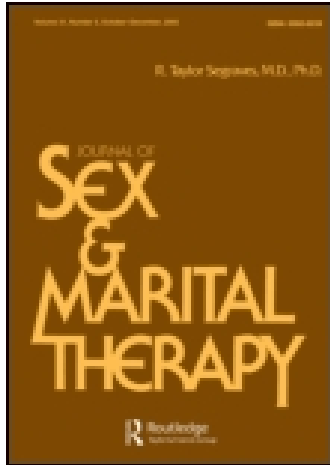


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The Female Sexual Response: A Different Model

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Clarification of women's sexual response during long-term relationships is needed. I have presented a model that more accurately depicts the responsive component of women's desire and the underlying motivational forces that trigger it. The variety of arousal/ orgasm responses is also acknowledged. The purpose is both to prevent diagnosing dysfunction when the response is simply different from the traditional human sex-response cycle and to more clearly define subgroups of dysfunction. The latter would appear to be necessary before progress in newer treatment modalities, including pharmacological, can be made.

This article describes a model for women's sexual response that appears to be a more accurate representation of their experiences—especially in longer term relationships than those afforded by the traditional human sex-response cycle. This alternative model was developed to increase the understanding of women's sexual psychophysiology and thus, to improve the behavioral, psychological, and pharmacological treatment of their sexual problems. A stronger recognition that women's sexual response more commonly stems from intimacy needs rather than a need for physical sexual arousal leads to an alternative understanding of women's sexual desire and, hence, to different definitions of hypoactive desire. Similarly, a stronger recognition that women's sense of sexual arousal often stems only minimally from awareness of genital congestion or other physiological changes leads to the acceptance of different subtypes of hypoarousal disorders. Finally, awareness that orgasmic release may be multiple, extended, highly variable, depending on the type of stimulation, and at times unnecessary leads to the concept that there

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are many patterns of female arousal and release. Inquiry into exactly what physical sensations and emotions are experienced when stimulation is stopped without any orgasmic release allows us to define different subtypes of female orgasmic disorder (FOD).

THE NEED FOR A DIFFERENT MODEL

Difficulties encountered while applying the Masters and Johnson model of sexuality, even with the inclusion of an initial sexual desire phase (Kaplan, 1979) when addressing women's sexual response, have been well described. Both Leiblum (1998) and Tiefer (1991) stressed that the focus on genital responses and traditional indicators of desire, including sexual fantasies and a need to self-stimulate, ignores major components of women's sexual satisfaction: trust, intimacy, the ability to be vulnerable, respect, communication, affection, and pleasure from sensual touching. The absence of these components, according to the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV) (American Psychological Association, 1994), which relies heavily on the traditional human sex response cycle, is apparently unimportant. Consequently, studies on women's sexuality in health and disease rarely include these aspects. These authors also identify the frequent overlap of dysfunctions, especially female sexual arousal disorder (FSAD) with hypoactive sexual desire disorder (HSDD) or FOD.

Masters and Johnson studied those women who were not only willing to be observed in a laboratory setting but who were orgasmic with intercourse (Masters & Johnson, 1966). The classic sex-response cycle thus was based on one small subset of women (Tiefer, 1991). That the traditional sex-response cycle has been relatively useful for understanding men's sexual function and dysfunction may have discouraged critical questioning of its relevance for women. However, four fundamental aspects of women's sexuality in health underlie the need for a different model. First, compared to men whose responses are influenced more by testosterone (Bancroft, 1989), women have a lower biological urge to be sexual for release of sexual tension. Second, women's motivation (or willingness) to have a sexual experience stems from a number of "rewards" or "gains" that are not strictly sexual, these rewards being additional to, and often of far more relevance than, the women's biological neediness or urge. These rewards are not irrelevant to men but may less often be the major motivational force. To some degree, men experience their desire as independent of context—often choosing to use the word "drive." Third, women's sexual arousal is a subjective mental excitement that may or may not be accompanied by awareness of vasocongestive changes in her genitalia and other physical nongenital manifestations of arousal. If there is genital awareness, it may or may not be an erotic stimulus to the woman. Fourth, orgasmic release of sexual tension

may or may not occur; when it does, it can happen in a variety of ways, even in the one woman.

