THE JOURNAL OF
SEXUAL MEDICINE

Opinion Paper: On the Diagnosis/Classification of Sexual Arousal Concerns in Women

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ABSTRACT

Background: In the professional literature and among our professional societies, female sexual dysfunction nomenclature and diagnostic criterion sets have been the source of considerable controversy. Recently, a consensus group, supported by the International Society for Women's Sexual Health, published its recommendations for nosology and nomenclature, which included only one type of arousal dysfunction, female genital arousal disorder, in its classification system. Subjective arousal was considered an aspect of sexual desire and not part of the arousal phase.

Aim: To advocate for the importance of including subjective arousal disorder in the diagnostic nomenclature in addition to the genital arousal subtype.

Methods: We reviewed how the construct of subjective arousal was included in or eliminated from the iterations of various diagnostic and statistical manuals. The Female Sexual Function Index (FSFI) was used to examine the relations among subjective arousal, genital arousal, and desire in women with and without sexual arousal concerns.

Main Outcome Measures: Sexual arousal through a self-report Film Scale, physiologic sexual arousal through vaginal photoplethysmography in response to an erotic film, and the FSFI.

Results: The clinical literature and experience support differentiating subjective arousal from desire and genital arousal. Correlations between the FSFI domains representing desire and subjective arousal, although sufficient to suggest relatedness, share approximately 58% of the variance between constructs—a lower shared variance than FSFI domains representing subjective arousal and orgasm. Similarly, when looking at FSFI individual items best representative of sexual desire and subjective arousal, the large majority of the variance in subjective arousal was unexplained by desire. A third line of evidence showed no significant difference in levels of subjective arousal to erotic films between sexually functional women and women with desire problems. If desire and subjective arousal were the same construct, then one would expect to see evidence of low subjective arousal in women with low sexual desire.

Clinical Implications: Optimized treatment efficacy requires differentiating mental and physical factors that contribute to female sexual dysfunction.

Strengths and Limitations: Support for our conclusion is based on clinical qualitative evidence and quantitative evidence. However, the quantitative support is from only one laboratory at this time.

Conclusion: These findings strongly support the view that female sexual arousal disorder includes a subjective arousal subtype and that subjective arousal and desire are related but not similar constructs. We advocate for the relevance of maintaining subjective arousal disorder in the diagnostic nomenclature and present several lines of evidence to support this contention. **Althof SE, Meston CM, Perelman M, et al. Opinion Paper: On the Diagnosis/Classification of Sexual Arousal Concerns in Women. J Sex Med 2017;XX:XXX–XXX.**

Key Words: Female Sexual Dysfunction; Sexual Desire; Female Sexual Arousal Disorder; Subjective Arousal; Genital Arousal; Nomenclature

Received June 15, 2017. Accepted August 29, 2017.

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http://dx.doi.org/10.1016/j.jsxm.2017.08.013

INTRODUCTION

In the professional literature and among our professional societies, female sexual dysfunction (FSD) nomenclature and diagnostic criterion sets have been the source of considerable controversy and debate.[1,2] Although FSD diagnoses have advanced from exclusively ideologically driven expert clinical opinion toward greater emphasis on evidenced-based diagnosis, controversy continues to abound.

Sound, established, and validated diagnostic constructs and clarity are crucial to our patients and professional work. As Segraves et al[3] pointed out, officially sanctioned diagnostic criteria have a major influence on how (i) clinicians organize their thinking about sexual disorders; (ii) clinical activity is coded for reimbursement; (iii) populations are defined for clinical research; and (iv) compounds or psychotherapeutic interventions are evaluated for the treatment of these disorders.

