

DESIRE

Partner Responses to Low Desire: Associations With Sexual, Relational, and Psychological Well-Being Among Couples Coping With Female Sexual Interest/Arousal Disorder



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ABSTRACT

Background: The experience of distressing low sexual interest/arousal—female sexual interest/arousal disorder (FSIAD)—is prevalent in women of all ages and is associated with poorer sexual, relationship, and psychological well-being than women without this difficulty. Women who are partnered are almost 5 times more likely to be distressed by low desire and to receive a diagnosis of FSIAD than unpartnered women, indicating that interpersonal factors are highly relevant, although largely neglected in past research.

Aim: In a dyadic cross-sectional and longitudinal study, we examined whether partner responses to FSIAD were associated with the sexual, relationship, and psychological well-being of couples, and whether any effects persisted 1 year later.

Methods: Women diagnosed with FSIAD ($N = 89$) completed a validated measure of perceived partner positive vs negative responses to their low sexual interest/arousal and their partners reported on their own responses, as well as measures of sexual desire, sexual satisfaction, relationship satisfaction, sexual distress, and anxiety. 1 year later, couples ($N = 66$) completed the outcome measures again. Data were analyzed according to the Actor-Partner Interdependence Model.

Outcomes: Outcomes included were the Sexual Desire Inventory—Solitary and Partner-Focused Subscales; Global Measure of Sexual Satisfaction; Female Sexual Distress Scale; Couple Satisfaction Index; and State-Trait Anxiety Inventory—Short-Form.

Results: When women with FSIAD perceived more positive partner responses (eg, warm, supportive, compassionate) than negative responses (eg, hostile, unsupportive, indifferent), they were more satisfied with the relationship and they and their partners reported lower anxiety. When partners reported more positive than negative responses, they had greater relationship and sexual satisfaction and lower sexual distress and anxiety. Exploratory analyses revealed that women's *perceptions* of their partners' responses accounted for the link between partners' own responses and women's relationship satisfaction and anxiety. Partner responses did not predict any change in outcomes over time.

Clinical Implications: Findings support interpersonal conceptualizations of FSIAD and may inform the development of future couple-based interventions.

Strengths & Limitations: This study is one of the few dyadic investigations of FSIAD, as diagnosed via a clinical interview. Significant associations were only observed cross-sectionally, limiting causal conclusions. There was limited power to detect longitudinal effects.

Conclusion: More positive responses to women's low sexual interest/arousal by partners is linked to better adjustment among couples affected by FSIAD. **Rosen NO, Corsini-Munt S, Dubé JP, et al. Partner Responses to Low Desire: Associations With Sexual, Relational, and Psychological Well-Being Among Couples Coping With Female Sexual Interest/Arousal Disorder. J Sex Med 2020;17:2168–2180.**

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Complaints of low sexual desire and arousal difficulties in women that causes distress—female sexual interest/arousal disorder (FSIAD¹)—is 1 of the most frequent reason for seeking sex therapy.^{2,3} FSIAD is characterized by low sexual desire, few/no sexual thoughts, no initiation of sexual behavior and lack of receptivity to partner initiation, lack of pleasure during sexual activity, lack of responsive desire to erotic cues, and difficulties with physical sexual arousal.¹ At least 3 of these symptoms must persist for a minimum of 6 months, not be attributable to another psychiatric or medical condition, and be the cause of significant distress. In a nationally representative sample, 39% of women reported low sexual desire, 26% reported low arousal, and 30% of women with low desire were also sexually distressed.⁴ When applying the specific criteria of FSIAD introduced in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5¹; ie, 6-month persistence and experiences on all or almost all occasions), community prevalence is reported to be 0.6%.⁵ Despite the discrepancy in prevalence when strictly applying the DSM-5 criteria, there is ample evidence that low sexual desire is a common and distressing problem for many women.^{6–8} The etiology of FSIAD is multifactorial and includes biological, psychological, and interpersonal factors.^{9,10} The latter have been neglected in research despite theoretical and clinical models of FSIAD suggesting a significant role for relationship processes.^{9,11–14} The present study addresses this oversight by examining associations between partner responses to FSIAD—that is, the partners' positive relative to negative response to women's low sexual desire/arousal—and the sexual, relationship, and psychological adjustment of couples coping with this condition.

The burden of FSIAD is far-reaching; affected women report lower sexual and relationship satisfaction and greater symptoms of anxiety and depression than women without sexual dysfunction.^{15,16} Partnered women are 5 times more likely to be distressed by their low desire than unpartnered women and thus receive an FSIAD diagnosis,⁴ underscoring the interpersonal nature of this condition. Indeed, one study found that the association between women's low sexual desire and distress could be explained by partner-related factors, such as whether the low desire prevented them from engaging in partnered sexual activity and whether it decreased their partners' sexual pleasure.¹⁷ Sexual difficulties in the partner, poor sexual compatibility, and relationship dissatisfaction—reported from the perspective of the woman with low desire only—have also been linked to FSIAD symptomatology.^{18–20} Emotional intimacy with a partner is thought to facilitate women's sexual desire and arousal.^{21,22} In fact, there is evidence that relational factors better account for women's low desire than do biological disturbances such as low testosterone.^{19,23,24} Despite this, the potential role of the partner, including both women's perceptions of their partner's responses to their low desire and the perspective of the partners themselves, in maintaining or exacerbating FSIAD and its consequences has received little attention.

