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**THESIS OF THE DOCTORAL DISSERTATION**

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FEMALE SEXUAL DYSFUNCTION IN THE CONTEXT OF  
MARITAL INTIMACY

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## **Chapter 1: INTRODUCTION: CLINICAL RELEVANCE OF STUDYING MARITAL INTIMACY AND FEMALE SEXUAL DYSFUNCTION**

### **Purpose of Dissertation**

The purpose of this dissertation is to examine female sexual dysfunction (FSD), especially desire and pain disorders, in the context of marital intimacy based on two original research studies the author carried out on a unique clinical sample and two reviews. Desire and pain disorders, the most frequent presenting problems of all female sexual problems in a clinical setting, were chosen as the focus of the dissertation in the context of marital intimacy.

The author reviews the history of diagnostic considerations for Female Sexual Interest and Arousal Disorder, the ongoing differences between psychiatric and other sexual medicine diagnoses. The opposing viewpoints between these two camps is nowhere as intense as when it comes to the conceptualization of female sexual desire. Psychiatric diagnoses of FSD and their psychological treatments are based on phenomenological conceptualizations of disorders using observations about symptomology and patient report. This method of categorizing disorders has been criticized as limited in reflecting relevant hormonal, neurobiological, genetic and behavioral components underlying the particular disorder. It has also been noted as “impeding progress in psychiatry (Cuthbert et al 2013).

Since the goal of diagnosis is to determine the exact nature of a patient’s presenting problem to administer the optimal treatment, different classification systems all reflect their own respective conceptualizations behind what the “exact nature of “a particular disorder is, in this case, female sexual disorders. To illustrate the diversity of such diagnoses, author includes a general overview of nomenclature of female sexual disorders with an eye to low sexual desire, called Female Sexual Interest and Arousal Disorder (FSIAD) in the DSM-5 and Hypoactive Sexual Desire Disorder (HSDD) in the ICD and ICSM.

Sexual pain disorders, namely Female Genito-Pelvic Penetration Disorder (FGPPD) will be explored in a systematic review. Author chose to use ICSM and ICD nosology for this review since both of those systems explore in more detail the cause of sexual pain disorders. The DSM does not integrate fundamental neurobiological and experiential components that comprise these disorders; consequently, the DSM lags behind these other

classification systems when it comes to sexual pain diagnoses. Clearly, one reason for this is the nature of psychiatric diagnosis and clinical psychological treatment: to rule out hormonal or organic causes more diagnostic tests would need to be carried out, which is not practical in these settings. To bridge this gap in diagnosis and treatment, a widely promoted approach in the field is utilizing multidisciplinary teams, which involves a comprehensive approach, including a psychological and relational workup followed by medical treatment, if necessary.

This dissertation also reports on two original research studies carried out by the author on a unique clinical sample in the context of heterosexual long-term relationships, namely the marriage relationship. The results of these studies point to the importance of taking the context and quality of the marriage relationship into consideration when choosing treatment methods for FSD.

## **Chapter 2: FEMALE SEXUAL DYSFUNCTION: COMMON PREDICTORS AND ASSOCIATIONS**

### **Common Predictors of FSD in Relationships**

A sexual dysfunction is a disturbance in sexual functioning involving one or multiple phases of the sexual response cycle or pain associated with sexual activity. Consequently, various psychological, medical or physiological mechanisms may negatively influence one's sexual response to sexual stimuli. Relationship factors have been shown to be predictors of sexual function. Illustrative of this, research reports that starting a new relationship, where a person is more likely to have a positive perspective on their partner, is accompanied by stronger feelings of desire (Klusmann, 2002). Conversely, habituation, associations of sexual activity with negative outcomes such as physical pain or negative relational experiences will predict negative sexual responses. Relationship satisfaction declines over time however this does not necessarily mean a decline in sexual satisfaction. More importantly, attitudes towards one's partner is a predictor of relationship satisfaction, which in turn is a predictor of sexual satisfaction. More positive automatic partner attitudes should lead to more positive evaluative judgments of the relationship and

more negative automatic partner attitudes should lead to more negative judgments (Hicks & McNulty, 2019).

Love seems to be a stronger predictor for women for sexual activity than desire is, and this is also true for women with FSD (Vowels & Mark, 2020; Neto, 2012).

Women's desire for sex appears to be motivated by relationship factors, such as ways to express love and not wanting to "hurt their partner's feelings" and "prioritize their partner's enjoyment before their own" even when FSD is present (Elmerstig et al., 2013)

### **Common associations of FSD**

It is beyond the scope of this dissertation to provide a detailed overview of medical and psychological factors associated with FSD. However, it is important to mention at least the most typical medical conditions associated with sexual dysfunction. These include neurologic diseases such as multiple sclerosis, and spinal cord injury; atherosclerosis and other cardiac diseases; gynecologic conditions such as endometriosis, inflammation, fibroids, infections, and prolapse, as well as obstetrical conditions related to previous operative delivery, perineal tears, rectoceles, or episiotomy after delivery. Hendrickx et al. found that among women with provoked vestibulodynia, a chronic pain disorder, relational intimacy uniquely predicts better self-reported sexual functioning independent of sexual intimacy and partner intimacy (Hendrickx et al., 2015). This finding is in alignment with the results of author's own research studies, detailed later in Chapters 7-12.