The traditional model for the human sex response cycle can be represented as Desire → arousal → orgasm → resolution (Kaplan, 1979; Masters & Johnson, 1966). Women often relate to this model at the beginning of a new relationship. In the setting of a long-term relationship (some women experience a change within one year and others after a few years; the change often is coincident with increased distractions and fatigue associated with having children), the situation is often rather different (see Figure 1).

Sensing an opportunity to be sexual, the partner's neediness, or an awareness of one or more potential benefits or rewards that are very important to them (but not necessarily sexual), women move from a sexual neutrality to seeking stimuli necessary to ignite sexual desire. This sexual desire would be experienced as a craving for sexual sensations for their own sake, it also might involve a desire to experience physical and subjective arousal and perhaps release of sexual tension. Sexual desire then is a responsive rather than spontaneous event. The woman may at other times experience spontaneous desire in the form of sexual thoughts, sexual dreams, and fantasies, but at the time of the onset of a given partner experience, she is likely to be at "baseline." Many women who are sexually functional and satisfied do not have the conventional markers of spontaneous sexual desire. Of 50 premenopausal women in a community study by Cawood, only 2 reported sexual thoughts more often than once a week and 23 reported sexual thoughts less than once a month or never (Cawood & Bancroft, 1996). Thus, for many women, it would appear that sexual arousal and a responsive-type of desire occur simultaneously at some point after the women have chosen to experience sexual stimulation; this choice is based initially on needs other than a desire to experience physical sexual arousal and release. Further arousal

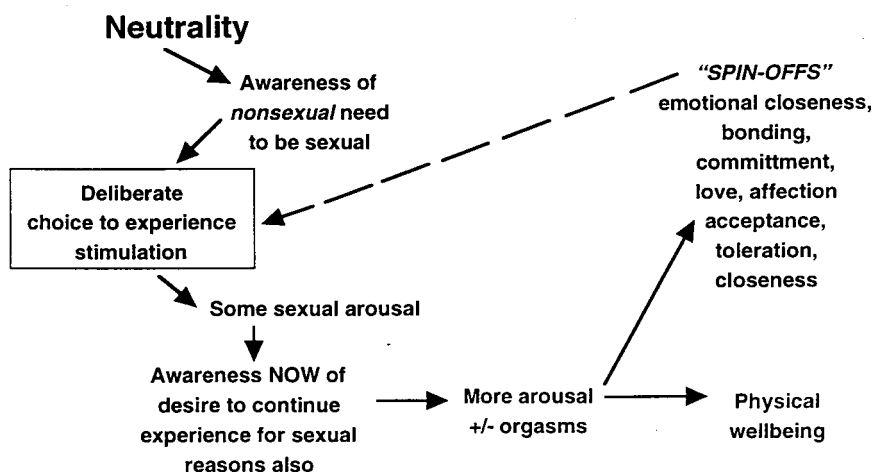


FIGURE 1. A women's sex response cycle.

follows, generating a focus upon which to build to potential orgasm. Physical well-being may follow without orgasmic release. The rewards of emotional closeness—the increased commitment, bonding, and tolerance of imperfections in the relationship—together with an appreciation of the subsequent well-being of the partner all serve as the motivational factors that will activate the cycle next time. Any of those potential rewards may be effective alone, or they may sometimes be accompanied by a physical sexual neediness or hunger (i.e., the traditional model may sometimes be accurate in situations of partner separation, typically after some days or weeks apart). This alternative model for women in longer-term relationships can be represented as Figure 2.

Although the woman is moved to be sexual by the expectation of increased intimacy rather than by a strong biological force, a pleasant physical experience—which is likely accompanied with time spent in nongenital and genital nonintercourse stimulation—is necessary to allow this motivation to continue in the long term. Thus dyspareunia or difficulties with arousal quickly can reduce motivation and ultimately become associated with a shutting down of awareness of sexual triggers in general and reduced sexual thoughts and fantasies.