Yet the partners of women with FSIAD are intimately affected and have their own responses to the sexual issue, which may have implications for the woman's desire and couples' adjustment. In the first dyadic FSIAD study, using the same sample of couples from the present study and a control group of couples, we found that partners of women with FSIAD had lower sexual and relationship satisfaction, greater sexual distress, and male partners reported more erectile and orgasmic difficulties than partners of women without sexual dysfunction.¹⁶ We have also shown that other interpersonal factors such as greater sexual communal strength (ie, being motivated to meet a partners' sexual needs), relational self-expansion (ie, viewing a partner as providing opportunities to broaden one's sense of self), and better emotion regulation strategies in the context of sexual interactions were linked to higher sexual desire, sexual and relationship satisfaction, and lower couple conflict and symptoms of depression and anxiety in affected couples.^{25–27} Thus, consistent with evidence from other sexual dysfunctions,^{28,29} both partners' cognitive, affective, and behavioral responses to FSIAD appear to contribute to the sexual symptoms and associated repercussions.

In their *Interpersonal Emotional Regulation Model of Sexual Dysfunction* in women, Rosen and Bergeron²⁸ proposed that interpersonal factors acting at both the distal (ie, trait or predisposing aspects of the relationship) and proximal (ie, state or what occurs before, during, or after sexual activity) levels affect the couples' coregulation of their emotions and, consequently, their adjustment. One salient interpersonal factor is the partners' response to FSIAD. For example, partners may respond more positively with warmth, kindness, compassion, and patience, or they may respond more negatively with hostility, indifference, pessimism, and impatience. In a community sample, when people anticipated that they would respond more negatively to their own or their partner's sexual problem, they reported poorer sexual functioning.³⁰ In studies of genito-pelvic pain, which is typically accompanied by difficulties with sexual desire and arousal, partner responses to painful intercourse are a robust predictor of women's pain intensity as well as the sexual and relationship adjustment of affected couples.^{31–33} Specifically, greater solicitous (eg, sympathy) and negative (eg, hostility) partner responses are associated with more pain and anxiety and lower sexual and relationship satisfaction, whereas greater facilitative partner responses (eg, affection) are associated with better outcomes. Similarly, more empathic partner responses have been linked to higher sexual and relationship satisfaction and lower sexual distress for women with genito-pelvic pain and their partners.^{34,35}

In line with the Interpersonal Emotion Regulation Model of Sexual Dysfunction, partner responses to FSIAD that are more supportive and validating may allow couples to better process their emotional reactions (eg, reduced threat value) and cope with the related stressors (eg, conflict over sex) by using more adaptive (eg, problem-solving, acceptance) emotion regulation strategies.²⁸ In contrast, more negative and invalidating partner

responses interfere with couples' emotion regulation by making couples more sensitive and reactive to the stressors (eg, heightened catastrophizing) and promoting the use of less-adaptive emotion regulation strategies (eg, avoidance, emotional suppression). In turn, individual and couple coregulation of emotions are thought to affect couples' adjustment to FSIAD.²⁸

AIMS

The aim of the present study was to examine the cross-sectional and longitudinal associations between partner responses to women's low sexual interest/arousal—as perceived by women and reported by their partners—and the sexual (desire, distress, satisfaction), relational (satisfaction), and psychological (anxiety) well-being of women diagnosed with FSIAD and their partners. We hypothesized that more positive partner responses to women's low sexual interest/arousal (eg, warm, patient, loving) than negative partner responses (eg, hostile, indifferent, judgmental) would be associated with greater well-being for both members of the couple. Examining partner responses to FSIAD may improve understanding of the interpersonal context of this disorder and inform treatment targets for future couple-based interventions.

METHODS

Participants

Participants were recruited via online and social media advertisements, flyers, and word-of-mouth from September 2016 to May 2018.* To be eligible, couples were required to be at least 18 years of age, in a committed relationship of 6 months or more, either living together or with a minimum of 4 in-person contacts per week, fluent in English, and both members of the couple had to agree to participate. One member of the couple had to meet the diagnostic criteria for FSIAD as defined by the DSM-5 and determined via a clinical interview, described in [Procedure](#). Exclusion criteria were low sexual interest/arousal attributed to another psychiatric or medical condition or medication; undergoing hormonal therapy with the exception of hormone-based contraceptives; no previous sexual experience; and being pregnant, breastfeeding, or 1 year postpartum. There were no additional exclusion criteria for the partners of women with FSIAD.

The laboratory was contacted by 220 individuals who completed an initial telephone screening for eligibility. Of 175 women who were potentially eligible after this screening call, 146 completed the clinical interview and 26 were no longer interested. After the clinical interview, 23 women were not diagnosed with FSIAD and were therefore ineligible, and one eligible

* Of the sample, 25.8% ($n = 25$) were recruited from the following social media sites: Reddit ($n = 6$); Facebook ($n = 9$); Instagram ($n = 3$); Buz ($n = 6$); and Twitter ($n = 1$). Another 37.1% were recruited from online classifieds posted on Kijiji ($n = 32$) and Craigslist ($n = 4$). In addition, 10.3% ($n = 10$) of the sample was recruited from word of mouth, which included hearing about the study via a radio interview ($n = 1$); university lecture

participant chose to withdraw before providing data. 32 eligible couples were excluded from the final analyses because only one partner completed the survey ($n = 5$), one or both members of the couple did not complete the measure of partner responses to low sexual interest/arousal ($n = 8$), or the research team found evidence of invalid reporting (eg, one or both partners failed attention checks embedded within the survey; $n = 20$). The final sample was 89 couples (see [Table 1](#) for participant characteristics). 1 year later, 8 couples reported that they had broken up and at least one member from 66 couples completed the follow-up survey, indicating a retention rate of 74%. There were 6 instances where only one member completed the measures, resulting in a final sample of 60 couples at time 2.

