

**Genito-Pelvic Pain/Penetration Disorder: Relationships Between Relationship Aspects,
Sexual Self-Esteem, Vulvar Pain, and Sexual Distress**

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Abstract

Approximately 54% of women worldwide experience sexual pain, of which 19% undergo severe pain falling under the diagnosis GPPPD. The proportion of women suffering from this sexual dysfunction is significant, and its multidimensional impact on the lives of these women as well as on their partners' is considerable. The present paper aimed to examine: 1) how aspects of the relationship with a partner (including perceived relationship quality, perceived partner responsiveness, perceived dyadic sexual communication, and perceived partner responses to pain) influence vulvar pain and sexual distress in women; 2) how sexual self-esteem influences vulvar pain and sexual distress in women; 3) whether there is an interaction effect between aspects of the relationship with a partner and sexual self-esteem, and, if there is, how this interaction relates to vulvar pain and sexual distress in women. Data for this cross-sectional study were collected via an online survey in Qualtrics Survey Software, which could be self-administered by the participating sexually active, female, Dutch students aged between 18 and 65 years ($N = 277$), and were analyzed by using multiple regression in SPSS. It was found that when perceived partner responsiveness decreased, vulvar pain tended to increase. When perceived partner responsiveness to expressions of pain increased, so did vulvar pain. When sexual self-esteem decreased, vulvar pain as well as sexual distress tended to increase. No interaction effect was found. Up to this time, research on women with GPPPD and on significantly involved factors in this sexual disorder is still rapidly growing. This study contributes to this expanding knowledge by highlighting important variables in women's vulvar pain and sexual distress experiences. In addition, this study presents interesting target points for interventions in women with GPPPD with the aim of tackling these negative symptoms and improving these women's overall well-being.

Keywords: genito-pelvic pain/penetration disorder, vulvar pain, sexual distress, relationship aspects, sexual self-esteem

Genito-Pelvic Pain/Penetration Disorder: Relationships Between Relationship Aspects, Sexual Self-Esteem, Vulvar Pain, and Sexual Distress

Sexual intercourse is an activity of great relevance in our society. In general, it is seen as something pleasurable and fun, however, this is not the case for everyone. Approximately 54% of healthy women worldwide experience sexual pain (during or following vaginal penetration), of which 19% experiences severe pain (Fergus et al., 2020). Respective pain is hindering this last group of women to such an extent that it has a significant impact on their sexual functioning and wellbeing and that of their partners (Dogan & Dogan, 2007; Pâquet et al., 2018; Shallcross et al., 2018). Genito-pelvic pain/penetration disorder (GPPPD) is an overarching term used to describe such pain difficulties. With the publication of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders in 2013, the previously separate disorders dyspareunia and vaginismus have been combined to the sexual dysfunction condition GPPPD, because of their significant overlap in symptom presentation (American Psychiatric Association, 2013; Rogers et al., 2018). For completeness, in the DSM-4 dyspareunia referred to the experience of genital pain before, during, or after sexual intercourse. Vaginismus referred to the recurrent or persistent involuntary spasming of the vaginal muscles when vaginal penetration is attempted. A diagnosis of GPPPD can be made if at least one of the following four main symptoms of this condition has been present for at least six months, causing clinically significant distress: 1) pain or difficulty with vaginal penetration during sexual intercourse; 2) vulvovaginal or pelvic pain during vaginal penetration (attempts); 3) fear or anxiety about vulvovaginal or pelvic pain before, during, or after vaginal penetration; 4) tensing or tightening of the pelvic floor muscles when attempting vaginal penetration (American Psychiatric Association, 2013).

Etiology of GPPPD

According to the DSM-5, GPPPD can be present from the beginning of sexual activity. It can also be that it developed in a later period, after previous normal sexual functioning. There does not seem to be a simple etiology of GPPPD, since many different factors could play a role in the emergence and maintenance of this sexual dysfunction. Therefore, a biopsychosocial framework is commonly employed as it considers GPPPD multidimensionally from a biological, psychological and social perspective (e.g., Bergeron et al., 2015; Bergeron et al., 2020; Meana & Binik, 2022; Pukall et al., 2016). Using this framework, possible biological causes of GPPPD that have been studied are pelvic floor muscle dysfunction, inflammatory factors, hormonal factors, and neurological changes (e.g., increased nerve fiber density, lower sensory and pain thresholds, increased pain sensitivity; Bergeron et al., 2015; Bergeron et al., 2020; Lorenz, 2019; Pukall et al., 2016). Psychological factors that have been found to be involved in the emergence as well as maintenance of GPPPD are a history of sexual abuse, trait anxiety, depression, pain catastrophizing, hypervigilance toward the pain, and self-efficacy (Bergeron et al., 2015; Bergeron et al., 2020; Meana & Binik, 2022; Pukall et al., 2016). Lastly, important social factors appear to be relationship factors like intimacy (empathic responses and self-disclosure), sexual communication, affection, and attachment insecurity (Bergeron et al., 2015; Bergeron et al., 2020; Meana & Binik, 2022). Important to note is that the symptomatology of GPPPD is often an interplay between factors, which makes it challenging to treat (Meana & Binik, 2022).

Impact of GPPPD

The impact GPPPD can have on individuals suffering from this condition may cover a wider scope than only experiencing sexual pain, which is the characteristic symptom of the disorder. Symptoms of GPPPD can manifest themselves at various levels, such as physiologically, psychologically, and socially (Banaei et al., 2023; Meana & Binik, 2022).

For instance, many studies have found reduced sexual arousal, desire, function and satisfaction (in both members of the couple), hypersensitivity, and hypervigilance in women with GPPPD (Banaei et al., 2023; Bergeron et al., 2020; Meana & Binik, 2022; Pukall et al., 2016; Zarski et al., 2018). In addition, frequently seen psychological difficulties in this population are increased rates of anxiety, worry, frustration, depression, distress, feelings of guilt, shame, inadequacy, lower self-esteem, lower body image, and altered self-image compared to pain-free women (Banaei et al., 2023; Bergeron et al., 2020; Meana & Binik, 2022; Pukall et al., 2016; Shallcross et al., 2018; Zarski et al., 2018). Symptoms can occur independently of each other, but they often seem to be interrelated (Banaei et al., 2023). Associations have been found between the experience of higher than usual symptoms of anxiety and depression, and higher vulvar pain and lower sexual functioning in these women (Pâquet et al., 2018). Besides this, higher than usual of these negative affective symptoms in their partners were related to greater sexual distress in both the women and their partners (Pâquet et al., 2018). Furthermore, correlations have been found between women suffering from GPPPD and problems with sexual functioning in their partner (Dogan & Dogan, 2007). These findings imply a significant unfavorable impact of negative affective symptoms on pain experience and sexual functioning of this group of women. Likewise, negative affective states of the women as well as those of their partners seem to be related to greater (sexual) distress and impaired sexual functioning for the couple. The greater sexual distress and lower sexual functioning experienced by both the women and their partners could in turn negatively impact their relationship quality due to other negative or maladaptive thoughts, feelings, or behaviors it can elicit.

Sexual Communication and GPPPD

A positive factor on women's sexual pain condition seems to be a couple's sexual communication, meaning their interactions about sexual matters. Greater sexual

communication with their partner has been associated with lower depressive symptoms, lower levels of distress, higher sexual functioning, higher dyadic adjustment of the couple to the women's condition, and higher sexual satisfaction in the women (Pazmany et al., 2015; Rancourt et al., 2016; Rancourt et al., 2017). Notably, women with GPPPD have been found to report poorer dyadic sexual communication than women without GPPPD, which could put them at a disadvantage to profit from the beneficial effects of greater dyadic communication (Pazmany et al., 2014). These results indicate the important role of the quality of dyadic sexual communication among couples in dealing with the women's sexual pain. They point to the positive impact dyadic sexual communication could have on the women's wellbeing, (sexual) functioning, sexual satisfaction and the couple's adjustment, and at the same time, the detrimental effect a bad quality of communication could have. To sum up, GPPPD is associated with numerous negative symptoms that could be seen as causal, influential, or consequential factors of the condition (Meana & Binik, 2022). These symptoms can have a significant impact on the sufferers, such as negatively affecting their daily functioning, their sexual functioning, their relationship with their partner, and even their overall quality of life. Thus, psychological difficulties, sexual pain, sexual functioning and dyadic sexual communication in women with GPPPD seem to be closely related and can influence each other in a multidirectional way.