REDEFINING FEMALE SEXUAL DYSFUNCTION (FSD)

A recent International Consensus Committee sponsored by the American Foundation of Urologic Disease has begun the process of redefining FSD (Rosen, in press). Although the traditional Masters, Johnson, and Kaplan model was used, subtle but important changes were made. Additionally, the dualistic approach of dysfunction being either organic or psychogenic was discarded. DSM-IV definitions, on the other hand, have a separate grouping of dysfunctions with “organic” etiologies, which are based on the false assumption that etiology can be determined accurately. For example, we may identify pathophysiological mechanisms that are involved in vulvarvestibulitis, which is often present in women whose histories are typical for vaginismus,

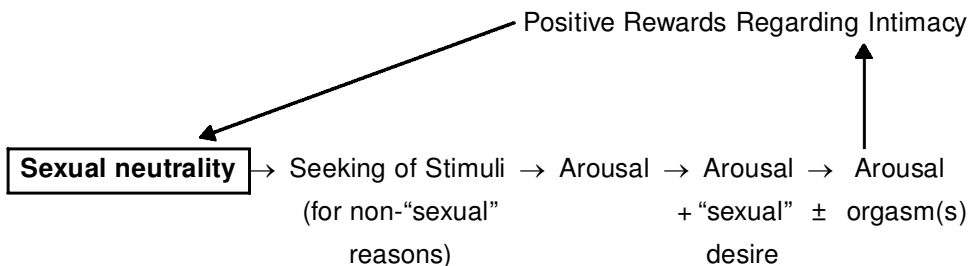


FIGURE 2. Brief version of alternative model of a woman's sex response cycle.

the allodynia identified once a careful introital exam is possible (Basson, 1996). The presence of chronic inflammation at the specific sites of tenderness (Chain, Meriwether, Gonik, Qureshi, & Sobel, 1996) can be documented as the proliferation of sensory nerves (Weström & Willen, 1998). But these findings may be secondary to abnormal underlying vaginal and perivaginal muscle tone (Glazer, Rodke, Swencionis, Hertz, & Young, 1995), the latter of which may possibly be subsequent to psychological stresses. Sex perhaps is the supreme example of a psychosomatic entity. Consequently, sometimes sexual dysfunction, despite having physical findings, may well stem from primarily psychological origin. An honest declaration that etiology may well be *unknown* is also stated.

Sexual Desire and Hypoactive Sexual Desire Disorder (HSDD)

The DSM-IV definition of HSDD is

persistently or recurrently deficient (or absent) sexual fantasies and desire for sexual activity. The judgment of deficiency or absence is made by the clinician, taking into account factors that affect sexual function, such as age and context of the person's life.

The disturbance causes distress or interpersonal difficulty.

The sexual dysfunction is not better accounted for by another Axis I disorder (American Psychiatric Association, 1994, p. 498)

The 1998 consensus definition of HSDD is: "The persistent or recurrent deficiency (or absence) of sexual fantasies, thoughts and/or desire for, or receptivity to, sexual activity, which causes personal distress" (Rosen, in press). The following might add further clarity (author's recommendation):

HSDD is the persistent or recurrent deficiency (or absence) of sexual fantasies, thoughts, desire for sexual activity (alone or with partner), *and* inability to respond to sexual cues that would be expected to trigger responsive sexual desire. These symptoms need to be causing personal distress.

This latter definition expands the concept of receptivity. Thus, the large group of women with *only* responsive desire are not pathologized.

For the management of complaints of low desire and for research into possible pharmacological approaches, it may be helpful to clarify subgroups of apparent HSDD:

1. Women with retained ability but low motivation to capitalize on responsive desire who continue to have sexual thoughts, dreams, fantasies.
2. Women with retained ability but low motivation to capitalize on responsive desire but with minimal sexual thoughts, dreams, fantasies.
3. Women unable to respond to sexual cues, which would be expected to

trigger responsive desire, but who retain ongoing sexual thoughts, dreams, fantasies.

We might choose to classify these last three groups as nonpathological; however, it should be noted that the woman and her partner are seeking help to change the situation. I have repeatedly found that once the woman and her partner accept that she does not have a mental disorder but is “normal,” she sees some purpose in exploring her lack of motivation in order to seek needed cues, triggers, scenes, atmospheres, attractive behaviors, and mutual respect. These may be particularly relevant for groups 1 and 2; alternatively, the couple may need to address why the rewards of increased commitment, emotional closeness, and so forth are not occurring, which would be an approach relevant to all three groups.