Measures

Sociodemographics

Participants reported their age, gender, sexual orientation, sexual frequency, education, and race/ethnicity. Women with FSIAD also reported their relationship status (ie, dating, living together or married) and length, household income, and duration of the low desire/arousal problem. Couple-level averages were calculated for sexual frequency (defined as giving and receiving manual and oral stimulation, and vaginal intercourse) and relationship duration.

Response to Sexual Difficulties

The Response to Sexual Difficulties Scale (RSDS³⁰) was used to measure women's perception of their partners' responses to their low sexual interest/arousal, as well as partners' reports of their own responses to the FSIAD. The instructions of the RSDS were modified to refer specifically to FSIAD (rather than any sexual difficulty). The measure consists of 23 bipolar items that tap into affective and interpersonal responses (eg, hostile-warm, indifferent-compassionate, harsh-kind, judgmental-understanding) and asks participants to choose the most suitable point on a 7-point Likert scale where 1 = a more negative reaction, 4 = neutral, and 7 = a more positive reaction. Total scores range from 23 to 161, with higher scores indicating more positive responses. The RSDS has been shown to have strong reliability and validity in community samples.³⁰ Cronbach's alpha for the RSDS scale used in this study was 0.96 for women with FSIAD and 0.95 for partners at time 1.

Sexual Desire

The Sexual Desire Inventory-2 is a well-validated 14-item questionnaire used to assess solitary, partner-focused, and other-focused sexual desire.^{36,37} The solitary subscale (4 items) includes 3 items that assess sexual desire for sexual behavior with ($n = 1$); from their partner ($n = 3$); from a friend ($n = 2$); and from their physician ($n = 3$). We recruited 21.7% ($n = 21$) via flyers that were posted around university campuses, sexual health clinics, and community bulletin boards. Finally, 5.2% ($n = 5$), were recruited from other sources, which included the following general internet search ($n = 2$); and unknown ($n = 3$).

Table 1. Descriptive characteristics for women with FSIAD and partners (*N* = 89 couples)

Characteristic	Median (IQR) or n	SD or %
Age (years)		
Women	29.8 (25.3, 37.3)	7.9
Partners	30.2 (25.3, 37.7)	9.5
Biological sex of partner		
Male	81	91
Female	7	7.9
Intersex	1	1.1
Self-identified sexual orientation		
Women		
Straight/heterosexual	61	68
Bisexual	15	17
Other	13	15
Partners		
Straight/heterosexual	75	84
Bisexual	5	6
Other*	9	10
Self-reported race/ethnicity		
Women		
Asian American/Asian	6	6.7
Caucasian/white	69	78
East Indian	1	1.1
Hispanic/Latino/Latina	3	3.4
Middle Eastern/Central Asian	3	3.4
Biracial/Multiracial	3	3.4
Other†	4	4.5
Partners		
African American/black	1	1.1
Asian American/Asian	7	7.9
Caucasian/white	71	80
East Indian	1	1.1
Hispanic/Latino/Latina	2	2.2
Middle Eastern/Central Asian	3	3.4
Biracial/Multiracial	2	2.2
Other†	2	2.2
Education (years)		
Women	16 (15, 18.5)	2.8
Partners	16 (14, 18)	3.5
Relationship status		
Married/common-law	49	55
Living together	26	29
Engaged	7	7.9
Dating	7	7.9
Relationship length (months)	65 (35, 120.5)	88.3
Sexual frequency‡	5 (3, 8)	4.1
Length of low-desire problems (months)	40 (18, 72)	64.2
Combined annual income		
<\$40,000	26	29
\$40,000–79,000	32	36
>\$80,000	30	34
Missing/unstated	1	1.1

FSIAD = female sexual interest/arousal disorder.

*Other sexual orientation = pansexual, queer, or “other”.

†Other race/ethnicity = Ashkenazi, Asian Canadian, Chinese Canadian, mixed black/white, Portuguese, South Indian.

‡Sexual frequency = the number of sexual acts of giving or receiving oral or manual sex, and vaginal intercourse over the last 4 weeks.

oneself and one item that assesses the frequency, whereas the partner-focused subscale (7 items) includes 5 items that assess sexual desire for the partner and 2 items on the frequency of a partner-focused sexual thought or desired sexual behavior. Items are responded to on Likert-type scales with higher scores indicating higher sexual desire. Scores range from 0 to 31 on the solitary and 0 to 54 on the partner-focused subscales, with higher scores indicating higher sexual desire. Cronbach's alpha for solitary sexual desire was 0.91 for women with FSIAD and 0.90 for partners at time 1 and 0.90 for women with FSIAD and 0.88 for partners at time 2. Cronbach's alpha for partner-focused sexual desire was 0.78 for women and 0.86 for partners at time 1 and 0.85 for women with FSIAD and 0.84 for partners at time 2.

Relationship Satisfaction

The 16-item Couples Satisfaction Index³⁸ measures the perceived quality of the overall relationship and has been shown to have strong convergent and construct validity relative to other measures of relationship satisfaction. Using Likert-type scales, participants rate different aspects of their relationship satisfaction, such as happiness in their relationship, whether they feel their relationship is better than others and how often they disagree with their partner. Scores range from 0 to 81, where higher scores represent higher relationship satisfaction. Cronbach's alpha in the current sample was 0.97 for women with FSIAD and 0.96 for partners and 0.97 for women with FSIAD and 0.98 for partners at time 2.

