupted by anxiety and pain.

There are two types of breathing: chest breathing (short, shallow breaths, characteristic of anxiety) and diaphragmatic or abdominal breathing (abdomen rising and falling, like babies, brings about a feeling of calm and relaxation). Before doing any other exercises in this therapy, you need to become aware of how you breathe. Place one hand on your breastbone and one hand on your belly button. Close your eyes and become aware of what is moving when you breathe in and out. If it is your abdomen, you are already breathing diaphragmatically. If it is your chest, you need to learn how to breathe from the abdomen. This is something that is particularly useful for the person experiencing the pain, but can also be useful for her partner." The therapist can direct this statement to the partner: "By being calm, present and focused with your partner, not only are you seeking a more relaxed state, but you can help her relax further."

How to do it:
Mindfulness breathing
"Place your hands just below your belly button. Close your eyes and imagine a balloon inside your abdomen. Each time you breathe in, imagine the balloon filling with air. Each time you

breathe out, imagine the balloon collapsing." The therapist will practice it with them for about 5 minutes and ask them if they have any questions or concerns. She will ask them to practice diaphragmatic breathing at home. They can count 10 breaths and start again. They can try it for about 5 minutes at a time, as often as possible, such as once a day.

Tantric breathing for two - an activity for both partners
"In addition to the relaxing effect that diaphragmatic (deep) breathing can have, breathing with someone else can also help create an attunement or connection, and help express a loving exchange. Breathing is also a basic component of tantric practices. Tantric practices are ancient spiritual practices from India, Nepal and China. They are about using one's awareness through breath, sound, movement, and symbols to enhance consciousness and bliss, and to help quiet the mind and activate one's sexual energy (Kuriansky, 2004)." The therapist will explain "The Synchronizing Breath" to the couple, and provide them with a handout which explains the other types of partnered breathing activities. She will suggest they try one or as many of the exercises as they would like. She will encourage them to try the breathing exercise during the week, repeating it at least one more time. The therapist can remind the couple that these breathing exercises may seem silly, and that silly is good. She will encourage them to try it, and to embrace and accept any "giggles" or "awkward" feelings.

Study-related issue:
The therapist will explain the homework checklist, and have each participant fill out a homework compliance form.

SESSION 2 HANDOUT #1

Mindfulness breathing instructions

Choose a moment during which you know you will not be disturbed. If you want, unplug the phone or leave the answering machine on.

1. Lie down on your back or in a comfortable chair or sofa.
2. Place your hands just below your belly button. Close your eyes and imagine a balloon inside your abdomen. As you breathe in through your nose, imagine the balloon filling with air. As you breathe out through your mouth, imagine the balloon collapsing.
3. While exhaling, notice the sensation of calm and relaxation that you are bringing forth with this type of breathing.
4. You can increase the relaxation effect by concentrating on words like "calm", "peacefulness", and "relaxation" while exhaling.
5. After 1 deep breath, breathe normally for 30 seconds -1 minute (approximately).
6. Allow your limbs to relax, become heavy, and sink into the chair.
7. Repeat this sequence 5-6 times once a day or more.

If intruding thoughts or worries cross your mind, imagine that your mind is a sieve and that all the thoughts just pass through its holes. Don't hang on to your thoughts.

SESSION 2 HANDOUT #2

Tantric breathing for two (Kuriansky, 2004)

Below are three types of tantric breathing exercises to try with your partner. Together, find a quiet moment during the week to try the first breath. If possible, repeat the exercise again during the week. Feel feel to try all three breathing exercises. You will find that they are ordered in terms of level of complexity. The more you try them, the easier and more natural they will feel.

1) "The Synchronizing Breath"

Breathe in and out at the same time to tune into each other's rhythm. Facing one another, sit cross-legged and comfotably, using pillows if you wish. Make sure to keep your spine straight. Use a small touch of the hand or fingertips, or wink to help pace one another. After a minute or two, close your eyes and continue breathing together, and work on sensing the other's energy and breath.

2) "The Reciprocal Breath"

In this exercise, the tantric principle is to send your love into the other. Sit cross-legged in front of one another, or lying down facing each other, maybe sharing one pillow, almost nose-to-nose. The goal is to inhale while your partner exhales, and exhale while your partner inhales. Your faces should be close or almost touching for this exercise and your hands can be pressed against one another or touching. Imagine as though you are breathing for one another.

3) "The Circulating Breath"

This exercise has you sitting with your partner in a more intimate position. It is your choice, and you can try this breathing exercise clothed and unclothed. For the position, the partner will sit, cross-legged, and the woman with PVD will sit or straddle her partner so that they are face-to-face, and can touch their palms together, on top of her partner. When you inhale, imagine the energy rising through your body, passing through your core, through the top of your head and, as you exhale, imagine the energy looping back down to the base of your spine and genitals. You and your parter will inhale and exhale together – each picturing the circulating breath through each of you, and imagining a harmonizing or synchronization of this breath.

*** If you find it too invasive to breath in as your partner breathes out (i.e., breathe in your partner's face), you may choose to do this exercise cheek to cheek so that you feel your partner's breath on your ear and neck. This alternative positioning may help avoid discomfort the first few times you try the breathing exercises, as well engage another sense (i.e., hearing), and therefore help you and your partner be present and aware of each other. ***

Material covered in Session 3

- Review of homework
- Intervention: Facilitating emotional disclosure and subsequent validating responses
- Intervention: Communication exercise for both partners

Homework:
"I" statements and continuation of disclosure and validation exercises
Continuation of pain journaling
Continuation of breathing exercises

Review of homework
The therapist should take a few minutes at the beginning of each session to review the homework from previous sessions. She will check in with the journaling for both partners. She will also ask how they experienced the breathing exercises presented in the previous session.

Some couples may want to speak about conflicts, or stay on certain topics longer than others. If this is the case, and to help stay on task, the therapist may remind couples that there are several opportunities to discuss a variety of topics throughout the therapy, and can point to certain sessions that will allow for discussions about pain, sex, or the relationship.

Intervention: Facilitating emotional disclosure and subsequent validating responses
Communication is an important tool that will help the couple navigate the PVD pain, and their shared sexuality. It can be one of their greatest assets in feeling more like a team, and working together. It can also be helpful for the couple in other areas of their relationship. The therapist should emphasize that every couple communicates differently, and that the following information and exercises are meant to help them facilitate their communication. This will also mean that the therapist will explore their established communication styles, and related feelings and thoughts about their communication.

An important consideration: The therapist should consider information gathered during the assessment session, and should open the discussion about communication by using positive examples of their communication that is specific to the couple, even if this example relates to finances, work, or something unrelated to their sex lives. Distressed couples will experience communication as more challenging, and couples should be validated that communicating when upset or hurt is more difficult.

The therapist will explain the importance of emotional disclosure and validating each other's disclosure in terms of improving communicating with one another. Specifically, she will highlight how this becomes important when communicating about the PVD pain, their sexuality, and their relationship. She will explain that emotional disclosure and "I" statements can be more effective than accusing or blaming "you" statements. She will also explain the concept of validation - validation refers to feeling understood, listened to and cared for by one's partner.

Starting the discussion of what communication looks like for the couple:
The overarching question that the below questions help build is: *What do you need to feel understood?* By using the questions below, the therapist can help work up to this question.

When do you feel understood by your partner? How do you know (what are the signs?) your partner is listening and understanding what you are saying with regard to the pain? When do you not feel this way (what are the signs)? What would help you to feel listened to? What would be a way of communicating when you are starting to feel unheard?

The therapist will provide each member of the couple with the Communication Tips handout. She will go through the handout with them, explaining the components of "I" statements and "active listening". The therapist will ensure that the couple understands the communication concepts, and invite them to ask questions.

Intervention: Communication exercise for both partners
The therapist will explain the exercise Turning Toward Your Partner's Needs. She will explain how this exercise builds on the previous discussion. She will provide the couple with the Handout #1 for this week, and will invite the couple to each practice stating one of the items from the Needs List, and then to come up with their own Need Statement relating to their pain or the impact of pain on their relationship and sexuality. She will instruct the couple to use the communication skills (e.g., "I statements" and "active listening") and to practice validation during this exercise. Again, the therapist will help coach the couple through this exercise, and model when necessary.

The 4-step process of communication has many more steps than a couple might be used to, and it can also make the couple feel as though they are being "taught" communication. The therapist can move through these steps slowly with the couple, and should present them as a guide for the exercise. It will be important to check-in with each couple regarding which components of the 4 steps they found the most helpful, and to point out that these steps will either blend together or become more second-nature with practice.

Homework:

"I" statements and continuation of disclosure and validation exercises
Continuation of pain journaling
Continuation of breathing exercises

"I" statements and continuation of disclosure validation exercises - an activity for both partners
Each member of the couple should already have a copy of the Communication Tips and Turning Toward Your Partner's Needs handouts. She will encourage them to find a moment during the week to have a discussion using these techniques and to continue practicing. She will suggest they either choose to discuss the PVD pain or a related-element. She will ask if they foresee any challenges with this exercise, and help explore potential solutions.

Continuation of pain and sex journaling
The therapist will encourage the couple to keep journaling, and offer more handout copies of the journal if necessary.

Continuation of breathing exercises
The therapist will encourage the couple to continue the breathing exercises together, as well as the deep breathing. She will suggest they try one of the tantric breathing methods that they have not yet attempted. She will encourage them to try the breathing exercise more than once

throughout the week. She will explore any potential barriers to this task, and help identify potential solutions.

sStudy-related issue:

The therapist will have each participant fill out a homework compliance form.

SESSION 3 HANDOUT #1

Communication Tips

Below are some suggestions for how to improve your communication about difficult topics such as PVD and sex.

1) Choose an appropriate time for broaching the subject
    a. It may be helpful to set a time aside in advance, so your partner does not feel caught off guard.
    b. Choose a time when both partners feel they have enough energy (i.e., not too tired) and are relaxed enough to engage in the conversation.

2) Use **"I" messages**
    a. "I" messages allow you to express to someone your need for them to change their reactions or behaviors, without blaming them or putting them down.
    b. Speaking from the "I" and stating one's feelings is more likely to create a positive atmosphere for communication and problem-solving, and is less likely to be met with defensiveness.
    c. <u>How to do it:</u> There are 4 parts to an "I" message. Not all parts need to be used (you may wish to postpone stating what you want to happen/change to allow a discussion of possible options) and you don't need to say the message in this order either.
        i. "I feel . . ." (state the feeling)
        ii. "When you . . ." (state the other person's behavior)
        iii. "Because . . ." (state the effect on you)
        iv. "I need . . ." (state what you want to happen)

3) Try to be an **active listener**
    a. *Encourage* your partner's efforts at talking to convey your interest (verbal & nonverbal).
    b. *Clarify* what your partner is saying by asking questions.
    c. *Reflect* back your partner's feelings to check that you understand. If you misunderstood, gently let your partner know you did not understand, and allow your partner to gently restate what he/she meant to say.
    d. *Validate* your partner's feelings, efforts, and actions. Show respect for your partner's intentions.
    e. *Restate* and *summarize* the basic ideas, facts, and feelings expressed by your partner to show that you understood what he/she said and to establish a basis for further discussion – this should be done thoughtfully and with the intention to continue the conversation.

SESSION 3 HANDOUT #2

Turning toward your partner's needs

INSTRUCTIONS: Read the list below and select a need that you have from it. Then take turns describing the need you selected to your partner by incorporating "I" messages

I feel (state feeling)…
when you (state behavior) …
because (state effect on you) …
I need (state what you want to happen)

If you are the listener, try incorporating active listening techniques:
Encourage, clarify, reflect, restate and summarize, validate

Both of you should try making suggestions about how you can better meet this need in the coming week.

Needs list (some examples of needs people may have)

I need more physical affection
I need to cuddle more
I need to talk more about the pain
I need more patience (for myself or from you)
I need to talk more about sex
I need to talk about feeling guilty
I need to talk about how we talk about sex
I need for us to have a date night
I need to have some time alone
I need help with housework or chores
I need to know you find me attractive
I need to do more things together
I need more or less family time
I need more alone time with you

Material covered in Session 4

- Review of homework
- Re-conceptualizing pain and PVD as multifactorial (Gate-control theory of pain)
- In-session exercise: Start identifying biopsychosocial factors that can influence pain specific to the couplet
- Psychoeducation regarding sexuality and models of sexual response
- Understanding how pain can impact upon sexuality and the relationship for both members of the couple and encouraging their self-disclosure to one another about this issue

Homework:
Pain localization and 'discomfort desensitization'
Body-scan relaxation / meditation

Review of homework
The therapist will review the couple's experience with homework, and ask about their journaling. She will ask the couple how they are experiencing the homework exercises. What challenges have they faced? What are potential work-arounds? What realizations have they had since starting the journal process?

Re-conceptualizing pain and PVD as multifactorial (Gate-control theory of pain)
This intervention, including the in-session completion of biopsychosocial factors that influence pain should be afforded 15-20 minutes.

Pain is multi-factorial. Many people unfamiliar with pain research and treatment are unaware of the influence of emotions, thoughts and behaviors, and the social context on pain. In this part of treatment, the clinician will discuss empirically identified emotions, behaviors and cognitions related to pain, as well as explore those experienced by the couple.

Gate-control theory of pain (Melzack & Wall)
From Karol, Doerfler, Parker, and Armentrout (1981): "Pain may begin with bodily damage or injury or with disease. A pain message from the site of injury is sent through a mechanism that works like a "gate to the brain." The brain then interprets this message. This gate can be partially or fully opened or closed, determining the amount of pain. A variety of physical, emotional, and mental factors may open or close the gate." The following is Melzack and Wall's gate control theory of pain and can be discussed with the couple, although the therapist should keep in mind that this model does not fully apply to painful intercourse.

Factors that open the gate
1. Physical factors
    a. Extent of injury or trauma to the area
    b. Readiness of the nervous system to send pain signals.
    c. Inappropriate activity level – fatigue.
2. Emotional stress
    a. Depression
    b. Anxiety
    c. Worry
    d. Tension

e. Anger

3. Mental factors
    a. Focusing on the pain
    b. Boredom due to minimal involvement in life activities
    c. Nonadaptive attitudes

Factors that close the gate

1. Physical factors
    a. Medication
    b. Counterstimulation (cold, massage, acupuncture)
    c. Appropriate activity level
2. Relative emotional stability
    a. Relaxation
    b. Positive emotions (e.g., happiness, optimism).
    c. Adequate rest
3. Mental factors
    a. Life involvement and increased interest in life activities
    b. Intense concentration
    c. Adaptive attitudes

Start identifying biopsychosocial factors that can influence pain specific to the couple

The therapist will emphasize the potential for the woman to perceive her pain differently, to accept her pain and what contributes to it, and to control her pain and discomfort. The therapist should try to include the partner in this discussion as well while being careful that the partner does not point out only the factors that contribute to more pain (i.e., blame). The therapist can provide a handout of gate-control/biopsychosocial model for the couple to complete together with the therapist. This may help them visualize and understand the many factors associated with the woman's pain, and with the pain experience for the couple. The therapist should keep this handout in the couple's file, for future use during a discussion of pain journaling – to see what else has been added to the contributing factors.

During the listing of the above factors, or afterwards, the therapist will ask the woman and her partner, "How does this gate-control theory or way of understanding pain sit with you? Which factors mentioned match your experience with the pain? What additional factors do you believe play a role?"

Psychoeducation regarding sexuality and models of sexual response

This psychoeducation exercise can be presented as an extension to the discussion stemming from the card-sorting task. By this point, sex has been eluded to during treatment, but not explored and explained at great length. The therapist will take the time to discuss the couple's views on sexuality, their own sexual narratives, and their understanding of sexual response. During this part of treatment, the clinician should be sensitive to individual variations when identifying with the couple their conceptualization of sexuality. This way, information that is provided can be adapted to their sexual narrative. The clinician might say "Sex is often portrayed as including kissing, foreplay and intercourse and orgasm, but sex or the sex narrative is unique to each person and couple, and can include many other behaviors as well as emotional and interpersonal components. When you think of sex, what does the whole process include for you?" The clinician should ask both members of the couple to describe what sex means to them.

Traditional model of sexual response cycle

The therapist will explain that there have been changes to our understanding of the sexual response cycle in recent years, particularly to reflect that motivations for sex go beyond biological urges. The therapist will explain the traditional model below, which indicates that there is desire, then excitation (vasocongestion of the genitals), then orgasm (reflexive muscular contractions), and resolution or a denouement.