The approximately 20% of women in two non-clinical samples (Rosen, Taylor, Leiblum, & Bachman, 1993; Michael, Gagnon, Lauman, & Kolata, 1994) who, despite experiencing sexual thoughts, physical arousal, and orgasms, reported sexual dissatisfaction might be included in the first of the previous three subgroups. Alternatively, many workers in this area would favor a separate classification for this phenomenon (Rosen, in press).

Women who do not appreciate the validity of the motivational forces and who search in vain for spontaneous desire—which may resemble their experience of sexual desire in the first few months of a new relationship—are excluded from the definition of true HSDD and can be reassured that they are not abnormal.

Sexual Arousal and Female Sexual Arousal Disorder (FSAD)

Figure 3 repeats the idea of desire being a motivational force that causes the woman to seek external stimuli to trigger an urge that is more inherently sexual and is experienced coinciding with her sexual arousal.

Women mainly are speaking of mental excitement when they speak of

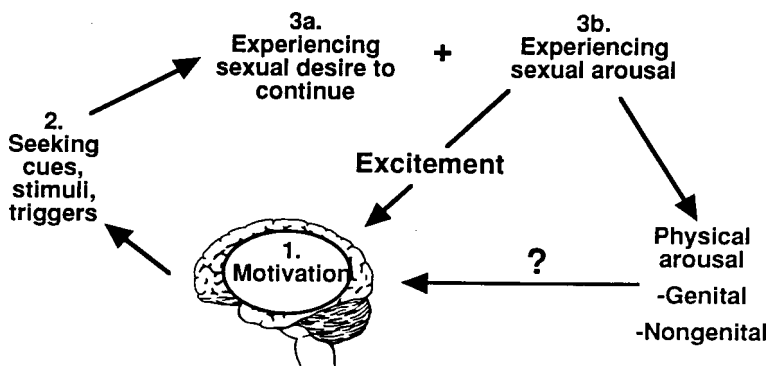


FIGURE 3. The motivational component of women's desire.

sexual arousal (Heiman, 1988; Morokoff & Heiman, 1980; Laan, Everaerd, van der Velde, & Geer, 1995). During sexual arousal, women may experience an increase in muscle tension, heart rate, body heat and a holding of breath, along with increased sensitivity of various areas including the breasts; however, women do not tend to focus on these physical symptoms as a measure of their arousal. Some women also may speak of genital engorgement, but when this is measured, it may or may not correlate with subjective arousal (Rosen, & Beck, 1988; Laan & Everaerd, 1995). Women with high levels of sexual guilt who were studied in a laboratory setting using a vaginal plethysmograph showed increased vaginal blood flow following an erotic stimulus but they reported less sexual arousal compared to women with low sexual guilt (Morokoff, 1985). Laan and Everaerd (1998) have shown that both in sexually functional and sexually dysfunctional women, vascular pulse amplitude in the vagina increases within a few seconds of the onset of an erotic video stimulus, whether or not there is any subjective arousal. They observe that “Women do not seem to attend to genital changes when assessing their subjective feeling state.” (Laan & Everaerd, 1998). Similarly, the changes in the internal genitalia with upward and backward movement of the anterior vaginal wall (tenting) and elevation of the cervix are other aspects of genital arousal of which women are largely unaware. So when we consider women’s sexual arousal, as depicted in Figures 3 and 4, it is questionable whether the state of their own genitalia is a perceived erotic stimulus.

Figure 4 shows arousing influences and interfering nonarousing influences including nonsexual distractions, interpersonal issues, self-monitoring or “spectatoring” and, for some women, the awareness of their partner’s physical sexual arousal. Rather than being an erotic stimulus (as it usually is for men), this can be negatively perceived if women feel somehow responsible for it and feel that they have some responsibility to attend to it.