Sexual Satisfaction

The Global Measure of Sexual Satisfaction³⁹ is a well-validated measure of sexual satisfaction—that is, the overall evaluation of the positive and negative aspects of the sexual relationships—in which participants select the number that best describes their sexual relationship on a 7-point scale using 5 bipolar items (eg, very bad-very good; unsatisfying-satisfying). Scores can range from 5 to 35, with higher scores indicating greater sexual satisfaction. Cronbach's alpha at time 1 was 0.88 for women with FSIAD and 0.92 for their partners and 0.93 for women with FSIAD and 0.95 for partners at time 2.

Sexual Distress

Distress associated with the sexual relationship was measured with the 13-item Female Sexual Distress Scale-Revised.⁴⁰ Using a 5-point scale of 1 = never to 5 = always, participants indicate how often they experience sexual distress. The FSDS-R has been shown to have good discriminant validity and high test-retest reliability. The scale total scores range from 13 to 66, and higher scores indicate more distress. Although the FSDS-R was originally developed to measure sexual distress in women, the items are gender-neutral and it has been validated for use in men.⁴¹ Cronbach's alpha was 0.92 for women with FSIAD and 0.93 for partners at time 1 and 0.95 for women with FSIAD and 0.94 for partners at time 2.

Anxiety

Anxiety was measured with a 6-item Short-Form of the trait subscale of the State-Trait Anxiety Inventory.⁴² The 6-item Short-Form of the trait subscale of the State-Trait Anxiety Inventory assesses how frequently participants feel symptoms of anxiety on a Likert scale from 1 = almost never to 4 = always. Total scores can range from 6 to 24, and higher scores indicate greater anxiety. This abbreviated version of the State-Trait Anxiety Inventory has been shown to have good reliability and validity.⁴² Cronbach's alpha in this sample was 0.88 for women with FSIAD and 0.85 for partners and 0.86 for both women with FSIAD and partners at time 2.

Procedure

This study was part of a larger study investigating the role of interpersonal factors in couples coping with FSIAD. Results of additional studies using this sample have been published, focusing on differences between couples affected by FSIAD and control couples, sexual motivation, and emotion regulation.^{16,25–27} Interested participants completed a structured telephone screening with a research assistant to assess initial eligibility. Those who met basic eligibility criteria were then scheduled for a semistructured clinical interview via telephone (approximately 45 minutes) with a clinical psychologist or clinical psychology PhD student to confirm the diagnosis of FSIAD. The clinical interview was modeled after prior studies^{15,43} and revised based on the clinical expertise of the research team. It can be found at the following Open Science Framework link: https://osf.io/g9zxy/?view_only=c9867816618142ee828e9f7aff0010ac. Eligible women were asked to confirm their partners' eligibility and willingness to participate. Couples were then e-mailed individual links to the online consent form and survey, hosted via secure Qualtrics software, which took approximately 60–75 minutes to complete. Couples were instructed to complete their surveys independently from each other. Participants who did not complete the survey within 1 week received a reminder phone call. Reminder e-mails were sent 2 and 3 weeks thereafter, and the survey expired 4 weeks after being sent to participants. Each partner was compensated with an \$18 CAD Amazon gift card. Participants were provided information on treatment resources.

Data Analysis

The deidentified data and accompanying syntax can be found on the Open Science Framework page for this project: https://osf.io/g9zxy/?view_only=c9867816618142ee828e9f7aff0010ac. All analyses were conducted with SPSS, version 26.0. Intercorrelations among study variables, both within-person (for women and partners respectively) and between women and partners, were analyzed with Pearson correlations. The associations between women and partners' perceptions of partner responses to low interest/arousal and outcome variables were

analyzed using multilevel modeling guided by the Actor-Partner Interdependence Model (APIM⁴⁴). The APIM identifies actor effects (eg, the association between women's perception of partner responses and women's own sexual satisfaction) and partner effects (eg, the association between women's perception of partner responses and their partner's sexual satisfaction). A 2-level modeling technique that nests individual data (level 1) within dyads (level 2) was used to account for the nonindependence of dyadic data.⁴⁴ All predictors in the models were grand mean centered and represent between-person differences. Coefficients (*b*) are unstandardized and can be interpreted as the change in the dependent variable for every one-unit change in the participant's average predictor value. Separate models were conducted for each of the 6 outcomes (solitary sexual desire, partner-focused sexual desire, relationship satisfaction, sexual satisfaction, sexual distress, and anxiety). Figure 1 depicts the model being tested using sexual satisfaction as an example.

Next, to test for longitudinal effects, we ran paired sample *t*-tests to examine the change in outcomes from time 1 to time 2 for women and partners separately. We then tested whether the grand mean—centered time 1 predictors (ie, women with FSIAD's perception of partner responses to their low sexual interest/arousal and partners' perception of their own responses) were associated with their own outcomes at time 2, while accounting for outcome variables at time 1. Only women with FSIAD showed significant changes in their outcomes (see Results), and therefore, all longitudinal analyses were conducted using multiple regression models.