Treatment of GPPPD

The vulvar pain women with GPPPD are suffering from can decrease over time or even spontaneously disappear (Davis et al., 2013). However, in case of persisting symptoms, a wide range of treatment options for GPPPD is currently known and available. Commonly used treatment methods that mainly focus on the psychological aspect of the disorder are systematic desensitization, cognitive behavioral therapy (CBT), exposure, behavioral sex therapy, and mindfulness (Bergeron et al., 2015; Flanagan et al., 2015; Maseroli et al., 2018;

Meana & Binik, 2022). Reasoned from the previously mentioned biopsychosocial framework, these methods mainly aim to target the psychological factors that are associated with the experienced pain in GPPPD, such as dysfunctional cognitions and feelings. Popular methods focusing more on the physiological aspect of the disorder and thus the biological factors associated with the pain are Botox injections, surgery, pharmacotherapy, (pelvic floor) physiotherapy, and biofeedback (Bergeron et al., 2015; Flanagan et al., 2015; Maseroli et al., 2018; Meana & Binik, 2022). Because of the multifactorial nature of GPPPD, there is no standard, optimal way of successfully treating its symptoms. Treatments that integrate psychological and biological interventions, instead of using them separately, are recommended in the current literature to address the multidimensional mechanisms contributing to the cause and maintenance of GPPPD (Bergeron et al., 2015; Meana & Binik, 2022). Research into the effectiveness of different treatment methods for GPPPD is still somewhat limited and has so far shown mixed results, ranging from no significant effect in random controlled trials (RCT) to a success rate in observational studies of 79% (Flanagan et al., 2015; Maseroli et al., 2018; Pérez-López et al., 2019). Nevertheless, it is advocated treatment methods should be tailored to the individual's specific syndrome and preferences, with the aim of relieving or eliminating the symptoms (Bergeron et al., 2015; Pérez-López et al., 2019).

Aim of This Paper

As mentioned earlier, approximately 54% of women worldwide experience sexual pain, of which 19% undergo severe pain which falls under the diagnosis GPPPD. This proportion of women suffering from this sexual dysfunction is significant, and the multidimensional impact the condition has on the lives of these women as well as on those of their partners is considerable. Besides the evident physiological symptoms, research has shown a higher-than-average prevalence of psychological difficulties (among which lower

self-esteem) in women with GPPPD, which seem to be closely interrelated with their sexual pain experience, (sexual) functioning, dyadic sexual communication, relationship quality, and overall quality of life. A factor that has been found to work as a potential buffer for the detrimental symptoms of GPPPD is greater sexual communication. In order to more specifically assess the psychological difficulty sexual self-esteem and its relation to the experience of pain and sexual distress, and to assess how dyadic sexual communication and several other associated relationship aspects influence the experience of pain and sexual distress in this group of women, this paper aims to examine the following: 1) how aspects of the relationship with a partner (including perceived relationship quality, perceived partner responsiveness, perceived dyadic sexual communication, and perceived partner responses to pain) influence vulvar pain and sexual distress in women; 2) how sexual self-esteem influences vulvar pain and sexual distress in women; 3) whether there is an interaction effect between aspects of the relationship with a partner and sexual self-esteem, and, if there is, how this interaction relates to vulvar pain and sexual distress in women. To do this, a study in women of the general population will be conducted to investigate the relationships between these independent and dependent variables.

Method

Participants

Participants were recruited via SONA, a system used by the University of Groningen for compulsory subject study points during the first year of its psychology program. If students were eligible for participating in the study, which was checked by SONA, they could self-select themselves for taking part in the study. The inclusion criteria were the following: woman, sexually active, aged between 18 and 65, not pregnant, and no history of diagnosis with mental illness. If students did not satisfy all these requirements, they were excluded from participating in this study. A total of 277 students participated in the study ($N = 277$). Upon completion of the survey, participants received a compensation of 0.70 SONA Credits. The study was approved by the Ethics Committee of the Faculty of Behavioral and Social Sciences at the University of Groningen (EC-BSS) before it was conducted, with ECP-SONA Approval Code: PSY-2223-S-0281.

The sample size was determined via a G*Power analysis. A power analysis for a one-tailed F-test with five predictors (perceived relationship quality, perceived partner responsiveness, perceived dyadic sexual communication, perceived partner responses to pain, and sexual self-esteem) indicated that the minimum sample size to yield a statistical power of at least 0.95 with an alpha of 0.05 and a large effect size ($d = 0.35$) was $N = 63$. The final sample exceeded this minimum sample size.

Materials

Meaning and Expectation of Sexual Activity (MESA)

This measure was self-constructed based on the Hite Report of Female Sexuality (1976 and newer versions), and used to measure sexual activity and meaning of sexual activity. The questionnaire consisted of 21 questions, of which 3 were multiple choice questions and the remaining 18 were statements which could be rated on a 5-point Likert

scale (never (1), rarely, sometimes, often, always (5); strongly disagree (1), somewhat disagree, undecided, somewhat agree, strongly agree (5)) or 6-point Likert scale (never (1), rarely, sometimes, often, always, I don't/never engage in this behavior (6); strongly disagree (1), somewhat disagree, undecided, somewhat agree, strongly agree, I don't know/not applicable (6)). An example item of the multiple-choice questions is "Please indicate how often you engage in sexual activity with your partner".

Hospital Anxiety and Depression Scale (HADS)

This scale was originally developed by Zigmond & Snaith (1983) and measures anxiety and depression. The cognitive and emotional aspects of anxiety and depression are measured on two separate subscales (one for anxiety, and one for depression) that each contain 7 items. This makes up the 14 items of the HADS which are assessed on a 4-point Likert scale that ranges from 0 to 3. An example item is "I feel tense or 'wound up'". Internal consistency of the HADS has been found to be acceptable, with a Cronbach's alpha for the anxiety subscale varying from .68 to .93 and for the depression subscale from .67 to .90 (Bjelland et al., 2002).

Experiences in Close Relationships-Revised Questionnaire (ECR-R)

This questionnaire was developed by Fraley et al. (2000) and measures adult attachment style on two subscales, namely avoidance and anxiety. The ECR-R consists of 36 items which are statements concerning feelings in emotionally intimate relationships. The degree to which each statement is applicable to the respondent can be rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). An example item is "I often worry that my partner doesn't really love me".

Perceived Relationship Quality Components (PRQC) Inventory

This inventory was developed by Fletcher et al. (2000) and measures perceived relationship quality by assessing six constructs that represent distinct components of

perceived relationship quality: satisfaction, commitment, intimacy, trust, passion, and love. The PRQC Inventory consists of 18 question items, 3 items per construct, which can be answered on a 7-point Likert scale ranging from 1 (not at all) to 7 (extremely). An example item is “How satisfied are you with your relationship?”. Cronbach’s alpha for the PRQC Inventory that was found in this study was .98, indicating an excellent level of internal consistency.

Perceived Partner Responsiveness Scale (PPRS)

This scale was originally developed by Reis & Carmichael (2006) and measures the degree to which people perceive their relationship partners are responsive to them. The PPRS consists of 18 items and integrates two constructs: understanding (the extent to which the relationship partner gets things right about oneself) and validation (the extent to which the relationship partner appreciates and values oneself; Reis et al., 2017). The items consist of statements regarding one’s partner and the degree to which an item applies to the individual that is being considered can be rated on a 9-point Likert scale ranging from 1 (not at all true) to 9 (completely true). An example item is “My partner is aware of what I am thinking and feeling”. Cronbach’s alpha for the PPRS has been found to be excellent, ranging between .91 and .98 (Reis et al., 2017). The two integrated constructs, understanding and validation, show a strong correlation of $r = 0.94$.

Vulvar Pain

This measure was self-constructed and assesses vulvar pain and engagement of sexual intercourse despite pain. This short questionnaire consists of 4 items. The first item assesses whether physical discomfort or pain is experienced when penetration/vaginal intercourse is attempted or engaged in, and can be rated on a 5-point Likert scale ranging from 0 (no) to 4 (yes, always). The second item included a choice for one or more answer options, based on the Hite Report of Female Sexuality (2003), that represent reasons for which physical

discomfort or pain was experienced. Participants could rate their average level of pain during intercourse in the third rating question, using an 11-point Likert scale ranging from 0 (no pain) to 10 (worst pain) as is proposed for clinical assessments of pain intensity (Kaasa et al., 2011). The fourth rating item assesses whether participants engage in sexual intercourse despite experiencing pain, and can be rated on a 5-point Likert scale ranging from 0 (no) to 4 (yes, always).

Sexual Communication Pain

This measure was self-constructed based on a study conducted by Carter et al. (2019) about women's reasons for not communicating painful sex. The short questionnaire consists of 3 questions about reporting painful sex towards one's partner, including one 5-point Likert scale question ranging from 1 (not at all painful) to 5 (extremely painful), one closed question, and one open ended question. An example item is "Why did you not tell your partner about your pain during sex?".