Psychological factors such as individual trait factors, cognitive distractions, efficacy expectations, attentional focus, anxiety, trauma history and low mood are all important dimensions of sexual function (Bergeron et al., 2010). For menopausal women, it is recommended to initiate routine clinical investigation of psychological factors and life stressors and to address contextual factors that can precipitate and maintain sexual difficulties, including relationship quality, sexual experience, previous sexual function, mental and physical health (L Brotto et al., 2016; Lori Brotto et al., 2016; Worsley et al., 2017).

Women with a history of sexual trauma are more likely to report poorer relationship satisfaction and lower sexual function. For such women, who are already at a higher risk

of developing FSD, lower sexual function and lower sexual satisfaction mediates the association of their trauma and their relationship satisfaction. (Blais, 2020).

Early attachment style and relationship attachment style are both associated with sexual function, dysfunction, most specifically sexual desire. Cherkasskaya and Rosario, in a description of their sexual desire theory, stated that “women's internalized representations of self and other that stem from childhood and their capacity to embody their sexual bodies are integral to our understanding of the phenomenology of sexual desire in women” (Cherkasskaya & Rosario, 2019). The primacy of attachment style in their theory was met with some criticism as other authors emphasized factors such as cultural pressures and relations factors associated with women’s sexual desire (Bogaert et al., 2019).

### **Age, Length of Relationship and Sexual Function**

Age will inevitably impact sexual function. There are situational stressors, stage-of life stressors and hormonal issues that will change across the lifespan and influence sexual function for women of different ages. Some research shows a negative association between aging and sexual desire is particularly pronounced among women experiencing lower relational intimacy in their relationships with sexual intimacy mediating the association between relationship length and sexual excitement. (Birnbaum et al., 2007). Over time, women’s sexual desire tends to decline more than men’s, which doesn’t decline on average. Declines in women’s sexual desire is accentuated by childbirth and is a predictor in both partner’s marital satisfaction. (McNulty et al., 2019).

Partners will often experience changes in the level of their sexual desire, their passion towards each other will likely wane over time. Regardless of this phenomenon, what seems to be a determining factor in couple sexual satisfaction is not so much the level of passion a partner has towards the other but more so how aligned the two partners are in their level of desire for each other. Sexual desire discrepancy (SDD), the difference in levels of desire between partners, is an important determinant of sexual satisfaction. Even though SDD is not a sexual dysfunction per se, and it may or may not be underlined by a clinically diagnosable sexual problem, it is an important building block in conceptualizing female sexual dysfunction in a dyadic setting. It is also one of the most frequent presenting problems in therapy given the levels of significant distress it can cause for partners (Jodouin et al., 2021).

### **Hormonal Associations of FSD**

There is an ongoing debate about the amount of influence that androgens have on female sexual functioning. There is evidence for a link between sexual desire and particularly arousability with androgens, but the research findings are not univocal. Postmenopausal women seem to benefit from transdermal testosterone for low sexual desire, current available research supports a moderate therapeutic benefit, while this has not been proven to be the case for premenopausal women. (Achilli et al., 2017; Both et al., 2010); Simon & Kapner, 2020). Interestingly, among these many factors that influence FSD and female sexual frequency is mate-guarding behavior. Fertile-phase, younger women are perceived by other women with attractive partners as a threat and are more often responded to with jealousy and mate-guarding (Hurst et al., 2017).

Since testosterone therapies have become highly popular in clinical practice among both primary care and sexual medicine practitioners, the International Society for the Study of Sexual Health (ISSWSH) has recently released its clinical guidelines for systemic use of testosterone in women with hypoactive sexual desire disorder (HSDD- nosology used by ISSWSH for low sexual desire). In its guidelines ISSWSH cautions practitioners to refrain from using total testosterone levels to diagnose HSDD (Handy et al., 2020; Parish, Simon, et al., 2021).