We conducted bivariate correlations for age, education, relationship length, sexual desire problem duration, and sexual frequency at times 1 and 2 with dependent variables at times 1 and 2 for the whole sample, women, and partners together. Frigon and Laurencelle⁴⁵ have recommended retaining covariates with correlations greater than or equal to 0.3. The sexual frequency was the only potential covariate to correlate with predictor or outcome variables greater than 0.3 (sexual satisfaction T1, $r = 0.35$, $P < .001$; sexual satisfaction T2, $r = 0.47$, $P < .001$; relationship satisfaction T2; $r = 0.36$, $P < .001$) and therefore was retained as a covariate for all models.

RESULTS

Cross-Sectional Analyses

Descriptive characteristics of the sample are reported in Table 1, and descriptive statistics for predictor and outcome variables are reported in Table 2. All bivariate correlations between predictor and outcome variables of women with FSIAD and of their partners, and between women with FSIAD and their partners, are reported in Table 3. Women's perceptions of partner responses and partner's report of their own responses were moderately correlated ($r = 0.34$, $P < .01$). A paired sample *t*-test revealed that women's perceptions were significantly less

positive than partners' report of their own responses ($t(88) = -2.2$, $P < .05$).

Actor and partner effects for the APIM analyses for each outcome variable are presented in Table 4. Regarding sexual well-being, when women perceived more positive partner responses, they had greater sexual satisfaction. Partners who reported more positive responses to low interest/arousal also had greater sexual satisfaction. Partners who perceived their responses to women's low interest/arousal as more positive were less sexually distressed. For sexual desire, there were no significant associations for women or partners, for both solitary and dyadic desire subscales. When women perceived partners as responding more positively than negatively to their low sexual interest/arousal, they had greater relationship satisfaction. When partners reported more positive responses to women's low interest/arousal, partners had greater relationship satisfaction. Finally, when women perceived more positive partner responses, both women with FSIAD and their partners reported less anxiety. Partners' reports of more positive responses were also associated with their own (but not women's) lower anxiety.

When including the sexual frequency as a covariate in the models, all effects remained significant except for the association between women's perception of partner responses to low interest/arousal and their own sexual satisfaction, which became marginal ($P = .053$).

Exploratory Mediation Analyses

Contrary to our hypothesis, partners' reports of their responses were not associated with women's outcomes (ie, no evidence of partner effects for women with FSIAD). Coupled with the relatively low correlation between women's perception of partner responses and partners' report of their own responses, these results led us to consider whether partners' responses might be associated with women's outcomes only in so much as women *perceive* these responses to be more positive than negative. Thus, we conducted exploratory mediation analyses to examine if the effects of partners' responses as reported by partners on women's outcomes were mediated by women's perceptions of partner responses.

Because we were interested in this specific pathway, we used simple mediation analysis, conducted using ordinary least squares path analysis in the PROCESS macro for SPSS.⁴⁶ This analysis revealed 2 significant indirect effects, as evidenced by a confidence interval based on 10,000 bootstrap samples that did not include zero. We found 2 indirect effects of partners' positive responses on women's higher relationship satisfaction, $b = 0.11$, 95% CI = [0.040, 0.186] and lower anxiety, $b = -0.018$, 95% CI = [-0.039, -0.004] through women's perceptions of positive partner responses. There were no other significant indirect effects for partner responses on women with FSIAD's outcomes through women with FSIAD's perception of partner responses.

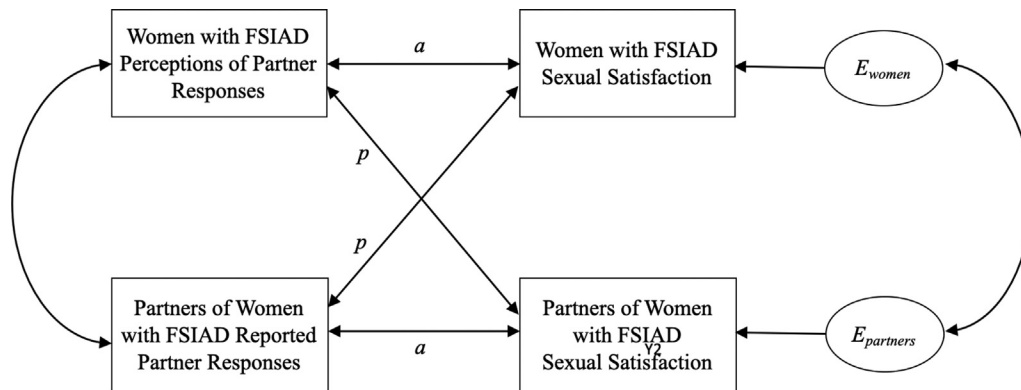


Figure 1. An example Actor-Partner Interdependence Model (APIM) depicting associations between partner responses and sexual satisfaction. Actor effects (marked *a*) represent associations between an individual’s own perceptions of partner responses and their own sexual satisfaction. Partner effects (marked *p*) represent associations between an individual’s own perceptions of partner responses and their partner’s sexual satisfaction. The curved line on the left represents the correlation between perceptions of partner responses for women with FSIAD and their partners. The curved line on the right represents the residual nonindependence in the outcome variable, which is the correlation between error terms of sexual satisfaction (marked *E*) in this example. FSIAD = female sexual interest/arousal disorder.

