

Psychological factors involved in women's sexual dysfunctions

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Compared with research on men's sexual dysfunction, far less is known about the precise etiology of and effective treatments for sexual dysfunction in women. The lack of any pharmacologically approved treatment for women's sexual complaints has been attributed, in part, to the complexity of psychosocial and interpersonal factors involved. The aim of this article is to review some of the major psychological aspects of women's sexual dysfunction, focusing on the role of Axis I and Axis II disorders, individual vulnerability factors and interpersonal influences. Implications for treatment, where relevant, are discussed throughout.

KEYWORDS: female sexual dysfunction • mood • personality • psychiatric contributor • psychological factor • sexual problem

The WHO recognizes sexual health as a vital component of quality of life. However, difficulties in sexual functioning are common, and can be defined as a “disturbance in sexual desire and in the psychophysiological changes that characterize the sexual response cycle and cause marked distress and interpersonal difficulty” [1]. The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Text Revised (DSM-IV-TR) classifies sexual dysfunctions into: desire, arousal, orgasm and sexual pain disorders, with subtypes of each. Although complaints of sexual symptoms may be common in the general population, a sexual dysfunction is only diagnosed in cases of significant distress or negative interpersonal consequences of the difficulty. Approximately half the women in recent epidemiological studies who report an impairment in sexual desire, arousal, and/or orgasm experience significant distress and, thus, meet criteria for a sexual dysfunction [2–4].

Since the approval of sildenafil citrate (Viagra[®]) for men in 1998, there has been a surge of biomedical research on sexual dysfunction in both men and women. This research has led to a notable increase in our understanding of the biological factors contributing to sexual dysfunction, including the impact of medications (e.g., selective serotonin reuptake inhibitors), chronic disease (e.g., cancer, diabetes and multiple sclerosis) and physical disability (e.g., spinal cord injury and brain injury), as well as a very aggressive pursuit, championed by the pharmaceutical industry, for an efficacious medication

to improve sexual dysfunction. Despite the enormous advances in understanding the pathophysiology and etiology of women's sexual complaints, there are no medications approved by the US FDA or Health Canada specifically targeted to improving the sexual response of women, and this is despite the finding that 30–40% of women report lack of sexual desire [5–7] and 10–31% of women report problems with sexual arousal [4–6,8]. There has also been vocal opposition to this medical model, arguing that it fuels the medicalization of women's sexuality [9–12]. Between these politically motivated oppositions, clinicians themselves realize that the most balanced place to rest is somewhere between the purely medical view of sexual dysfunction as “disease within the individual” and the opposite pole, which may overemphasize the psychological causes of sexual problems.

In the 1970s, however, treatment of sexual problems involved a more integrated mind–body approach, and was sensitive to the overarching cultural and political influences that affect the expression of sexuality [13]. The therapies that resulted from the cultural climate around sexuality of that time recognized the importance of individual and dyadic contributions, vulnerabilities, anxieties, wishes and desires, for example. The sex therapy techniques of Masters and Johnson, developed in the 1960s–1970s and studied for their efficacy at that time [14], remain popular today. However, overall, there has been a major dearth in good methodological research exploring psychological techniques for sexual dysfunction in

women [15]. Only in the past few years has there been a resurgence of interest in developing and exploring psychological treatments for women's sexual dysfunctions [16–19].

The renewed interest in psychological treatment outcome research has also coincided with increasing attention to psychological, interpersonal and cultural influences on sexuality. There is a danger in assuming a psychological–organic duality underlying sexual dysfunction, given that all psychological expressions have a physical/physiological counterpart [20] and all biological changes may impact upon psychological functioning. Moreover, the interaction between organic and psychological contributors can act synergistically to influence sexuality. For example, in women with cervical cancer who have also experienced a history of childhood sexual abuse, the combination of both experiences has a greater negative impact on sexual satisfaction than the simple sum of either experience alone [21].

The authors recognize and acknowledge the important and well-documented role for biological contributors to women's sexual function. However, the goal of this review is to focus on some psychological influences on sexuality in women, given that these are less well studied and described. The division of psychological disorders into Axis I (clinical disorders) and Axis II (personality disorders), as is adopted in the multi-axial system of the DSM-IV-TR, will be employed. It will be structured such that first some of the major Axis I psychological disorders (e.g., major depressive disorder [MDD], anxiety disorders, psychotic disorders and bipolar disorder) will be considered. Next, the influence of Axis II personality disorders and clusters will be considered. We will then focus on some individual vulnerability factors that often correlate with sexual dysfunction (e.g., childhood sexual abuse, negative early experiences and stressors). Finally, we will consider some interpersonal domains, such as performance anxiety, negative expectations, relationship satisfaction and communication deficits in women's sexual functioning.