Dyadic Sexual Communication Scale (DSC)

This scale measures perception of the discussion of sexual matters with one's partner (Catania, 1998). The DSC consists of 13 statement items that can be rated on a 6-point Likert scale ranging from 1 (disagree strongly) to 6 (agree strongly). An example item is "Talking about sex is a satisfying experience for both of us". The DSC has shown good internal consistency, with a Cronbach's alpha between .81 and .83, and with a Cronbach's alpha of .89 for test-retest reliability (Catania, 1998). The discriminant validity, the ability of discriminating between people with and without sexual problems, also seems good ($p = .001$; Catania, 1998).

Female Sexual Function Index (FSFI)

This questionnaire assesses sexual functioning and quality of life in women (Ter Kuile et al., 2006; Rosen et al., 2000). The FSFI consists of 19 items covering six key

domains of sexual function in women, namely desire, arousal, lubrication, orgasm, satisfaction, and pain. It is divided into 3 closed questions and 16 statement rating questions on a 6-point Likert scale ranging from 1 to 6, where lower scores indicate lower sexual functioning and higher scores indicate higher sexual functioning. An example item is “How often did you feel sexually aroused (“turned on”) during sexual activity or intercourse?”. The internal consistency of the FSFI has been found to be good, with all six domains showing a Cronbach’s alpha value between .82 and .98, and the complete scale of .93 and .97 (Ter Kuile et al., 2006; Rosen et al., 2000). The discriminant validity of the FSFI, the ability to discriminate between people with sexual complaints and without sexual complaints, also seemed good ($p < .001$; Rosen et al., 2000).

Female Sexual Distress Scale-Revised (FSDS-R)

This scale assesses sex-related personal distress in women, related to sexual dysfunction, and consists of 13 statement items concerning feelings and problems women could experience regarding their sexuality (DeRogatis et al., 2008). The FSDS-R can be rated on a 5-point Likert scale ranging from 1 (never) to 5 (always). An example item is “How often do you feel guilty about sexual difficulties?”. Cronbach’s alpha for the FSDS-R that was found in this study was .94, indicating an excellent internal consistency.

Sexual Self-Esteem Inventory for Women - Short Form (SSEI-W-SF)

This inventory was developed by Zeanah and Schwarz (1996) and assesses affective reactions to self-appraisals of sexuality in women. The SSEI-W-SF contains five subscales that reflect different domains of sexual self-esteem, including adaptiveness, attractiveness, control, moral judgment, and skill/experience. The measure consists of 35 statement items which can be rated on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree) (Zeanah & Schwarz, 2019). An example item is “I feel I am pretty good at sex”. The

internal consistency of the SSEI-W-SF has been found to be good, with all five domains showing a Cronbach's alpha value between .85 and .94 (Zeanah & Schwarz, 1996).

Significant Other Response Scale (adapted) (SORS-a)

This measure assesses perceived partner responses to expressions of pain by using the subscale Significant Other Response Scale of the West Haven-Yale Multidimensional Pain Inventory (WHYMPI) that was slightly adapted by Rosen et al. (2010) (Kerns et al., 1985; Rosen et al., 2010). It consists of 25 statement items that can be rated in applicability to one's situation on a 6-point Likert scale ranging from 1 (never) to 6 (very often). Perceived partner responses are assessed on two subscales, namely negative responses and solicitous responses. An example item is "He/She expresses irritation at me." Internal consistency of the two subscales has been found to be sufficient, with a Cronbach's alpha of .77 and .84 (Rosen et al., 2010).

Sexual Motives Scale (SexMS)

This scale measures sexual motivation by assessing the reasons a person has to engage in a sexual relationship, and using six types of sexual regulation proposed by self-determination theory (SDT) as subscales (Gravel et al., 2016). The SexMS consists of 24 statement items that can be rated on a 7-point Likert scale ranging from 1 (does not correspond at all) to 7 (corresponds completely). An example item is "Because I enjoy sex". All subscales have been found to have a Cronbach's alpha between .80 and .90, indicating good internal consistency (Gravel et al., 2016).

Procedure

The data for this cross-sectional study were collected via Qualtrics Survey Software through an online survey which could be self-administered by the participating women via a mobile phone, tablet or desktop. Before starting the survey, all participants were told the aim of the study was to investigate sexual behavior and genital pain in a representative female

sample, and for this purpose, they would be presented with a variety of questions about their demographic background, living situation, relationship, sexual behavior, and pain. They were also informed that all data would be collected anonymously, and that they would receive a compensation of 0.70 SONA Credits after they completed the study of approximately 30 minutes. When informed consent was given by the participant, they could start the survey. First a short introduction video was shown introducing the aim of the study and its procedure. After watching the video, the participants could fill out the survey. The survey started with descriptive questions regarding gender identity, age, education, sexual orientation, romantic relationship, living situation, religion, and menstrual cycle. Furthermore, the survey was composed of several questionnaires assessing meaning and expectation of sexual activity, anxiety and depression, adult attachment style, relationship quality, partner responsiveness, vulvar pain, sexual (pain) communication, sexual functioning, sexual distress, sexual self-esteem, and sexual motives.

In this correlational between-subjects research design the independent variables of main interest were *relationship aspects*, measured using the Perceived Relationship Quality Components (PRQC) Inventory, Perceived Partner Responsiveness Scale (PPRS), Dyadic Sexual Communication Scale (DSC), and Significant Other Response Scale (adapted), *sexual self-esteem*, measured using the Sexual Self-Esteem Inventory for Women - Short Form (SSEI-W-SF). With regard to the dependent variables, of main interest were *vulvar pain*, measured using a self-constructed vulvar pain measure, and *sexual distress*, measured using the Female Sexual Distress Scale-Revised (FSDS-R).

Data Analysis, Assumption Checks, and Data Reduction

The data will be analyzed by using multiple regression in SPSS. Before conducting the intended multiple regression analyses, there was checked for normality, and data distributions looked approximately normal, except for the PRQC Inventory (see Figure A1

and A2 in the Appendix). However, this violation is not problematic with large sample sizes and additionally, data transformations often bias interpretation of results (Pek et al., 2018; Schmidt & Finan, 2018). Homoscedasticity was checked with scatterplots for both dependent variables, and the residuals were approximately homoscedastic (see Figure A3). There was checked for outliers with histograms and boxplots, and two extreme outliers were removed (see Figure A1, A4, and A5). Lastly, there was tested for multicollinearity between the independent variables, and no worrisome values for the multiple regression model were found (all predictors were moderately correlated with $1 < VIF \leq 5$; see Table 2 and 3). Since no problematic violations of the assumptions were found, the multiple regression analyses were carried out as planned.

Results

Participant Flow and Missing Data

The questionnaire was filled in by the participants between March 28 and May 30, 2023. Out of the 231 eligible participants, 211 (91.3%) completed the entire study. Possible reasons for participants not completely finishing the study could be a sudden change of mind about their participation, or the length of the questionnaire. Nonetheless, some data was missing for certain questions. For this reason, the percentages given in this section are valid percentages, so the percentage of the number of participants who filled in this question. During the data analysis it was checked that the number of responses for the analyzed questions was high enough, at least $N = 63$, to yield a statistical power of at least 0.95 with an alpha of 0.05 and a large effect size ($d = 0.35$).

Data were excluded from participants indicating to have a male or non-binary gender identity, or when no answer was given to this question. In addition, data from two participants were removed, because an analysis of the distribution of the data showed them to be outliers (see Figure A1 and A2 in the Appendix for this analysis). Eventually, 231 female participants remained in the sample and were included in the analysis.

Sample Descriptives

The final sample used in this study was aged between 18 and 22 years (92.7%; $M = 20.04$), had higher secondary education as highest completed education (71.4%), had no children (98.7%), were predominantly heterosexual (73.2%), were living alone (51.1%), and were not religious (74.9%). Current relationship status varied among the sample, with most participants not actively dating or single ($n = 92$) or being in a committed long-term relationship ($n = 76$), and some dating one person ($n = 36$) or being in a new relationship ($n = 33$). Approximately a third of the sample had been dating/in a relationship with their current

(sexual) partner for less than one year (31.3%), one fifth for 1-3 years (18.6%), and one tenth for 3-10 years (10%).

Descriptive Statistics

The women in this sample had a FSDS-R total mean score of $M = 13.8$ ($SD = 11.25$), with 51.2% of them scoring above the cut-off score of 11, which indicates sexual distress (DeRogatis et al., 2008). The measure for vulvar pain indicated that the majority of the sample (56.3%) sometimes experiences physical discomfort or pain when attempting to or engaging in penetration or vaginal intercourse with their partner. The average level of pain or discomfort experienced had a mean score of 2.49 out of 10 (n valid = 210; n missing = 21; $SD = 1.98$; see Table 1). A percentage of 42.5% indicated to most of the time or always engage in sexual intercourse despite pain. In Table 1, descriptive statistics (i.e., M , SD , n) of the other scales of interest can be found.