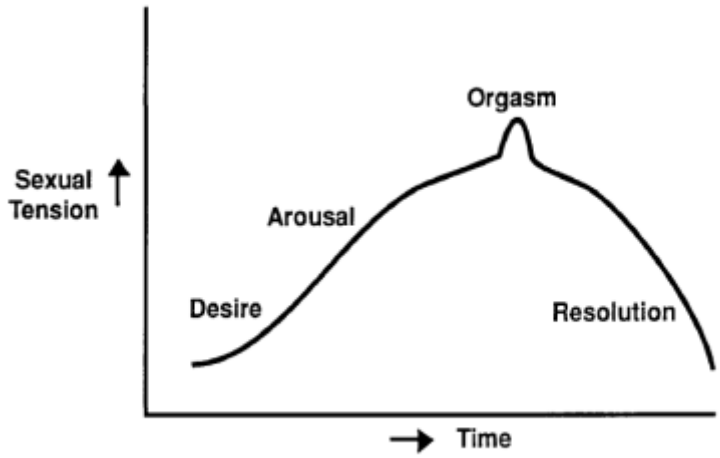


FIGURE 6. Masters/Johnson/Kaplan model of sex response.

Additional perspectives on sexual motivations and sexual response

The therapist will explain that more recent research provides alternative understandings of sexual response or sexual desire and arousal. The traditional model of sexual response can give the impression that desire for sex is almost spontaneous, that one desires sex and thus pursues it, primarily due to an innate or biological urge. Research has shown, and your experience may reflect this as well, that there are many other reasons that motivate people to have sex. Equally, there are a variety of reasons, aside from a lack of desire or arousal, for not wanting to have sex. One study found that women with PVD reported multiple goals related to sexual activity that go beyond wanting to avoid pain, including many reasons why they continue to have sex despite the pain, such as a desire to maintain intimacy, pleasure a partner, avoid a partner's disappointment, or for fear of losing one's partner (Elmerstig et al., 2008).

There are also a variety of factors that can influence the different phases of sexual response described in the traditional model of sexual response. Research has demonstrated that there can be a disconnect between our subjective experience of sexual arousal (i.e., when we say we feel aroused or "turned on") and our bodies' physiological response (Chivers & Bailey, 2005). While other times, you may feel quite turned on, or be faced with something or someone that is arousing (like your partner!), but something else (the pain!) competes for your attention or distracts you and therefore dampens or drowns out the desire or arousal (Janssen & Bancroft, 2007).

For example, you may really want to have sex because you want to feel emotionally close to your partner, but then the thought or memory of the pain might put the breaks on your desire and arousal, or it may be hard to experience orgasm and pleasure when one has interfering thoughts about the pain.

The therapist will also mention that desire/arousal are not the only phases of sexual response that can be inhibited. That is, it can be hard to experience pleasure and orgasm when one has interfering thoughts about the pain, whether it is about the experience of pain (woman), or contributing to pain (partner).

Discussion of which "model" is most consistent with the couple's experience
Following an explanation of the sexual response model and factors that can influence difference aspects of the model, the therapist will ask each member of the couple about which aspects resonate with their experience, and which differ.

Understanding how pain can impact upon sexuality and the relationship for both members of the couple and encouraging their self-disclosure to one another about this issue
The therapist will discuss the impact of pain on thoughts, feelings, physical sensations and behavior, and in return the impact that thoughts, feelings, and physical sensations such as arousal might have on the pain experience. She will explain to clients the details of the vicious cycle and continue to educate them about the impact of coital pain on desire, arousal and orgasm, having them generate their own examples: How has their sex life changed since the pain?

In a study conducted by our research group, 86% of participants, who were women with PVD, reported having sexual intercourse for reasons other than their own desire (e.g., feeling obligated). In addition, 24% of women stated not being able to have sexual intercourse at all because of the pain. For women who are still having intercourse, some of the difficulties reported included lubrication or arousal problems because of the pain, trouble reaching orgasm, lesser frequency of intercourse, negative attitudes toward sex, and avoidance of sex. Overall, there is an important deterioration in sexual function and satisfaction associated with PVD pain.

What are some of the consequences the couple has noticed in their sexual functioning? What have been the consequences for the woman? What have been the consequences for the partner? How do they feel about these changes? What does having pain during intercourse mean to the woman and her partner?

PVD can have a tremendous impact on the life of the couple. Long term, it can result in relationship conflict, sexual frustration, feeling pressured to have sex, a fear of losing one's partner, and the partner feeling powerless.

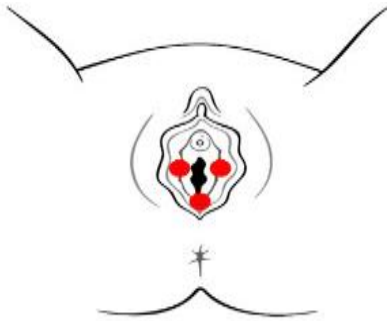
The therapist will explore some of the ways the couple feels their relationship has been impacted upon by the pain.

Homework:

Pain localization and 'discomfort desensitization'
Body scan relaxation and meditation

Pain localization and 'discomfort desensitization' - an activity for both partners
The therapist will present this activity as an exercise for the couple to do together. The goal is to demystify the locale of the pain, and to alleviate discomfort and taboo that the woman and her partner may have about the woman's genitals. This activity may be illuminating for both

the woman and her partner, particularly for those who have not identified the exact location of the pain. This may also be considered as a team problem-solving exercise. The therapist will explain the rationale of the activity, and may use the below diagram to show the couple the area of the pain (generally between 3 and 9 o'clock). The therapist will explain that this is a diagram and that each woman has a different symmetry and shape. She will refer couples to the following website to provide examples of vaginas:
http://dodsonandross.com/blogs/carlin/2010/05/bettys-vulva-illustrations

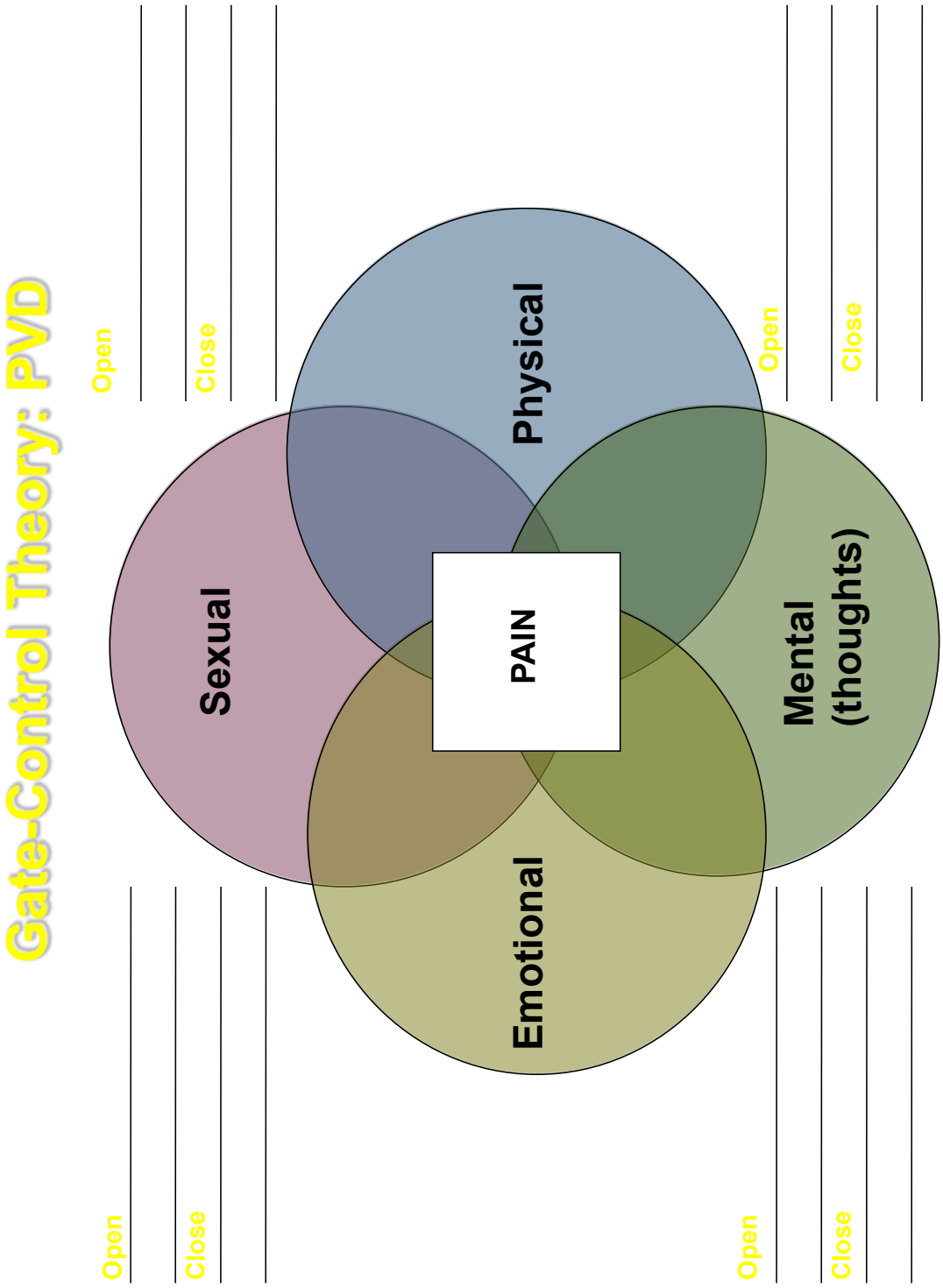


http://www.nva.org/whatIsVulvodynia.html

Body-scan relaxation and meditation (adapted from Jon Kabat-Zinn's Body-scan exercise in Full Catastrophe Living, 1990)
The therapist will introduce the Body-Scan Meditation exercise as another method of relaxation (and anxiety reduction) for the woman and her partner. This exercise is a mindfulness exercise. She will provide each of them with a copy of the handout, and explain how they can take each other through the exercise at home. The rationale for this exercise is similar to that of diaphragmatic breathing, such that a relaxed state can counteract the tension that contributes to increased pain, and therefore help lessen pain. Moreover, the therapist can explain how the identification and deepened connection with one's body is particularly important when one feels disconnected from the body or as though one's body has betrayed her or him, as can be the case with people who experience chronic pain.

Study-related issue:
The therapist will have each participant fill out a homework compliance form.
The therapist will send an email to the RA to confirm the couple completed the fourth session of CBCT. The therapist can also remind the participants that they have questionnaires to complete online in the next couple days.

SESSION 4 IN-SESSION HANDOUT



SESSION 4 HANDOUT #1

Pain localization and discomfort desensitization

During the session, we identified where the pain is located on the image. The goal of this activity is to identify where your pain is located with your partner. This activity will help you and your partner to clearly identify where it hurts, and may diminish perceived radiation (i.e., spread) of your pain. In addition, this exercise may help break down the taboo and discomfort that is associated with your genitals and with PVD.

This exercise will involve being naked in front of your partner in a context that is not sexual. It may be new for some, and normal for others. You should have a hand-mirror nearby.

Choose a moment during which you know you will not be disturbed, and where both of you are able to relax. If necessary, unplug the phone or leave the answering machine on. If the idea of doing this exercise makes you a bit nervous, take a bath before starting, engage in another activity that usually helps you to relax, or use the breathing techniques from the previous session.

Observe your genitals attentively, using the mirror. Touch different points to see where the pain is located. Invite your part to touch different points (lightly of course) so he may understand where the pain is located as well. What's important here, for you and your partner, is to identify exactly where it hurts and where it does not hurt.

If you try the exercise once and find that it's not working out (e.g. you're feeling uncomfortable, etc.), repeat it a second time, a third time, etc., until you feel relatively at ease and are able to make it through with your partner and identify where it hurts exactly. If you find this activity particularly challenging, you may want to add an extra step. For example, you could try the activity alone first, and then ask your partner to join you. Or, you could try conducting the exercise over your underwear first, and then try the activity as described.

While observing your genitals, both members of the couple should note one's own reactions and that of your partner's. This includes everything that goes through your head, without censuring or censoring yourself. For example, you may experience certain reactions towards the appearance of your genitals, their smell, etc.

Website showing different examples of vaginas:
http://dodsonandross.com/blogs/carlin/2010/05/bettys-vulva-illustrations

SESSION 4 HANDOUT #2

Body-scan (Adapted from Jon Kabat-Zinn's technique in Full Catastrophe Living)

Goal of this exercise: The goal of this exercise is two-fold. First, this exercise will help you to get in touch with your body, to learn to attend to its sensations and feelings, and to learn to be mindful and accepting of those sensations, in a non-judgemental manner. The second goal is to practice the act of being mindful, which is a form of relaxation. By scanning your body using the script below, you will learn to focus on each body part so that it can relax, with the ultimate benefit of leaving you completely relaxed as well. Body scan relaxation is another technique for bringing about a 'relaxation response'.

In this meditation you simply notice the feelings, you become aware of them. You do not try to actively change them. They will relax on their own. You will see at the end of the relaxation session that you may feel a stress/anxiety/pain relief anyway simply because this is a desired after-effect of the body scanning relaxation

How do I do it?

It is recommended that you practice the body scan once per day. Ask your partner to read the instructions to you at a pace that allows you to attend to each part of your body. You and your partner may want to make a recording of the instructions below. Eventually, you will be able to practice the scan without the instructions.

Find a comfortable space, and lie on your back. You may choose to turn off your phone. You may use a yoga mat or a camping air mattress. The aim is to be comfortable, but not to fall asleep during the exercise. Make sure you are warm enough. You could use a blanket if you like.

1) **Calmly let your eyes close.**
2) **Tune into the feeling of your breath as your abdomen rises and falls with your inhale and exhale.**
3) **Attend to your whole body in its entirety from your toes to the top of your head. Feel the sensation of your body's weight pressing against the floor.**
4) **Focus your attention on the toes of your left foot. While you are bringing your attention to your toes, direct your breathing toward your toes as well, so that your breath is flowing in and out from your toes. It can be helpful to imagine your breath flowing or traveling from your nose through your body to your toes and back.**
5) **Let yourself feel the sensations from your toes. If you find that you are not feeling anything, accept "no sensation" as the sensation.**
6) **Once you are ready to direct your breath and attention to the next part of your body, take a deeper breath all the way through your toes and bring your attention to the arch or sole of your foot. As you exhale this breath, allow the sensation from your toes to dissolve in your mind. Continue your breathing through each part of your body as you scan up through the top of your foot - - your heel - - your ankle. Observe your experience of the sensation as you breathe through each body part.**
7) **As you come to each region, breathe with that region and let go as you transition to the next region.**

8) **If your attention has slipped elsewhere, focus your awareness and mind to the target body region. This will happen from time to time.**
9) **Move slowly up your left leg (ankle - - calf - - shin - - knee - - your upper leg - - your inner thigh - - your genitals - - your buttocks - - the base of your spine - -your lower back - - your abdomen - - your rib cage - - your chest - - your breasts - - your upper back - - your shoulders. Take the time to direct your attention to the fingers of both arms, and move up your arms simultaneously, tuning into the sensations of your wrists - -your forearms - - your elbows - - your upper arms - - your armpits, your neck - -throat - - your jaw - - your cheeks - - your nose - - your eyes - - your brow and the top of your head.**
10) **The final step is to breathe through the top of your head through your whole body. Tune into your whole body, and take note of the sensations as they occur of their own will. Remember you are whole, and breathe through these sensations. When you are ready, take a moment to lay still in the silence and calm. You may feel as though your body has melted away. When you are ready, return to your body as a whole. Intentionally and slowly move your hands and feet. You can even massage your face lightly before opening your eyes.**

*** *If you are feeling pain, attend to the sensation of the pain as you attend to other regions, breathe through it, accept the sensation and let go as you transition your attention back to where you left off in the scan. If your pain continues to pull your attention away, be aware of it, and continue re-focusing your attention to your continued scan.*

*** If you still have trouble staying awake during this exercise, try doing the body scan with your eyes open.

If you prefer to use a pre-recorded version of this exercise, please visit this website:

http://rodalebooks.s3.amazonaws.com/mindfulness/02%20Meditation%202%20-%20The%20Body%20Scan%201.mp3

Material covered in Session 5

- Review of homework
- The role of anxiety/anticipation in pain and sex
- Discussion: Attitudes towards genitals for him and her and ways to approach

Homework:
Kegel exercises (discuss with partner)

Review of homework
The therapist may want to check in with the couple's experience during the Pain localization and discomfort desentization exercise. She will ask, "What emotions did they experience? What did they learn from this experience?" The therapist will also review other homework exercises with the couple, such as the body-scan. She will continue to problem-solve with the couple if they are finding it challenging to accomplish homework exercises during the week.