Longitudinal Analyses

To determine if there were changes over time in the outcome measures, we conducted paired sample t-tests to compare solitary and dyadic sexual desire, sexual satisfaction, sexual distress, relationship satisfaction, and anxiety at time 1 to time 2 (1-year follow-up) for women with FSIAD and their partners who were still in a relationship. Given that some couples did not complete

time 2 or reported ending their relationship and were excluded from the time 2 data, they were also excluded from the time 1 data in the paired sample t-test analyses. Thus, the following means and SDs for variables at time 1 differ slightly from the values reported in Table 2. There were no significant differences in any outcome variable for women (*n* = 63) or partners (*n* = 63) who completed time 2 vs those who did not (*n* = 23,

Table 2. Descriptive statistics of predictor and outcome variables for women with FSIAD and partners (time 1, *N* = 89 couples; time 2, *N* = 66 couples)

Variable	Time 1		Time 2	
	Mean (range)	SD	Mean (range)	SD
Response to sexual difficulties				
Women	106.6 (23–159)	29.0	-	-
Partners	113.7 (35–161)	24.8	-	-
Sexual desire – solitary				
Women	7.1 (0–27)	7.4	8.1 (0–24)	6.8
Partners	16.2 (0–31)	7.6	16.9 (0–39)	6.8
Sexual desire- dyadic				
Women	17.8 (0–43)	9.0	21.5 (2–47)	10.5
Partners	39.6 (6–54)	8.5	39.1 (14–54)	8.4
Relationship satisfaction				
Women	59.3 (21–80)	14.6	58.2 (18–80)	15.3
Partners	61.2 (24–81)	12.6	59.6 (13–81)	16.4
Sexual satisfaction				
Women	21.1 (5–35)	5.5	22.7 (5–35)	6.7
Partners	23.8 (10–35)	6.3	24.8 (9–35)	6.8
Sexual distress				
Women	30.1 (7–50)	9.8	23.0 (3–52)	11.7
Partners	17.9 (0–50)	10.7	18.3 (0–43)	11.0
Anxiety				
Women	14.8 (6–24)	4.3	13.9 (6–24)	4.2
Partners	12.2 (6–24)	3.8	12.2 (6–20)	3.9

FSIAD = female sexual interest/arousal disorder; Women = Women with FSIAD.

Table 3. Correlations between predictor and outcome variables at time 1

Measure	1	2	3	4	5	6	7
1. RSDS	.34**	.03	.09	.57***	.24*	.01	-.29**
2. Solitary desire	-.03	.06	.35**	.05	.07	-.14	-.05
3. Dyadic desire	-.04	.25*	-.15	.14	.27*	-.00	-.01
4. Rel. satisfaction	.57***	.01	.13	.46***	.39***	-.08	-.29**
5. Sex. satisfaction	.33**	.02	.06	.62***	.44***	-.35**	-.12
6. Sexual distress	-.32**	-.06	-.02	-.60***	-.62***	.14	.31**
7. Anxiety	-.42***	-.00	-.06	-.49***	-.27*	.42***	.24*

FSIAD = female sexual interest/arousal disorder; Rel. = relationship.

*** $P < .001$, ** $P < .01$, * $P < .05$.

Women with FSIAD's correlations are above the diagonal. Partners' correlations are below the diagonal. Bolded correlations are between women's and partners' scores. RSDS = partner responses to low sexual interest/arousal as perceived for women with FSIAD and as reported by partners.

respectively). Overall, for women with FSIAD, there was a significant increase in dyadic sexual desire from time 1 to time 2 ($MD = -4.0$, $SD_1 = 8.1$, $SD_2 = 9.9$, $t(65) = -3.3$, $P < .01$), a significant increase in sexual satisfaction from time 1 to time 2 ($MD = -1.6$, $SD_1 = 5.5$, $SD_2 = 6.6$, $t(65) = -2.0$, $P < .05$), and a significant decrease in sexual distress from time 1 to time 2 ($MD = 6.6$, $SD_1 = 9.1$, $SD_2 = 11.2$, $t(65) = 5.1$, $P < .001$). There were no other significant differences between time 1 and time 2 for women with FSIAD and no significant differences for partners.

Next, we tested the effects of women with FSIAD's perception of partner responses to low interest/arousal and partners' reports of their own responses at time 1 on the outcomes that differed at time 2—dyadic sexual desire, sexual satisfaction, and sexual distress for women with FSIAD only. As reported in Table 5, after accounting for each respective outcome at time 1, we did not find any effects between partner responses to low interest/arousal at time 1 and women's dyadic sexual desire, sexual satisfaction, and sexual distress at time 2.

DISCUSSION

In the present study, we examined associations between women's perceptions of how their partner responds to their low sexual desire/arousal and partners' own reports of their responses, and the sexual, relational, and psychological adjustment of couples coping with FSIAD. At time 1, more positive partner responses to women's low sexual desire (eg, warm, compassion, understanding) than negative partner responses (eg, hostile, indifferent, pessimistic) were associated with one's own greater sexual, relational, and psychological well-being. However, partner responses did not predict change in well-being over time for either partner. The cross-sectional results are consistent with research findings in other sexual dysfunctions, such as genitopelvic pain, which have demonstrated that partner responses to women's pain during intercourse are linked to couples' adjustment.^{31–33,47} Together with evidence that partners of women with FSIAD also report negative impacts to their sexuality and

relationships relative to partners of women without sexual dysfunction,¹⁶ the current results support theoretical and clinical approaches that integrate an interpersonal perspective.^{14,28}