Table 1

Descriptive Statistics for PRQC Inventory, PPRS, DSC, SORSa, SSEI-W-SF, Vulvar Pain, and FSDS-R

		PRQC					Vulvar	
		Inventory	PPRS	DSC	SORSa	SSEI-W-SF	Pain	FSDS-R
n	Valid	208	208	210	85	203	210	207
	Missing	23	23	21	146	28	21	24
	M	5.22	6.43	3.25	3.09	4.31	2.49	2.05
	SD	1.60	1.97	.50	.99	.66	1.98	.86

Inferential Statistics

Two separate multiple regression analyses – one for each dependent variable (i.e., vulvar pain and sexual distress) – were conducted in SPSS with the five independent variables of interest (i.e., perceived relationship quality, perceived partner responsiveness, perceived dyadic sexual communication, perceived partner responsiveness to expressions of pain, and sexual self-esteem).

Multiple regression on vulvar pain showed that perceived partner responsiveness ($\beta = -.449, t = -2.649, p = .010$), perceived partner responsiveness to expressions of pain ($\beta = .329, t = 3.055, p = .003$), and sexual self-esteem ($\beta = -.357, t = -2.932, p = .005$) were significant predictors of vulvar pain. Perceived relationship quality and perceived dyadic sexual communication were not found significant (see Table 2 for regression output).

Multiple regression on sexual distress resulted in no significance for perceived relationship quality, perceived partner responsiveness, perceived dyadic sexual communication, and perceived partner responsiveness to expressions of pain in predicting sexual distress. Only sexual self-esteem ($\beta = -.639, t = -6.564, p < .001$) was found to be a significant predictor (see Table 3 for regression output).

Table 2*Multiple Regression PRQC Inventory, PPRS, DSC, SORSa, and SSEI-W-SF on Vulvar Pain*

Model		Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i>	95% CI for <i>B</i>		Collinearity Statistics	
		<i>B</i>	<i>SE</i>	β			<i>LL</i>	<i>UL</i>	Tolerance	VIF
1	(Constant)	5.23	2.10		2.49	.015	1.04	9.41		
	PRQC Inventory	.43	.23	.35	1.87	.066	-.03	.89	.31	3.18
	PPRS	-.44	.16	-.45	-2.65	.010	-.76	-.11	.37	2.68
	DSC	.21	.53	.04	.40	.692	-.85	1.27	.95	1.05
	SORSa	.66	.22	.33	3.06	.003	.23	1.09	.93	1.08
	SSEI-W-SF	-1.08	.37	-.36	-2.93	.005	-1.82	-.35	.72	1.39

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

Table 3*Multiple Regression PRQC Inventory, PPRS, DSC, SORSa, and SSEI-W-SF on FSDS-R*

Model		Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i>	95% CI for <i>B</i>		Collinearity Statistics	
		<i>B</i>	<i>SE</i>	β			<i>LL</i>	<i>UL</i>	Tolerance	VIF
1	(Constant)	5.53	.65		8.48	<.001	4.23	6.83		
	PRQC Inventory	-.11	.07	-.22	-1.43	.157	-.25	.04	.31	3.27
	PPRS	.07	.05	.17	1.24	.219	-.04	.17	.37	2.71
	DSC	-.09	.15	-.05	-.57	.570	-.39	.22	.95	1.05
	SORSa	.09	.07	.10	1.21	.230	-.06	.23	.94	1.06
	SSEI-W-SF	-.78	.12	-.64	-6.56	<.001	-1.02	-.54	.73	1.37

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

Exploratory Analysis

Since two of the four studied relationship aspects and sexual self-esteem were found significant in predicting vulvar pain, it was also examined whether an interaction effect could be found between either of the two significant relationship aspects and sexual self-esteem. A multiple regression with the three significant predictors (i.e., perceived partner responsiveness, perceived partner responsiveness to expressions of pain, and sexual self-esteem) and the two interaction terms (i.e., perceived partner responsiveness multiplied with sexual self-esteem, and perceived partner responsiveness to expressions of pain multiplied with sexual self-esteem) was conducted accordingly but yielded no significant findings (see Table 5 for regression output). This could have been expected given the weak to moderate correlations between both aspects of the relationship and sexual self-esteem, which were $r(195) = 0.429, p < .001$, and $r(82) = 0.135, p = .220$, respectively (see Table 6 for the correlation matrix).

Table 5

Multiple Regression PPRS, SORSa, SSEI-W-SF, PPRS x SSEI-W-SF, and SORSa x SSEI-W-SF on Vulvar Pain

Model		Unstandardized		Standardized		95% CI for B		Collinearity		
		Coefficients	SE	Coefficients	t	p	LL	UL	Tolerance	VIF
1	(Constant)	9.40	6.55		1.43	.156	-3.67	22.46		
	PPRS	-.48	.79	-.47	-.61	.544	-2.06	1.09	.02	54.74
	SORSa	.14	1.67	.07	.08	.933	-3.19	3.47	.02	57.07
	SSEI-W-SF	-1.75	1.52	-.55	-1.15	.254	-4.77	1.28	.05	21.22
	PPRS x SSEI-W-SF	.06	.17	.33	.36	.720	-.28	.41	.01	79.32
	SORSa x SSEI-W-SF	.14	.38	.33	.37	.715	-.62	.89	.01	77.34

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

Table 6*Correlation Matrix PRQC Inventory, PPRS, DSC, SORSa, SSEI-W-SF, Vulvar Pain, and FSDDS-R*

		PRQC					Vulvar	
		Inventory	PPRS	DSC	SORSa	SSEI-W-SF	Pain	FSDDS-R
PRQC Inventory	Pearson's <i>r</i>	1	.800**	.061	.319**	.421**	-.107	-.381**
	<i>p</i> (2-tailed)		<.001	.385	.003	<.001	.126	<.001
	<i>N</i>	208	203	205	84	196	204	200
PPRS	Pearson's <i>r</i>	.800**	1	.054	.229*	.429**	-.150*	-.323**
	<i>p</i> (2-tailed)	<.001		.441	.038	<.001	.032	<.001
	<i>N</i>	203	208	206	82	197	204	201
DSC	Pearson's <i>r</i>	.061	.054	1	.078	.098	-.005	-.102
	<i>p</i> (2-tailed)	.385	.441		.478	.169	.939	.146
	<i>N</i>	205	206	210	84	200	206	204
SORSa	Pearson's <i>r</i>	.319**	.229*	.078	1	.135	.199	-.018
	<i>p</i> (2-tailed)	.003	.038	.478		.220	.071	.874
	<i>N</i>	84	82	84	85	84	83	83
SSEI-W-SF	Pearson's <i>r</i>	.421**	.429**	.098	.135	1	-.352**	-.664**
	<i>p</i> (2-tailed)	<.001	<.001	.169	.220		<.001	<.001
	<i>N</i>	196	197	200	84	203	198	199
Vulvar Pain	Pearson's <i>r</i>	-.107	-.150*	-.005	.199	-.352**	1	.381**
	<i>p</i> (2-tailed)	.126	.032	.939	.071	<.001		<.001
	<i>N</i>	204	204	206	83	198	210	202
FSDDS-R	Pearson's <i>r</i>	-.381**	-.323**	-.102	-.018	-.664**	.381**	1
	<i>p</i> (2-tailed)	<.001	<.001	.146	.874	<.001	<.001	
	<i>N</i>	200	201	204	83	199	202	207

Note. * = correlation is significant at the 0.05 level (2-tailed); ** = correlation is significant at the 0.01 level (2-tailed).

Discussion

The purpose of this paper was to examine 1) how aspects of the relationship with a partner (including perceived relationship quality, perceived partner responsiveness, perceived dyadic sexual communication, and perceived partner responses to pain) influence vulvar pain and sexual distress in women; 2) how sexual self-esteem influences vulvar pain and sexual distress in women; 3) whether there is an interaction effect between aspects of the relationship with a partner and sexual self-esteem, and, if there is, how this interaction relates to vulvar pain and sexual distress in women.