The role of anxiety/anticipation in pain...and sex
As highlighted last session, pain, as well as cognitive and emotional processes such as anxiety and anticipation can influence all phases of sexual response. The therapist will capitalize on the previous discussion to highlight how anxiety and anticipation of pain can impact upon the couple's sexual experiences. The therapist will explain how the anticipation of pain leads to anxiety which in turn inhibits arousal and can contribute to involuntary muscle contraction. Both of these things lead to more pain. Moreover, excitement about sex can quickly turn into inhibitory excitement, sometimes depleting one's libido and making it difficult to tap into pain management techniques like breathing and relaxation, and the pleasure associated with sexual activity.

If the therapist is aware of a history of trauma, or suspects a history of trauma for either member of the couple, she should exercise a mindful sensitivty throughout this discussion, with validation that trauma (abuse, coercion, or emotionally negative experiences with sex) may also contribute to anxiety and apprehension about sexual activity, even when that activity is now happening with a loving and safe partner. Understanding what has not been great about sex, if this is the case, will help create a clearer picture about the role of anxiety, anticipation, and apprehension.

The therapist can ask some of the following questions to both members of the couple, to guide the discussion: "How has pain contributed to your anxiety about sex and visa versa? What are your anxieties as they relate to sex? How do they influence the way you approach sex?" The therapist will help the couple link their pain, emotions, thoughts and behaviors using emotionally-focussed questions and techniques. She will explore emotional connections by highlighting the dynamic that might play out between the partners (e.g., "If we were to "unpack" that emotion of anxiety, or in other words, look deeper into the emotional reaction to see what other emotions are involved (e.g., sadness, frustration), what might we find? What's happening for you in that moment? And, in this moment, how are you experiencing sharing how you feel? And John/June, what's happening for you when Mary feels this way?").

It is likely that avoidance of sexual activity will be raised as part of this discussion, or at a later moment for the couple. Avoidance as a coping mechanism does not allow the person avoiding

to address the unpleasant experience, and therefore it can take more and more space, rather than less. The therapist could even draw the following diagram for the couple – as anxiety increases, we engage in avoidance, which can level it off, but it never decreases, but keeps creeping up. This explanation helps illustrate how avoidance is not adaptive in terms of coping over the long term.

The therapist will encourage each person to speak directly to their partner, to avoid the passive voice and to explicitly state their emotions out loud in the first person (i.e., using the word "I"). For example, if the woman says "I feel on edge, and all closed up, like I don't want him to touch me at all". The therapist will say "Can you say that to John/June directly?" The goal is for woman to say, "John/June, when we start being sexually intimate I feel on edge, and closed up. I feel like I don't want you to touch me at all." Then the therapist will ask how the woman feels in this moment. It is likely that sharing her emotions directly will conjure up the same feelings of anxiety. The therapist will ask the partner to describe his or her reaction in that moment when the woman is "on edge". The partner may offer how he or she reacts to Mary not wanting to be touched, and may offer reassurance because he or she realizes she is feeling anxious, or another reaction. The idea is to move back and forth between the emotional reactions, and to deepen the understanding and communication between the couple.

Discussion: Attitudes towards genitals

As a continuation to the above discussion, the therapist can introduce the concept of one's own attitudes towards genitals as another contributing factor to sexual function. By opening this topic, the couple remains in exploration of their understanding of sexual function and their shared sexuality. The therapist can tie in the importance of this discussion with the pain localization exercise, and the images that were provided as part of the website on that handout.

"Attitudes towards genitals is an area of focus when a sexual dysfunction is present. It refers to how we feel and what we think about our genitals. Both female and male genitalia come in all shapes and sizes, with different amounts of pubic hair, different symetry, and different smells. Some people are more comfortable with their genitals than others, and some have never taken the time to look at their own genitals. Sometimes we don't know how to feel because we have never really thought about it or taken the time to look that closely. If I ask you now to reflect on all this, how do you feel about your genitals? How might your feelings about your genitals affect your pain and ability to enjoy sexual activities?"

The therapist will connect negative feelings about genitals to anxiety and thus pain as per the biopsychosocial model. "Women and men with sexual problems can sometimes feel betrayed by their vagina or penis, because they may feel that things aren't working as they should be. But you are not your genitals, no more than you are defined by knees, elbows, or hands. Having a positive attitude towards one's genitals is like having a positive attitude towards one's body, it will help contribute to a sense of comfort and confidence, which may translate into increased

sexual satisfaction and decreased pain (e.g., via enhanced ability to communicate with partner about sex).

This can become an emotionally-charged discussion for some couples, and the therapist should quickly defuse negative comments by asking for more sensitive re-framing, helping the clients unpack the negative feelings. In this instance, interrupting the member of the couple expressing negativity can help the therapist maintain a safe discussion for the couple.

Homework:

Kegel exercises (discuss with partner)

Kegel exercises
The therapist will introduce Kegel exercises for the woman, and provide her with a copy of the handout. The therapist can link Kegel exercises to the importance of connecting with or tuning into one's own body, and being mindful. Research has shown that the anxiety associated with anticipated pain can cause contraction and tensing of the vaginal muscles upon attempted intercourse, and that the pelvic muscles may even be more tense at rest. Together, these factors are associated with more pain. The therapist will suggest that the woman practice the contraction/relaxation exercises for 5 minutes each day. She will take a moment to ask the woman if there are any problems with this homework, and to explore potential solutions.

Study-related issue:

The therapist will have each participant fill out a homework compliance form.

SESSION 5 HANDOUT #1

Kegels

Goal of this exercise: The goal of this exercise is to increase your control over the muscles in your vagina so that you can relax them completely during intercourse and do this despite of the pain. When you involuntarily contract those muscles, it contributes to increasing the pain intensity. It is thus very important to learn to relax those muscles.

How do I know which vaginal muscles to focus on?
To make contact with your vaginal muscles, try stopping the flow of urine the next time you go to the washroom. The muscles that will enable you to do this are the muscles that circle your vagina and urethra; these muscles are the ones you'll be working on during the Kegel exercises.

Instructions
1. Choose a moment during which you know you will not be disturbed. If necessary, unplug the phone or leave the answering machine on. To feel more at ease, you can also choose a room where you can lock the door.
2. If the idea of doing this exercise makes you a bit nervous, engage in another activity that usually helps you to relax (e.g., diaphragmatic breathing, breathing with your partner, play calming music, take a bath)
3. Kegel exercises are easy to do. Here are the steps:
   a) Start by engaging in diaphragmatic breathing for a few minutes
   b) Contract your vaginal muscles, and hold the contraction for 5-10 seconds (count the seconds if you don't have an appropriate watch).
   c) Then relax the muscles for the following 10-20 seconds.
   d) Keep alternating this way between the contraction and the relaxation up to a **sequence of 10 contractions-10 relaxations**. Relaxations should be twice as long as contractions.
   e) Practice **one sequence of Kegel exercises per day**.

Important: If you feel pain during the exercise, note it in the Pain Journal, just as for any other activity.

Talking with your partner: We encourage you to talk to your partner about how you find the Kegel exercises. What are your reactions? What have you realized about your body following the exercises?

Material covered in Session 6

- Review of homework
- Discussion and psychoeducation: Role of the partner and partner responses in women's pain experience and sexual satisfaction
- Discussion: **Partner and woman** responses in relation to sexual satisfaction
- Continuing communication and facilitating the quality of the relationship (e.g., brief communication skills training)

Homework:
Giving and receiving (Step 1 – Relaxing together and non-sexual massage)
Disclosing favourite intimate moments (sexual intimacy)

Review of homework
The therapist should ask the couple how they experienced the homework exercises from the previous session. The therapist should always be looking for ways to help couples overcome challenges to homework, but may need to remind couples that the homework exercises are theirs to use as they please. For example, if they have not completed the homework exercises, they should not feel they are not prepared for therapy.

Discussion and psychoeducation: Role of the partner and partner responses in women's pain experience and sexual satisfaction
The therapist will explain to couples that in addition to pain being influenced by thoughts, emotions and behaviors, that it can also be influenced by the social context or interpersonal factors. Research from the past few years has started to assess the partner's experience, and has suggested that partner's experience psychological distress as well, depending on how they perceive the woman's pain. She will explain that research with chronic pain patients, and also with women with PVD, has shown that the way the partner responds to the person with pain can lead to higher and lower reports of pain, as well as psychological and sexual outcomes like changes in anxiety and depression and sexual satisfaction (Boothby, Thorn, Overduin & Ward, 2004; Cano, Gillis, Heinz, Geisser & Foran, 2004; Rosen, Bergeron, Leclerc, Lambert & Steben, 2010). At the same time, it is important to know that partner responses can also be extremely helpful! One study reported that women who experience pain during intercourse list an understanding partner as the most helpful component when emotionally coping with vulvar pain (Gordon, Panahian-Jand, McComb, Melegari & Sharp, 2003). The therapist will exercise sensitivity when explaining this to the couple so as not to lay blame or guilt on the partner. One way to help present this information is to mention that the woman's own way of responding to her pain is important, and that responding to pain by her and her partner interact with one another. Responses to pain are behaviors and communications, and just like any other behavior and communication it is important to understand their intention and our own reactions.

Before explaining the different types of responses identified in the scientific literature, the therapist will ask the couple about the ways they **each** respond to the woman's pain during or after intercourse. Pain responses may include active and passive behaviors (e.g., getting more lubricant, hugging/kissing, switching to non-painful sexual activity, turning over in bed, etc.) and verbal expressions (e.g., expressing frustration, offering comfort, asking how he can help, etc.). The therapist can ask the couples what they believe is the impact of the various types of responses on the woman's pain, on the sexual interaction, and on both of them in terms of

emotional reactions. The therapist will also ask the woman about her perceptions of partner responses and how she responds as a result; **highlighting the interaction between each person's responses**. This is intended to facilitate open-ended responding.

Research regarding partner responses to PVD
(Research information for the clinician)

Consistent with data from the chronic pain literature, women who perceived their partner as responding to their pain in a highly solicitous manner (concern, attention, support) or as high in negativity (aggression, hostility and resentment) reported higher pain intensity during intercourse in a small cross-sectional investigation (Desrosiers et al., 2008). An examination of partner responses from the perspectives of the woman and her partner found that greater solicitous responses, as perceived by women and partners, were associated with greater vulvo-vaginal pain intensity (Rosen et al., 2010). Rosen and colleagues (2010) suggest that partner solicitousness may result in avoidance of sexual intercourse. Avoidance as a coping mechanism can increase cognitive-affective factors such as catastrophizing, anxiety and hypervigilance, which are associated with increased pain intensity (Gates & Galask, 2001; Payne et al., 2005; Rosen et al., 2010). Greater negative responses and greater solicitous responses were also associated with higher sexual satisfaction in women. Negative partner responses may signal a lack of sensitivity and understanding of the pain, whereas solicitous responses signal the opposite. In this way, partner responses affect the interpersonal environment in which the sexual activity occurs, and consequently the sexual satisfaction.

Another type of partner response, facilitative responses, are thought to decrease avoidance of painful activities and negative cognitive-affective factors associated with pain (Rosen et al., under review). Facilitative responses include encouraging the patient's adaptive coping strategies (Schwartz, Jensen & Romano, 2005). Higher facilitative partner responses, among couples with PVD, are associated with lower pain, as well as higher sexual satisfaction when controlling for sexual function, trait anxiety, and frequency of pain-related and sexual behaviors (Rosen et al., under review).

The therapist will explain that just as one's own responses (thoughts, anxiety, anticipation) about the pain can intensify or lessen the pain we experience, the partner's responses to pain and painful sex can impact upon pain intensity and sexual satisfaction. The response styles that have been most studied among women with PVD are solicitous and negative responses, and more recently facilitative responses. Solicitous responses include those that demonstrate an exaggerated level of concern, attention and support. Negative responses include hostility, criticism and resentment. Both greater solicitous and negative responses are associated with greater pain reported during intercourse. It has been suggested that solicitous responses might encourage avoidance and increase catastrophizing about the pain. Facilitative responses are those that encourage adaptive coping with the pain. Higher facilitative responses are associated with lower pain and higher sexual satisfaction. Therefore facilitative responses are supportive in nature, but they are distinguished from solicitous responses because they help encourage adaptive coping or adaptive ways of approaching the pain, rather than avoidance (which tends to be associated with more pain). The therapist will ask the couple to reflect on and identify their own experiences with partner responses to pain, as well as how the woman responds to her own pain.

Using previously established strategies which focus on affect, the therapist will facilitate a discussion about how partner responses may **encourage** or **discourage** avoidance of sexual activity, but also intimacy in general, and **reinforce** or **help correct** cognitive appraisals of the pain (e.g., catastrophizing, self-efficacy) that in turn heighten pain. The therapist will also explore what types of partner responses have **validated or invalidated** efforts on the woman's part, and what were the consequences of these responses for both partners. Here, validating the effort refers to supporting, encouraging or rewarding the effort (e.g., with praise or affection), whereas invalidating would refer to undermining or discouraging the effort (e.g., with criticism). The therapist will introduce the idea that each person's reaction can lead to cognitive-affective and behavioral reactions in the other, initiating a vicious cycle, and will explore the consequences of each person's reaction. She may wish to refer back to the biopsychosocial diagram of PVD pain to illustrate this cycle and the role of partner responses. How does the woman's responses to her own pain (e.g., crying, anger, avoidance, apologizing, etc.) impact upon her partner's sexual and emotional experience? (E.g., How do you typically react to your own pain? What happens for you [the partner] when she feels this way/reacts this way?). The therapist should highlight that the various partner responses may occur on different occasions, and it can be helpful to identify patterns so that we can work on increasing helpful responses and decreasing harmful ones (e.g., patterns of responses may change when it has been a longer time between sex, or when sex is on a special occasion, or depending on who initiated sex, etc.).

Discussion: <u>Partner and woman</u> responses in relation to sexual satisfaction
Continuing with the previous discussion about partner responses, the therapist will remind couples of the types of partner responses already mentioned (e.g., facilitative, solicitous and negative), and ask the couples to discuss how they have experienced partner responses in relation to sexual satisfaction. For example, how do they believe partner responses (and the woman's responses) have influenced their sexuality and sexual satisfaction? The focus of this discussion will be the impact of one's reactions and responses on sexuality and sexual satisfaction, and not the impact of the pain itself.

Continuing communication and facilitating the quality of the relationship (e.g., brief communication skills training)
The therapist can inquire about ways in which the couple communicates about the pain and the areas of difficulty. If not already done in earlier sessions, she can then teach them basic communication skills such as how to broach highly charged topics. For example, **when** to say something (e.g., reserve a time slot in advance so as not to take one's partner by surprise), or **speaking from the "I"** and **stating one's own feelings**. The therapist can help illustrate by taking from previous exchanges she has facilitated with the couple, pointing to the importance of speaking about how one feels in the first person without blaming the partner.

She can discuss the disadvantages of not saying what is on their mind (e.g., if they say to their partner two years down the road that they do not enjoy some sexual behaviour or way of approaching sex that has been present all along, the partner may be more upset than if they say it the first or second time he does it). Finally, the detrimental effects of avoidance can be highlighted (i.e., the less you talk about it, the bigger the problem becomes, and the harder the solutions are to implement because of the accumulated resentment that needs to be worked through).

Homework:

Giving and receiving (Step 1 – Relaxing together and non-sexual massage) Disclosing favorite intimate moments (sexual intimacy)

Giving and receiving - an activity for both partners
The therapist will provide the couple with the Giving and Receiving handout. She will explain the rationale for the exercise, and will suggest that the couple try Step 1 this week. This exercise presents an opportunity to be mindful, and the therapist will explain how to approach mindfulness during giving and receiving. She will also go over how to provide feedback to each other. She will remind the couple that mindfulness refers to paying attention to the moment, and what is being felt during that moment (see page 19 for the previous description of mindfulness). For certain couples (e.g., those with histories of trauma, suspected trauma, or couples in which the therapist assesses trust to be low or easily threatened), the therapist may suggest certain safe zones as part of this exercise. For example, the therapist can work with the couple to make this a safe exercise by checking in with both members of the couple about how they feel about the exercise and creating zones of the body which are "safe" to touch, and which ones should remain "off the menu" for the moment.

Disclosing favorite intimate moments (sexual intimacy) - an activity for both partners
In preparation for the next session's discussion relating to sexual communication, the therapist will suggest that the couple take 15 minutes during the next week to take turns disclosing their favorite intimate moment to one another. This could be anything from the first time they held hands to the first kiss, or to a time when they felt strongly desired by the other, or felt strong desire for their partner. It could be a particular sexual encounter. It can be more sexual or less. The goal is to communicate their favorite moment, and to share why this moment stands out for him or her.

Study-related issue:

The therapist will have each participant fill out a homework compliance form.