An indirect measure of physiological genital arousal is the pleasure from stimulation of sexually responsive areas. Many of these areas are not only hidden from view but are remote from the stimulation of an entering or

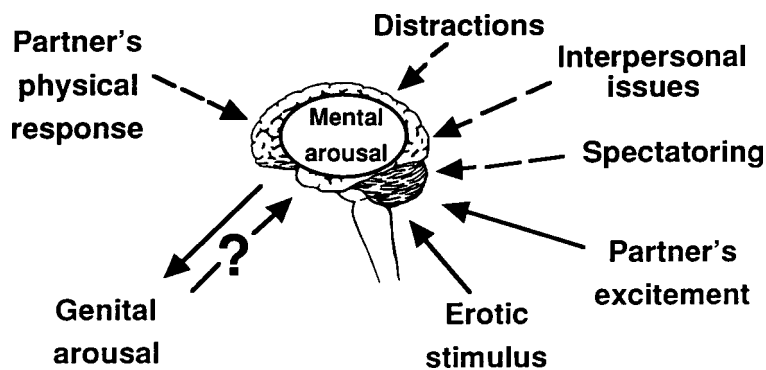


FIGURE 4. A model of women’s sexual arousal.

thrusting penis. Recent work by O'Connell (O'Connell, Hutson, Anderson, & Plenter, 1998) has found that erectile tissue in the bulb of the vestibule (equivalent of male corpus spongiosum) has broader anatomical boundaries than was traditionally thought. Usually described as being on each side of the introitus, deep to the superficial perineal muscles, it can extend more deeply to surround three sides of the urethra and be more closely related to the corpora cavernosa of the clitoral shaft. This may partially explain the sexual arousal that can result from finger stimulation of the anterior wall of the vagina. Unfortunately, neither the erectile tissue of the corpus spongiosum around the urethra nor the erectile tissue of the shaft or glans of the clitoris is usefully stimulated by most positions of intercourse. That it may be possible to stimulate the skin and underlying corpus spongiosal erectile tissue around the urethral meatus during intercourse is suggested by Levin (1998). He suggests that this is the woman's "urethral glans or true glans." Although she may not be aware that her erectile tissue is tumescent (as a man is aware of penile tumescence), her sense of arousal is increased if these structures are skillfully stimulated. Figure 5 shows components of a woman's arousal.

Vaginal lubrication traditionally has been considered the genital marker of arousal. However, many women are little aware of their lubrication. Some find "excessive" amounts of lubrication distressing and nonsexual. Many entirely responsive and functional women report the routine need of a little saliva or other lubrication to facilitate penile entry, even following high arousal with orgasms and continued mental arousal. Women with healthy sexual desire who become estrogen-deficient tend to complain of dryness with pain or discomfort from penile entry, however, these women do not typically complain of lack of sexual arousal. With more severe estrogen deficiency, a lack of ability to attain engorgement of erectile tissue may cause women to decline genital stimulation because the pleasurable sexual sensations do not occur and, with further stimulation, discomfort and irritation may be felt. Still such women tend to complain of the discomfort and perhaps lack of pleasure from genital touch—they do not typically speak of "being unaroused."

The 1998 consensus definition for FSAD is "The persistent or recurrent inability to attain or to maintain sufficient sexual excitement causing personal distress. It may be expressed as a lack of subjective excitement or a lack of genital lubrication/swelling (or other somatic responses)" (Rosen, in

$$\text{Arousal} = \text{Excitement} \left(\begin{array}{c} \text{Stimulus} \\ \text{appreciation} \end{array} - \begin{array}{c} \text{Distractions} \\ \text{etc.} \end{array} \right) + \begin{array}{c} \text{Pleasure} \\ \text{from} \\ \text{physical} \\ \text{stimulation} \end{array}$$

⌘ Appreciation of engorgement, tenting, etc.

FIGURE 5. The components of women's sexual arousal.

press). This, I would suggest, is far more appropriate for women with FSAD than the DSM-IV definition, which is: “Persistent or recurrent inability to attain or to maintain until completion of the sexual activity, an adequate lubrication—swelling response of sexual excitement. The disturbance causes marked distress or interpersonal difficulty. The sexual dysfunction is not better accounted for by another Axis I” (American Psychiatric Association, 1994)

The consensus definition allows the woman who may be lubricated but who lacks mental excitement to be diagnosed with FSAD. Again, the consensus definition accepts the interplay of psychological and biological factors.

Further subtyping of FSAD may have clinical and research relevance:

1. Stimulus is not mentally exciting—no genital changes are happening.
2. Stimulus is not appreciated as mentally exciting—genital changes occurring but not being registered.