Firstly, the results of the current study showed that of the studied aspects of the relationship with a partner, perceived partner responsiveness had a negative relationship with vulvar pain, whereas perceived partner responsiveness to expressions of pain had a positive relationship with vulvar pain. This indicates that when perceived partner responsiveness decreases, vulvar pain increases. Conversely, when perceived partner responsiveness to expressions of pain increases, so tends vulvar pain. Neither of the relationship aspects were found to be significant predictors of sexual distress. Secondly, sexual self-esteem was found to be negatively associated with vulvar pain as well as with sexual distress. This suggests that when sexual self-esteem decreases, vulvar pain increases. Similarly, when sexual self-esteem decreases, so tends sexual distress. Thirdly, no interaction effect was found including only the independent variables that were found significant in this study (i.e., perceived partner responsiveness, perceived partner responsiveness to expressions of pain, and sexual self-esteem) and their interaction terms on dependent variable vulvar pain.

Links Between the Current Study and Research in Women With GPPPD

Higher perceived partner responsiveness – comprising understanding and validation – was associated with lower levels of vulvar pain. Although perceived partner responsiveness has previously been found to be related to lower sexual distress in women with GPPPD

(Bergeron et al., 2020; Bois et al., 2016), this study did not find such an association. A possible explanation for this could be that even though half of the present sample scored above the cut-off score for sexual distress, the impact of perceived partner responsiveness could be more clearly seen in the even higher levels of sexual distress experienced by women with GPPPD compared to women without sexual pain disorder (Bergeron et al., 2015). Research on the associations of partner responsiveness and sexual pain in this population is still limited and findings are mixed (Meana & Binik, 2022). Nevertheless, the finding of this study seems plausible, since perceived partner responsiveness has been found to be associated with better sexual satisfaction and functioning (Bergeron et al., 2021). This includes greater experiences of sexual desire, arousal, orgasm, and pleasure (Pascoal et al., 2014), that generally entail positive and pleasant emotional and physical experiences, which in turn could have a counteracting effect on vulvar pain by for example distracting women from hypervigilance on this experience.

In line with previous research, higher perceived partner responsiveness to expressions of pain – comprising negative and solicitous responses – was associated with higher levels of vulvar pain. Yet, the direction of the relationship between partner responsiveness to pain and vulvar pain experiences in women with GPPPD has been shown to vary, depending on the way in which the responsiveness is expressed. In general, responses with affective encouragement of adaptive coping are related to less pain, whereas negative and solicitous responses are related to more pain (Bergeron et al., 2015; Meana & Binik, 2022). A possible explanation for this difference in effect could be that negative responses to expressions of pain evoke feelings of inadequacy, shame, and worry in women, which can negatively impact vulvar pain. Moreover, solicitous responses could encourage a hypervigilance towards the pain or towards sexual dysfunction, which can also negatively influence women's pain experiences.

Sexual communication was not found significant in explaining variance in vulvar pain or sexual distress. Previous studies have generally found higher dyadic sexual communication to be related to lower sexual distress in women with GPPPD, whereas the relation with pain still seems ambiguous, with some studies finding no relationship and others a negative relationship (Bergeron et al., 2015; Chisari et al., 2021; Rancourt et al., 2017). A possible explanation for this study's null results could be that the used sample consisted of women from the general population, so without a sexual pain disorder diagnosis. Women with GPPPD, for example, often report feelings of guilt, shame, distress and anxiety over the impact their condition has on their sexual functioning, and tend to have worse sexual communication than women without GPPPD (Banaei et al., 2023; Pazmany et al., 2014). Communicating these thoughts and feelings with their partner could positively influence their understanding and engagement with the women's problems, which in turn could facilitate the couple's coping with the pain and reduce the women's distress (Rancourt et al., 2016; Rancourt et al., 2017). The women in the current study likely did not suffer to this extent from these negative affective feelings – although scores of half of the sample indicated sexual distress (51.2%) as well as sexual dysfunction (48.3%; FSFI total score had $M = 23.76$, $SD = 8.9$, which is below the cut-off score of 26.55; Meston et al., 2020) – which could be a possible explanation as to why sexual communication would not strongly contribute to reducing their sexual distress or vulvar pain since they probably have less burdensome thoughts or feelings to open up about to their partner.

Relationship quality seemed not to significantly predict vulvar pain or sexual distress. Relationship quality is a broad term that, in this study, encompassed many smaller elements of a relationship, i.e., satisfaction, commitment, intimacy, trust, passion, and love. Despite the often negative associations between these components and sexual pain and distress (e.g., Bergeron et al., 2015; Meana et al., 2022), significant differences in the scores given for each

subcomponent (for example, a high score for perceived passion, but a low score for trust) could be a possible reason for that no significant effect was found between relationship quality and the outcome variables.

Sexual self-esteem was found to be negatively associated with vulvar pain as well as with sexual distress. Since sexual self-esteem has previously been found to be positively related to sexual functioning (Kong et al., 2023), and has shown to be an important predictor for sexual pain and distress in the present study, interventions aimed at increasing levels of sexual self-esteem might be promising in relieving vulvar pain and sexual distress experiences in women with GPPPD. Especially since these women would have more to gain in self-esteem than women of the general population, since self-esteem tends to be lower in women with GPPPD compared to women without sexual pain disorder (Banaei et al., 2023; Shallcross et al., 2018). Intervention strategies in women with GPPPD aimed at increasing sexual self-esteem would be interesting to study in future research.

Limitations

This study had several limitations. Firstly, this study used a convenience sample which was quite homogenous regarding background and characteristics, e.g., level of education and sexual orientation. This may have consequences for the generalizability of the findings to other populations. Secondly, not everyone completed the full survey. As a result, some data was missing for some questions. However, since 91.3% did complete the full study, this small portion who did not may not have a profound impact on the interpretation of the results. Another limitation of this study was that there was an error in the presentation of the Significant Other Response Scale (adapted) in the questionnaire, which resulted in its double inclusion. Consequently, many participants only filled in one of the two versions, or even partly one and partly the other, which complicated data analysis for this scale. Eventually it was decided to use the version of the scale with most complete data, resulting in

an inability to use data from two-third of the sample, which was nevertheless still enough to reach sufficient power.

It should also be mentioned that for the literature search on GPPPD, information from studies on GPPPD as well as from studies explicitly only on vaginismus, vestibulodynia, vulvodynia, or dyspareunia were used. But since some of these separate diagnostic terms have been combined in the DSM-5 and all fairly overlap, it seemed justified to connect already existing information about the separately studied sexual disorders for the overarching GPPPD, to fill the gap of research on this classification.

Implications and Future Directions

This study highlights three independent variables that play a significant role in the experience of sexual pain and distress in women. Despite this study being conducted in a convenience sample consisting of women without sexual pain disorder diagnosis, its results can be very relevant for further research and interventions in women with sexual pain disorders like GPPPD. Addressing the found significant independent variables in women with GPPPD – a population in which sexual pain and distress have been found to occur in much higher extent and thus pose a bigger problem (Bergeron et al., 2015; Meana et al., 2022) – could give promising results in tackling and relieving sexual pain and distress experiences. Even though no causal effects can be guaranteed by this study due to its cross-sectional nature, targeting and improving partner responsiveness, partner responsiveness to pain and sexual self-esteem would probably still be very beneficial for women with and without GPPPD by improving dyadic communication, intimacy, self-image, and overall relationship quality and satisfaction (Bergeron et al., 2015; Kong et al., 2023; Meana & Binik, 2022). If these interventions will not significantly improve women's pain and distress levels, chances are high their happiness in their relationship or overall well-being will at least. In addition, since the overall costs of such interventions would be very low, implementing them would be

advocated if this can make a positive difference in the (sexual) lives of women with GPPPD. Since the research on women with GPPPD and important factors involved in this disorder is still rapidly growing, this study contributes to this expanding knowledge by highlighting important factors in women's vulvar pain and sexual distress experiences and comparing this to what is known about women with GPPPD. In this way, this study aspired to bridge knowledge about women of the general population to women with GPPPD, to provide useful target points for interventions, and to inspire future research in women with GPPPD. It would be recommended to further study how the in the present study's found relationships hold for a sample of women with sexual pain disorders like GPPPD, to study if the current findings can be replicated, and to examine what differences in findings of these populations can be attributed to.

Conclusion

To sum up, three independent variables were found to be associated with vulvar pain. Perceived partner responsiveness to expressions of pain was positively related to vulvar pain, whereas perceived partner responsiveness and sexual self-esteem were negatively related to vulvar pain. One of the studied explanatory variables, sexual self-esteem, was also found to correlate with sexual distress. Up to this time, research on women with GPPPD and significantly involved factors in this sexual disorder is still rapidly growing. This study contributes to this expanding knowledge by highlighting important variables in women's vulvar pain and sexual distress experiences. In addition, this study presents interesting target points for interventions in women with GPPPD with the aim of tackling these negative symptoms and improving these women's overall well-being.