SESSION 6 HANDOUT #1
Giving and receiving pleasure

Rationale: The purpose of this exercise is to increase your awareness of what feels pleasurable to you and your partner while going at your own pace. The goal is to improve your skills at guiding each other toward what feels good for both of you. A secondary goal is to practice the skill of being mindful. Mindfulness refers to being present and purposeful in one's experience in a way that allows one to pay attention to the moment, and what is felt, thought and experienced in that moment. Part of being mindful is paying attention to any interfering, distracting, thoughts as they come into your mind, acknowledging those thoughts, but then redirecting your attention back to the present experience.

How do we do it? Choose a time when you will not be disturbed. It can be helpful to set up the right environment, perhaps by lighting candles, playing soft music, taking a bath, engaging in some tantric breathing with one another, or whatever else makes you feel relaxed and comfortable. It is recommended that you should both undress.

One partner – the receiver – lies down on a bed in a comfortable position, on his or her stomach, back or side. The other partner – the giver – will take the role of the "toucher". For each step, the partners will switch positions. In other words, you and your partner take turns giving and receiving pleasure. Try spacing the steps out over the course of next couple weeks, but set aside enough time so that both partners give and receive on each occasion.

Steps

1) Non-erotic massage, no genital touching
    a. The giver should not try to sexually arouse the receiver. The giver should focus on exploring, touching many parts of the receiver's body, noticing the various textures and sensitivities.
2) Touch/massage including some erotic/genital touching, but focus still on sensations and arousal, not orgasm or sexual performance
3) Touching in an erotic way for sexual pleasure, including orgasm if desired. Couples can also experiment with mutual touching at this step.

Being mindful: Pay attention to the moment, what you are experiencing and thinking. Acknowledge your thoughts, distracting and otherwise. Once you have acknowledged the thoughts, let them pass, and bring your attention back to your experience. Continue to be mindful of the sensations, emotions, and thoughts relevant to the present experience.

This exercise does not include sexual intercourse. You and your partner can of course choose to engage in intercourse or sexual activity whenever you like during the week, but you are encouraged to refrain from intercourse when you are doing a step from this exercise so that you can focus specifically on giving and receiving pleasure.

Important: At each step, the receiver should make suggestions to the giver, telling their partner what feels good and what is uncomfortable. The giver should also remember to ask for feedback from the receiver.

Material covered in Session 7

- Review of homework
- Psychoeducation and discussion: Sexual communication
- Discussion: Defining/redefining the sexual narrative in the context of pain, and "Outercourse"

Homework:
Relaxation breathing with visualization and dilatation
Involving the partner in dilatation exercises

Review of homework
The therapist will take a few minutes to ask the couple how they experienced the Giving and Receiving exercise from last session. What were their reactions? How did the exercise make them each feel? How did they experience being mindful of what they felt and thought during the massage?

Psychoeducation and discussion: Sexual communication

"Sexual communication pertains to the way we communicate our sexual desires, need, likes, and dislikes with our partner. It comprises how we talk about sex when clothed, and during the throws of sexual activity. It has to do with how we talk to one another about sex, and during sex. Is sex something you normally discuss? If so, what does a typical conversation look like? How do you wish it looked? What are some of the things that stop you from talking about sex with your partner? What helps you to feel more comfortable to speak about sexual matters with one another?"

Discussion: Defining/redefining sexual narrative and schemas in the context of pain, and 'Outercourse'
"Sometimes there's a divide between couples because of the way they see themselves in the sexual relationship (Perel, 2006). She might say, I'm an emotional person and I need to feel connected before having sex. (He) might say, I'm more physical and I express my connectedness through being sexual. Or, vice versa. And these differences can contribute to sexual problems. Sometimes having an open conversation about how you see yourself sexually can be illuminating and help bridge a divide that you perceived to be there, or help demystify one that was never really there. Our sexual schema is defined as the way we think about the sexual aspects of ourself. A sexual schema is formed through previous experience and plays out in our current sexual experiences by determining how we interpret sexual information and how we behave sexually (Andersen & Cyranowski, 1994; Andersen, Cyranowski & Espindle, 1999). If I were to ask you each how you see yourself sexually, what would you say (e.g., romantic, adventurous, conservative, timid, etc.)? How do you each view your partner? The therapist will ask the partner to describe reactions to the other person's sexual schema. How do you think your schemas affect each other (do they work against or with each other)? How can we bridge the gap between the two?

The therapist will be building upon the couple's previously stated sexual narrative, or idea of what sex includes. Intercourse is often where couples experience difficulty during sexual

activity. Outercourse includes sexual activity other than intercourse. It includes foreplay, carressing, heavy petting, kissing, manual sex such as mutual masturbation, oral sex, etc.

What are non-penetrative sexual activities that they each enjoy? What comes to mind when you think of a sexual encounter that doesn't include intercourse? The therapist will examine myths or perceptions of what it means to the couple to have a sexual relationship that focuses more heavily on outercourse. For example, some myths include that outercourse is reserved for a period of time in the relationship where they were not ready to engage in intercourse, that it does not constitute sex, or that it cannot be pleasurable as intercourse. Other myths and themes may relate to how the couple approaches sexual activity

Other pertinent notions or themes to discuss with the couple during the 'outercourse' intervention are listed below, and discussion of these themes may depend on what has been previously discussed with each couple.

- **"Spontaneous vs. planned sex":** Couples may complain that they find it less sexy (or exciting) when they have to plan sexual activity. If this is the case, the therapist can explore what "spontaneity" means to the couple, and what "planning" seems to take away from their shared sexual activity. Alternatively, she can also see if there times when planning helps build excitement. It may be helpful to nuance previously established beliefs about "spontaneous sex" by exploring the types of planning that were utilized when they first started having sex (e.g., going on dates, shaving one's legs, getting waxed, bringing a condom, having mints or gum for one's breath, etc.), and how these differ with current scheduling challenges. Some couples may discount things they did in the past that helped enhance desire, arousal, and excitement (e.g., texting sexy innuendos, holding or touching hands, romantic date planning). It might be that couples discount these acts because they were not paying close attention to these efforts as a "means to an end", or were not anxious or pressured that these acts lead to sexual intercourse necessarily. The pressure of wanting to specifically achieve sex, in addition to the inhibiting factors associated with pain, and the fear of pain may make it more difficult for couples to engage in planning, or may make the types of planning different than how they planned in the past. The therapist should validate the experience and feelings shared by the couple, and explore ways in which less pressured/goal-directed, and more mindful approach might help the couple become reacquainted with simmering, flirting, setting the mood, arranging for a baby-sitter so that they can go out on a date, etc. The goal of this discussion can include helping "planning" become fun and exciting for the couple, rather than another "chore" for them to tackle.
- **"Simmering":** Many couples will talk about the novelty and excitement foreplay (or outercourse activities) held at the beginning of their relationship, before they started having sexual intercourse. While novelty, nervousness, and initial exploration of their shared attraction helped contribute to the excitement, "simmering" may have also played a role. In that sense, the couple may not have let things heat up too quickly, or would have cooled things down when they got too hot so as not to rush their sexual activity. The therapist can ask couples if this resonates with their experience, and if they think it may be helpful way to approach their outercourse so that it does not seem like a step backwards, but another way to keep the fires burning (so to speak).
- **Adequate duration for sexual intercourse:** A study by Corty and Guardiani (2008) quantified the opinion of expert sex therapists in North America and determined that, despite what is depicted in films, sit-coms, and mainstream erotica, "adequate" sexual intercourse has a duration of 3 to 7 minutes, with "desirable" durations lasting between 7 and 13 minutes. Many couples are surprised to hear this, and this is a great opportunity to

discuss other pressures the partner and the woman may each feel in terms of sexual activity. In terms of the PVD pain and in line with the previous discussion of "outercourse" options, the therapist can discuss with the couple the idea of decreasing the amount of time they focus exclusively on sexual intercourse.

- **Orgasms are orgasms, simultaneous or not:** Some couples (or one member of the couple) will think that the most ideal way to achieve orgasm is together, simultaneously, and during sexual intercourse. While this is often how the media portrays sexual climax, there is no one ideal that applies to everyone. For example, some people (men and women alike) prefer to be part of the other's orgasm (as the "giver" and "witness"), and then to feel more free to focus on their own pleasure. Simultaneous orgasms are not a myth, but are certainly not the norm for many couples. The therapist should encourage pleasure-focused activity, and continue the dialogue regarding "outercourse", pressures the couple may feel, and problem solve with the couple in terms of addressing these sexually-related pressures. A continued discussion of what it means to be the giver of pleasure, and receiver of pleasure may also be pertinent at this time.

Homework:

Relaxation (deep breathing) with visualization and dilation exercises Involving the partner in the dilation exercises

Relaxation with visualization and dilatation exercises
The therapist will ask the woman with PVD to do her breathing exercises and to imagine or visualize penetration. The goal of this activity is to pair the idea of penetration with the relaxation response. The therapist will provide coping statements and suggestions for muscular and cognitive reactions to imagined penetration.

Vaginal dilatation
The therapist will explain that the goal of dilatation is (1) to desensitize oneself to the association of 'something inside the vagina equals pain' and to get acquainted with the feeling of having something inside the vagina while not experiencing any pain and while in complete control of the situation, and (2) to accomplish this in a **progressive** approach. Progressive increase (slow and steady) is an important component of this exercise. The therapist can also refer back to the gate-control theory of pain, that by progressive exposure to "something inside he vagina" can help them slowly and safely approach the cues that might normally open the pain gate. The therapist will suggest that the woman try the visualization exercise before trying the dilatation. The therapist will ask the woman to do this type of exercise once a day, preceded by a relaxation exercise. Insertion should ideally be about 2 inches deep, but may start with less, depending on the woman's current level of pain and readiness for this exercise. She may use lubricant to facilitate insertion, and she may start with a cotton-swab if a finger is too difficult. As she develops more comfort, she can use other objects if she likes (carrot or zucchini covered with a condom), or proceed with her fingers and her partner's. Provide them with the handout and highlight the suggested progression of dilatation, which includes the partner. The therapist will ask if she and her partner envision any potential problems? Can they think of solutions?

Study-related issue:

The therapist will have each participant fill out a homework compliance form.

SESSION 7 HANDOUT #1

Dilatation

Goal of this exercise: The goal of this exercise is to desensitize yourself to the association of 'something inside the vagina equals pain' and to get acquainted with the feeling of having something inside the vagina while not experiencing any pain and while in complete control of the situation.

General instructions

- Choose a moment during which you know you will not be disturbed. If necessary, unplug the phone or leave the answering machine on. To feel more at ease, you can also choose a room where you can lock the door. If the idea of doing this exercise makes you a bit nervous, take a bath before starting, or engage in another activity that usually helps you to relax.
- Practice **one dilatation exercise per day**. The sequence of exercises will serve as a model, although you will not always necessarily follow it precisely.
- As is evident by the sequence and the fact that you must do one exercise a day, you will often repeat the same exercise two or three days in a row, which will enable you to master it well.
- When you feel that you have mastered a given exercise, go on to the next one. You may progress slower or faster than the model sequence. Go at your own pace, making sure that you practice one exercise a day.

Instructions for dilatation exercises

- First, do the breathing/relaxation exercise.
- Then do a dilatation exercise, starting with exercise 1 (insertion of your smallest finger).
- Once you have succeeded in inserting the finger, keep it inserted for about 5 minutes, continuing to take deep breaths.
    - You might not succeed right away. If you can't insert your finger, just touch the entry of your vagina with the tip of the finger. You can try inserting it farther the next time you do the exercise.
- Observe how you are feeling (anxious, frustrated, tired, etc.). Don't hang on to those emotions; concentrate on your breathing.
- If you feel pain during the exercise, note it in the Pain Journal, just as for any other activity.

Gradation of dilatation exercises

This is a guide to progressing through the exercises. Remember to go at your own pace!

1. Insert smallest finger alone
2. Insert second smallest finger alone
3. Insert third smallest finger alone
4. Insert index or middle finger and move around gently
5. Insert partner's smallest finger yourself
6. Insert partner's index finger yourself
7. Have partner insert his index finger
8. Insert 2 of your own fingers alone
9. Have partner insert his index and move around gently
10. Have partner insert 2 fingers
11. Insert 2 fingers alone and move around gently
12. Have partner insert 2 fingers and move around gently
13. Insert penis yourself with no thrusting
14. Have partner insert penis with no thrusting
15. Attempt gentle thrusting, indicating to your partner what kind of thrusting hurts less

Material covered in Session 8

- Review of homework
- Discussion: Problem solving – what's working and what's not working
- Psychoeducation and discussion: Facilitating sexual desire and arousal
- Introduction: Cognitive defusion

Homework:
Facilitating sexual desire and arousal
Continuation of giving and receiving (Step 2 – Relaxing together and non-sexual massage)
Continuation of pain and sex journaling

Review of homework
The therapist should take a few moments to ask the couple how they experienced the homework exercises from the previous session. She will ask the woman if she attempted the dilatation exercises, and how they both feel about including the partner in the dilatation exercises.

Discussion: Problem-solving – What's working? What's not working?
Taking from previous discussions about how their sex life has changed since the pain started / over the course of their relationship, the therapist will assess and introduce and facilitate the idea of problem-solving for the couple. For example, have they started trying non-penetrative sexual activities? What changes or adaptations have they made? What adaptations have worked? Which haven't worked? What do solutions look like for the woman? For her partner? Have they come up with their own helpful ways of responding to the pain?

Psychoeducation and discussion: Facilitating sexual desire and arousal
Likely raised in previous sessions, many women report a decrease in desire and capacity to become aroused because they are anticipating the pain. The reverse is also true: the experience of pain leads to decreases in desire and arousal. Likewise, it is possible for the partner to feel a decrease in desire and arousal because of the negative associations (e.g., the woman's discomfort) with sexual intercourse. The therapist will ask the couple to think about ways to facilitate their desire for sex and she will help them make a list. In addition, she will ask them to also think about things that enhance their arousal and sexual excitement. If they are shy about this, she can start generating ideas herself (e.g., fantasy rehearsal, erotic material, discussing their frustrations with their partner in order to problem solve, setting the mood, lighting candles) and slowly bring them to do it themselves. She should use humour to dissipate their discomfort if any. She might also ask them to think about their entries in their Pain and Sex Journals by asking, "What ideas might those entries spark?"

How to facilitate desire and arousal

The desire and arousal discussions can be blended into one single discussion encompassing both dimensions. For some couples, discussions of desire may be more important, and for others it may be challenges to sparking and maintaining arousal that is more pertinent for discussion.

The therapist may refer back to models of sexual response and normalize the idea that desire and arousal may not be spontaneous, but may evolve and grow once sexual activity is initiated.

1) The therapist will ask the woman and her partner at what point during sex does the woman experience desire and/or arousal problems. The therapist will also ask the partner this question if the partner experiences desire and/or arousal problems. "Think back to those moments, what would help increase your desire and/or arousal?" The therapist will help by making the list, or taking notes. She will add some suggestions herself if necessary and discuss ways to implement these: What might prevent them from implementing those changes (e.g., the myth of simple, spontaneous sex)? How does the partner feel about the changes they may make in their sex life? The therapist will facilitate a conversation between the woman and her partner to discuss their feelings about these changes using previously developed techniques that centre on the clients' emotions.

2) Could anything else besides anticipation of pain be inhibiting desire and/or arousal? The therapist can have them generate examples. For example, issues with receiving pleasure or being the focus of pleasure, feeling guilty that they have pain and that their partner has to put up with a "dysfunctional partner", difficulties in communicating preferences, especially regarding new ways to diminish or avoid the pain, focusing only on the partner's arousal, negative body image, etc. The therapist will help facilitate an exchange between the woman and her partner about these factors.

Introduction: Cognitive defusion of thoughts (ACT)
The therapist will introduce cognitive defusion, which is a method of working with preoccupying or maladaptive cognitions. Cognitive defusion relates back to the concept of mindfulness.

It is the process of recognizing thoughts as just that – thoughts. Rather than altering the content of the thought, cognitive defusion works to reframe the context in which one has the thought. The therapist can explain that defusion is meant to help address the thoughts that tend to hold us hostage and reduce their power to negatively affect our lives. For example, a negative thought could be watched dispassionately as it passes through the mind, repeated out loud until only its sound remains, or treated as an externally observed event by giving it a shape, size, color, speed, or form. A person could thank their mind for such an interesting thought, label the process of thinking (''I am having the thought that I am no good''), or examine the historical thoughts, feelings, and memories that occur while they experience that thought. Such procedures attempt to reduce the literal quality of the thought, weakening the tendency to treat the thought as what it refers to (''I am no good'') rather than what it is directly experienced to be (e.g., the thought ''I am no good''). Again, the idea is that thoughts are just thoughts. Cognitive defusion helps diffuse maladaptive thoughts of their power, lessening their ability to determine how we feel and act. The result of defusion is usually a decrease in believability of, or attachment to, private events rather than an immediate change in their frequency.