Axis I psychological disorders

Major depressive disorder

Major depressive disorder is defined when there has been one or more major depressive episodes – the latter of which is characterized by 2 weeks of depressed mood or loss of interest/pleasure along with four other depressive symptoms [1]. Research and clinical practice have consistently found a strong relationship between depression and sexual dysfunction [22,23]. This includes dysfunctions of sexual desire, both decreased as well as persistent sexual arousal, sexual pain and, less frequently, orgasmic functioning [24–28]. For example, one study that included 79 women with MDD who were not taking antidepressant medications found that 50% reported a decrease in sexual desire, 50% reported a decrease in subjective sexual arousal, 40% reported difficulties with vaginal lubrication and 15% reported difficulties attaining orgasm following the onset of MDD [25]. More recently, researchers using functional MRI have found that women with MDD have significantly reduced activation in numerous areas of the brain associated with sexual functioning during the viewing of erotic visual stimuli, compared with healthy women [29].

However, it should be noted that all of the women in this study with MDD also met criteria for female sexual arousal disorder (FSAD). As no additional control groups of women with MDD but not FSAD, or with FSAD but not MDD, were included in the study, the extent to which the combination of MDD and FSAD, versus each of these conditions on their own, contributed to the findings is unclear.

The relationship between sexual function and depression may be bidirectional. Sexual dysfunctions may contribute to depression through their impact on the individual, as well as through their impact on the sexual relationship. Conversely, sexual dysfunctions may be a symptom of, or be maintained by, depression as depression can have profound effects on social and sexual functioning, particularly through diminished ability to experience pleasure, loss of interest and reduced energy. This bidirectional relationship is complicated by the sexual side effects of many antidepressant medications (for reviews, see [30–33]). These side effects can occur either through direct physiological drug effects, such as on neurotransmitter receptors, and/or through indirect effects, such as through weight gain and sedation. Consequently, differentiating the direct and indirect effects of medications versus the effects of depression itself on sexual function is often very difficult, with important implications for treatment compliance. Very recently, sildenafil citrate has been found to be effective for reversing the sexual side effects of selective serotonergic reuptake inhibitor antidepressants in a very small, highly selective group of women with anorgasmia [34]. In a woman presenting for treatment of sexual complaints, symptoms of depression must be assessed and, if deemed to be causally related to the sexual impairment, must be treated – either in tandem with the sexual dysfunction or prior to.

Anxiety disorders

Anxiety has long been assumed to play a significant role in sexual dysfunctions. In fact, early psychodynamic theories presumed anxiety to underlie all sexual difficulties, and the influential sex therapy protocols of Masters and Johnson [35] and Kaplan [36] focused on anxiety in both the etiology of the dysfunction and as a target for treatment.

Since that time, research has accumulated on the relationship between anxiety and sexual function, particularly in female participants. Compared with healthy controls, significantly higher rates of anxiety have been found in patients with sexual dysfunctions [37] and significantly higher rates of sexual dysfunctions have been found in patients with anxiety disorders [38]. These anxiety disorders include panic disorder [39], social phobia [40], obsessive–compulsive disorder [25], post-traumatic stress disorder [41] and generalized anxiety disorder [22,23], although differences in rates of sexual difficulties across these disorders have been found. For example, patients with panic disorder have been found to have significantly higher rates of sexual difficulties than patients with social phobia [39], and patients with obsessive–compulsive disorder have been found to have significantly higher rates of orgasmic dysfunction than those with either generalized anxiety disorder [42] or social anxiety [43]. In addition, certain sexual

dysfunctions appear to be more highly associated with anxiety. Figueira *et al.* found that sexual aversion disorder was the most common sexual dysfunction in a group of patients with panic disorder, and that sexual aversion was secondary to fears of having a panic attack during sexual intercourse [39]. In line with these findings, an earlier study by Kaplan *et al.* found that medications for panic disorder resulted in significant improvements for both panic and sexual aversion [44].

Provoked vestibulodynia, a sexual pain disorder characterized by severe pain at the introitus, has also been found to be associated with heightened states of anxiety across a number of studies [45], with fear of pain, catastrophizing and hypervigilance to pain-related and general somatic cues being higher compared with no-pain controls. Women with lifelong genital pain tended to show more anxiety with body exposure than women with more recently acquired pain [46]. Anxiety has been implicated in the pathophysiology as well as the maintenance of this condition.

As with depression, the relationship between anxiety and sexual function is complicated by the sexual side effects of many of the medications used to treat anxiety. In fact, several of the same medications used to treat depression (e.g., antidepressants such as the selective serotonin reuptake inhibitors and tricyclic antidepressants) are used to treat anxiety [47]. Moreover, the high comorbidity between depression and anxiety further obscures the relationship between anxiety and sexual function. Other medications used to treat anxiety, such as the benzodiazepines, have been associated with both improved and diminished sexual function [48].