### **Chapter 3: FEMALE SEXUAL INTEREST/AROUSAL DISORDER: HISTORY OF DIAGNOSTIC CONSIDERATIONS AND THEIR IMPLICATIONS FOR CLINICAL PRACTICE**

Low sexual desire, also called Hypoactive Sexual Desire Disorder or Sexual Interest/Arousal Disorder, is a type of Female Sexual Dysfunction (FSD). This section reviews diagnostic considerations, a historical overview of how current DSM-5 diagnostic criteria was developed, including a crossover from DSM-IV-TR to DSM-5, diagnostic considerations in pharmaceutical treatments for low female sexual desire as well as the predominant sexual response cycle models that DSM-5 criteria was built on. It provides a historical overview of the two majorly divergent camps of perspective, namely the DSM-5 and the ICSM/ ICD classification systems, their theoretical and research basis. It concludes that female sexual desire is a rather complex phenomenon and a mechanism set

in motion by intricate hormonal, emotional, relational and biological processes. Psychiatrists are well-suited in both recognizing, diagnosing and treating female sexual desire problems. Author of this review encourage flexibility and a patient focused approach in clinical practice, which would both require utilizing a biopsychosocial perspective and the use of a multi-specialty team.

### **History of Diagnostic Criteria for FSIAD**

Interest in the diagnosis and treatment of low sexual desire in women has been steadily rising since that late 80's, having reached new heights with the support of pharmaceutical interests. The success rates of attempts to find a pharmaceutical cure for women's sexual desire have been highly critiqued (Chivers et al., 2017). Consequently, the field of sexual medicine continues to be divided between two camps: advocates of psychological approaches, based on the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders) and advocates of medicalized approaches based on ICSM (Fourth International Consultation in Sexual Medicine) and ICD (International Classification of Diseases and Statistics) diagnostic criteria, altogether the three most well-known classification systems in sexual medicine.

DSM-5 criteria were formulated based on circular models while ICD and ICSM diagnoses maintained the linear model perspective. Authors of the DSM-5 diagnostic criteria have criticized linear models as errant in supposing that sexual desire/ excitement must be present for a woman at the onset of the sexual activity. They argued that women engage in sexual activity for a variety of reasons and the presence of sexually competent stimuli is needed in order for the woman to respond favorably. (Rosemary Basson, 2001; Basson, 2010). Basson emphasizes that desire may or may not be present initially and it may only be triggered in response to adequate sexual stimuli and consequent sexual arousal. In her recommendations for the revisions of past DSM-IV-TR diagnostic criteria of hypoactive sexual desire she stated "We recommend that desire be regarded as the result of an incentive (sexually competent stimulus) that activates the sexual system where subjectively perceived desire is one of many components" (Basson, 2010). In the light of this, FSIAD can only be diagnosed if a woman does not experience this responsive sexual interest and arousal even when the appropriate sexual and non-sexual triggers are present.

**Table 1** Crossover from DSM-IV-TR to DSM-5 FSD diagnosis.

DSM-IV-TR Diagnosis	DSM-5 Diagnosis
Female Hypoactive Desire Disorder	Merged into Female Sexual Interest/ Arousal Disorder
Female Arousal Disorder	
Female Orgasmic Disorder	Unchanged
Dyspareunia	Merged into Genito Pelvic Pain/ Penetration Disorder
Vaginismus	

**Table 1** illustrates the crossover from DSM-IV-TR to DSM-5 FSD diagnosis. Clearly, this divergence from previous DSM-IV-TR criteria of FSIAD is based on a significant change in the theoretical understanding of how female sexual desire works. Research on this subject was headed up by groups of researchers mainly in the US, Canada and the Netherlands (R. Basson, 2001; Rosemary Basson, 2001; Kleinplatz & Ménard, 2007; Metz, 2010; Toates, 2009).

The Fourth ICSM concluded that hypoactive sexual desire dysfunction should be kept as a separate entity from female sexual arousal dysfunction. They recommended adopting some DSM-5 definitions, some DSM-IV-TR definitions, some ICD-10 definitions, and some new definitions developed by the consensus. Their conclusive definition for Hypoactive Desire Dysfunction is “persistent or recurrent deficiency or absence of sexual or erotic thoughts or fantasies and desire for sexual activity (clinical principle) (Parish, Cottler-Casanova, et al., 2021; Parish, Simon, et al., 2021).

### **Diagnostic Considerations and Pharmaceutical Approaches for Female Low Sexual Desire**

Currently, neither the US Food and Drug Administration (FDA), the government agency in the United States overseeing the regulation of pharmaceutical trials, or the European Medicines Agency have published standards for trials for female sexual dysfunctions. In the United States before a clinician can prescribe a particular pharmaceutical to a patient,