The therapist will ask each member of the couple to identify and share a thought related to the PVD pain, sex or their relationship that they believe might be problematic, or one that has been bothering them. She will help coach and guide the couple through this process (i.e., identifying thoughts that seem to take hold of them or preoccupy them). In particular, this might be useful for thoughts like, "This is going to hurt." and other thoughts that are realistic and true for the couple. The therapist can assure couples that identifying their thoughts can be a difficult

process at first because thoughts are often automatic and quick that we may not be aware of them. Increasing our attention to thoughts is a first step to reducing their influence, and will get easier with time.

The therapist will encourage the couple to notice their thoughts over the coming week in preparation for beginning cognitive defusion in the following session.

Homework:

Try one thing from their list of ways to facilitate sexual desire and arousal Continuation of giving and receiving (Step 2 – Relaxing together and non-sexual massage) Continuation of pain and sex journals

Try one thing from their list of ways to facilitate sexual desire and arousal - an activity for both partners
The therapist will provide the couple with the list of ideas regarding desire and arousal developed during the session. As an exercise for the week, she will encourage them to select one of the ideas and try it out. She will ask if they foresee any problems, or if there are any activities that seem more feasible or more exciting to try.

Continuation of giving and receiving (Step 2 – Relaxing together and non-sexual massage) - an activity for both partners
The therapist will ask the couple to engage in the Giving and Receiving exercise again so that they can try Step 2. She will encourage them to engage in mindfulness during the exercise. For certain couples, it may be important for the therapist to remind them of their safe zones.

Pain and sex journal
The therapist will ask the couple to read over their pain journal entries during the next week and to bring their pain journal entries with them to the next session. She can point out that the journaling or reading of the journal may help them identify some of their preoccupying thoughts related to PVD pain, sex and the relationship.

Study-related issue:
The therapist will have each participant fill out a homework compliance form.
The therapist will confirm with the RA that the couple completed week 8 of CBCT. She can also remind the participants that they will have questionnaires to complete at home in the next couple days.

SESSION 8 HANDOUT #1

List of ideas to facilitate desire and arousal
(To be completed during the session)

Material covered in Session 9

- Review of homework
- Following up: Sexual desire and arousal
- Cognitive defusion intervention: Defusing negative thoughts, beliefs and cognitive distortions related to **pain** (catastrophizing, hypervigilance, attributions, self-efficacy, etc.), the **relationship** and **sex.**
- Psychoeducation and discussion: Attributions about pain
- Follow-up: Pain and sex journaling check in – Any revelations to share?

Homework:
Practice cognitive defusion

Review of homework
The therapist will check in with the couple about how they are experiencing the Giving and Receiving activity. How has it made them feel? What have they noticed? Have they run into any difficulty in trying it? If they have yet to try the activity, what could help them in trying? How did they experience practicing mindfulness during the actvity or exercise?

Following up: Sexual desire and arousal
The therapist will ask the couple to share their experience in trying one of their ideas to facilitate desire and arousal. How did it feel trying something from their list? What did they take away from trying something new? What are they taking away from this experience? How did applying arousal techniques work for the woman and her partner? Did they try any other items on their list and what was the outcome? The therapist can suggest more ways to increase sexual interest if these have not already come up (identifying sexual needs, reading and viewing erotic material, fantasizing, etc.). What might be preventing them from trying out some of the desire and arousal strategies that have been suggested? Why do the things they know about sexual pleasure suddenly become irrelevant when they start to feel the pain?

Research regarding pain-related cognitions
(Research information for the clinician)

Women with PVD report more catastrophizing about their pain (i.e., an exaggerated and pessimistic perspective) compared to control women reporting on other forms of pain (Pukall, Binik, Khalifé, Amsel & Abbott, 2002; Payne et al., 2007). Women with PVD also demonstrate higher levels of hypervigilance towards the pain when compared to a neutral stimulus (Payne, Binik, Amsel & Khalifé, 2005). In addition, women with PVD tend to exhibit increased catastrophizing over the negative pain-related consequences for their partner and relationship (Granot & Lavee, 2005). Higher levels of catastrophizing, and hypervigilance, as well as lower levels of pain self-efficacy (i.e., one's beliefs about one's ability to cope with the pain) have been found to contribute unique variance in predicting increased intercourse pain in women with PVD (Desrochers, Bergeron, Khalifé, Dupuis & Jodoin, 2009). Higher levels of pain self-efficacy were also found to be significantly associated with better sexual functioning (Desrochers et al., 2009). Moreover, there is evidence of a prospective relationship between cognitive variables and PVD, where higher levels of pain catastrophizing and lower levels of self-efficacy were shown to predict worse treatment

outcomes in a randomized trial evaluating cognitive-behavioral therapy (Desrochers, Bergeron, Khalifé, Dupuis & Jodoin, 2010).

Cognitive defusion intervention

The therapist will briefly re-explain cognitive defusion. "Our thoughts have a direct impact on the way we perceive and react to events that happen in our lives. Cognitive defusion is about learning to distance oneself from one's thoughts. The idea is to take a step back from one's thoughts so that they do not preoccupy us to the point of distraction or make us feeling trapped. Defusion allows one to perceive thoughts as simply thoughts, and as passing words or images. The therapist can use the following metaphors to help illustrate the process of defusion (i.e., the process of distancing oneself or detangling oneself from one's negative or burdensome thoughts): cars passing by a house or along a street, clouds moving in the sky, waves rolling into the beach, trains pulling out of the station.

The therapist can provide this rationale for defusion: "Changing how you interact with your thoughts is important because the way you react to your pain has a direct effect on how you perceive this pain. Unrealistic thoughts about pain, such as catastrophizing, are linked to higher pain intensity, among other reasons because they provoke anxiety and anxiety is related to increases in pain intensity. These maladaptive thoughts also limit adaptive coping and can even maintain unproductive interactions between partners."

The therapist will introduce the following exercise by explaining that the intention is to learn one way of taking a preoccupying thought, and taking steps to label it as a thought, and then taking steps to create some distance between them and the thought.

I'm having the thought that (adapted from Hayes et al., 1999; Harris, 2009)

1) The therapist will, in turn, ask each member of the couple to state a negative thought relating to the pain, sex, the relationship or her or himself in a short sentence. For example, "I'm not sexy because I can't have pain-free sex like everyone else."
2) The therapist will then ask the client to "fuse" with this thought for 10 seconds, encouraging them to get wrapped up in the thought. "This can be done by repeating it to yourself, or focusing on this thought. Get wrapped up in it."
3) Next, the therapist will ask the client to "replay" or repeat the thought with these words in front of it: "**I'm having the thought** that…" The therapist will say the sentence for the client twice to emphasize the difference. She will then ask the client to repeat it back to her, followed by another repetition. She will ask her or him to repeat it one more time to herself or himself.
4) Then the therapist will ask them to repeat the thought again with these words in front of it: "**I notice** that I'm having the thought that…" The therapist will use the same method listed in step 3 to help the client get wrapped up in the new phrasing of the thought, and thus defusing the original thought.

Following this exercise, the therapist will explore the client's experience with this exercise. For example, "What happened for you during this process? Did you notice any changes in your connection to or experience of the thought? Did you feel yourself get further from the thought?" The therapist may want to repeat the exercise with each member of the couple if there is time. The therapist will follow up with the couple after the exercise and ask if they

believe they can apply this exercise outside of therapy. "When you have a negative thought, do you think you could use this technique to distance yourself from the thought?"

Psychoeducation and discussion: Attributions about pain

Research regarding attributions about PVD pain
(Research information for the clinician)

Researchers investigated male partners' attributions about vestibulodynia and found that partners who attributed the woman's pain to internal causes (e.g., personal responsibility) demonstrated lower dyadic adjustment and higher levels of psychological distress (Jodoin et al., 2008). Negative forms of attributional dimensions (i.e., internal, women responsibility, global and stable) along with higher pain intensity for the woman, were correlated with greater psychological distress in male partners. Partners who perceive the pain as a pervasive and long-lasting problem may be less likely to utilize healthy forms of coping, may feel more helpless in the face of their female partners' pain, and therefore are likely to experience more psychological distress (Jodoin et al., 2008). In a similar study examining women's attributions about their own pain, results indicated that the more women perceived their vulvar pain as external, global and stable, taken together, the more relationship distress they reported (Jodoin et al., 2011). Addressing one's attributions or beliefs about the pain may serve as an important pathway to lessening the negative consequences of chronic pain on romantic relationships. Internal and global (i.e., pervasive) attributions were associated with higher levels of dyadic adjustment, however, global attributions were also associated with greater psychological distress and lower sexual functioning (Jodoin et al., 2011).

The therapist will explore how each member of the couple views the pain, and to what they attribute the pain (e.g., the causes). What types of attributions has the woman made about her pain? And her partner? What do they believe causes the pain? Do they believe the causes are external or internal, or both? How do they expect the pain to change or not to change in the future? Does the pain affect all aspects of their life and sense of self, across all situations, or is it confined to certain aspects/situations? Why do they think it continues?

Causal attributions are how one explains the pain. These ideas may have already been raised in a previous session, however, the intention in this intervention is to highlight the impact these attributions can have. For example, the woman may perceive the PVD as all her fault, and therefore feel guilt, shame, or as though she is not a woman because of the loss and difficulty associated with their sexuality. The perception of it being her fault can lead to negative feelings, which in turn can lead to a behavioral consequence such as avoiding sex (as per the CBT model). Some men feel responsible for the woman's pain, or perceive their partner as being "the problem". As part of this exploration, the therapist will explain that these are the attributions that each person makes about the pain. She will go on to explain that the

attributions that one makes about the pain can influence the quality of relationship, pscyhological distress for both partners and sexual functioning for the woman. The therapist can link this information back to the biopsychosocial diagram as well as the CBT model to illustrate the impact of attributions on pain, sexual, relational, and psychological functioning.

How do these attributions affect how they feel? How do they influence their behaviour (e.g. avoidance)? How can these attributions be reframed?

The therapist will explain that negative forms of attributions can be problematic. For example, partner attributions that are internal, place responsibility on the woman, are global and stable are the types of attributions that are associated with more psychological distress for the partner. Whereas, the woman's attributions of the pain being external, global and stable (all at once) were associated with higher reports of relationship distress. The therapist can take some time with the couple to see if these elements are present in their attributions and continue re-framing with them.

Follow up: Pain and sex journaling check-in
In addition to using the pain journal entries in the previous discussion, the therapist will ask each member of the couple if the process of keeping a pain journal, or in examining the entries in their pain journal has contributed to any new realizations about the pain or if they have noticed any patterns with regard to their pain (e.g., context), thoughts, or behaviours?

Homework:

Practice cognitive defusion

Practicing defusion
The therapist will give each member of the couple a copy of the cognitive defusion handout. She will explain the rationale of practicing cognitive defusion. The therapist can explain that their experience in pain and sex journaling will help with this exercise in that it may have helped identify some of their negative thoughts. She will tell the couple to keep track of their experience with defusion using the provided grid during the week because they will discuss it next session.

Study-related issue:

The therapist will have each participant fill out a homework compliance form.

SESSION 9 HANDOUT #1

Practicing cognitive defusion

Rationale: Our thoughts have a direct impact on the way we perceive and react to events that happen in our lives. The means we use to cope with a given problem can modify our perception of that problem. For example, the way you react to your pain has a direct effect on how you perceive this pain. Thus, certain thoughts can take hold of us and keep us from doing the things we want to do, feeling good about ourselves and living our lives. Cognitive defusion is a technique whose goal is to help you distance yourself from your negative thoughts, and therefore cope more efficiently with the pain, thus enabling you to perceive it as less intense.

Instructions for defusion:

1) Take note of the negative thought.
2) Take note of the thought's form – is it made of words, images or sounds? By taking the time to consider the form of the thought, you are taking steps toward identifying the thought for what it is, a thought, and toward demystifying the thought and its power to preoccupy you.
3) Take a moment to thank your mind for the thought, even if it is negative. This helps remind you that the thought came from your mind, and is just a thought.
4) Try the exercise below. Keep in mind that structuring the thought into a simple sentence may make the exercise easier.

Below are the instructions for the exercise you tried during this week's session (from Harris, 2009). Remember to keep track of your experiences with these exercises. For example: How did they make you feel? What did you like about them? What did you notice during the process of defusion?

I'm having the thought that…

- Take the negative thought and put it in the form of a short sentence.
- Just as you did with the therapist during this week's session, "fuse" with the thought for 10 seconds. Get caught up in the thought. Repeat it to yourself. Focus on it.
- Now, to yourself, replay this thought with these words in front of it: "I'm having the thought that…" Replay this at least three times to yourself.
- And now, replay it again with these words: "I'm noticing that I'm having the thought that…"

SESSION 9 HANDOUT #2

Practicing cognitive defusion for the partner

Rationale: Our thoughts have a direct impact on the way we perceive and react to events that happen in our lives. The means we use to cope with a given problem can modify our perception of that problem. Our way of thinking can also influence our partner's experiences. For example, the way you react to your partner's pain can have an impact on your perception and her perception of her pain. Thus, certain thoughts can take hold of us and keep us from doing the things we want to do, feeling good about ourselves and living our lives, as well as impact upon our partner's experiences. Cognitive defusion is a technique whose goal is to help you distance yourself from your negative thoughts, and therefore cope more efficiently with the pain, thus enabling you to perceive it as less intense.

Instructions for defusion:

5) Take note of the negative thought.
6) Take note of the thought's form – is it made of words, images or sounds? By taking the time to consider the form of the thought, you are taking steps toward identifying the thought for what it is, a thought, and toward demystifying the thought and its power to preoccupy you.
7) Take a moment to thank your mind for the thought, even if it is negative. This helps remind you that the thought came from your mind, and is just a thought.
8) Try the exercise below. Keep in mind that structuring the thought into a simple sentence may make the exercise easier.

Below are the instructions from the exercise practiced during this week's session (from Harris, 2009). Remember to keep track of your experiences with these exercises. For example: How did they make you feel? What did you like about them? What did you notice during the process of defusion?

I'm having the thought that…

- Take the negative thought and put it in the form of a short sentence.
- Just as you did with the therapist during this week's session, "fuse" with the thought for 10 seconds. Get caught up in the thought. Repeat it to yourself. Focus on it.
- Now, to yourself, replay this thought with these words in front of it: "I'm having the thought that…" Replay this at least three times to yourself.
- And now, replay it again with these words: "I'm noticing that I'm having the thought that…"

Material covered in Session 10

- Review of homework
- Intervention and follow-up: Cognitive defusion revisited

Homework:
Continue practicing cognitive defusion
Continuation of Giving and receiving (Step 3 – Sexual touching and potential to focus on orgasm)

Review of homework
The therapist will check in with the couple about how they experienced the cognitive defusion exercises, and keeping track of these experiences.

Intervention and follow-up: Cognitive defusion revisited
The therapist will discuss the cognitive defusion exercise with the clients. Did they notice a distancing from their negative thoughts? What did this feel like?

The therapist will practice another defusion exercise with the couple. She will explain that this exercise is considered to be a mode meditative technique, and builds upon previous mindfulness strategies discussed during the course of therapy. The therapist will remind the couple that mindfulness refers to bringing awareness to one's thought and feelings, without trying to hold onto, reject them or judge them.

Leaves on a stream (from Harris, 2009)

1) Get into a comfortable position, and close your eyes or find a point to focus on.
2) Imagine yourself sitting by the water, by a gently flowing stream. Picture that there are leaves floating past along the surface of the water. The stream and leaves can look however you like. They could be autumn leaves that have fallen, or green leaves. (Pause for 10 seconds as the client develops her or his own image).
3) For the next couple of minutes, take every thought that comes to your mind and place it on a leaf floating along the water. Let it float away. Do this with every thought, whether the thought it positive or negative, pleasant or painful. (Pause for 10 seconds so he or she can start to picture this).
4) If the thoughts stop, just take a few moments to watch the stream in your imagination. Your thoughts will start up again. (Pause for 20 seconds).
5) Let the water move at its pace. Do not try to slow it down or speed it up. (Pause 20 seconds).
6) If you happen to be thinking that "This is stupid" or "I can't do this", I encourage you to place those thoughts on a leaf. (Pause 20 seconds).
7) You may find some leaves get stuck and do not float away as fast as others. This is ok. Don't force it to float away.
8) If you are feeling bored, or impatient, take those feelings and place them on leaves. Let them float on by.
9) You may notice that some thoughts are going to grab you and it will be harder to focus on the stream and the exercise. Just as with the body-scan, this is normal and will happen. When this happens, acknowledge that you have been hooked by a thought and gently turn your attention back to the steam and the exercise.

Following the last instruction, the therapist will allow the clients a few minutes to continue imagining their stream. She will remind them periodically that it is normal for thoughts to grab their attention, and that as soon as they realize this and note it, that they should return their attention back to the exercise.