Improvements in sexual function following treatment for anxiety are not altogether surprising, given the commonly assumed negative association between anxiety and sexual function. However, interestingly, research on the relationship between anxiety and sexual function has found that anxiety is not, as was initially believed, always detrimental to sexual function. In sexually functional women, laboratory-induced anxiety has been found to enhance sexual response [49]. These findings have been confirmed with additional research examining the effects of sympathetic nervous system (SNS) activation – presumably the mechanism through which anxiety exerts its effects on sexual response – although findings have been more mixed in sexually dysfunctional women [50]. However, if anxiety facilitates sexual function in some women, this may partially explain the negative effects of anti-anxiety medications on sexual function. Overall, the results suggest a complex relationship between anxiety and sexual response – one that is probably influenced by the nature, intensity and history of the anxiety. It is important to note, however, that many of the components of sex therapy include anxiety-reduction techniques, such as relaxation, diaphragmatic breathing and cognitive challenging.

Psychotic disorders

Psychotic disorders, by the nature of their symptoms and their high comorbidity with other disorders – particularly substance-use disorders – frequently lead to impairments in relationship functioning, including sexual relationships [51,52]. Psychotic

disorders are also associated with impairments in sexual response. Most commonly, individuals suffering from psychotic disorders report reduced sexual desire [53,54]. Many of the medications used to treat psychotic disorders are associated with impaired sexual function. This is particularly true for the more traditional, or typical, antipsychotics, although reports of sexual difficulties from the use of newer, atypical antipsychotics and other medications used to treat psychosis are also present in the literature [55–59]. Increased prolactin, resulting in hyperprolactinemia, common with the typical antipsychotics but rare with the majority of atypical antipsychotics, may be one mechanism contributing to the sexual side effects of these medications [60], although numerous other peripheral and central drug effects are also implicated. Sexual side effects are frequently rated as among the most distressing side effects of antipsychotic medications [61,62] and are known to influence treatment compliance [63]. Therefore, assessment and minimization of sexual side effects through changes in specific medications and doses is an important component of clinical care, although at least one study found that sexual side effects were not moderated by medication type and dosage [53], and reports of beneficial effects of antipsychotic medications on sexual function have also been reported [54].

In reviewing the literature on the relationship between psychosis and sexual function, it is important to note that the vast majority of studies have focused on men [64]. Therefore, while those studies that have examined female sexual function have also reported sexual difficulties following the onset of psychosis and/or treatment with antipsychotic medications, much less is known with regard to the true nature of this association and progression in women.

Bipolar disorder

Bipolar disorder, defined by the presence of one or more manic or mixed episodes that results in functional impairments, is also associated with shifts in sexual function. During a manic episode, defined as at least a 1-week period of abnormally persistent elevated, expansive or irritable mood [1], individuals may show hypersexuality [65], while during depressive episodes, impairments in sexual functioning congruent with those discussed previously in MDD are frequently present [24]. Thus, when considering treatment for the individual with sexual symptoms in the context of bipolar disorder, one must take into account whether the person is in a manic, depressive or asymptomatic phase of their illness.

As with depression, medications used to treat bipolar disorder both confound and compound the relationship between the disorder and sexual functioning. Various medications are utilized in the treatment of bipolar disorder, including antipsychotics, antidepressants, benzodiazepines and lithium. The effects of antipsychotics, antidepressants and benzodiazepines on sexual function have already been mentioned earlier. Research on the effects of lithium on sexual function is relatively sparse, has mainly focused on men, and has produced equivocal findings. While some research has found high rates of decreased sexual function with lithium (e.g., 50% of patients on lithium in a study by Lorimy *et al.* [66]), other research has found very low, or no rates, or even

positive sexual effects [67,68]. As with other medications, lithium may exert its effects on sexual function either directly or indirectly. For example, negative effects may occur through weight gain and hypothyroidism, both of which are associated with lithium use. Conversely, positive effects on sexual function may be the result of the alleviation of distressing psychiatric symptomatology.

Interestingly, one study examined the effects of lithium alone, versus lithium in combination with benzodiazepines, on sexual function in individuals with bipolar disorder [69]. Of the 59 women in the sample, 75% reported no change in sexual function with the medications, 5% reported mild changes, 5% reported moderate changes and 15% reported 'great' changes. Of those who noted changes, the majority (40%) pertained to decreased sexual desire, but decreased orgasmic ability (26%), decreased quality of orgasms (24%) and pain during orgasm (4%) were also reported. Of note, not all reported sexual side effects were negative; 24% of the women reported increased sexual desire and 22% reported orgasmic improvements. Perhaps not surprisingly, the results comparing lithium alone to lithium plus benzodiazepines revealed a significant difference; while only 14% of patients solely on lithium reported negative sexual side effects, this number rose to 60% in the group taking lithium in combination with benzodiazepines. However, a more recent study failed to replicate these findings [70]. Furthermore, as there was no comparison group of women solely on benzodiazepines in the study by Ghadirian *et al.*, no conclusions can be drawn regarding any additive effects of lithium beyond those of benzodiazepine use on its own [69].