the drug would first have to be approved by the FDA. The FDA held a public meeting and scientific workshop in 2014 to hear scientific opinions, including patient accounts. Yet no official FDA statement was released indicating the DSM-5 or any other diagnostic definition to be the basis for drug trials for female sexual desire. The FDA has consistently favored patient reports over clinician's evaluation which tends to be more along the lines of DSM-5 viewpoints. They had defended this approach by reiterating their position to protect consumer interests against the "medicalization" of "everyday lifestyle problems" from the financial interests of "Big Pharma" (powerful, for-profit drug companies) (Pyke, 2021). Pressure on the FDA finally resulted in the approval of the drug, Flibanserin, after it had been rejected twice. Thus Flibanserin, Addyi, "the female Viagra" was never able to take off successfully. Only 4,000 prescriptions were written for it in the first 4 months of it on the market, which is rather marginal given the size of the vast US drug market (Pevzner & Klein, 2016). It has been consistently criticized as misleading in being called the "female viagra" (Shapiro et al., 2017). While Addyi has proven to be a failed attempt to revolutionize the treatment of female low sexual desire, to its credit, it attempted to go about sexual desire in a different way than drugs for male dysfunctions: it is a psychiatric drug and not a performance drug, targeting the CNS driven female sex drive. (Pfaus & Jones, 2018). Flibanserin, a postsynaptic 5-HT1A agonist/5-HT2A antagonist, an anti-depressant SSRI drug, was found to be ineffective to treat depression however it was observed during the clinical trials that Flibanserin contributed to an increase in sexual desire in depressed women with low sexual desire. (Clayton et al., 2018). While sceptics have questioned Flibanserin as a valid treatment agent given its efficacy was rated as "very low"; the mean difference in SSE-s was a 0.49 increase per month vs. placebo and a 0.27-point increase on the FSFI desire domain (Joffe et al., 2015). Regarding bremelanotide: there was no statistically significant difference in SSE-s between the treatment group and placebo (AHC MEDIA, 2020). During the DAISY (acronym for Dose Ascending Study over half a Year) Phase III trials of the drug, the SSE endpoint was the behavioral component of the study and was reported to be statistical significant at the 100mg dosing. 25 mg and 50 mg dosing did not reach statistical significance. Practically speaking, women who take Flibanserin can expect to have maybe one more "sexually satisfying event" in a month than they otherwise would if they were not taking it.

FSIAD, as defined in the DSM-5, has not yet been studied in the pharmacological interventional clinical trials of testosterone. All the controlled, published and randomized clinical trials of testosterone have used the definition of HSDD, a distinct diagnostic entity, as it is presented in the DSM-IV, ICD-10, ICD-11 and ICSM. The divergent paths between medically and psychologically based diagnostic criteria for low sexual desire is apparent here. HSDD is the choice for defining the problem of low sexual desire when it comes to drug trials while FSIAD is the preferred diagnosis in psychological treatment studies (Lori Brotto et al., 2016).

#### **Chapter 4: REVIEW OF PSYCHOLOGICAL ASSOCIATIONS FOR FEMALE GENITAL -PELVIC PAIN DYSFUNCTION- WHAT IS REALLY BEING TREATED DURING TREATMENT?**

Female Genital -Pelvic Pain Dysfunction (FGPPD) is one of the most common female sexual dysfunctions encountered by psychologists treating chronic pain and sexual medicine clinicians. Prevalence rates of FGPPD have been reported between 1%-27% worldwide (McCabe, Sharlip, Atalla, et al., 2016). Exact prevalence rates are difficult to state given the difference in nomenclature and nosology used by research studies, in addition to a wide variance of age strata, classifications based on lifelong, primary or secondary occurrence, severity and self-reported vs. clinically confirmed diagnoses.

Given the ongoing inconsistencies defining a uniform nosological system and nomenclature we have decided to use the definition proposed by the ICSM for female genital pain problems, Female Genital-Pelvic Pain Dysfunction (FGPPD) for this review. The definition of FGPPD is broader than the DSM-5 definition of Genito-Pelvic Pain Disorder and is defined as Persistent or recurrent difficulties with at least one of the following: (i) vaginal penetration during intercourse; (ii) marked vulvovaginal or pelvic pain during genital contact; (iii) marked fear or anxiety about vulvovaginal or pelvic pain in anticipation of, during, or as a result of genital contact; or (iv) marked hypertonicity or overactivity of pelvic floor muscles with or without genital contact (Association, 2013; McCabe, Sharlip, Lewis, et al., 2016; Parish, Cottler-Casanova, et al., 2021; Parish, Simon, et al., 2021)

While research on psychological treatments for FGPPD is typically carried out in teaching hospitals or medical universities still a large portion of treatment happens in outpatient private practice or at tertiary clinics, sometimes within the context of the patient receiving treatment for another mental health issue or a relational problem. Consequently, efficacy of treatment and treatment modalities used are seldom tracked and much valuable data falls through the cracks. When it comes to psychological treatment outcomes, the patient-clinician relationship also accounts for a large portion of success (Cuijpers et al., 2019). In addition to this, given the scarcity of RCT-s and research studies with an intent-to-treat design, it might be premature to draw a final recommendation for preferred modalities for psychological approaches in the treatment of FGPPD (Melnik et al., 2012).

Psychological contributors are never one-dimensional and often require the clinician to use a variety of approaches. In an effort to facilitate clinicians' choices of treatment options of empirically supported treatment modalities, we have added three tables (**Table 2** Effect Sizes: Small; **Table 3** Effect Sizes Medium; **Table 4** Effect Sizes Large) and grouped psychological associations according to their effect sizes on FGPPD.