10) Now, we can bring the exercise to an end. Take your time in opening up your eyes, or sitting up in your chair. Take a moment to look around the room – welcome back.

In turn, the therapist will ask the clients how they experienced this exercise. What did they notice? What types of thoughts moved along the stream more quickly? Which ones tended to grab or hook their attention? Did they find themselves trying to speed up or slow down certain thoughts or feelings? What was it about those thoughts? During this discussion, the therapist will explain that this exercise was not about rushing to create distance between one and one's thoughts, but to experience a "natural flow" of her or his thoughts.

If the couple is struggling with defusion or the therapist believes that defusion is contributing to an increased focus on the thoughts, or a fusion with the negative thoughts, the therapist will explore this experience with them. She will identify "fusion" if it is occurring, and highlight the impact of one's thoughts (e.g., just how preoccupying some thoughts can be, or how much of our attention they can take). Following the exploration of the experience, she may suggest selecting a negative thought that has less charge and that can be phrased more simply as a means of practicing defusion.

The therapist will explore the following questions with both members of the couple regarding cognitive defusion: What were there reactions? What challenges did it pose? What did they like about it? Do they believe they will be able to use this strategy in the future? She will gently encourage couples by highlighting that similar to other mindful exercises, this strategy make time to learn and will take practice.

Homework:

Continue practicing cognitive defusion Continuation of giving and receiving (Step 3 – Sexual touching and potential to focus on orgasm)

Continue practicing cognitive defusion - an activity for both partners
The therapist will provide the couple with a copy of Session 10 Handout #1, which outlines the steps for the same Leaves on a stream intervention that was accomplished during the session. She will encourage them in taking turns walking the other through this exercise.

Continuation of Giving and receiving (Step 3 – Sexual touching and potential to focus on orgasm) - an activity for both partners
If the couple has not tried Step 3 of the Giving and Receiving exercise, the therapist can suggest that they take time to try Step 3 during the week. She can explore any concerns or challenges that they foresee with this activity. If the couple does not feel ready to try Step 3, the therapist will suggest that they do Step 2 again, but explore reasons for avoiding Step 3 (lack or orgasm, discomfort with mutual pleasure, etc.) For certain couples, it may be important for the therapist to remind them of their safe zones.

Study-related issue:

The therapist will have each participant fill out a homework compliance form.

SESSION 10 HANDOUT #1

Leaves on a stream guided meditation and cognitive defusion exercise

Instructions: For this cognitive defusion exercise, you will need to take turns guiding one another by reading the instructions below. In addition to the written guidelines below, you may also need a clock with a second hand to help you time each step. Together, you can set up a comfortable space in your living room in which you can each sit comfortably. You may even want to set your phones to silent so that you will not be interrupted. If you like, you can take a few minutes at the end to share some of the thoughts that grabbed you more than others, which ones moved more quickly down the stream, and any reactions.

Leaves on a stream (from Harris, 2009)

1) Get into a comfortable position, and close your eyes or find a point to focus on.
2) Imagine yourself sitting by the water, by a gently flowing stream. Picture that there are leaves floating past along the surface of the water. The stream and leaves can look however you like. They could be autumn leaves that have fallen, or green leaves. (Pause for 10 seconds as the meditator develops her or his own image).
3) For the next couple of minutes, take every thought that comes to your mind and place it on a leaf floating along the water. Let it float away. Do this with every thought, whether the thought it positive or negative, pleasant or painful. (Pause for 10 seconds so he or she can start to picture this).
4) If the thoughts stop, just take a few moments to watch the stream in your imagination. Your thoughts will start up again. (Pause for 20 seconds).
5) Let the water move at its pace. Do not try to slow it down or speed it up. (Pause 20 seconds).
6) If you happen to be thinking that "This is stupid" or "I can't do this", I encourage you to place those thoughts on a leaf. (Pause 20 seconds).
7) You may find some leaves get stuck and do not float away as fast as others. This is ok. Don't force it to float away.
8) If you are feeling bored, or impatient, take those feelings and place them on leaves. Let them float on by.
9) You may notice that some thoughts are going to grab you and it will be harder to focus on the stream and the exercise. Just as with the body-scan, this is normal and will happen. When this happens, acknowledge that you have been hooked by a thought and gently turn your attention back to the steam and the exercise.

Following the last instruction, the reader will allow the meditator a few minutes to continue imagining their stream. He or she will remind them periodically that it is normal for thoughts to grab their attention, and that as soon as they realize this and note it, that they should return their attention back to the exercise.

10) Now, we can bring the exercise to an end. Take your time in opening up your eyes, or sitting up in your chair. Take a moment to look around the room, and welcome yourself back.

Material covered in Session 11

- Review of homework
- Discussion: Asserting oneself with one's partner
- Psychoeducation and discussion: Avoidance of sexual activities

Homework:
Homework exercises revisited

Review of homework
The therapist will ask the couple continues to experiencing the Giving and Receiving massage exercises. The therapist will also check in about other homework exercises that the couple may be incorporating.

Discussion: Asserting oneself with one's partner
The therapist will raise the issue of communication again. She can reiterate how communication difficulties can create conflicts between partners, and that certain communication difficulties stem from lack of assertion. She will begin by asking couples about their experiences with assertion in their relationship. Are there certain areas that are more easily approached with assertion? She will ask them to think of an area of difficulty (e.g. initiation, arousal problems, asserting sexual needs, broaching the topic of sex, taking partners' frustration too personally, etc.) and discuss reasons why it is difficult for them to talk about some of these issues with their partners. What are the barriers or obstacles? What facilitates assertion in areas where it happens more easily or naturally? It can be useful to explore the emotions associated with the area of difficulty being discussed. Moreover, it may also be useful to do some cognitive defusion with the couple regarding some of these issues, as well as reframing. The therapist should encourage the couple to do the cognitive defusion with one another, helping only to facilitate if necessary.

Psychoeducation and discussion: Avoidance of sexual activities
The therapist will help clients to identify if they have been avoiding sex. She will work at breaking avoidance habit if some of them are avoiding (this will be an ongoing task throughout the therapy): How do they avoid sex? Do they have unrealistic beliefs or less adaptive attitudes about sex? She can use the different levels they are at to facilitate their learning from one another. What are some of the reasons why they avoid sex? Pain is one, but what about activities that are not painful? What purpose might the avoidance serve for them as individuals and for the relationship? What sexual activities do not involve pain? Can they practice these? Can they show their partner how they masturbate so as to avoid any pain? The therapist can lead the discussion toward the partner's reactions to the pain. How might these contribute to the pain experience? This discussion may repeat issues previously discussed in therapy. The therapist should have them generate some potential ideas/solutions and suggest some herself if necessary. She should potentiate their own coping skills and give them the opportunity to develop their own solutions, while emphasizing the potential they have to control their pain.

What else do they avoid? Intimacy in general? Does the couple avoid hugging/kissing for fear it will lead to painful sex? Depending on how the discussion evolves, the therapist may incorporate and encourage the couple to practice any of the interventions previously introduced in therapy during this discussion (e.g., cognitive defusion, validating/active listening, etc.)

Homework:

Homework revisited (identify homework activities that were unsuccessful, very helpful or that went untried, and the couple will choose which to try or re-try)

Homework revisited

The therapist will ask the couple about their experiences with the homework exercises. She will ask which ones were most successful or easy to complete. She will enquire about which homework exercises slipped through the cracks, or were attempted but unsuccessful. Their homework for the following week will be to re-try a homework that was previously attempted, or to try a homework that was never attempted. The therapist will explore the reasons for why the selected homework was not tried, etc. She will ask the couple to identify the challenges associated with this particular exercise, and explore potential solutions with the couple. The therapist should have copies of all handouts in case the couple has misplaced the handout for the selected homework exercise. The therapist should also be ready to explain any of the homework exercises.

Study-related issue:

The therapist will have each participant fill out a homework compliance form.

Material covered in Session 12

- Review of homework
- Discussion: Progress and setbacks
- Discussion: Summarizing information learned
- Psychoeducation and discussion: Tools for the future

Review of homework
The therapist will follow-up with the couple about their revisiting certain homework tasks. She will take a moment to explore the couple's experience with re-trying a homework, or trying a homework they had never tried before. What had stopped them from trying it in the first place? Why did they choose this exercise to re-try?

Discussion: Progress and setbacks
The therapist will open a discussion with the couple about their perceived progress during therapy. What changes have they noticed? How do they feel now having gone through therapy? She will also explore setbacks or negative perceptions that may have developed during therapy? What challenges or problems did they encounter? What might be some ways of overcoming these barriers (e.g., barriers to trying new exercises)?

Discussion: Summarizing information learned
The therapist will review what has been learned with the couple. What is the most significant thing they have learned? What aspects of therapy have been integrated into their daily life as a couple? What take-away messages are they leaving with for their sex-life? What components, exercises or information do they plan to continue integrating? What will they do in the future if they experience a period of increased pain, a flare-up? The therapist will also ask some of the following questions: How can they ensure they will keep practicing or implementing what they have learned? What problems do they anticipate? What might help prevent these problems?

Psychoeducation and discussion: Tools for the future
The therapist will discuss how to communicate with doctors and clinicians in the future. Women with PVD and their partners often report frustration with doctors for many reasons, including: not feeling understood or listened to respectfully by physicians, feeling as though they are not taken seriously, and their experience that many physicians lack of expertise and knowledge regarding PVD (Connor, Robinson & Wieling, 2008). As part of this discussion, the therapist will encourage women and their partners to be their own advocates when navigating the health care system, and to engage in self-assertion.

Tools for the future: She will suggest the following books if appropriate for the couple's situation: a) Lonnie Barbach, "For yourself", b) Lonnie Barbach, "For each other", c) Margaret Caudill, "Managing pain before it manages you", d) Glazer and Rodke, 'Vulvodynia Survival Guide', Elizabeth Stewart, 'the V Guide', e) Goldstein, Pukall & Goldstein, "When sex hurts: A woman's guide to banishing sexual pain", and any other book on sexuality that seems serious and instructive.

Considerations for therapy termination

Saying good-bye to clients is often a challenging part of therapy. During this last session, the therapist can share her impressions of the couple's strengths for the future, alongside the couple outlining the tools they feel they have developed. The therapist can also express an authentic appreciation in having gotten to know them, and work with them.

Study-related issues:

The therapist will have each participant fill out a homework compliance form. The therapist will send an email to the RA to let her know the couple has completed CBCT. She can also remind the couple they have some questionnaires to complete online within a couple days, and that they will be contacted by the RA for the post-treatment assessment.

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Appendix B

Measures and Questionnaires

Childhood Trauma Questionnaire (CTQ)

Female Sexual Function Index (FSFI)

International Index of Erectile Function (IIEF)

Couple Satisfaction Index (CSI)

Trait subscale of the State-Trait Anxiety Inventory (STAI-T)

McGill Pain Questionnaire (MPQ)

McGill Pain Questionnaire – Short Form (MPQ-SF)

Numerical Rating Scale (NRS) of Pain

Derogatis Interview for Sexual Functioning - Self-Report (DISF-SR)

Global Measure of Sexual Satisfaction Scale (GMSEX)

Pain Catastrophizing Scale (PCS)

Painful Intercourse Self-Efficacy Scale (PISES)

Beck Depression Inventory-II (BDI-II)

Participant Ratings of Global Improvement

Numerical Rating Scale (NRS) for Treatment Satisfaction

Therapist Intervention Checklist

Homework Completion Checklist

Childhood Trauma Questionnaire (CTQ)

The following statements are about childhood experiences in your own family. Respond to the statements using the below scale.

Never true	Rarely true	Sometimes true	Often true	Very often true
1	2	3	4	5

When I was growing up…	Never True	Rarely True	Some-times True	Often True	Very Often True
1. I didn't have enough to eat.					
2. I knew that there was someone to take care of me and protect me.					
3. People in my family called me tings like "stupid," "lazy," or "ugly".					
4. My parents were too drunk or high to take care of the family.					
5. There was someone in my family who helped me feel that I was important or special.					
6. I had to wear dirty clothes.					
7. I felt loved.					
8. I thought that my parents wished I had never been born.					
9. I got hit so hard by someone in my family that I had to see a doctor or go to the hospital.					
10. There was nothing I wanted to change about my family.					
11. People in my family hit me so hard that it left me with bruises or marks.					
12. I was punished with a belt, a board, a cord, or some other hard object.					
13. People in my family looked out for each other.					
14. People in my family said hurtful or insulting things to me.					
15. I believe that I was physically abused.					
16. I had the perfect childhood.					
17. I got hit or beaten so badly that it was noticed by someone like a teacher, neighbour, or doctor.					
18. I felt that someone in my family hated me.					
19. People in my family felt close to each					

other.					
20. Someone tried to touch me in a sexual way, or tried to make me touch them.					
21. Someone threatened to hurt me or tell lies about me unless I did something sexual with them.					
22. I had the best family in the world.					
23. Someone tried to make me do sexual things or watch sexual things.					
24. Someone molested me.					
25. I believe that I was emotionally abused.					
26. There was someone to take me to the doctor if I needed it.					
27. I believe that I was sexually abused.					
28. My family was a source of strength and support.					

Female Sexual Function Index (FSFI)

These questions ask about your sexual feelings and responses **during the past 4 weeks**. Please answer the following questions as honestly and clearly as possible. Your responses will be kept completely confidential. In answering these questions the following definitions apply:

Sexual activity: Includes caressing, foreplay, masturbation and vaginal intercourse.
Sexual intercourse: Defined as penile or sex-toy penetration (entry) of the vagina
Sexual stimulation: Includes situations like foreplay with a partner, self-stimulation (masturbation) or sexual fantasy.
Sexual arousal: Sexual arousal refers to physical and mental states. Arousal may include feelings of warmth or tingling in your genitals, lubrication (being "wet"), or muscular contractions.
Sexual desire: Sexual desire or interest is a feeling that included wanting to have a sexual experience, feeling receptive to a partner's sexual initiation, and thinking or fantasizing about having sex.

Check only one item per question.

1. Over the past 4 weeks, how **often** did you feel sexual desire or interest?
    1. Almost never or never
    2. A few times (less than half the time)
    3. Sometimes (about half the time)
    4. Most times (more than half the time)
    5. Almost always or always

2. Over the past 4 weeks, how would you rate your **level** (degree) of sexual desire or interest?
    1. Very low or none at all
    2. Low
    3. Moderate
    4. High
    5. Very high

3. Over the past 4 weeks, how often did you feel sexually aroused ("turned on") during sexual activity or intercourse?
    N/A. No sexual activity
    1. Almost never or never
    2. A few times (kess than half the time)
    3. Sometimes (about half the time)
    4. Most times (more than half the time)
    5. Almost always or always.