The American Psychiatric Association and the World Health Organization publish independent compilations of psychiatric and medical-psychological nosology, known as the *Diagnostic and Statistical Manual* (DSM) and the *International Classification of Diseases* (ICD), respectively.[4–11] To date there have been 6 revisions of the DSM and 10 revisions of the ICD. In addition, the International Society for the Study of Women's Sexual Health (ISSWSH), the International Consultation of Sexual Medicine (ICSM), and the American Foundation of Urologic Diseases (AFUD) have published recommendations for FSD nomenclature and diagnostic criteria.[12–14] Recently, a consensus group (that included Drs Althof and Perelman), supported by the ISSWSH, published its recommendations for nosology and nomenclature. That group emphasized the importance of definitions being based on well-conducted research trials, case reports, and expert opinion. In juxtaposing their work with that of the DSM, they correctly stated that, "… a resource that recognizes the biopsychosocial nature of sexual wellness and sexual health is preferable for the contemporary management of FSDs" [p. 1889].[12] Parish et al[12] offered a comprehensive and detailed rationale for their nomenclature recommendations, in particular by providing a thorough description of female genital arousal disorder. However, they failed to incorporate other female sexual arousal disorder (FSAD) subtypes, including subjective arousal disorder and mixed genital-subjective arousal disorder. Parish et al presented their recommendations at the 2017 ISSWSH meeting and during the ensuing discussion on subjective arousal stated that subjective arousal was considered part of sexual desire. This also was implied in the article on nomenclature.

As diagnostic systems have evolved, there have been changes in what constitutes subjective arousal and even recommendations to eliminate this subtype. We advocate for the relevance and importance of maintaining subjective arousal disorder in the diagnostic nomenclature and present several lines of evidence to support this contention and to differentiate subjective arousal from sexual desire.

EVOLUTION OF FSD DIAGNOSIS IN THE DSM SERIES

The first DSM was published in 1952 and did not contain any explicit FSD diagnosis.[4] It was based on expert opinion and heavily influenced by psychoanalytic theory. Under the heading of "psychophysiological autonomic and visceral disorders," terms such as *frigidity, impotence*, and *vaginismus* appeared in a list of conditions subsumed under "urogenital disorders."

The DSM-II was published in 1968 and contained a listing of "psychophysiological genitourinary disorders" that included disorders of micturition, menstruation, and sexual function.[5] Frigidity could be found in this category.

The work of sex therapy pioneers Kaplan,[15] Lief,[16] and Masters and Johnson[17,18] was responsible for the inclusion of psychosexual disorders in the DSM-III published in 1980.[6] This compilation included inhibited sexual desire, inhibited sexual excitement, inhibited female orgasm, functional dyspareunia, and functional vaginismus. Inhibited sexual excitement was the term used for men and women but did not include a subjective component and referenced only the lack of a physiologic response.

The DSM-III-R was published in 1987.[7] Inhibited sexual excitement was divided into male erectile disorder and FSAD, which included subjective sexual arousal and lack of genital response in the criterion set. Also appearing in DSM-III-R were distinctions between lifelong and acquired subtypes and generalized and situational subtypes.

FSAD and the genital and subjective subtypes continued to be included in the DSM-IV published in 1994.[8] However, the DSM-IV-TR, published in 2000, eliminated the subjective subtype.[9] This occurred despite the advisory committee preparing an extensive literature review that supported maintaining the subjective arousal subtype. The decision to eliminate the subjective arousal subtype was made so that the male-female similarity in sexual dysfunction diagnoses could be maintained and to create congruence between the DSM-IV-TR and the ICD-9.[3]

The DSM-5 was published in 2013 and combined hypoactive sexual desire disorder and FSAD into a new diagnostic entity known as *female sexual interest/arousal disorder*.[10] The criterion set for female sexual interest/arousal disorder included six symptoms (three were necessary to establish the diagnosis) that encompass sexual desire and subjective and genital arousal.

The AFUD and the ICSM working groups recommended that FSAD include a subjective subtype.[14,19] Parish et al,[12] in summarizing the ISSWSH Consensus Group on Nomenclature, argued that subjective sexual arousal is part of sexual desire and that FSAD is represented only by genital arousal, with the implication that a subcategory of subjective arousal was not needed. They stated, "Some definitions of arousal also include the subjective awareness and enjoyment of the genital and extragenital changes occurring before and during sexual activity. However, there is controversy as to whether subjective awareness of the physical changes of arousal is just one aspect of sexual desire" [p. 1894].