Axis II personality disorders & traits

The second axis of the multi-axial DSM-IV-TR system is that relating to underlying pervasive or personality conditions [1]. In an extensive review that included individual personality differences relating to women's sexuality, the authors reported that developmental factors are important to consider when examining the relationship between personality and sexuality [71]. Specifically, older women seeking treatment for mixed sexual dysfunctions had higher neuroticism scores [72], whereas in younger women, the trait of extraversion was more prominent [73]. The DSM currently lists ten different personality disorders, as well as a 'Personality Disorder Not Otherwise Specified' category for cases in which the individual personality profile does not fit neatly into one of the other categories. These disorders are grouped into three clusters based on their descriptive similarities. Cluster A includes paranoid, schizoid and schizotypal personality disorders. Almost no empirical data exist on the relationship between Cluster A personality disorders/traits and women's sexuality, with the exception of one qualitative study that found schizoid personality traits to be associated with asexuality [74], a sexual identity characterized by a lifelong lack of sexual attraction. Schizoid personality disorder is characterized as a "pattern of detachment from social relationships and a restricted range of emotional expression", so it is not surprising that detachment from sexual relationships might also feature [1].

Compared with Cluster A, much more research has explored the association between Cluster B personality disorders and traits and sexual functioning in women. This cluster includes antisocial,

borderline, histrionic and narcissistic personality disorders, and those in this group are often characterized as dramatic, emotional and/or erratic. In a study of women with histrionic personality disorder, characterized by "excessive emotionality and attention seeking" [1], who were compared with nonhistrionic women, the former were found to have significantly lower sexual assertiveness, greater erotophobic attitudes toward sex, lower self-esteem and greater marital dissatisfaction [75]. This group also exhibited significantly lower sexual desire, more sexual boredom and greater orgasmic dysfunction but, paradoxically, also reported higher levels of sexual esteem and increased likelihood of entering into an extramarital affair. Borderline personality disorder is characterized as "a pattern of instability in interpersonal relationships, self-image, and affects, and marked impulsivity" [1]. Women with borderline personality disorder have shown similar sexual outcomes to those with histrionic personality in that, despite sexual depression and dissatisfaction, there were higher rates of sexual esteem and sexual assertiveness compared with controls [76]. In a study of 45 women with borderline personality who completed brief questionnaire measures of sexual response, the impairment in several domains of sexual functioning was found to be associated with sexual abuse history and not exclusively to the personality traits, *per se* [77]. This was also borne out in other research that found higher rates of sexual abuse in dating relationships (i.e., date rape) and an earlier debut of sexual activity among women with borderline personality [78]. Others have found that anxiety mediates the relationship between borderline personality and negative sexual attitudes and reporting pressure from partners to engage in sex [79]. Unfortunately, the effects of borderline personality on sexual dysfunction are also mediated by larger, more complex influences on the relationship, given the finding that emotional invalidation as a child plays a key role in relationship disturbances among these women [80]. Sensation seeking, a characteristic of individuals with narcissistic personality disorder, has been found to be related to increased sexual desire and arousability, but was not associated with marital or sexual satisfaction [81]. Antisocial personality disorder is characterized by a "pattern of disregard for, and violation of, the rights of others" [1]. Unlike the other Cluster B personality disorders, antisocial personality is much more frequently diagnosed in men than in women, and here, there is a plethora of research associating the condition with risky and compulsive sexual behaviors. We could locate no published studies examining sexual functioning in women with antisocial personality disorder or traits.

The Cluster C personality disorders include avoidant, dependent and obsessive-compulsive personality disorders and are characterized by anxiety and fear. Relative to the personality disorders in Cluster B, very little empirical data are available on sexual functioning in individuals with Cluster C disorders or traits. Compared with the available research on obsessive-compulsive disorder and women's sexuality that shows significantly lower rates of desire, arousal and satisfying orgasms compared with sexually healthy controls [82], we could locate no empirical papers on obsessive-compulsive personality disorder, characterized as "a pattern of preoccupation with orderliness, perfectionism, and

control" [1] and women's sexual functioning. There is similarly no research on avoidant personality disorder, characterized by a pattern of social inhibition, feelings of inadequacy, and hypersensitivity to negative evaluation" [1]; however, given that one of the core criteria for this disorder is the avoidance of activities that involve significant interpersonal contact, as well as showing restraint within intimate relationships because of the fear of being shamed or ridiculed, one might assume that those with avoidant personality disorder would be unlikely to engage in sexual activities and would avoid any kind of intimate interaction. Unless there was significant distress over the avoidant behavior, these women would also be unlikely to seek treatment. The final Cluster C personality disorder, dependent personality disorder, is characterized by "a pattern of submissive and clinging behavior related to an excessive need to be taken care of" [1]. Although we could locate no empirical data on the sexual functioning of women with this personality disorder, one might postulate that the fear of separation and the difficulty expressing disagreement with others might create relationship strain in a manner that might influence sexual functioning. The DSM-IV-TR text also states that when a close relationship ends, these individuals may urgently seek another relationship [1].

Because, in general, personality disorders are considered to be more 'treatment resistant' than Axis I clinical disorders, given their roots in characterological constitution, this implies that attempting to improve sexual symptoms by targeting the personality disorder may be difficult. However, given that the described personality disorders have behavioral correlates and/or psychological symptoms that may play a role in the onset of a sexual symptom, it may be most prudent for treatment to address these specific correlates of the sexual dysfunction in individuals. We could not locate any empirical study that has attempted to improve sexual functioning in individuals with personality disorders.