References

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.).
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
- Banaei, M., Kariman, N., Ozgoli, G., Nasiri, M., Roozbeh, N., & Zare, F. (2023). Sexual function among women with vaginismus: A biopsychosocial approach. *Journal of Sexual Medicine*, 20(3), 298-312. <https://doi-org.proxy-ub.rug.nl/10.1093/jsxmed/qdac049>
- Bergeron, S., Corsini-Munt, S., Aerts, L., Rancourt, K., & Rosen, N. O. (2015). Female sexual pain disorders: a review of the literature on etiology and treatment. *Current Sexual Health Reports*, 7(3), 159-169. <https://doi.org/10.1007/s11930-015-0053-y>
- Bergeron, S., Pâquet, M., Steben, M., & Rosen, N.O. (2021). Perceived partner responsiveness is associated with sexual wellbeing in couples with genito-pelvic pain. *Journal of Family Psychology*, 35(5), 628-638. <https://doi.org/10.1037/fam0000829>
- Bergeron, S., Reed, B.D., Wesselmann, U. & Bohm-Starke, N. (2020). Vulvodynia. *Nature Reviews Disease Primers*, 6(36) (2020). <https://doi.org/10.1038/s41572-020-0164-2>
- Bjelland, I., Dahl, A. A., Haug, T. T., & Neckelmann, D. (2002). The validity of the hospital anxiety and depression scale. An updated literature review. *Journal of Psychosomatic Research*, 52(2), 69-77. [https://doi.org/10.1016/s0022-3999\(01\)00296-3](https://doi.org/10.1016/s0022-3999(01)00296-3)
- Bois, K., Bergeron, S., Rosen, N., Mayrand, M.-H., Brassard, A., & Sadikaj, G. (2016). Intimacy, sexual satisfaction, and sexual distress in vulvodynia couples: An observational study. *Health Psychology*, 35(6), 531-540. <https://doi.org/10.1037/hea0000289>

- Carter, A., Ford, J. V., Luetke, M., Fu, T., Townes, A., Hensel, D. J., Dodge, B., & Herbenick, D. (2019). "Fulfilling his needs, not mine": Reasons for not talking about painful sex and associations with lack of pleasure in a nationally representative sample of women in the United States. *The Journal of Sexual Medicine*, *16*(12), 1953-1965. <https://doi.org/10.1016/j.jsxm.2019.08.016>
- Catania, J. A. (1998). Dyadic sexual communication scale. In C.M. Davis, W. L. Yarber, R. Bauserman, G. Schreer, S. L. Davis (Eds.), *Handbook of sexuality-related measures* (pp. 129-131). Thousand Oaks, CA: Sage Publications.
- Chisari, C., Monajemi, M. B., Scott, W., Moss-Morris, R., & McCracken, L. M. (2021). Psychosocial factors associated with pain and sexual function in women with vulvodynia: A systematic review. *European Journal of Pain (London, England)*, *25*(1), 39-50. <https://doi.org/10.1002/ejp.1668>
- Davis, S. N. P., Bergeron, S., Binik, Y. M., & Lambert, B. (2013). Women with provoked vestibulodynia experience clinically significant reductions in pain regardless of treatment: results from a 2-year follow-up study. *The Journal of Sexual Medicine*, *10*(12), 3080-3087. <https://doi.org/10.1111/jsm.12309>
- DeRogatis, L., Clayton, A., Lewis-D'Agostino, D., Wunderlich, G., & Fu, Y. (2008). Original research—outcomes assessment: validation of the female sexual distress scale-revised for assessing distress in women with hypoactive sexual desire disorder. *The Journal of Sexual Medicine*, *5*(2), 357-364. <https://doi.org/10.1111/j.1743-6109.2007.00672.x>
- Dogan, S., & Dogan, M. (2007). The frequency of sexual dysfunctions in male partners of women with vaginismus in a Turkish sample. *International Journal of Impotence Research: Your Sexual Medicine Journal*, *20*(2), 218-221. <https://doi.org/10.1038/sj.ijir.3901615>
- Fergus, K. B., Cohen, A. J., Cedars, B. E., Rowen, T. S., Patino, G., & Breyer, B. N. (2020).

- Risk factors for sexual pain among physically active women. *Sexual Medicine*, 8(3), 501-509. <https://doi.org/10.1016/j.esxm.2020.03.007>
- Flanagan, E., Herron, K. A., O'Driscoll, C., & Williams, A. C. de C. (2015). Psychological treatment for vaginal pain: Does etiology matter? A systematic review and meta-analysis. *Journal of Sexual Medicine*, 12(1), 3-16. <https://doi-org.proxy-ub.rug.nl/10.1111/jsm.12717>
- Fletcher, G. J. O., Simpson, J. A., & Thomas, G. (2000). The measurement of perceived relationship quality components: a confirmatory factor analytic approach. *Personality and Social Psychology Bulletin*, 26(3), 340-354. <https://doi.org/10.1177/0146167200265007>
- Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item-response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology*, 78(2), 350-365.
- Gravel, E. E., Pelletier, L. G., & Reissing, E. D. (2016). "Doing it" for the right reasons: Validation of a measurement of intrinsic motivation, extrinsic motivation, and amotivation for sexual relationships. *Personality and Individual Differences*, 92, 164-173. <https://doi.org/10.1016/j.paid.2015.12.015>
- Hite, S. (1976). *The Hite report: A nationwide study of female sexuality*. Dell.
- Hite, S. (2003). *The Hite report: A nationwide study of female sexuality*. Seven Stories Press.
- Kaasa, S., Apolone, G., Klepstad, P., Loge, J. H., Hjermstad, M. J., Corli, O., Strasser, F., Heiskanen, T., Costantini, M., Zagonel, V., Groenvold, M., Fainsinger, R., Jensen, M. P., Farrar, J. T., McQuay, H., Rothrock, N. E., Cleary, J., Deguines, C., Caraceni, A., ... European Association for Palliative Care Research Network (EAPCRN). (2011). Expert conference on cancer pain assessment and classification-the need for

- international consensus: Working proposals on international standards. *Bmj Supportive & Palliative Care*, 1(3), 281-7.
<https://doi.org/10.1136/bmjspcare-2011-000078>
- Kerns, R. D., Turk, D. C., & Rudy, T. E. (1985). The west haven-yale multidimensional pain inventory (whympi). *Pain*, 23(4), 345-356. [https://doi.org/10.1016/0304-3959\(85\)90004-1](https://doi.org/10.1016/0304-3959(85)90004-1)
- Kong, L. V., Ting, R. S., Chung, K. R., Hidayat, W., Ooi, W. L., & Goh, P. H. (2023). Bidimensional self-esteem and sexual functioning among young adults: A systematic review. *Current Psychology*, 43(6), 4930-4944. <https://doi.org/10.1007/s12144-023-04699-7>
- Lisspers, J., Nygren, A., & Söderman, E. (1997). Hospital anxiety and depression scale (had): Some psychometric data for a Swedish sample. *Acta Psychiatrica Scandinavica*, 96(4), 281-286. <https://doi.org/10.1111/j.1600-0447.1997.tb10164.x>
- Lorenz, T. K. (2019). Interactions between inflammation and female sexual desire and arousal function. *Current sexual health reports*, 11, 287-299.
<https://doi.org/10.1007/s11930-019-00218-7>
- Maseroli, E., Scavello, I., Rastrelli, G., Limoncin, E., Cipriani, S., Corona, G., Fambrini, M., Magini, A., Jannini, E. A., Maggi, M., & Vignozzi, L. (2018). Outcome of medical and psychosexual interventions for vaginismus: A systematic review and meta-analysis. *The Journal of Sexual Medicine*, 15(12), 1752-1764.
<https://doi.org/10.1016/j.jsxm.2018.10.003>
- Meana, M., & Binik, Y. M. (2022). The biopsychosocial puzzle of painful sex. *Annual Review of Clinical Psychology*, 18, 471-495. <https://doi-org.proxy-ub.rug.nl/10.1146/annurev-clinpsy-072720-014549>
- Meston, C. M., Freihart, B. K., Handy, A. B., Kilimnik, C. D., & Rosen, R. C.