We respectfully disagree with Parish et al and offer our reasoning and data as to why subjective arousal and desire are related, but not equivalent, constructs and therefore recommend that FSAD maintain a subjective arousal subtype.

Terms such as *subjective arousal*,[20,21] *mental arousal*,[22,23] and *cognitive arousal*[24,25] have been used interchangeably. Each of these concepts suggests subtle differences, but the overlap among these terms is more significant than the differences. In this article, we use the term *subjective arousal* because it has previously and repeatedly appeared in the diagnostic literature. We propose the following definitions and characterizations of these constructs:

Desire

The motivation to engage in and/or be receptive to a sexual event for sexual or non-sexual gratification.

Genital Arousal

1. Genital changes in response to sexual stimuli.
2. These changes might or might not be associated with increased heart rate, sweating, pupil dilation, hardening and erection of the nipples, and flushing of the skin, etc.

Subjective Arousal

1. Positive mental engagement and focus in response to a sexual stimulus.
2. There might or might not be awareness of the presence or absence of genital changes or sensations occurring during a sexual event (perceived arousal).

In the following sections, we provide three lines of evidence that support the notion that subjective arousal is a unique construct different from sexual desire or genital arousal. In the studies cited below, we rely heavily on the Female Sexual Function Index (FSFI) as a diagnostic tool.[26] The FSFI is a 19-item self-report measure that provides an overall sexual function score on a continuous interval scale and individual domain scores for sexual desire, subjective arousal, lubrication, orgasm, sexual satisfaction, and sexual pain. In the initial validation study, the FSFI demonstrated good internal consistency and test-retest reliability.[26] It also was shown to differentiate between women with FSAD and age-matched controls. Since that initial study, the FSFI has been translated into more than 20 languages[27] and has been validated in more than 30 countries.[28] It has been validated for use with multiple populations, including women of different age groups, with diverse medical conditions, and with various sexual dysfunctions.[29–31] Cutoff scores have been established that reliably differentiate between women with and without sexual impairment, and a sexual desire cutoff score has been established to differentiate between women with and without hypoactive sexual desire disorder.[32,33] The FSFI also has been shown to be sensitive to treatment-induced changes in female sexual function.[34] Based on this accumulation of evidence, the FSFI seems to be a well-supported useful clinical assessment tool and has been referred to as a "gold standard" instrument for assessing female sexual function.[34]

FSFI DESIRE, AROUSAL, AND LUBRICATION DOMAIN SCORE CORRELATIONS

The FSFI[26] differentiates sexual desire, subjective arousal, and genital arousal. The FSFI arousal domain includes questions that pertain to subjective arousal (eg, "How often did you feel sexually aroused ('turned on') during sexual activity or intercourse?"); items in the lubrication domain refer to genital sexual arousal (eg, "How difficult was it to become lubricated ('wetness') during sexual activity or intercourse?"); and the desire domain items refer specifically to sexual desire (eg, "How often did you feel sexual desire or interest?"). This clear differentiation among constructs allowed us to examine the relatedness among these constructs. In the original article on scale development,[26] domain intercorrelations were reported for 131 women who reported no problems with arousal, desire, or orgasm and 128 age-matched women who met criteria for the clinical diagnoses of FSAD.[9] Correlations between the arousal and desire domains were 0.76 for the combined group of women, 0.71 for women with FSAD, and 0.61 for the sexually functional control women. Similar correlations have been reported elsewhere.[33] These correlations are sufficiently high to suggest a close relation between desire and arousal problems. That is, problems becoming aroused could diminish desire over time, or vice versa, or some common diathesis might produce desire and arousal dysfunction. However, as pointed out by Clayton et al,[1] because the square of the correlation coefficient (the coefficient of determination) provides a measurement of shared variation, a correlation of 0.95 (ie, 90% shared variation) would be required to make two entities "identical." Relevant to the argument we provide here, if the highest reported correlation between desire and arousal domains is squared (0.76), it accounts for only 58% of the variance. Thus, although there is some overlap in the desire and arousal constructs, they are not the same, thus contradicting the notion that subjective arousal is subsumed under desire.