Individual vulnerability factors

The influence of individual vulnerability factors on women's sexuality has been extensively studied from the perspective of medical, psychological and sociocultural variables. From the perspective of studying distress associated with sexual problems, personal distress and interpersonal (i.e., relational) distress have been studied as separate constructs [4]. Moreover, the definition of sexual dysfunction as a mental disorder within the DSM-IV-TR states that dysfunction is "conceptualized as a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and that is associated with present distress or disability" [1]. However, there have been strong critiques of this position, noting that many sexual problems emerge from and are located within the couple dyad, and that the notion of a sexual disorder being situated within an individual is absurd. For example, even in the case of an iatrogenic sexual dysfunction (e.g., hypoactive sexual desire disorder secondary to bilateral ovarian removal and hysterectomy), correlates of the surgery may impact the woman and her partner simultaneously (e.g., changes in role in the case of surgery owing to ovarian cancer) in a manner that

directly influences sexual functioning. Nonetheless, there has been extensive research exploring individual factors as they relate to and influence sexual response difficulties in women. This section will focus on factors within and affecting the woman herself that have been identified as being associated with impairments in sexual response.

Motivation

The Incentive Motivation model of sexual response has been the focus of numerous empirical studies attempting to define the role of motivation in sexual functioning. According to this model, each individual has a sexual response system that can be activated by competent sexual stimuli [83]. A second component is the 'disposition' to then respond to those stimuli with some form of sexual activity, which, in and of itself, then generates sexual desire. This disposition is probably influenced by central and peripheral neurotransmitter-hormone interactions [84] and can be measured by reflexes of the Achilles tendon, reflecting an 'action tendency' [85]. The model postulates, therefore, that sexual desire is a result of engaging in sexual activity, and not the opposite. Clinically derived models of sexual response also highlight the important role of motivation. For example, the sex-response cycle proposed by Basson indicates that a constellation of motivating factors (otherwise known as reasons or incentives) are crucial for 'tipping' the woman out of a state of sexual neutrality towards seeking out or responding to sexual cues from a partner [86-88]. Indeed, empirical data have found 237 discrete reasons that might motivate an individual to engage in sexual activity [89]. In the case of women with sexual dysfunction, although motivation was still important, there were considerably fewer 'cues' that could effectively motivate sexual desire compared with sexually healthy women [90]. These findings suggest that treatment of women reporting loss of sexual desire must address motivations for sexual activity, explore whether there are sufficiently positive motives that outweigh potential negative motives, and directly address the link between motivation and sexual desire.

Childhood sexual & emotional abuse

Several studies have shown mid- and long-term negative effects of childhood abuse and neglect on women's sexual functioning as an adult. Low sexual desire is the sexual concern most commonly reported by women survivors of sexual abuse [91-97]. In a study aimed at exploring mechanisms by which child sexual abuse (CSA) exerts its effects, 48 female CSA survivors and 71 control women completed measures of sexual and psychological function and sexual self-schemas [98]. CSA survivors saw themselves as less romantic and passionate on the measure of schemas, and although depression and anxiety were higher in the CSA group, the higher negative sexual affect could not be accounted for solely by these psychological variables. When asked to write about sexuality, women with a history of CSA used more negative emotion words and, interestingly, used more sex words than controls when writing about nonsexual topics [97]. These findings suggest that there are fundamental differences between women with and without a CSA history in how they view sexuality and how they view themselves as sexual beings.

When physiological sexual arousal in response to erotic stimuli was observed and compared between groups, women with a history of CSA, whether they experienced post-traumatic stress disorder or not, exhibited a lower genital arousal response than control women; however, there were no group differences in self-reported sexual arousal to the explicit films [99]. Moreover, when SNS activity was activated by exercise, only women in the control group experienced the expected greater increase in physiological sexual arousal whereas women with CSA histories showed no parallel further increase in response. Women with CSA also had lower levels of cortisol in a salivary analysis compared with the controls. The authors speculated that there are disruptions in the hypothalamic–pituitary–adrenal axis in women with CSA, as well as exaggerated levels of SNS activity. The clinical implications might, therefore, suggest that techniques that decrease SNS activity might have utility for improving the physiological, but not subjective, sexual response of women with a CSA history and sexual dysfunction characterized by impaired genital response.

Emotional intelligence, defined broadly as ‘adaptive capacities and abilities to control impulses and cope with stress’ and measured with the Trait Emotional Intelligence Questionnaire, was found to be associated with orgasmic frequency in women in a study of 2035 British women enrolled in a twin registry [100]. In this study where emotional intelligence and orgasmic frequency with intercourse and masturbation (separately) were assessed with self-report questionnaires, higher emotional intelligence scores were found to be significantly associated with higher frequency of orgasm during both masturbation and intercourse.