- (2020). Scoring and interpretation of the FSFI: What can be learned from 20 years of use? *The Journal of Sexual Medicine*, *17*(1), 17-25.
<https://doi.org/10.1016/j.jsxm.2019.10.007>
- Pâquet, M., Rosen, N. O., Steben, M., Mayrand, M.-H., Santerre-Baillargeon, M., & Bergeron, S. (2018). Daily anxiety and depressive symptoms in couples coping with vulvodynia: Associations with women's pain, women's sexual function, and both partners' sexual distress. *The Journal of Pain*, *19*(5), 552-561.
<https://doi.org/10.1016/j.jpain.2017.12.264>
- Pascoal, P. M., Narciso, I. d. S. B., & Pereira, N. M. (2014). What is sexual satisfaction? Thematic analysis of lay people's definitions. *Journal of Sex Research*, *51*(1), 22-30.
<https://doi.org/10.1080/00224499.2013.815149>
- Pazmany, E., Bergeron, S., Verhaeghe, J., Van Oudenhove, L., & Enzlin, P. (2014). Sexual communication, dyadic adjustment, and psychosexual well-being in premenopausal women with self-reported dyspareunia and their partners: A controlled study. *The Journal of Sexual Medicine*, *11*(7), 1786-1797.
<https://doi.org/10.1111/jsm.12518>
- Pazmany, E., Bergeron, S., Verhaeghe, J., Van Oudenhove, L., & Enzlin, P. (2015). Dyadic sexual communication in pre-menopausal women with self-reported dyspareunia and their partners: Associations with sexual function, sexual distress and dyadic adjustment. *The Journal of Sexual Medicine*, *12*(2), 516-528.
<https://doi.org/10.1111/jsm.12787>
- Pek, J., Wong, O., & Wong, A. (2018). How to address non-normality: A taxonomy of approaches, reviewed, and illustrated. *Frontiers in Psychology*, *9*.
<https://doi.org/10.3389/fpsyg.2018.02104>
- Pérez-López, F. R., Bueno-Notivol, J., Hernandez, A. V., Vieira-Baptista, P., Preti, M., &

- Bornstein, J. (2019). Systematic review and meta-analysis of the effects of treatment modalities for vestibulodynia in women. *The European Journal of Contraception & Reproductive Health Care, 24*(5), 337-346.
<https://doi.org/10.1080/13625187.2019.1643835>
- Pukall, C. F., Goldstein, A. T., Bergeron, S., Foster, D., Stein, A., Kellogg-Spadt, S., & Bachmann, G. (2016). Vulvodynia: Definition, prevalence, impact, and pathophysiological factors. *The Journal of Sexual Medicine, 13*(3), 291–304.
<https://doi.org/10.1016/j.jsxm.2015.12.021>
- Rancourt, K. M., Flynn, M., Bergeron, S., & Rosen, N. O. (2017). It takes two: Sexual communication patterns and the sexual and relational adjustment of couples coping with provoked vestibulodynia. *The Journal of Sexual Medicine, 14*(3), 434-443.
<https://doi.org/10.1016/j.jsxm.2017.01.009>
- Rancourt, K. M., Rosen, N. O., Bergeron, S., & Nealis, L. J. (2016). Talking about sex when sex is painful: Dyadic sexual communication is associated with women's pain, and couples' sexual and psychological outcomes in provoked vestibulodynia. *Archives of Sexual Behavior, 45*(8), 1933-1944.
- Reis, H. T., Crasta, D., Rogge, R. D., Maniaci, M. R., & Carmichael, C. L. (2017). Perceived partner responsiveness scale (pprs) (Reis & Carmichael, 2006). *The Sourcebook of Listening Research: Methodology & Measures, 516-521*.
<https://doi.org/10.1002/9781119102991.ch57>
- Rogers, R. G., Pauls, R. N., Thakar, R., Morin, M., Kuhn, A., Petri, E., Fatton, B., Whitmore, K., Kingsberg, S. A., & Lee, J. (2018). An international urogynecological association (iuga)/international continence society (ics) joint report on the terminology for the assessment of sexual health of women with pelvic floor dysfunction. *International*

Urogynecology Journal: Including Pelvic Floor Dysfunction, 29(5), 647-666.

<https://doi.org/10.1007/s00192-018-3603-9>

Rosen, N. O., Bergeron, S., Leclerc, B., Lambert, B., & Steben, M. (2010). Woman and partner-perceived partner responses predict pain and sexual satisfaction in provoked vestibulodynia (pvd) couples. *The Journal of Sexual Medicine*, 7(11), 3715-3724.

<https://doi.org/10.1111/j.1743-6109.2010.01957.x>

Rosen, R., Brown, C., Heiman, J., Leiblum, S., Meston, C., Shabsigh, R., Ferguson, D., & D'Agostino, R. (2000). The Female Sexual Function Index (FSFI): A multidimensional self-report instrument for the assessment of female sexual function.

Journal of Sex & Marital Therapy, 26(2), 191-208. <https://doi-org.proxy-ub.rug.nl/10.1080/009262300278597>

Schmidt, A. F., & Finan, C. (2018). Linear regression and the normality assumption. *Journal of Clinical Epidemiology*, 98, 146-151. <https://doi.org/10.1016/j.jclinepi.2017.12.006>

Shallcross, R., Dickson, J. M., Nunns, D., Mackenzie, C., & Kiemle, G. (2018). Women's subjective experiences of living with vulvodynia: A systematic review and meta-ethnography. *Archives of Sexual Behavior*, 47(3), 577-595. <https://doi-org.proxy-ub.rug.nl/10.1007/s10508-017-1026-1>

Ter Kuile, M. M., Brauer, M., & Laan, E. (2006). The female sexual function index (FSFI) and the female sexual distress scale (FSDS): Psychometric properties within a Dutch population. *Journal of Sex & Marital Therapy*, 32(4), 289-304.

<https://doi.org/10.1080/00926230600666261>

Zarski, A.-C., Berking, M., & Ebert, D. D. (2018). Efficacy of internet-based guided treatment for genito-pelvic pain/penetration disorder: Rationale, treatment protocol, and design of a randomized controlled trial. *Frontiers in Psychiatry*, 8.

<https://doi.org/10.3389/fpsy.2017.00260>

Zeanah, P. D., & Schwarz, J. C. (1996). Reliability and validity of the sexual self-esteem inventory for women. *Assessment*, 3(1), 1-15.

<https://doi.org/10.1177/107319119600300101>

Zeanah, P. D., & Schwarz, J. C. (2019). Sexual self-esteem inventory and the sexual self-esteem inventory-short form. *Handbook of sexuality-related measures*, 555-558.

Zigmond, A. S., & Snaith, R. P. (1983). The hospital anxiety and depression scale. *Acta*