4. Over the past 4 weeks, how would you rate your level of sexual arousal ("turn on") during sexual activity or intercourse?
    N/A. No sexual activity
    1. Very low or none at all

2. Low
3. Moderate
4. High
5. Very high

5. Over the past 4 weeks, how confident were you about becoming sexually aroused during sexual activity or intercourse?
   N/A. No sexual activity
   1. Very low or no confidence
   2. Low confidence
   3. Moderate confidence
   4. High confidence
   5. Very high confidence

6. Over the past 4 weeks, how often have you been satisfied with your arousal (excitement) during sexual activity or intercourse?
   N/A. No sexual activity
   1. Almost never or never
   2. A few times (less than half the time)
   3. Sometimes (about half the time)
   4. Most times (more than half the time)
   5. Almost always or always

7. Over the past 4 weeks, how often did you become lubricated ("wet") during sexual activity or intercourse?
   N/A. No sexual activity
   1. Almost never or never
   2. A few times (less than half the time)
   3. Sometimes (about half the time)
   4. Most times (more than half the time)
   5. Almost always or always

8. Over the past 4 weeks, how difficult was it to become lubricated ("wet") during sexual activity or intercourse?
   N/A. No sexual activity
   1. Extremely difficult or impossible
   2. Very difficult
   3. Difficult
   4. Slightly difficult
   5. Not difficult

9. Over the past 4 weeks, how often did you maintain your lubrication ("wetness") until completion of sexual activity of intercourse?
   N/A. No sexual activity
   1. Almost never or never
   2. A few times (less than half the time)

3. Sometimes (about half the time)
4. Most times (more than half the time)
5. Almost always or always

10. Over the past 4 weeks, how difficult was it to maintain your lubrication ("wetness") until completion of sexual activity or intercourse?
    N/A. No sexual activity
    1. Extremely difficult or impossible
    2. Very difficult
    3. Difficult
    4. Slightly difficult
    5. Not difficult

11. Over the past 4 weeks, when you had sexual stimulation or intercourse, how often did you reach orgasm (climax)?
    N/A. No sexual activity
    1. Almost never or never
    2. A few times (less than half the time)
    3. Sometimes (about half the time)
    4. Most times (more than half the time)
    5. Almost always or always

12. Over the past 4 weeks, when you had sexual stimulation or intercourse, how difficult was it for you to reach orgasm ("climax")?
    N/A. No sexual activity
    1. Extremely difficult or impossible
    2. Very difficult
    3. Difficult
    4. Slightly difficult
    5. Not difficult

13. Over the past 4 weeks, how satisfied were you with your ability to reach orgasm (climax) during sexual activity or intercourse?
    N/A. No sexual activity
    1. Very dissatisfied
    2. Moderately dissatisfied
    3. About equally satisfied and dissatisfied
    4. Moderately satisfied
    5. Very satisfied

14. Over the past 4 weeks, how satisfied have you been with the amount of emotional closeness during sexual activity between you and your partner?
    N/A. No sexual activity
    1. Very dissatisfied
    2. Moderately dissatisfied
    3. About equally satisfied and dissatisfied

4. Moderately satisfied
5. Very satisfied

15. Over the past 4 weeks, how satisfied have you been with your sexual relationship with your partner?
    1. Very dissatisfied
    2. Moderately dissatisfied
    3. About equally satisfied and dissatisfied
    4. Moderately satisfied
    5. Very satisfied

16. Over the past 4 weeks, how satisfied have you been with your overall sexual life?
    1. Very dissatisfied
    2. Moderately dissatisfied
    3. About equally satisfied and dissatisfied
    4. Moderately satisfied
    5. Very satisfied

17. Over the pas 4 weeks, how often did you experience discomfort or pain during vaginal penetration?
    N/A. Did not attempt intercourse
    1. Almost always or always
    2. Most times (more than half the time)
    3. Sometimes (about half the time)
    4. A few times (less than half the time)
    5. Almost never or never

18. Over the past 4 weeks, how often did you experience discomfort or pain following vaginal penetration?
    N/A. Did not attempt intercourse
    1. Almost always or always
    2. Most times (more than half the time)
    3. Sometimes (about half the time)
    4. A few times (less than half the time)
    5. Almost never or never

19. Over the past 4 weeks, how would you rate your level (degree) of discomfort or pain during or following vaginal penetration?
    N/A. Did not attempt intercourse
    1. Very high
    2. High
    3. Moderate
    4. Low
    5. Very low or none at all

International Index of Erectile Function (IIEF)

Instructions: These questions ask about your sexual feelings and responses **during the past 4 weeks**. Please answer the following questions as honestly and clearly as possible. In answering these questions, the following definitions apply:

Sexual activity includes intercourse, caressing, foreplay and masturbation
Sexual intercourse is defined as vaginal penetration of the partner (you entered your partner)
Sexual stimulation includes situations like foreplay with a partner, looking at erotic pictures, etc.
Ejaculate is defined as the ejection of semen from the penis (or the feeling of this)

Mark only one item per question.

1. Over the past 4 weeks, how often were you able to get an erection during sexual activity?

NA No sexual activity
1 Almost never or never
2 A few times (much less than half the time)
3 Sometimes (about half the time)
4 Most times (much more than half the time)
5 Almost always or always

2. Over the past 4 weeks, when you had erections with sexual stimulation, how often were your erections hard enough for penetration?

NA No sexual activity
1 Almost never or never
2 A few times (much less than half the time)
3 Sometimes (about half the time)
4 Most times (much more than half the time)
5 Almost always or always

Questions 3, 4 and 5 will ask about erections you may have had during sexual intercourse.

3. Over the past 4 weeks, when you attempted sexual intercourse, how often were you able to penetrate (enter) your partner?

NA Did not attempt intercourse
1 Almost never or never
2 A few times (much less than half the time)
3 Sometimes (about half the time)
4 Most times (much more than half the time)
5 Almost always or always

4. Over the past 4 weeks, during sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?

NA Did not attempt intercourse
1 Almost never or never
2 A few times (much less than half the time)
3 Sometimes (about half the time)
4 Most times (much more than half the time)
5 Almost always or always

5. Over the past 4 weeks, during sexual intercourse, how difficult was it to maintain your erection to completion of intercourse?
NA Did not attempt intercourse
1 Extremely difficult
2 Very difficult
3 Difficult
4 Slightly difficult
5 Not difficult

6. Over the past 4 weeks, how many times have you attempted sexual intercourse?
0 No attempts
1 1-2 attempts
2 3-4 attempts
3 5-6 attempts
4 7-10 attempts
5 11 or more attempts

7. Over the past 4 weeks, when you attempted sexual intercourse how often was it satisfactory for you?
NA Did not attempt intercourse
1 Almost never or never
2 A few times (much less than half the time)
3 Sometimes (about half the time)
4 Most times (much more than half the time)
5 Almost always or always

8. Over the past 4 weeks, how much have you enjoyed sexual intercourse?
NA No intercourse
1 Not enjoyable
2 Not very enjoyable
3 Fairly enjoyable
4 Highly enjoyable
5 Very highly enjoyable

9. Over the past 4 weeks, when you had sexual stimulation or intercourse how often did you ejaculate?
NA Did not attempt intercourse
1 Almost never or never
2 A few times (much less than half the time)
3 Sometimes (about half the time)
4 Most times (much more than half the time)
5 Almost always or always

10. Over the past 4 weeks, when you had sexual stimulation or intercourse how often did you have the feeling of orgasm or climax (with or without ejaculation)?

NA Did not attempt intercourse
1 Almost never or never
2 A few times (much less than half the time)
3 Sometimes (about half the time)
4 Most times (much more than half the time)
5 Almost always or always

Questions 11 and 12 ask about sexual desire. Let's define sexual desire as a feeling that may include wanting to have a sexual experience (for example, masturbation or intercourse), thinking about having sex or feeling frustrated due to a lack of sex.

11. Over the past 4 weeks, how often have you felt sexual desire?
1 Almost never or never
2 A few times (much less than half the time)
3 Sometimes (about half the time)
4 Most times (much more than half the time)
5 Almost always or always

12. Over the past 4 weeks, how would you rate your level of sexual desire?
1 Very low or none at all
2 Low
3 Moderate
4 High
5 Very high

13. Over the past 4 weeks, how satisfied have you been with your overall sex life?
1 Very dissatisfied
2 Moderately dissatisfied
3 About equally satisfied and dissatisfied
4 Moderately satisfied
5 Very satisfied

14. Over the past 4 weeks, how satisfied have you been with your sexual relationship with your partner?
1 Very dissatisfied
2 Moderately dissatisfied
3 About equally satisfied and dissatisfied
4 Moderately satisfied
5 Very satisfied
15. Over the past 4 weeks, how do you rate your confidence that you can get and keep your erection?
1 Very low or none at all
2 Low
3 Moderate
4 High
5 Very high

Couple Satisfaction Index (CSI)

1. Please indicate the degree of happiness, all things considered, of your relationship.

Extremely Unhappy	Fairly Unhappy	A Little Unhappy	Happy	Very Happy	Extremely Happy	Perfect
0	**1**	**2**	**3**	**4**	**5**	**6**

Most people have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and your partner for each item on the following list.

	Always Agree	Almost Always Agree	Occasionally Disagree	Frequently Disagree	Almost Always Disagree	Always Disagree
2. Amount of time spent together	**5**	**4**	**3**	**2**	**1**	**0**
3. Making major decisions	**5**	**4**	**3**	**2**	**1**	**0**
4. Demonstrations of affection	**5**	**4**	**3**	**2**	**1**	**0**

	All the time	Most of the time	More often than not	Occasionally	Rarely	Never
5. In general, how often do you think that things between you and your partner are going well?	**5**	**4**	**3**	**2**	**1**	**0**
6. How often do you wish you hadn't gotten into this relationship?	**0**	**1**	**2**	**3**	**4**	**5**

	Not at all TRUE	A little TRUE	Somewhat TRUE	Mostly TRUE	Almost Completely TRUE	Completely TRUE
7. I still feel a strong connection with my partner	**0**	**1**	**2**	**3**	**4**	**5**
8. If I had my life to live over, I would marry (or live with /	**0**	**1**	**2**	**3**	**4**	**5**

date) the same person						
9. Our relationship is strong	**0**	**1**	**2**	**3**	**4**	**5**
10. I sometimes wonder if there is someone else out there for me	**5**	**4**	**3**	**2**	**1**	**0**
11.My relationship with my partner makes me happy	**0**	**1**	**2**	**3**	**4**	**5**
12.I have a warm and comfortable relationship with my partner	**0**	**1**	**2**	**3**	**4**	**5**
13. I can't imagine ending my relationship with my partner	**0**	**1**	**2**	**3**	**4**	**5**
14. I feel that I can confide in my partner about virtually anything	**0**	**1**	**2**	**3**	**4**	**5**
15. I have had second thoughts about this relationship recently	**5**	**4**	**3**	**2**	**1**	**0**
16. For me, my partner is the perfect romantic partner	**0**	**1**	**2**	**3**	**4**	**5**
17. I really feel like **part of a team** with my partner	**0**	**1**	**2**	**3**	**4**	**5**
18. I cannot imagine another person making me as happy as my partner does	**0**	**1**	**2**	**3**	**4**	**5**

	Not at all	A little	Some-what	Mostly	Almost Complete-ly	Complete-ly
19. How rewarding is your relationship with your partner?	**0**	**1**	**2**	**3**	**4**	**5**
20. How well does your partner	**0**	**1**	**2**	**3**	**4**	**5**

meet your needs?						
21. To what extent has your relationship met your original expectations?	**0**	**1**	**2**	**3**	**4**	**5**
22. In general, how satisfied are you with your relationship?	**0**	**1**	**2**	**3**	**4**	**5**

	Worse than all others (Extremely bad)					Better than all others (Extremely good)
23. How good is your relationship compared to most?	**0**	**1**	**2**	**3**	**4**	**5**

	Never	Less than once a month	Once or twice a month	Once or twice a week	Once a day	More often
24. Do you enjoy your partner's company?	**0**	**1**	**2**	**3**	**4**	**5**
25. How often do you and your partner have fun together?	**0**	**1**	**2**	**3**	**4**	**5**

For each of the following items, select the answer that best describes *how you feel about your relationship*. Base your responses on your first impressions and immediate feelings about the item.

26.	INTERESTING	**5**	**4**	**3**	**2**	**1**	**0**	BORING
27.	BAD	**0**	**1**	**2**	**3**	**4**	**5**	GOOD
28.	FULL	**5**	**4**	**3**	**2**	**1**	**0**	EMPTY
29.	LONELY	**0**	**1**	**2**	**3**	**4**	**5**	FRIENDLY
30.	STURDY	**5**	**4**	**3**	**2**	**1**	**0**	FRAGILE
31.	DISCOURAGING	**0**	**1**	**2**	**3**	**4**	**5**	HOPEFUL
32.	ENJOYABLE	**5**	**4**	**3**	**2**	**1**	**0**	MISERABLE

Trait subscale of the State-Trait Anxiety Inventory (STAI-T)

Instructions: A number of statements which people have used to describe themselves are given below. Read each statement and circle the number to the right of the statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	Almost never	Some-times	Often	Almost Always
1. I feel pleasant	**1**	**2**	**3**	**4**
2. I feel nervous and restless	**1**	**2**	**3**	**4**
3. I feel satisfied with myself	**1**	**2**	**3**	**4**
4. I wish I could be as happy as others seem to be	**1**	**2**	**3**	**4**
5. I feel like a failure	**1**	**2**	**3**	**4**
6. I feel rested	**1**	**2**	**3**	**4**
7. I am « calm, cool, and collected »	**1**	**2**	**3**	**4**
8. I feel that difficulties are piling up so that I cannot overcome them	**1**	**2**	**3**	**4**
9. I worry too much over something that really doesn't matter	**1**	**2**	**3**	**4**
10. I am happy	**1**	**2**	**3**	**4**
11. I have disturbing thoughts	**1**	**2**	**3**	**4**
12. I lack self-confidence	**1**	**2**	**3**	**4**
13. I feel secure	**1**	**2**	**3**	**4**
14. I make decisions easily	**1**	**2**	**3**	**4**
15. I feel inadequate	**1**	**2**	**3**	**4**
16. I am content	**1**	**2**	**3**	**4**
17. Some unimportant thought runs through my mind and bothers me	**1**	**2**	**3**	**4**
18. I take disappointments so keenly that I can't put them out of my mind	**1**	**2**	**3**	**4**
19. I am a steady person	**1**	**2**	**3**	**4**
20. I get in a state of tension or turmoil as I think over my recent concerns and interests	**1**	**2**	**3**	**4**

McGill Pain Questionnaire (MPQ)

* Important: Choose only one adjective per category but you are not obligated to choose one in each category.

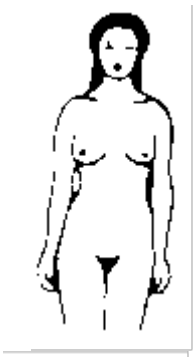
The vulvo-vaginal pain I am feeling is...

1	Flickering	__	11	Tiring	__
	Quivering	__		Exhausting	__
	Pulsing	__			
	Throbbing	__			
	Beating	__			
	Pounding	__			
2	Jumping	__	12	Sickening	__
	Flashing	__		Suffocating	__
	Shooting	__			
3	Pricking	__	13	Fearful	__
	Drilling	__		Frightful	__
	Stabbing	__		Terrifying	__
	Lancinating	__			
4	Sharp	__	14	Punishing	__
	Cutting	__		Gruelling	__
	Lacerating	__		Cruel	__
				Vicious	__
				Killing	__
5	Pinching	__	15	Wretched	__
	Pressing	__		Blinding	__
	Gnawing	__			
	Cramping	__			
	Crushing	__			
6	Tugging	__	16	Annoying	__
	Pulling	__		Troublesome	__
	Wrenching	__		Miserable	__
				Intense	__
				Unbearable	__
7	Hot	__	17	Spreading	__
	Burning	__		Radiating	__
	Scalding	__		Penetrating	__
	Searing	__		Piercing	__
8	Tingling	__	18	Tight	__
	Itchy	__		Numb	__
	Smarting	__		Drawing	__
	Stinging	__		Squeezing	__
				Tearing	__
9	Dull	__	19	Cool	__
	Sore	__		Cold	__
	Hurting	__		Freezing	__
	Aching	__			
	Heavy	__			
10	Tender	__	20	Nagging	__
	Taut	__		Nauseating	__
	Rasping	__		Agonizing	__
	Splitting	__		Dreadful	__
				Torturing	__

PPI	0	No pain	__
	1	Mild	__
	2	Discomforting	__
	3	Distressing	__
	4	Horrible	__
	5	Excruciating	__
			__

PPI Section : Rate the intensity of your pain by putting an « X »

Blacken the painful area on the corresponding image



McGill Pain Questionnaire – Short Form (MPQ-SF)

Instructions: For each word below that describes your pain (in your pelvic area only), rate the intensity of that particular quality of pain by placing a mark in the appropriate space.

Pain Rating Index (PRI):

	NONE	MILD	MODERATE	SEVERE
1. Throbbing	0) _____	1) _____	2) _____	3) _____
2. Shooting	0) _____	1) _____	2) _____	3) _____
3. Stabbing	0) _____	1) _____	2) _____	3) _____
4. Sharp	0) _____	1) _____	2) _____	3) _____
5. Cramping	0) _____	1) _____	2) _____	3) _____
6. Gnawing	0) _____	1) _____	2) _____	3) _____
7. Hot-Burning	0) _____	1) _____	2) _____	3) _____
8. Aching	0) _____	1) _____	2) _____	3) _____
9. Heavy	0) _____	1) _____	2) _____	3) _____
10. Tender	0) _____	1) _____	2) _____	3) _____
11. Splitting	0) _____	1) _____	2) _____	3) _____
12. Tiring-Exhausting	0) _____	1) _____	2) _____	3) _____
13. Sickening	0) _____	1) _____	2) _____	3) _____
14. Fearful	0) _____	1) _____	2) _____	3) _____
15. Punishing-Cruel	0) _____	1) _____	2) _____	3) _____

Numerical Rating Scale (NRS) of Pain

Rate the average intensity of the vulvo-vaginal pain during intercourse you have experienced on a scale of 0 to 10 (past 6 months/since you started treatment/over the past 4 weeks).

0	1	2	3	4	5	6	7	8	9	10
No pain										Worst pain ever

Derogatis Interview for Sexual Functioning – Self-Report (DISF-SR)
Female Version

Derogatis Interview for Sexual Functioning – Self-Report (DISF-SR)
Male Version

Global Measure of Sexual Satisfaction (GMSEX)

Instructions: Overall, how would you describe your sexual relationship with your partner? For each pair of words, circle the number which best describes your sexual relationship.