In the recent Boston Area Community Health Survey of 3205 women aged 30–79 years, emotional abuse was conceptualized as “[if an adult] emotionally abused, humiliated or insulted you occasionally or often” [101]. Overall, women with a history of emotional abuse were not less likely to be sexually active than nonabused women, but emotional abuse was associated with a significantly higher likelihood (odds ratio [OR]: 1.86 for emotional abuse as an adult; OR: 2.13 for emotional abuse as a child) of having any female sexual dysfunction. However, when the specific domains of sexual functioning were compared, women with (any) abuse history were significantly more likely to report sexual dissatisfaction and genital pain in the past 4 weeks [101].

Taken together, in the woman with a history of sexual abuse and current sexual dysfunction, the abuse should, at a minimum, be assessed carefully, and in some cases, primary treatment of the sequelae of the abuse will precede treatment of the sexual complaint.

Negative early environment/attachment

According to John Bowlby’s Attachment Theory, there exists a universal human tendency to seek closeness with another person and to feel secure when that person is present [102]. Problems in child–parent attachment may lead to problems in how the person later develops intimate relationships as an adult. Clinical wisdom suggests that the quality of attachment to parents and caregivers early in life seems to foster sexual comfort and identity. Dysfunctional very-early relationships with caregivers can

have a large variety of psychological consequences among which later sexual dysfunction may be one aspect. Although assessment of developmental history and, in particular, attachment to early support figures is a key aspect of any biopsychosocial assessment of sexual dysfunction, unfortunately, the empirical data directly linking early attachment and later sexual dysfunction are non-existent. Nonetheless, assessment of early attachment relationships is a key component in the assessment of sexual dysfunction, and may be a component of treatment if found to be relevant where correlates to current-day relationships are explored.

Distraction & attention

The early work of Masters and Johnson focused on their perspective that distraction and its associated anxiety played a key role in the etiology of sexual dysfunction [35]. As a result, their technique of ‘sensate focus’ was designed to, among other things, reduce distraction and thereby heighten the sexual response of both partners. In empirical studies, distraction, or focus away from the sexual experience, has been shown to be detrimental to female sexual arousal, especially subjective sexual arousal and desire [103–105]. It has been shown that neutral (i.e., nonsexual) distracting stimuli inhibit the sexual responses of those without sexual dysfunction [106]. Attention has also been investigated as it relates to sexual arousal and formed the basis for one of the earliest theories of sexual dysfunction that was based on cognitive interference [106]. In a recent study employing the dot-detection task and the eyeblink startle-response test as two measures of attention, men and women with higher levels of desire were slower to detect neutral dots that replaced sexual images, suggesting that the amount of attention captured by a sexual stimulus strongly predicts levels of sexual desire [107]. This finding also suggests that attention may differentiate those with high from those with low sexual desire. In another recent study, two subgroups were differentiated on the basis of their initial preconscious attentional bias for sexual cues, and a different sexual-response profile was found [108]. In an initially low-attention group, preconscious attentional bias for sexual cues increased when the female participants were given testosterone. In these women, the combination of supraphysiological testosterone and vardenafil (a phosphodiesterase type 5 inhibitor used in the treatment of erectile dysfunction) caused an improvement in genital response and subjective indices of sexual functioning. In the group that had high attention for sexual cues at baseline, preconscious attentional bias for sexual cues decreased when they were given testosterone. In this group, the combination of testosterone and vardenafil had no effect on any of the indices of their sexual functioning. This replicates the findings from an earlier pilot study [109].

In the clinical scenario, sensate focus techniques are a staple in sex therapy approaches to the treatment of sexual dysfunction. More recently, mindfulness-based cognitive behavioral therapy has also been tested for women with genital sexual arousal complaints (in individual format) and for women with mixed desire and arousal complaints (in group format) [18,19]. Mindfulness is characterized as present-moment, nonjudgmental awareness

and has a long history in meditation in eastern philosophy and Buddhism. Women with and without sexual dysfunction have been found to have impaired subjective and psychophysiological sexual arousal when distracted [105]. Thus, the beneficial effects of mindfulness-based treatments suggest that reducing distraction and increasing attention on the present-moment sexual experience is a key aspect of women's healthy sexual response.

Self-focused attention

Attention that is focused on oneself may negatively impact genital and subjective sexual arousal in women. In a recent study of sexually healthy women, state self-focus was induced by switching on a TV camera that pointed at the woman's face and which she could see. Induction of state self-focus did not affect genital responses measured with a vaginal photoplethysmograph, but an interaction effect was observed between state self-focus and participants' level of trait sexual self-focus [110]. Compared with women with low scores on trait self-focus, women with high scores exhibited smaller genital responses when state self-focus was induced. The groups did not differ when no self-focus was induced. An increase in state self-focus did not affect subjective sexual arousal, but participants with a high level of trait sexual self-focus reported stronger subjective arousal, compared with those with low trait level [110]. These findings suggest that assessment should address women's focus during sexual activity, whether problems in self-focus emerge only during sexual activity (state) or are more universal in most of her experiences (trait), and the content of her focus – whether it is on sexual cues, nonsexual neutral distractions or negative distractions. As indicated, mindfulness-based approaches that espouse the practice of 'nonjudgment' may be particularly useful [18,19,111].