Also of note is the fact that the arousal and orgasm domains reported by Rosen et al[26] show correlations as high as 0.81 for the combined group of women, suggesting that arousal and orgasm are more similar constructs than are desire and arousal. To our knowledge, theorists and researchers of women's sexuality have not proposed the merging of arousal and orgasm into one diagnostic classification.

FSFI DESIRE AND AROUSAL INTER-ITEM CORRELATIONS

To further substantiate that desire and subjective arousal are distinct constructs, we examined their discriminate validity in a large and relatively diverse sample of women (Kilimnik CD,

Table 1. Inter-domain and inter-item Pearson r correlation coefficients for Female Sexual Function Index desire and arousal domains and relevant individual items for the entire group (N = 933)*

Variables	1. Desire domain	2. Genital arousal domain	3. Desire frequency†	4. Arousal frequency‡	5. Desire level§	6. Arousal level‖
1	1.00	0.69	0.95	0.59	0.95	0.68
2		1.00	0.61	0.87	0.69	0.90
3			1.00	0.54	0.80	0.60
4				1.00	0.58	0.75
5					1.00	0.69
6						1.00

*All presented correlation coefficients are significant at the $P < .001$ level.
†Desire item, "How often did you feel sexual desire or interest?"
‡Arousal item, "How often did you feel sexually aroused ('turned on') during sexual activity?"
§Desire item, "How would you rate your level of sexual desire or interest?"
‖Arousal item, "How would you rate your level of sexual arousal ('turned on') during sexual activity or intercourse?"

Meston CM; unpublished data; 2017). Nine hundred thirty-three women were recruited through Mechanical Turk (Amazon, Seattle, WA, USA) to take part in an online study assessing the sexual well-being of women. Mechanical Turk is an online crowdsourcing participant recruitment platform for compensated and anonymous research and task completion. The reliability of this data collection technique has been established.[35] The women were 18 to 68 years old (mean = 33.72, SD = 9.79), well educated (40.6% had completed a college degree and 36.3% had attended college), and primarily white (76.1%; followed by African American [9.4%]) and heterosexual (80.8%; followed by bisexual [12.5%]). As part of a larger battery of sexuality measures, the women completed the FSFI. According to the FSFI cutoff score for clinically relevant generalized sexual dysfunction ($\leq$ 26.55),[33] 560 of the women were categorized as sexually functional and 373 were considered sexually dysfunctional.

To replicate the findings established by Rosen et al[26] for the discriminate validity of genital arousal and desire, we examined inter-domain correlations for these subscales of the FSFI. Correlations for the present sample were 0.69 (entire group), 0.65 (dysfunctional group), and 0.41 (functional group). These squared correlations suggest that at best desire could explain 48% of the variance in genital arousal in these women. Next, we calculated correlations between the FSFI items best indicative of desire and subjective arousal constructs. The inter-item correlations between the desire item "How often did you feel sexual desire or interest?" and the arousal item "How often did you feel sexually aroused ('turned on') during sexual activity?" were 0.54 (entire group), 0.52 (dysfunctional group), and 0.25 (functional group). The inter-item correlations between the desire item "How would you rate your level of sexual desire or interest?" and the arousal item "How would you rate your level of sexual arousal ('turned on') during sexual activity or intercourse?" were 0.69 (entire group), 0.63 (dysfunctional group), and 0.49 (functional group). This highly powered assessment of discriminate construct validity suggests that desire frequency can explain only approximately 29% of the variance in subjective arousal frequency and that the level of desire can explain only approximately 48% of the variance in the level of subjective arousal. The large majority of the variance in subjective arousal is unexplained by desire. This provides evidence that these constructs are indeed related, although undoubtedly distinct. The correlation coefficients for the entire sample are listed in Table 1. The replicated moderate inter-domain correlations between desire and arousal in the present sample, the low to moderate inter-item correlations for the desire and subjective arousal items, and the interaction between sexual function and the relation between desire and arousal provide further evidence for the distinctiveness of these two constructs.