Psychiatrica Scandinavica, 67(6), 361-370. <https://doi.org/10.1111/j.1600->

0447.1983.tb09716.x

Appendix

SPSS Analysis Output

Figure A1

Histograms of the Data Spread

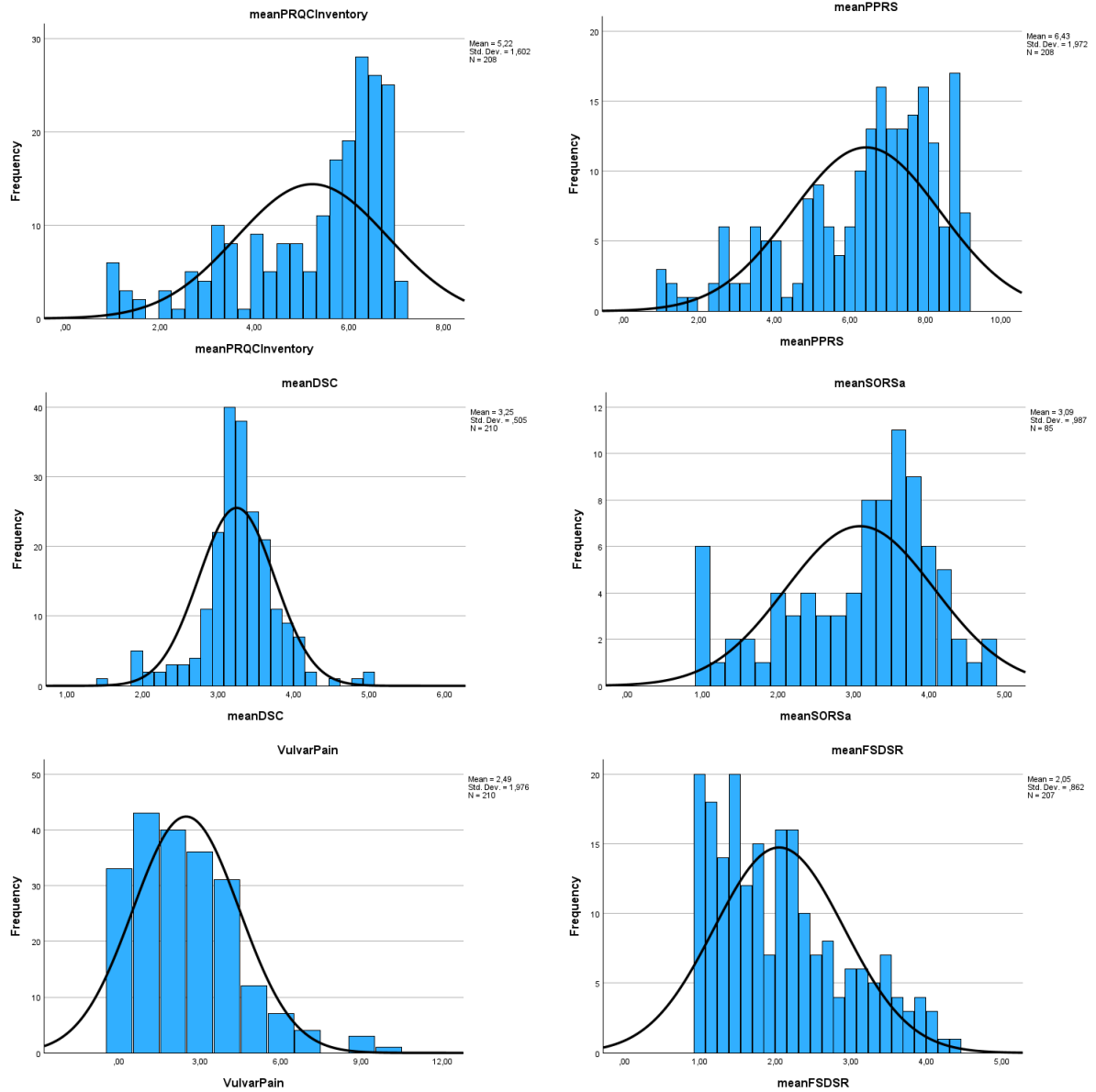
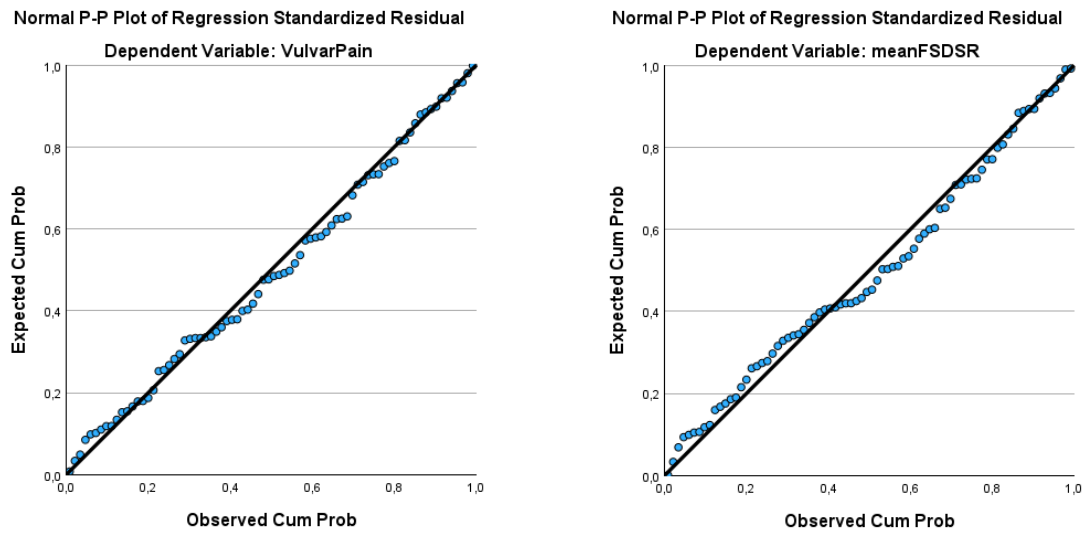


Figure A2

Normal Probability Plots for Dependent Variables Vulvar Pain and FSDS-R

**Figure A3**

Residual Scatterplots for Dependent Variables Vulvar Pain and FSDS-R

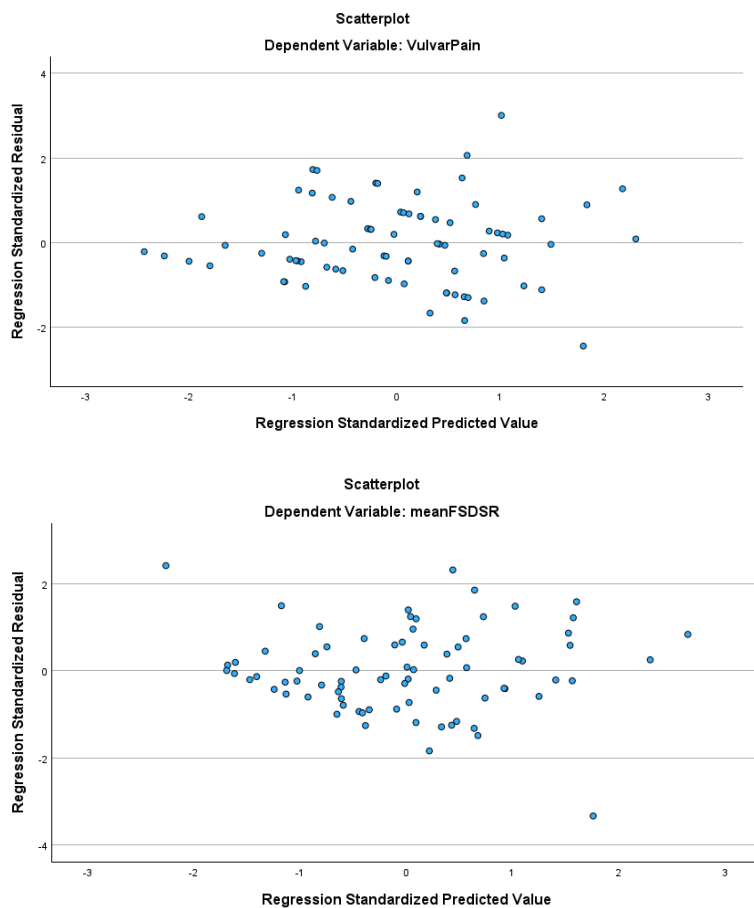


Figure A4

Boxplots of the Data Spread of the PRQC Inventory, PPRS, DSC, SORS-a, SSEI-W-SF, Vulvar Pain, and FSDS-R

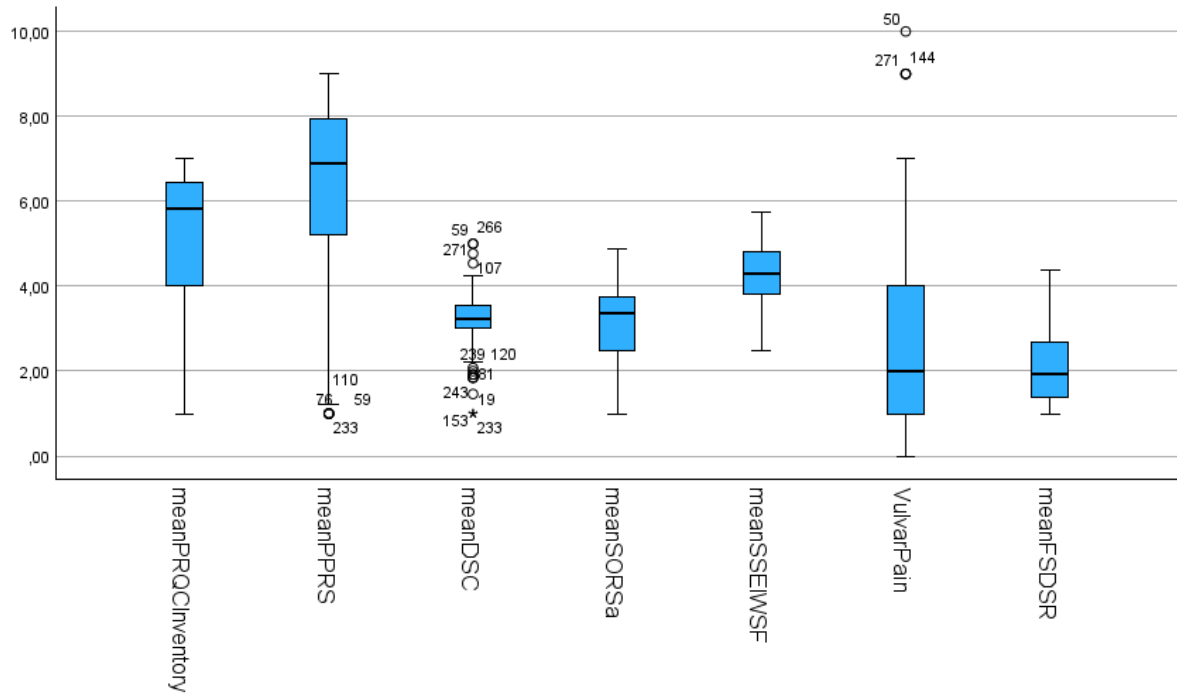


Figure A5

Boxplot of the Data Spread of the DSC