1.

Very Good						Very Bad
7	6	5	4	3	2	1

2.

Very Pleasant						Very Unpleasant
7	6	5	4	3	2	1

3.

Very Positive						Very Negative
7	6	5	4	3	2	1

4.

Very Satisfying						Very Unsatisfying
7	6	5	4	3	2	1

5.

Very Valuable						Worthless
7	6	5	4	3	2	1

Pain Catastrophizing Scale (PCS)
Female Version

Everyone experiences painful situations at some point in their lives. We are interested in the types of thoughts and feelings that you have when you are experiencing vulvo-vaginal pain. Listed below are thirteen statements describing different thoughts and feelings that may be associated with pain. Using the following scale, please indicate the degree to which you have these thoughts and feelings when you are experiencing vulvo-vaginal pain.

0- not at all **1**- to a slight degree **2**- to a moderate degree **3**- to a great degree **4**- all the time

When I'm experiencing vulvo-vaginal pain…

1 ☐ I worry all the time about whether the pain will end.

2 ☐ I feel I can't go on.

3 ☐ It's terrible and I think it's never going to get any better.

4 ☐ It's awful and I feel that it overwhelms me.

5 ☐ I feel I can't stand it anymore.

6 ☐ I become afraid that the pain will get worse.

7 ☐ I keep thinking of other painful events.

8 ☐ I anxiously want the pain to go away.

9 ☐ I can't seem to keep it out of my mind.

10 ☐ I keep thinking about how much it hurts.

11 ☐ I keep thinking about how badly I want the pain to stop.

12 ☐ There's nothing I can do to reduce the intensity of the pain.

13 ☐ I wonder whether something serious may happen.

Pain Catastrophizing Scale (PCS)
Partner Version

We are interested in looking at the relationship between thoughts and pain. Listed below are thirteen statements describing different thoughts and feelings that may be associated with pain. Please indicate the degree to which you have experienced each of the following thoughts or feelings when your significant other experiences vulvo-vaginal pain by choosing a number for each statement.

When my significant other feels pain...

1. I worry all the time about whether his/her pain will end.

0	1	2	3	4
Not at all				All the time

2. I feel I can't go on

0	1	2	3	4
Not at all				All the time

3. It's terrible and I think it's never going to get any better.

0	1	2	3	4
Not at all				All the time

4. It's awful and I feel that it overwhelms me.

0	1	2	3	4
Not at all				All the time

5. I feel I can't stand it anymore.

0	1	2	3	4
Not at all				All the time

6. I become afraid that his/her pain may get worse.

0	1	2	3	4
Not at all				All the time

7. I think of other of his/her painful experiences.

0	1	2	3	4
Not at all				All the time

8. I anxiously want his/her pain to go away.

0	1	2	3	4
Not at all				All the time

9. I can't seem to keep it out of my mind.

0	1	2	3	4
Not at all				All the time

When my significant other feels pain...

10. I keep thinking about how much it hurts for him/her.

0	1	2	3	4
Not at all				All the time

11. I keep thinking about how badly I want his/her pain to stop.

0	1	2	3	4
Not at all				All the time

12. There is nothing I can do to reduce the intensity of his/her pain.

0	1	2	3	4
Not at all				All the time

13. I wonder whether something serious may happen.

0	1	2	3	4
Not at all				All the time

Painful Intercourse Self-Efficacy Scale (PISES)
Woman Version

Self-efficacy subscale: pain

In the following questions, we'd like to know how your pain during sexual intercourse affects you. For each of the following questions, please circle the number which corresponds to your certainty that you can *now* perform the following activities.

1. How certain are you that you can decrease your pain *quite a bit*?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

2. How certain are you that you can continue most of your sexual activities?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

3. How certain are you that you can keep pain during intercourse from interfering with your relationship?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

4. How certain are you that you can make a *small-to-moderate* reduction in your pain during intercourse by using non-surgical methods?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

5. How certain are you that you can make a *large* reduction in your pain during intercourse by using non-surgical methods?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

Self-efficacy subscale: function

We would like to know how confident you are in performing certain activities. For each of the following questions, please circle the number which corresponds to your certainty that you can perform these activities as of *now*. Please consider what you *routinely* can do, not what would require a single extraordinary effort.

AS OF NOW, HOW CERTAIN ARE YOU THAT YOU CAN:

1. Attempt intercourse and achieve partial penetration.

10	20	30	40	50	60	70	80	90	100

Very uncertain				Moderately uncertain					Very certain

2. Attempt intercourse and achieve full penetration without movement.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

3. Attempt intercourse and achieve full penetration with movement.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

4. Insert/remove a tampon.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

5. Undergo a complete gynaecological examination.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

6. Insert your finger in your vagina.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

7. Have your partner insert his/her finger in your vagina.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

8. Have your partner perform manual stimulation of your genitals.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

9. Have your partner perform oral stimulation of your genitals.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

Self-Efficacy subscale: other symptoms

In the following questions, we'd like to know how you feel about your ability to control your pain during intercourse. For each of the following questions, please circle the number which corresponds to the certainty that you can *now* perform the following activities.

1. How certain are you that you can control your sexual desire and arousal?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

2. How certain are you that you can regulate your sexual activity so as to be active without aggravating your pain during intercourse?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

3. How certain are you that you can do something to help yourself feel better if you are feeling discouraged about your pain during intercourse?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

4. As compared to other women with painful intercourse like yours, *how certain* are you that you can manage your genital pain during your sexual activities?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

5. How certain are you that you can manage your painful intercourse and associated symptoms so that you can do and wear the things you enjoy doing and wearing?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

6. How certain are you that you can deal with the frustration of pain during intercourse?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

Painful Intercourse Self-Efficacy Scale (PISES)
Partner Version

Self-efficacy subscale: pain

In the following questions, we'd like to know how your partner is affected by the pain she experiences during sexual intercourse. For each of the following questions, please circle the number which corresponds to *your perception* regarding the certainty that your partner can *now* perform the following activities.

1. *How certain* is your partner that she can decrease her pain *quite a bit*?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

2. *How certain* is your partner that she can continue most of her sexual activities?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

3. *How certain* is your partner that she can keep pain during intercourse from interfering with your relationship?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

4. *How certain* is your partner that she can make a *small-to-moderate* reduction in her pain during intercourse by using non-surgical methods?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

5. *How certain* is your partner that she can make a large reduction in her pain during intercourse by using non-surgical methods?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

Self-efficacy subscale: function

We would like to know how confident your partner is in performing certain activities. For each of the following questions, please circle the number which corresponds to your perception regarding the certainty your partner has that she can perform these activities as of now. Please consider what your partner can routinely do, not what would require a single extraordinary effort.

AS OF NOW, HOW CERTAIN IS YOUR PARTNER THAT SHE CAN:

1. Attempt intercourse and achieve partial penetration.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

2. Attempt intercourse and achieve full penetration without movement.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

3. Attempt intercourse and achieve full penetration with movement.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

4. Insert/remove a tampon.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

5. Undergo a complete gynaecological examination.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

6. Insert her finger in her vagina.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

7. Have you insert a finger in her vagina.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

8. Have you perform manual stimulation of her genitals.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

9. Have you perform oral stimulation of her genitals.

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

Self-Efficacy subscale: other symptoms

In the following questions, we'd like to know how your partner feels about her ability to control her pain during intercourse. For each of the following questions, please circle the number which corresponds to *your perception* regarding the certainty that your partner has she can *now* perform the following activities.

1. *How certain* is your partner that she can control her sexual desire and arousal?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

2. *How certain* is your partner that she can regulate her sexual activity so as to be active without aggravating her pain during intercourse?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

3. *How certain* is your partner that she can do something to help herself feel better if she is feeling discouraged about her pain during intercourse?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

4. As compared to other women with painful intercourse like your partners', *how certain* is she that she can manage her genital pain during her sexual activities?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

5. *How certain* is your partner that she can manage her painful intercourse and associated symptoms so that she can do and wear the things she enjoys doing and wearing?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

6. *How certain* is your partner that she can deal with the frustration of pain during intercourse?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately uncertain					Very certain

Beck Depression Inventory –(BDI-II)

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group.

1 Sadness
- 0 I do not feel sad.
- 1 I feel sad much of the time.
- 2 I am sad all the time.
- 3 I am so sad or unhappy that I can't stand it.

2 Pessimism
- 0 I am not discouraged about my future.
- 1 I feel more discouraged about my future than I used to be.
- 2 I do not expect things to work out for me.
- 3 I feel my future is hopeless and will only get worse.

3 Past Failure
- 0 I do not feel like a failure.
- 1 I have failed more than I should have.
- 2 As I look back, I see a lot of failures.
- 3 I feel I am a total failure as a person.

4 Loss of Pleasure
- 0 I get as much pleasure as I ever did from the things I enjoy.
- 1 I don't enjoy things as much as I used to.
- 2 I get very little pleasure from the things I used to enjoy.
- 3 I can't get any pleasure from the things I used to enjoy.

5 Guilty Feelings
- 0 I don't feel particularly guilty.
- 1 I feel guilty over many things I have done or should have done.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all the time.

6 Punishment Feelings
- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

7 Self-Dislike
- 0 I feel the same about myself as ever.
- 1 I have lost confidence in myself.
- 2 I am disappointed in myself.
- 3 I dislike myself.

8 Self-Criticism
- 0 I don't criticize or blame myself more than usual.
- 1 I am more critical of myself than I used to be.
- 2 I criticize myself for all of my faults.
- 3 I blame myself for everything bad that happens.

9 Suicidal Thoughts or Wishes
- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

10 Crying
- 0 I don't cry anymore than I used to.
- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

11 Agitation

0 I am no more restless or wound up than usual.
1 I feel more restless or wound up than usual.
2 I am so restless or agitated that it's hard to stay still.
3 I am so restless or agitated that I have to keep moving or doing something.

12 Loss of Interest

0 I have not lost interest in other people or activities.
1 I am less interested in other people or things than before.
2 I have lost most of my interest in other people or things.
3 It's hard to get interested in anything.

13 Indecisiveness

0 I make decisions about as well as ever.
1 I find it more difficult to make decisions than usual.
2 I have much greater difficulty in making decisions than I used to.
3 I have trouble making any decisions.

14 Worthlessness

0 I do not feel I am worthless.
1 I don't consider myself as worthwhile and useful as I used to.
2 I feel more worthless as compared to other people.
3 I feel utterly worthless.

15 Loss of Energy

0 I have as much energy as ever.
1 I have less energy than I used to have.
2 I don't have enough energy to do very much.
3 I don't have enough energy to do anything.

16 Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern.
1 I sleep somewhat more than usual.
2 I sleep somewhat less than usual.
3 I sleep a lot more than usual.
4 I sleep a lot less than usual.
5 I sleep most of the day.
6 I wake up 1-2 hours early and can't get back to sleep.

17 Irritability

0 I am not more irritable than usual.
1 I am more irritable than usual.
2 I am much more irritable than usual.
3 I am irritable all the time.

18 Changes in Appetite

0 I have not experienced any change in my appetite.
1 My appetite is somewhat less than usual.
2 My appetite is somewhat greater than usual.
3 My appetite is much less than before.
4 My appetite is much greater than usual.
5 I have no appetite at all.
6 I crave food all the time.

19 Concentration Difficulty

0 I can concentrate as well as ever.
1 I can't concentrate as well as usual.
2 It's hard to keep my mind on anything for very long.
3 I find I can't concentrate on anything.

20 Tiredness or Fatigue

0 I am no more tired or fatigued than usual.
1 I get more tired or fatigued more easily than usual.
2 I am too tired or fatigued to do a lot of the things I used to do..
3 I am too tired or fatigued to do most of the things I used to do.

21 Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

Participant Ratings of Global Improvement

To what extent do you believe that there has been an improvement in your pain during sexual intercourse following the treatment you received in the course of this study?

a. Complete recovery (no more pain)
b. Great improvement
c. Moderate improvement
d. Small improvement
e. No improvement
f. Deterioration

Numerical Rating Scale (NRS) for Treatment Satisfaction

Please rate on a scale from 0 to 10 your global satisfaction towards the treatment you received

0	1	2	3	4	5	6	7	8	9	10
Completely dissatisfied										Completely satisfied

Therapist Intervention Checklist

Session	Content
1	Introduction of the clinician to the couple Introduction of the couple to the clinician: Telling their story Explanation of the treatment plan Homework: *Readings - PVD articles* *Exercise - Pain Journaling*
Notes:	
2	Review journaling and the readings PVD Dispelling myths about pain ACT Value clarification in-session exercise: Card sorting Discussion: Treatment expectations and goals Homework: *Exercise – Mindfulness breathing* *Exercise – Tantric breathing for two*
Notes:	
3	Re-conceptualizing pain and PVD as multifactorial (Gate-control theory of pain) In-session exercise: Start identifying biopsychosocial factors that can influence pain specific to the couple Homework: *Exercise – Pain localization and 'discomfort desensitization'* *Continuation of pain journaling* *Continuation of breathing exercises*
Notes:	

4	Psychoeducation regarding sexuality and models of sexual response Understanding how pain can impact upon sexuality and the relationship for both members of the couple and encouraging their self-disclosure to one another about this issue Intervention: Facilitating emotional disclosure and subsequent validating responses (e.g., "I" statements) Homework: Exercise: Taking turns self-disclosing and validating at home *Exercise – Mindfulness Body Scan*
Notes:	
5	The role of anxiety/anticipation in pain and sex Discussion: Attitudes towards genitals for him and her and ways to approach Homework: *Exercise – Kegel muscle exercises (discuss with partner)*
Notes:	
6	Discussion and psychoeducation: Role of the partner and partner responses in women's pain experience Discussion: Partner and woman responses in relation to sexual satisfaction Increasing the quality of the relationship (e.g., brief communication skills training) Homework: *Exercise - Giving and receiving (Step 1 – Relaxing together and non-sexual massage)* *Exercise – Disclosing favourite intimate moments (sexual intimacy)*
Notes:	

7	Psychoeducation and discussion: Sexual communication Discussion: Defining/redefining the sexual narrative in the context of pain, and "Outercourse" Homework: *Exercise – Mindfulness breathing with visualization and dilatation* *Exercise – Involving the partner in dilatation exercises*
Notes:	
8	Discussion: Problem solving – what's working and what's not working Psychoeducation and discussion: Facilitating sexual desire and arousal Introduction: Cognitive defusion Homework: *Exercise – Facilitating sexual desire and arousal* *Continuation of Giving and receiving (Step 2 – Relaxing together and non-sexual massage)* *Continuation of pain journaling*
Notes:	
9	Following up: Sexual desire and arousal Cognitive defusion: Defusing negative thoughts, beliefs and cognitive distortions related to **pain** (catastrophizing, hypervigilance, attributions, self-efficacy, etc.), the **relationship** and **sex.** Discussion re: Attributions about the pain Follow-up: Pain journal check in – Any revelations to share? Homework: *Practice cognitive defusion*
Notes:	

10	Intervention and follow-up: Cognitive defusion revisited Homework: *Continuation of Giving and receiving (Step 3 – Sexual touching and potential to focus on orgasm)*
Notes:	
11	Discussion: Asserting oneself with one's partner Psychoeducation and discussion: Avoidance of sexual activities Homework: *Homework exercises revisited*
Notes:	
12	Discussion: Progress and setbacks Discussion: Summarizing information learned Psychoeducation and discussion: Tools for the future Anonymous evaluation / assessment of treatment
Notes:	

More notes:

Homework Completion Checklist

Participant identification number: _____
Today's date: _____ (dd-mm-yyyy)

Please fill out this form every week. Give this compliance form back to your therapist at every session. Certain exercises may not have been covered by the time you fill out this form. Fill out the form only for the exercises that have already been covered. Please be as honest as possible; your compliance with the exercises, as indicated on this form, will not be discussed in therapy. However, your therapist may ask how you how you experienced the exercises. The purpose of this form is to know how you comply with the exercises in order to evaluate the overall effectiveness of the treatment.

Last session number .....

Name of therapist .....

I read __ of the 3 the articles provided by the therapist						
I did the pain journaling exercise					YES	NO
I practiced the mindfulness breathing exercises			times		this week	
I practiced the tantric breathing exercises with my partner			times		this week	
I did the pain localization exercise with my partner					YES	NO
We practiced "I" statements			times		this week	
We disclosed information to one another			times		this week	
I practiced the body-scan exercise		times		this week		
I practiced the Kegel exercises		times		this week		
I practiced the relaxation and visualization exercise			times		this week	
I practiced the dilatation exercises		times		this week		
I practiced the dilatation exercises WITH my partner			times		this week	
We practiced the Giving and Receiving Exercise			times		this week	
We tried something from our sexual desire and arousal list			times		this week	
I practiced cognitive defusion exercises			times		this week	