AROUSAL MEASURES IN WOMEN WITH AND WITHOUT DESIRE DYSFUNCTION

If desire and subjective arousal were the same construct, then one would expect to see evidence of low subjective arousal in a population of women with low sexual desire. To examine this hypothesis, we combined data from a series of published[36,37] and unpublished[38–40] studies conducted in the Meston laboratory that assessed overall sexual function (through the FSFI), subjective sexual arousal (through a self-report Film Scale[41]), and physiologic sexual arousal (through vaginal photoplethysmography or vaginal pulse amplitude) in response to an erotic film. All studies in this collection used the same experimental methodology. Women were invited to the laboratory to view a short (3-minute) neutral film followed by a 6-minute erotic film, which included 2 minutes of foreplay, 2 minutes of oral sex, and 2 minutes of penetrative sex. All films were matched for content. After the film presentation, participants were asked to complete the Film Scale,[41] which includes three Likert-scale items that pertain to subjective sexual arousal. These three items include an assessment of overall "sexual arousal," a sense of "mental sexual arousal," and one reverse-scored item on feeling "sexually turned off" in response to the prior erotic film.

Data from 213 women18 to 47 years old (mean = 25.2, SD = 7.2) were included in the present analysis. The women were

predominately Caucasian (49.1%), 10.7% were Hispanic or Latina, 9.8% were Asian, 6.1% were African American, and 24.3% reported another ethnicity. Most women (57.5%) reported being in a committed dating relationship, 14.9% reported being married, 16.6% reported being single, and 1% reported a relationship status of "other." The sample consisted largely of women who had completed some college (41.6%), 20.6% had a college degree, 14.0% had an advanced degree, 20.1% had a high school diploma, and 3.7% reported attending some high school. Based on their FSFI desire domain scores, 149 women met the criteria for hypoactive sexual desire disorder. According to Gerstenberger et al,[32] a score no higher than 5 on the combination of items composing the sexual desire domain is predictive of decreased sexual desire in women, regardless of menopausal status.

Results from a one-way analysis of variance showed that women with low sexual desire (ie, FSFI desire domain scores $\leq$ 5) did not have significantly lower subjective arousal compared with women without desire problems. This was true for the composite subjective arousal score ($F_{1,208} = 0.67$, $P = .797$), which is a combination of the scores of the three subjective arousal items from the Film Scale,[29] and for the individual item from the Film Scale that specifically assesses mental sexual arousal ($F_{1,211} = 0.11$, $P = .742$). The lack of statistically significant differences in subjective sexual arousal between women with and without low desire provides further support that subjective arousal and desire are separate and distinct constructs.

DISCUSSION

In this article, we have provided evidence to support our contention that subjective arousal is a unique construct different from genital arousal or sexual desire. Correlations between the FSFI domains representing desire and subjective arousal, although high enough to suggest relatedness, shared only 58% of the variance between constructs—a lower shared variance than FSFI domains representing subjective arousal and orgasm. Similarly, when looking at FSFI individual items best representative of sexual desire and subjective arousal, the large majority of the variance in subjective arousal was unexplained by desire. A third line of evidence showed no significant difference in levels of subjective arousal to erotic films between sexually functional women and women with desire problems. If desire and subjective arousal were the same construct, then one would expect to see evidence of low subjective arousal in women with low sexual desire. Taken together, we believe these findings strongly support the notion that subjective arousal and desire are not similar constructs and that classification of FSAD maintain a subjective arousal subtype.

The ISSWSH consensus article by Parish et al[12] erroneously implied that the sexual thoughts that accompany genital arousal were only a continued manifestation of the desire phase of sexual response (p. 1890). Clearly there are cognitions related to desire that help sustain arousal, but others are distinct from desire and constitute only subjective arousal. Alternatively put, lack of mental arousal is not simply a "failure to maintain desire." Nonetheless, it is the combination of desire, subjective arousal, and sexual stimulation that provides the platform for orgasm to potentially occur. Discerning the differences between the constructs of subjective arousal (not merely genital) and desire not only affect the pedantic debate but also are extremely important in considering interventions for treating arousal disorders from a transdisciplinary perspective.[42] Although the potential for medical intervention using drugs to ameliorate the difficulty some women experience in becoming and remaining aroused is encouraging, counseling can synergistically improve that prognosis. Although that is taken for granted by many, unfortunately too little has been written about how exactly one uses the information obtained in a focused sex history or sex status to do so.[43–45] Identifying and assisting the patient to focus mindfully on erotic thoughts and feelings to the exclusion of those that are inhibiting (changes in subjective arousal) provides an opportunity for counseling to enhance sexual balance and help maintain arousal.