Body image

Using a definition of body image self-consciousness that focused on women's concerns regarding appearing fat when being physically intimate with a partner, Wiederman studied 200 young women who completed various measures of body image, self-focused attention, sexual esteem, sexual assertiveness and sexual avoidance [112]. A third of women reported experiencing significant body image self-consciousness when intimate with a partner (despite the fact that only 12% were obese). Moreover, sexual self-esteem was significantly associated with body image self-consciousness. Importantly, those women with more body image self-consciousness with a partner reported more sexual avoidance, less sexual assertiveness and had fewer sexual experiences. In another study conducted in a controlled laboratory setting, sexual desire in response to viewing erotic stimuli was positively correlated with higher body esteem [113]. Interestingly, inducing a state of increased body awareness while exposed to a sexual stimulus resulted in significant enhancement of physiological and subjective sexual arousal [114]. Taken together, these findings suggest that increased self-focus may have differential patterns of effects on sexuality depending on whether or not the woman is sexually aroused, and this must be carefully taken into account during assessment and treatment of sexual complaints in women.

Interpersonal-related factors

Performance anxiety

The previously discussed relationship between attention and sexual responding can be understood further by considering the role of performance anxiety. Anxiety in general, and performance anxiety in particular, have long been theorized to be primary factors underlying sexual dysfunctions. For example, Masters and Johnson believed that fears of inadequacy and fears pertaining to sexual performance combined to prevent sexual functioning [35]. Kaplan expanded on this concept to include anxiety pertaining to the partner, such as fear of performance demands by the partner and an excessive need to please the partner [36]. These sexual anxieties were purported to impede autonomic nervous system functioning to the extent that physiological sexual arousal was significantly inhibited, resulting in sexual dysfunctions [36]. Barlow went on to propose a model of sexual dysfunction that attributed impairments in sexual arousal to disrupted processing of erotic cues necessary for arousal [106]. Specifically, he proposed that disruptions occur as a result of performance anxiety, which shifts attention from a focus on the rewards of sexual activity to the threat of sexual failure. The shift in attention from pleasurable sensations to focusing on, monitoring and evaluating oneself is also known as 'spectatoring'.

Masters and Johnson [35] and Kaplan [36] used their theory about the role of performance fears to develop psychological approaches to the treatment of sexual dysfunctions aimed at reducing performance anxiety and perceptions of sexual inadequacy. Sensate focus (described previously), an anxiety-reduction technique, directs attention to bodily sensations and away from negative cognitions by giving specific instructions to the partner receiving touch to focus his/her attention on the sensation while simultaneously providing gentle verbal feedback to the partner administering the touch. Wolpe similarly focused on the reduction of anxiety as the key to treating sexual dysfunctions, and advocated for the use of systematic desensitization in treatment [115]. Cognitive behavioral approaches for the treatment of sexual dysfunctions also frequently focus on the reduction of anxiety [116].

While some support for the effectiveness of anxiety-reduction techniques in the treatment of both female orgasmic disorder (FOD) and FSAD exists [117], other studies have noted only modest or negligible improvements, leading Meston and colleagues to suggest that, for most women, anxiety does not play a pivotal role in the development of their sexual dysfunction [118]. Moreover, they speculated that anxiety-reduction techniques may be best suited to cases where performance anxieties are clearly present.

Negative expectations

Negative sexual expectations, or schemas, are believed to be another contributing factor in the etiology of sexual dysfunctions [15,119]. For example, beliefs such as 'I will not become sexually aroused' are theorized to lead to interpretations about the partner or the sexual situation, which, in turn, result in the fulfillment of the initial negative expectations [73]. Research by Middleton *et al.* that examined the effects of experimentally adopted positive and negative sexual schemas on sexual arousal in women with FSAD and

healthy controls revealed that positive sexual schemas (in which women read a script instructing that the participant believe she has a very positive and healthy sexual response) resulted in significantly greater increases in physiological and subjective sexual arousal than negative sexual schemas (the condition in which women read a script instructing that the participant believe she has a very negative and dysfunctional sexual response) [120]. No control condition with a neutral schema was employed; therefore, evaluation of any detrimental impact of the negative sexual schemas on sexual arousal could not be elucidated. However, these researchers did find that women with FSAD held more negative pre-existing sexual schemas than the healthy controls, supporting the hypothesis that negative expectations may be a factor in the development and/or maintenance of sexual difficulties and, therefore, comprise an important treatment target. There is also considerable support for a relationship between negative expectations and sexual pain disorders [121,122]. As such, addressing and challenging negative expectations (of pain as well as interpersonal reactions) is a fundamental component of psychological treatments for sexual pain.

Relationship satisfaction

Not surprisingly, both clinical observations and research findings have consistently noted an association between relationship dissatisfaction and impaired sexual function [4,121–125]. Conversely, evidence is accumulating for the beneficial effects on relationships of women with high levels of sexual satisfaction [5,126], and higher relationship satisfaction has generally been found to be accompanied by greater sexual response [127]. For example, while relationship conflict is associated with decreased orgasmic functioning [127], marital happiness has been found to predict a higher frequency of orgasm [128].