Cross-sectionally, when women perceived their partner to respond more positively to their low desire/arousal than more negative responses, they were more satisfied with the relationship and they and their partners reported lower anxiety. Women who perceive their partners' responses as more positive are likely to feel more validated and supported in the context of the low desire problem. Such responses create a more secure relational environment and may buffer against the perceived threat to the relationship created by FSIAD, helping temper associated feelings of anxiety for both partners. Many studies have documented that perceiving a partner to be more responsive globally in the relationship is a robust contributor to promoting relationship well-being, including when faced with health and other sexual problems.^{35,48–50} It is also possible that individuals who are more anxious are more hypervigilant toward negativity and therefore more prone to interpreting partner responses in a negative light.⁵¹

Moreover, when partners reported that they had more positive than negative responses to the woman's low desire/arousal, they had greater relationship and sexual satisfaction and lower sexual distress and anxiety. Partners' more positive responses may trigger and reinforce their own more adaptive coping with the woman's FSIAD, which is consistent with operant learning models.⁵² Partner responsiveness has been found to increase pro-relationship cognitive-affective responses (eg, reduced defensiveness) and behavioral responses (eg, support) that promote satisfaction in relationships.⁴⁸ It could also be that the partners who are less distressed about the sexual relationship and are more broadly satisfied have fewer negative emotions related to FSIAD and therefore respond more positively.

Finally, the cross-sectional findings can be understood in light of Rosen and Bergeron's²⁸ Interpersonal Emotion Regulation Model of women's sexual dysfunction. Their model suggests that when partners respond in a more supportive and soothing manner, the couple becomes less sensitive and reactive to the

Table 4. Cross-sectional associations between outcome variables and partner responses to sexual difficulties as perceived by women with FSIAD and reported by their partners (N = 89 couples)

Outcome variables		Model 3:											
		Model 1: Solitary sexual desire		Model 2: Dyadic sexual desire		Relationship satisfaction		Model 2: Sexual satisfaction		Model 5: Sexual distress		Model 6: Anxiety	
Predictor variable		Women	Partners	Women	Partners	Women	Partners	Women	Partners	Women	Partners	Women	Partners
RSDS—women's perception	b (SE)	-.01 (.03)	.03 (.03)	.02 (.04)	-.04 (.03)	.27 (.05)	.08 (.04)	.04 (.02)	.03 (.02)	-.01 (.04)	-.03 (.04)	-.04 (.02)	-.05 (.01)
	t	-.39	1.1	.51	1.3	5.7***	1.9	2.1*	1.4	-.69	-.21	-2.7**	-4.0***
RSDS—partner reports	b (SE)	.06 (.03)	-.02 (.03)	.03 (.04)	-.03 (.04)	.08 (.05)	.26 (.05)	.01 (.02)	.07 (.03)	.04 (.05)	-.13 (.05)	.00 (.02)	-.04 (.02)
	t	1.8	-.64	.80	-.76	1.4	5.5***	.30	2.6*	.77	-2.7**	.20	-3.0**

FSIAD = female sexual interest/arousal disorder; RSDS = Response to Sexual Difficulties Scale; Women = women with FSIAD. *P < .05, **P < .01, ***P < .001. We used unstandardized beta (b) coefficients. Unstandardized betas (b) represent the amount of change in the outcome for every one-unit change in the predictor. Degrees of freedom were equal to 86.

low-desire problem (eg, views it as less threatening) and is therefore capable of engaging in more adaptive and effective emotion regulation strategies such as reappraisal and problem-solving. In a dyadic study, when women with FSIAD and their partners reported fewer difficulties in regulating their negative emotions, they reported less anxiety and partners reported less sexual distress.²⁷ In addition, greater use of cognitive reappraisal and less use of emotional suppression was linked to lower anxiety and couple conflict and greater relationship satisfaction and sexual desire in the same study. Future research should test whether enhanced emotion regulation accounts for the associations between partner responses and couple outcomes in FSIAD using longitudinal data.

Women with FSIAD and their partners generally perceived partner responses to be more positive than negative, as seen in their mean scores falling above the midpoint of the scale. However, women's perceptions of positive partner responses were only moderately correlated to partner reports of their own responses and were significantly lower than partners' reports. These findings led us to consider whether partners' reports of their own responses may only be associated with women with FSIAD's well-being to the extent that these responses are perceived as such by the women themselves.^{33,53} Indeed, more positive partner responses were indirectly associated with women with FSIAD's greater relationship satisfaction and lower anxiety through women with FSIAD's *perception* of more positive partner responses. Thus, although limited by the cross-sectional nature of these analyses (ie, no temporal precedence for mediation), we found preliminary evidence that partner responses do indeed relate to women's outcomes but only insofar as women perceive them. These findings underscore the importance of assessing the perspective of both members of the couple, and potentially working toward aligning the perceptions of partner responses for both members affected by FSIAD.

Although couples coping with FSIAD appeared to benefit in other ways from positive partner responses, such responses were unrelated to the core symptoms of FSIAD in women—that is, their sexual desire and sexual distress. Meeting the diagnostic criteria for inclusion in the study and the measurement of these symptoms may not have detected subtle changes in desire and distress because of the initially very low sexual desire and high sexual distress of the women with FSIAD. In other words, we had a restricted range of women's sexual desire and sexual distress, resulting in limited variance available to predict from partner responses. Moreover, we assessed women's global feelings of sexual desire (solitary and for their partner) that may better reflect and be interpreted by our participants as *spontaneous sexual desire*. In contrast, we did not assess their experience of *responsive sexual desire*. Responsive sexual desire refers to desire that emerges from feelings of sexual arousal after exposure to sexual stimuli that are meaningful to the person.^{54,55} As responsive sexual desire is thought to be more sensitive to context and interpersonal cues (eg, feelings of intimacy and closeness) and be especially relevant