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Conflicts of Interest: The authors report no conflicts of interest.

Funding: None.

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REFERENCES

1. Clayton AH, DeRogatis LR, Rosen RC, et al. Intended or unintended consequences? The likely implications of raising the

bar for sexual dysfunction diagnosis in the proposed DSM-V revisions: 1. For women with incomplete loss of desire or sexual receptivity. **J Sex Med 2012;9:2027-2039.**

2. Graham CA, Brotto LA, Zucker KJ. Response to Balon and Clayton (2014): female sexual interest/arousal disorder is a diagnosis more on firm ground than thin air. **Arch Sex Behav 2014;4:1231-1234.**
3. Segraves RT, Balon R, Clayton AH. Proposal for changes in the diagnostic criteria for sexual dysfunction. **J Sex Med 2007; 4:567-580.**
4. American Psychiatric Association. Diagnostic and statistical manual: mental disorders. Washington DC: American Psychiatric Press; 1952.
5. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 2nd ed. Washington DC: American Psychiatric Press; 1968.
6. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 3rd ed. Washington DC: American Psychiatric Press; 1980.
7. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 3rd ed, rev. Washington DC: American Psychiatric Press; 1987.
8. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed. Washington DC: American Psychiatric Press; 1994.
9. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed, text rev. Washington DC: American Psychiatric Press; 2000.
10. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Arlington VA: American Psychiatric Press; 2013.
11. World Health Organization. International statistical classification of diseases and health related problems. 10th rev. Geneva: World Health Organization; 2010.
12. Parish S, Goldstein A, Goldstein S, et al. Toward a more evidence-based nosology and nomenclature for female sexual dysfunction—part II. **J Sex Med 2016;13:1888-1906.**
13. Basson R, Leiblum S, Brotto L, et al. Revised definitions of women's sexual dysfunction. **J Sex Med 2004;1:41-48.**
14. Basson R, Berman J, Burnett A, et al. Report of the international consensus development conference on female sexual dysfunction: definitions and classifications. **J Urol 2000; 163:888-893.**
15. Kaplan HS. The new sex therapy. New York: Bruner Mazel; 1974.
16. Lief H. Inhibited sexual desire. **Med Aspects Hum Sex 1977; 7:94-95.**
17. Masters W, Johnson V. Human sexual response. Boston: Little Brown; 1966.
18. Masters W, Johnson V. Human sexual inadequacy. Boston: Little Brown; 1970.
19. McCabe MP, Sharlip ID, Atalla E, et al. Definitions of sexual dysfunctions in women and men: a consensus statement from the Fourth International Consultation on Sexual Medicine 2015. **J Sex Med 2016;13:135-143.**
20. Brotto LA, Gorzalka BB. Genital and subjective sexual arousal in postmenopausal women: influence of laboratory-induced hyperventilation. **J Sex Marital Ther 2002;28:39-53.**
21. Bossio JA, Suschinsky KD, Puts DA, et al. Does menstrual cycle phase influence the gender specificity of heterosexual women's genital and subjective sexual arousal? **Arch Sex Behav 2014;43:941-952.**
22. Nappi RE, Lachowsky M. Menopause and sexuality: prevalence of symptoms and impact on quality of life. **Maturitas 2009; 63:138-141.**
23. Hackbert L, Heiman JR. Acute dehydroepiandrosterone (DHEA) effects on sexual arousal in postmenopausal women. **J Womens Health Gend Based Med 2002;11:155-162.**
24. Tollison CD, Adams HE, Tollison JW. Cognitive and physiological indices of sexual arousal in homosexual, bisexual, and heterosexual males. **J Psychopathol Behav Assess 1979; 1:305-314.**
25. Wincze JP, Hoon P, Hoon EF. Sexual arousal in women: a comparison of cognitive and physiological responses by continuous measurement. **Arch Sex Behav 1977;6:121-133.**
26. Rosen R, Brown J, Heiman S, et al. The Female Sexual Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. **J Sex Marital Ther 2000;26:191-208.**
27. Sun X, Li C, Jin L, et al. Development and validation of Chinese version of Female Sexual Function Index in a Chinese population: a pilot study. **J Sex Med 2011;8:1101-1111.**
28. Nowosielski K, Wróbel B, Sioma-Markowska U, et al. Sexual dysfunction and distress—development of a Polish version of the Female Sexual Distress Scale—Revised. **J Sex Med 2013; 10:1304-1312.**
29. Dargis L, Trudel G, Cadieux J, et al. Validation of the Female Sexual Function Index (FSFI) and presentation of norms in older women. **Sexologies 2012;21:126-131.**
30. Likes W, Stegbauer C, Hathaway D, et al. Use of the Female Sexual Function Index in women with vulvar intraepithelial neoplasia. **J Sex Marital Ther 2006;32:255-266.**
31. Meston C. Validation of the female sexual function index (FSFI) in women with female orgasmic disorder and in women with hypoactive sexual desire disorder. **J Sex Marital Ther 2003; 29:39-46.**
32. Gerstenberger E, Rosen R, Brewer J, et al. Sexual desire and the Female Sexual Function Index (FSFI): a sexual desire cut-point for clinical interpretation of the FSFI in women with and without hypoactive sexual desire disorder. **J Sex Med 2010; 7:3096-3103.**
33. Wiegel M, Meston C, Rosen R. The Female Sexual function Index (FSFI): cross-validation and development of clinical cutoff scores. **J Sex Marital Ther 2005;31:1-20.**
34. Rosen R, Revicki D, Sand M. Commentary on 'critical flaws in the FSFI and IIEF'. **J Sex Res 2014;51:492-497.**