### **Evidence Synthesis for Psychological Correlates**

The reviewed studies encompass a wide range of psychological and psychophysiological associations for FGPPD such as cognitive associations, affective associations, relational and social associations, relational, social associations and psychophysiological associations.

Altogether, we can state with confidence that FGPPD has strong psychological correlations and addressing them via psychotherapeutic methods is an integral part of successful treatment outcomes. Not one treatment modality stands out as an overarching “one shot, that’s all” method; therefore, combined therapeutic approaches, focusing on individual patient characteristics, seem to offer the most promising results. Based on our meta-analysis and systematic review we recommend that clinicians select treatment modalities to address a variety of psychological associations of FGPPD during treatment and, when feasible, in a relationship context. See summary table for more information.

**Table 2** Effect Sizes: Small

**SMALL**

Target Sex: $\eta^2 = 0.16$ V.: $d = 0.19$ D.: $d = 0.29$ )	Distractor Pain $\eta^2 = 0.06$ D.: $d = 0.31$ )	Effect of exposure treatment on automatic and deliberate threat associations $\eta^2 < 0.01$		Painfulness D.: $d = 0.32$	Fear D.: $d = -0.04$	Body image Unconsummated Women (UCM) $d = -0.25$
Depressive $d = -0.031$	Noncommunication LLV $d = 0.3$	TEMPS-A Scores Depressive $d = 0$	Free-floating anxiety $d = 0.173$	Phobic Anxiety $d = 0.038$	OCD $d = 0.060$	VTototal MHQ-S $d = 0.233$
GRSSS Communication $d = 0.13$	GRSSS Sensuality $d = 0.24$	Pain related global Self Esteem $d = -0.15$	self-image cognitions about vaginal penetration ( $b = 0.25, P = 0.005$ )	Dyadic adjustment (DAS) = not significantly different	Pair-wise comparison of deliberate negative appraisal in women dyspareunia and controls $d = 0.030$	

**Table 3 Effect Sizes Medium**

**MEDIUM**

Genital Incompatibility cognitions V.: d=0.41;	Genital Incompatibility cognitions V.: d=0.41; D.: 0.30	Target pain $\eta^2 = 0.04$ ; V. d= 0.29; D.: d= 0.45	Distractor Pain $\eta^2 = 0.06$ ; vaginismus d= 0.50	t positive stimulus: penetration : d= 0.49 and positive sex: d= 0.53	Less positive affect to penetration stimuli than to non-penetration stimuli: d= - 0.57	Effect of exposure treatment on deliberate fear ratings with regard to vaginal penetration stimuli: d= 0.51
GRSSS Frequency d= 0.42	Partner catastrophizing and perceptions of women's self-efficacy explained 31.1% of the variance in the pain intensity of women with entry dyspareunia, with 7.5% accounted for by partner variables		Dissatisfaction LLV d=0.57	Nonsexuality LLV 0.45	Anorgasmia LLV d= 0.45	TEMPS-A Scores Hyperthymic d=0.6
Woman with PVD: lower sexual funct. r=-0.32; higher anxiety r=0.30	Higher approach less painful sex and higher sexual satis. r=-0.25 and r=0.22	Higher avoidance goals more pain r=0.19	Higher self-focused avoidance greater depressive symptoms r=0.40	Pain related sexual self Esteem d= -0.50	Dyadic sexual communication (DSC) $\eta^2 = 0.08$	Depression (BDI) $\eta^2 = 0.05$

**Table 4 Effect Sizes Large**

**LARGE**

Loss of control during penetration V.: d=2.08; D.:d= 1.79	Pain Catastrophizing Vag.: d=1.29; Dysp.d=: 1.4	Self-image Vag: d=0.89; D.: d=0.98	Coitus attempts $\eta^2 = 0.2$	Arousal (FSFI) $\eta^2 = 0.6$ :	Pair-wise comparison of deliberate negative appraisal in women with vaginismus vs controls $\eta^2 = 0.18$ ; d=0.712	Vaginal penetration stimuli and fear associations: V.:d= 1.08	
penetration stimuli d= -1.25 and non-penetration stimuli d= -0.82	Effect of exposure therapy on global affect evaluation of penetration stimuli: d= 0.63		Back Anxiety Inventory (BAI) V.:d=1.3	Back Depression Inventory (BDI) V.: d=1.5	TEMPS-A Scores Cyclothymic d= 0.9	TEMPS-A Scores Anxious d=1.5	TEMPS-A Scores Irritable d=1.8
sexual antimony Vag.:d= -0.9; Dysp.: d=-0.98	Control cognitions Dysp.: d=-1.36 Vag.: d=-2.3	Catastrophic and pain Vag.: d=4.8; Dysp.:d=2.54	Self-image cogn. Dysp.: d= 1.35 Vag.: d= 2.1	Positive cogn. Dysp.: d= -1.64; Vag.: d=-1.4	Genital incompat. Dysp.: d=0.79; Vag.: d= 1.6	Histrionic V.: d=0.633	Vaginismus LLV d= 1.5
Back Anxiety Inventory (BDI) V.: d= 3.62	Back Depression Inventory (BDI) d= 1.35	GRISS total score d= 1.62	GRSSS Satisfac. d= 1.05	GRSSS Avoidance d= 1.06	GRSSS Vaginismus d=2.90	Subjective disgust V.: d=0.53	Subjective threat V.: d=0.79