Table 5. Longitudinal associations between women's reporting of dyadic sexual desire and sexual distress and partner responses to sexual difficulties as perceived by women with FSIAD and reported by their partners ($N = 60$ couples)

Predictor	Dyadic sexual desire		Sexual satisfaction		Sexual distress	
	<i>b</i> (SE)	<i>T</i>	<i>b</i> (SE)	<i>t</i>	<i>b</i> (SE)	<i>T</i>
RSDS—women's perception	.03 (.04)	.75	.02 (.03)	.67	-.01 (.05)	-.16
RSDS—partner reports	-.02 (.05)	-.38	-.01 (.14)	-.40	.00 (.07)	.04

FSIAD = female sexual interest/arousal disorder; RSDS = Response to Sexual Difficulties Scale; Women = women with FSIAD.

We used unstandardized beta (*b*) coefficients. Unstandardized betas (*b*) represent the amount of change in the outcome for every one-unit change in the predictor. Degrees of freedom were equal to 65.

for women with clinically low desire,^{12,56} future studies should test its associations with partner responses.

Partner responses to women's low sexual desire/arousal did not predict *change* in outcomes over time. Women with FSIAD reported significantly higher partner-focused sexual desire and sexual satisfaction and lower sexual distress 1 year later, suggesting that there was some improvement in core FSIAD symptoms over time, which is consistent with patterns observed among women with genito-pelvic pain/penetration disorder.⁵⁷ Couples who were lost to attrition did not differ from the included couples on study variables at time 1, suggesting that improvements over time were not being driven by the more distressed couples dropping out. Moreover, only 6 (9%) women at time 2 reported accessing formal treatment during the 1-year period (4 women tried therapy, and 2 women tried topical hormonal treatments). It is possible that improvements over time may have resulted from couples accessing self-help resources and/or from their participation in the research itself (eg, gaining insight into the problem, enhanced communication about their sexual relationship, feeling united as a team to work on the low desire after participating together in the study). Still, improvement over time was unrelated to partner responses to women's low desire. One strong possibility is that we were underpowered to detect predictors of these longitudinal effects. This possibility is bolstered by the pattern of correlations between partner responses at time 1 and outcomes 1 year later, which were all in the expected direction although not all significant. Future research will require a larger sample size to draw firmer conclusions regarding whether or not partner responses can predict change in FSIAD symptoms and associated consequences over time.

One important point of consideration relates to the measure of partner responses used in this study. This validated partner response measure was designed to assess a range of partner responses on a positive to negative bipolar scale. The use of a bipolar scale restricts the possibility that positively and negatively valenced reactions might occur simultaneously (eg, a partner could express feeling hurt and also compassion for the woman's experience at the same time). The measure also does not provide nuance beyond the positive-negative dimension. It is possible, for example, that some negative responses (eg, hostility, insensitivity) could be more impactful than others (eg, indifference or worry). However, the measure has very high internal consistency,

suggesting that the items hold together well and tap into one common underlying construct.³⁰

The measure also does not capture other possible partner responses, including behavioral responses such as avoidance of sexual activity, demonstrations of affection, or other things that partners may do to try and promote sexual desire or arousal. In genito-pelvic pain, the most commonly studied partner response measure combines both affective and behavioral responses into *solicitous*, *negative*, and *facilitative* partner responses as defined earlier; these response types demonstrate differential associations with women's pain and couples' associated adjustment.²⁸ In recent research with community couples, 4 types of partner responses to sexual rejection (ie, a partner declining one's interest in sexual activity) were identified that include cognitive-affective and behavioral responses: *understanding* (responsiveness and reaffirming positive regard for a partner), *resentful* (expressing anger and trying to make a partner feel bad), *insecure* (responding with hurt feelings or sadness), and *enticing* (reinitiating sex and attempting to change a partner's mind).⁵⁸ This measure is specific to partner responses to sex being turned down, whereas in the present study, we examined partners' general responses to women's low sexual desire/arousal. Still, how partner responses to sexual rejection shape sexual and relationship outcomes have not been studied and seems highly relevant in the context of FSIAD where sexual desire discrepancies are higher than among other couples as are the frequency of sexual rejection interactions. Future studies should examine a broader spectrum of partner responses to FSIAD while acknowledging potential variability within-person (eg, by using a daily experience study design).

Although this study was inclusive of sex- and gender-diverse couples, the majority of the sample identified as heterosexual and were in mixed-sex relationships, limiting generalizability. Another limitation is the possibility of a selection bias, particularly given that both members of the couple were required to participate; more distressed couples may be less likely to participate in sexual dysfunction research⁵⁹ and be more likely to break up and drop out of longitudinal studies.

CONCLUSIONS

Whereas medical interventions are costly, have adverse side effects, and have received limited empirical support in the

treatment of FSIAD thus far,^{60,61} there is promising support for psychological treatments.^{43,62–66} Yet, there is almost no empirical evidence to inform targets for couple-based interventions, and consequently, there are very few empirically supported couple treatments. The present study established a novel interpersonal factor—partner responses—that could be targeted in cognitive-behavioral or emotion-focused psychological approaches to treating FSIAD. Specifically, interventions could focus on enhancing awareness of how partner responses relate to couple adjustment to FSIAD, more adaptive communication of negative partner responses and processing of these emotions, and facilitating the experience and expression of more positive partner responses in a way that is authentic for the couple.

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