35. Buhrmester M, Kwang T, Gosling SD. Amazon's Mechanical Turk: a new source of inexpensive, yet high quality data? **Perspect Psychol Sci 2011;6:3-5**.

36. Handy AB, Meston CM. Interoceptive awareness moderates the relationship between perceived and physiological genital arousal in women. **J Sex Med 2016;13:1907-1914**.

37. Stanton AS, Meston CM. A single session of autogenic training increases acute subjective and physiological sexual arousal in sexually functional women. **J Sex Marital Ther 2017;47:601-617**.

38. Handy AB, Meston CM. Perceived genital arousal in women with sexual dysfunction. Paper presented at the International Society for the Study of Women's Sexual Health 2017 annual conference; February 23-26, Atlanta, GA.

39. Pulverman CS, Meston CM. The relationship between affective appraisal of physiological sexual arousal and sexual dysfunction among women with a history of childhood sexual abuse. Presented at: Annual Meeting of the International Academy of Sex Research. June 2016; Malmö, Sweden.

40. Stanton AM, Hixon JG, Nichols LM, et al. One session of autogenic training increases acute subjective sexual arousal in pre-menopausal women reporting sexual arousal problems. Under review.

41. Heiman JR, Rowland DL. Affective and physiological sexual response patterns: the effects of instructions on sexually functional and dysfunctional men. J Psychosom Res 1983;27: 105-116.

42. Perelman MA. Introduction: advocating for a transdisciplinary approach to the management of sexual disorders. In: Lipshultz LI, Pastuszak AW, Goldstein AT, et al., eds. Management of sexual dysfunction in men and women. New York: Springer New York; 2016. p. 1-8.

43. Althof SE. Sexual therapy in the age of pharmacotherapy. **Annu Rev Sex Res 2006;17:116-131**.

44. Althof SE, Rubio-Aurioles E, Perelman MA, et al. Standard operating procedures for taking a sexual history. **J Sex Med 2012;10:26-35**.

45. Perelman MA. Why the sexual tipping point model? **Curr Sex Health Rep 2016;8:39-46**.