## **Chapter 5: CLINICAL STUDIES ON MARITAL INTIMACY, FSD AND SEXUAL FREQUENCY**

The following chapters are from the following two publications: Witherow et al., 2016; Witherow et al., 2017. These research studies were carried out in three different outpatient mental health clinics.

The current studies investigate the relationship between perceived levels of marital intimacy, sexual dysfunction and sexual frequency. We explored relational intimacy as a predictor of sexual frequency in married relationships that is if a woman feels closer to her husband will she have sex more frequently? We also investigated relational intimacy as a mediator between sexual frequency, as a count variable, and sexual functioning. We determined whether marital intimacy mediates the relationships between sexual functioning and several behavioral and emotional sexual outcomes (sexual frequency, sexual satisfaction and sexual distress) in a treatment-seeking heterosexual sample of married women.

### **List of materials and tests used:**

Sexual Satisfaction and Distress,  
IOS (Inclusion of The Other in The Self Scale),  
the Miller Social Intimacy Scale,  
the Couple's Satisfaction Index,  
the Female Sexual Function Index (FSFI-6)  
Count Variable of Sexual Frequency.

**Table 5** Participant Characteristic, Overall

<b>Variable</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>
Frequency of sexual intercourse	4.7	2.5	5.3
Married (years)	15.6	14	11
Age (years)	44	42	11
CSI-16	47	49	21.1
SSSW-30	93.1	93	23.2

MSIS-17	114.6	116	34
IOS	4.2	4	2
FSFI-6	16.2	17	6.1

CSI: Couple’s Satisfaction Index, max score: 81; MSIS: Miller Social Intimacy Scale, max score 154; IOS: Inclusion of the Other in the Self Scale, max score 7; SSS-W: Sexual Satisfaction Scale for Women, max score: 139; FSFI-6: six-item Female Sexual Function Index, max score:27

**Table 6** Participant Characteristic, Sexual Function, Overall

Variable	Mean	Median	SD
Desire	1.6	2	1.3
Arousal	2.9	3	1.5
Lubrication	3.3	4	1.7
Orgasm	3.5	4	1.6
Satisfaction	2	2	1.4
Pain	2.9	3	1.1
FSFI-6	16.2	17	6.1

Desire (0-4): very low →very high; arousal (0-5): no →very high; lubrication (0-5): never →always; orgasm (0-5): almost never →almost always; satisfaction (0-4): very dissatisfied →very satisfied; pain (0-4): almost never →almost always

## Chapter 6: RESULTS

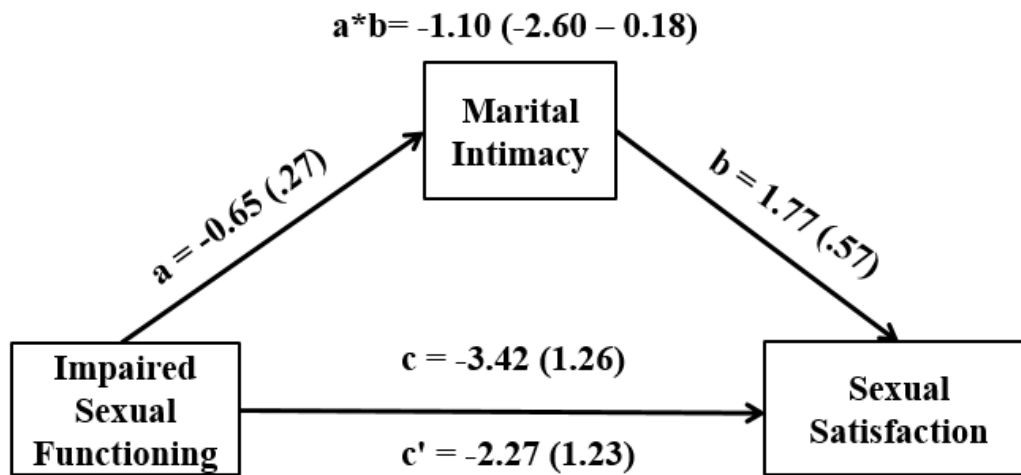
**Table 7.** Multivariable Negative Binomial Regression. Mediation Exploration: *Sexual Frequency as Outcome*