As with other factors implicated in sexual difficulties, causation is bidirectional, and it can be difficult to determine whether sexual difficulties have contributed to, or resulted from, an unsatisfactory relationship. Therapeutic attention to sexual and relationship concerns may prevent unresolved relationship conflicts from undermining the efficacy of the treatment of sexual dysfunction.

Communication deficits

Communication deficits have been found to be abundant in women with sexual dysfunctions, particularly in women with FOD [129–133]. Compared with orgasmic women, women with FOD not only reported more discomfort communicating about sexual activities that involved direct clitoral stimulation (i.e., activities involving oral and manual genital stimulation – the forms of sexual stimulation most likely to lead to orgasm) [130,131], but women with FOD were also found to be less receptive during communication about both sexual and nonsexual topics [129].

Communication deficits also extend to the partners of women with FOD. Partners have been found to report significantly more discomfort when communicating about intercourse and sexual activities involving direct clitoral stimulation [130]. Interestingly, research has also found that both anorgasmic women and their partners are more blaming than orgasmic couples, and tend to view the woman as being responsible for her sexual difficulties [130,134].

Once again, the direction of the relationship between communication deficits and sexual dysfunctions is unclear, as sexual dysfunctions may be the product, or the consequence, of dysfunctional communication. As Kelly and colleagues pointed out, if communication deficits and sexual dysfunction are causally related, the two difficulties may also act synergistically on each other to exacerbate the problem [129]. In other words, sexual dysfunctions may lead to blame, which may result in even greater sexual difficulty. Alternatively, communication style and sexual function may be causally unrelated. However, even if causally unrelated, communication deficits may impede the successful treatment of sexual difficulties and, therefore are often an important target in therapy. In some cases, deferral of sex therapy until adequate attention to communication skills has been paid may be required.

Expert commentary

Although far less is known about the psychological aspects of women's sexual dysfunction compared with our understanding of its biological roots, there has been increasing research on this topic in the past decade. There is a strong link between anxiety and depression and sexual dysfunction in women, which is further compounded by antidepressant use. Relative to research on psychiatric illness and disorders, much less has focused on the influence of personality disorders or traits and women's sexual function, despite the frequent clinical observation that such traits may directly impact upon the sexual symptoms and their treatment. Within the personality disorder clusters, more has been studied concerning Cluster B syndromes than the others, and within this cluster, most of the data have focused on women with histrionic or borderline personality disorder. The research here finds effects of the personality traits on specific sexual symptoms but also on broader domains relating to sexual self-esteem and higher rates of sexual activity. Individual vulnerability factors are numerous and are a core component of any in-depth assessment of the woman presenting with sexual concerns. Only a small fraction of vulnerability factors were covered in this article. Of those, there are ample data linking sexual and emotional abuse history, distraction, attention and body image to difficulties in sexual functioning. More data are needed to empirically support the frequent clinical observation that early attachment relationships affect sexual functioning as an adult. Many experts in the field would argue that sexual dysfunction is essentially a byproduct of interpersonal discordance and, therefore, attention to interpersonal-related factors is essential. Performance anxiety, negative partner-related expectations, communication deficits and overall relationship satisfaction have direct effects on sexual functioning and are often the targets in sex therapy. This body of research reinforces the importance of assessing the partner when a woman presents with sexual dysfunction.

Five-year view

The pendulum, which swung forcefully towards the biological pole in the late 20th Century and throughout much of the past decade, is apparently beginning to settle slightly towards the psychological pole, with an increasing number of psychological treatment outcome studies. We envision that the next decade

will see increasing focus on the role of psychological factors and more cross-cultural sensitivity, with an emphasis on understanding sexuality as it is expressed in ethnic minority groups. With an increasing focus on studying the psychological characteristics of women with sexual dysfunction, we may also begin to see more individualized psychological sex therapy treatments that take into account this important individual variability.

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Key issues

- Axis I psychological disorders, as well as the symptoms characteristic of subthreshold conditions, should be assessed in the woman with sexual difficulties.
- Among the Axis I disorders, most attention has focused on depression and anxiety, where associations with sexual functioning have been found across a wide number of studies.
- The Axis II personality disorders consist of pervasive patterns of personality that are far less responsive to change than are the Axis I disorders.
- Far less research has been performed on Axis II compared with Axis I conditions; however, borderline and histrionic personality disorders have been studied the most and both have been found to be associated with impairments in sexual functioning.
- Individual vulnerability factors are specific, sometimes situational, events that influence the woman presenting with sexual symptoms.
- Well-studied individual vulnerability factors are sexual and emotional abuse, distraction and attention, and body image.
- Relationship-related psychological factors of the woman presenting with sexual symptoms are a fundamental component of any comprehensive assessment.
- Relationship factors strongly predict sexual functioning and are, therefore, a major target in treatment.

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