Predictor	Without Intimacy		With Intimacy	
	Estimate	p-value	Estimate	p-value
Desire	0.2352	0.2132	0.0213	0.9041
Arousal	<u>0.0285</u>	0.8876	<u>-0.2471</u>	0.2101
Lubrication	0.1179	0.3562	0.204	<u>0.0776</u>

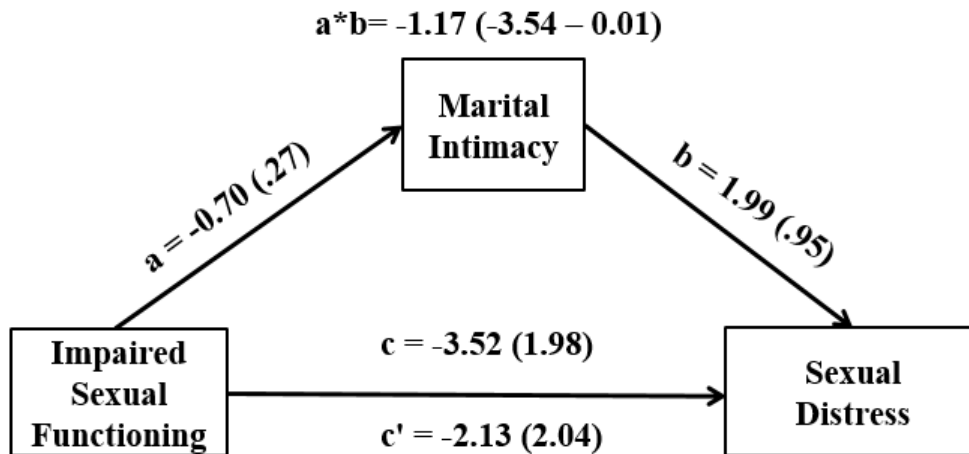


Orgasm	0.2132	0.0893	0.2136	0.0629
Pain	0.0629	0.7017	0.0639	0.6631
Age	-0.0225	0.2506	-0.0299	0.0905
Married	-0.001	0.958	-0.0011	0.9493
Intimacy			0.0106	0.0004

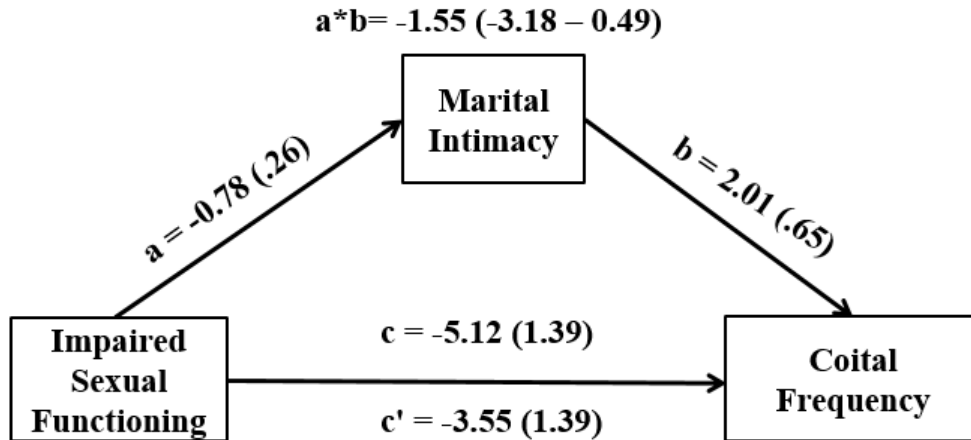
These use regression estimates, not the multiplicative increase



**Figure 1.** Schematic of bootstrapped mediation models predicting sexual satisfaction according to impaired sexual functioning status. Values represent unstandardized coefficients. Values in parenthesis reflect standard error except the indirect  $a*b$  pathway which displays 95% CI



**Figure 2.** Mediation pathway of impaired sexual functioning predicting sexual distress. Values represent unstandardized coefficients. Values in parenthesis reflect standard error expect the indirect  $a*b$  pathway which displays 95% CI



**Figure 3.** Mediation pathways of impaired sexual functioning predicting coital frequency. Values in parenthesis reflect standard error expect the indirect  $a*b$  pathway which displays 95%

## Chapter 7. DISCUSSION

This finding suggests that marital intimacy is an important factor in sexual frequency. Contrary to our hypothesis, marital intimacy was not found to be a mediator of the FSFI-6 variables and sexual frequency. Based on this finding, we speculate that sexual frequency is a matter of relational negotiation and in a sense a “choice” or a “mutual agreement” instead of a causal effect of intimacy levels within the marriage. Interestingly, none of the FSFI-6 variables mediates the relationship between intimacy and frequency. This might come as a surprise, as one might expect variables such as “pain” to be significant mediator. In general, this finding diverges from the findings of Desrosiers et al. (Desrosiers et al., 2008) on painful intercourse, possibly because their sample size was homogeneous to vulvar pain and thus may not be generalizable to our sample or the entire population. To explain our finding, we again have to rely on some anecdotal evidence from clinical experience that suggests that women have a tendency to “tough it out” and still engage in

sexual activity despite the presence of unpleasant side effects such as pain, for the sake of relational benefits. This finding might be significant in the sense that it supports recent sexual desire models that take multiple relational factors into consideration.

These findings suggest that enhancing marital intimacy and facilitating healthy relational negotiation should be considered important factors in sex therapy; however, this might not necessarily translate into an increase in sexual frequency. Sexual frequency appears to be correlated with but not caused by perceived levels of relational closeness.

Our findings suggest a compensatory role for marital intimacy in protecting relational and sexual interference associated with impaired sexual functioning and mirrors other research implicating marital closeness' protective function, especially in permanent relationships (Stephenson & Meston, 2010, 2015; Stephenson, 2010; Witherow et al., 2016). In general, neither age nor marital duration altered the primary mediation results. This implies that the role of relational intimacy in mediating sexual outcomes in impaired sexual functioning is robust to individual differences in age and marital duration. This pattern is inconsistent with theoretical models that predict habituation of sexual frequency and sexual interest as a function of greater marital duration and relational intimacy (Perel, 2007; Schnarch, 2000, 2010; Schnarch, 1997). The one exception to this pattern indicated that intimacy played a stronger mediating role in sexual satisfaction as age increased. This discovery expands on prior findings that showed a decline in sexual frequency over time, with age being the factor most highly predictive of sexual frequency (Call et al., 1995). While this study was cross-sectional, it was observed that older age predicted lower sexual frequency ( $p = .03$ ). Future research should examine the stability of the link between marital intimacy and sexual frequency, and whether age may moderate this association.

The unique contribution of our study includes methodological and statistical advances including our use of a sample of treatment-seeking, married women in established relationships. Because of the permanence of the relationship, and a more solidified narrative of sex (Moore, 2010), married women and women in long-term relationships have had more opportunities to develop adaptive behaviors that result in reaching desired levels of marital intimacy and are more likely to have learned to navigate their inner sexual maps within the relationship, despite challenges such as impaired sexual functioning. Thus, for married women with impaired sexual functioning, engaging in sexual intimacy may

become a “choice” based on relational factors and commitment to the relationship rather than a physiological drive. This speculation is consistent with the conclusions of a study that found that, in their sample, married couples had a high level of interpersonal exchange and commitment to the relationship even though the quality of their relationship was somewhat lower than for cohabitating or dating couples (Moore et al., 2001).

## **Chapter 8: SUMMARY**

Female Sexual Dysfunction has been consistently shown to be prevalent worldwide both in community and clinical samples. The high prevalence of sexual concerns indicates the importance of addressing the etiology, correlations, associations, treatment methods and outcomes for sexual disorders. Despite the need to have more validated research on clinical populations there is still just a dearth of studies targeting treatment-seeking populations. Our research is unique in that it attempts to contribute to the field by tying data from the psychology of close relationships to sexual outcomes. It is also unique in that it targets treatment-seeking heterosexual married women, a dominant segment of clinical work, yet one that has received disproportionately little attention in the literature.

We investigated the mediating role that marital intimacy plays in sexual frequency both for women with and without sexual dysfunction. We found that levels of marital intimacy are a strong predictor of sexual frequency in marriages both for women with and without impaired sexual function. Interestingly, age of participant and years of marriage did not significantly predict sexual frequency. We also have found that marital intimacy has a mediating role on sexual frequency and Female Sexual Dysfunction (DSM-IV-TR). We have attributed this later finding again to the meditating effects of marital intimacy, which, we speculate, has a protective function on the relationship and allows the couple to negotiate their sexual exchange minimizing relational threats and mate-guarding. We theorize that this protective function of marital intimacy acts both via secure attachment and a deeper knowledge of one’s partner and the narrative the couple shares about sexuality. Mediation results showed such a strong effect that we believe it to be imperative for clinicians to address relational aspects in the treatment of women with FSD.

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### **PUBLICATIONS RELATED TO THE THESIS**

**Witherow MP**, Chandraiah S, Seals SR, Bugar A. Relational Intimacy and Sexual Frequency: A Correlation or a Cause? A Clinical Study of Heterosexual Married Women. *Journal of Sex & Marital Therapy* 2016; **42**: 277-86. (Impact Factor: **1.842**)

**Witherow MP**, Chandraiah S, Seals SR et al. Relational Intimacy Mediates Sexual Outcomes Associated with Impaired Sexual Function: Examination in a Clinical Sample. *Journal of Sexual Medicine* 2017; **14**: 843-851 (Impact Factor ~ **3.151**)

**Witherow MP**. Female Sexual Interest/Arousal Disorder: History Of Diagnostic Considerations And Their Implications For Clinical Practice. *PSYCHIATRIA HUNGARICA*; article accepted ...