A third group would represent women with estrogen deficiency (and possibly women with nonestrogen-linked vascular insufficiency) (Park, Goldstein, Andry, & Siroky, 1997):

3. Stimulus is mentally exciting—the woman is missing the expected genital changes (that are not occurring).

The fourth group is rather theoretical—these women may be unlikely to present with a problem:

4. Stimulus is mentally exciting—the woman is missing the expected genital changes (that are, in fact, happening).

Understanding what an individual woman means by *absent arousal* will identify subgroups in whom vasoactive drug therapy might be helpful. This marked contrast to the clarity of the meaning of the term for men necessitates caution when considering the possibility of using vasoactive drugs for FSAD. Men with erectile dysfunction say they are not aroused, although mentally, they are, to some degree, aroused. Addressing their genital engorgement and rigidity brings back their sense of being aroused.

The subgroup 3 of FSAD would appear to be the obvious target for vasoactive medication. However, it may be that learning might occur over a period of time if such drugs were given to groups 1 and 2, provided skillful stimulation of the erectile tissue is given.

Orgasm and Female Orgasmic Disorder (FOD)

Some women typify the Masters and Johnson (1966) “mountain” of orgasmic release, as shown in Figure 6, but often it is not representative of their

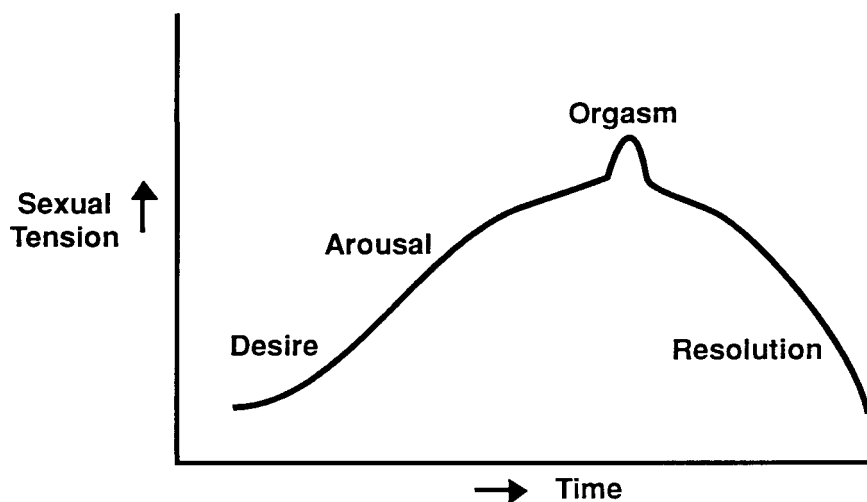


FIGURE 6. Masters/Johnson/Kaplan model of sex response.

arousal and release under different circumstances and occasions. These authors also identified women with “extended sexual orgasms” that last many seconds and women who experienced repeated orgasms only seconds apart. The clinical experience is that women often will depict a variety of curves and releases, changing from one occasion to another as depicted in Figure 7.

For some women, the response with sexual self-stimulation is consistently different from that afforded by partner-stimulation directly to her vulva and different again from the response during intercourse. If women are allowed to draw or describe their own responses or show alternatives, they quickly clarify their own experiences. Women can be reassured that their responses are “normal,” even if they differ from those in the partner.

The curve labeled (5) in Figure 7 is experienced by many women after years of sexual experience, when they learn to allow the orgasmic intensity of their sexual tension to be maintained for many seconds and then further enhance this state to an even higher level by further tensing pelvic muscles, holding their breath, and focusing their mind; the whole experience generally lasting well over a minute. This is not simply the reported lack of a refractory period for women; it is all occurring during one experience without a return to baseline level of sexual tension.

The 1998 consensus definition is: “Orgasmic disorder is the persistent or recurrent difficulty, delay in, or absence of attaining orgasm following sufficient sexual stimulation and arousal and causes personal distress (Rosen, in press). The DSM-IV definition is:

Persistent or recurrent delay in, or absence of, orgasm following a normal sexual excitement phase. Women exhibit wide variability in the type of intensity of stimulation that triggers orgasm. The diagnosis of FOD should be based on the clinician’s judgment that the woman’s orgasmic capacity

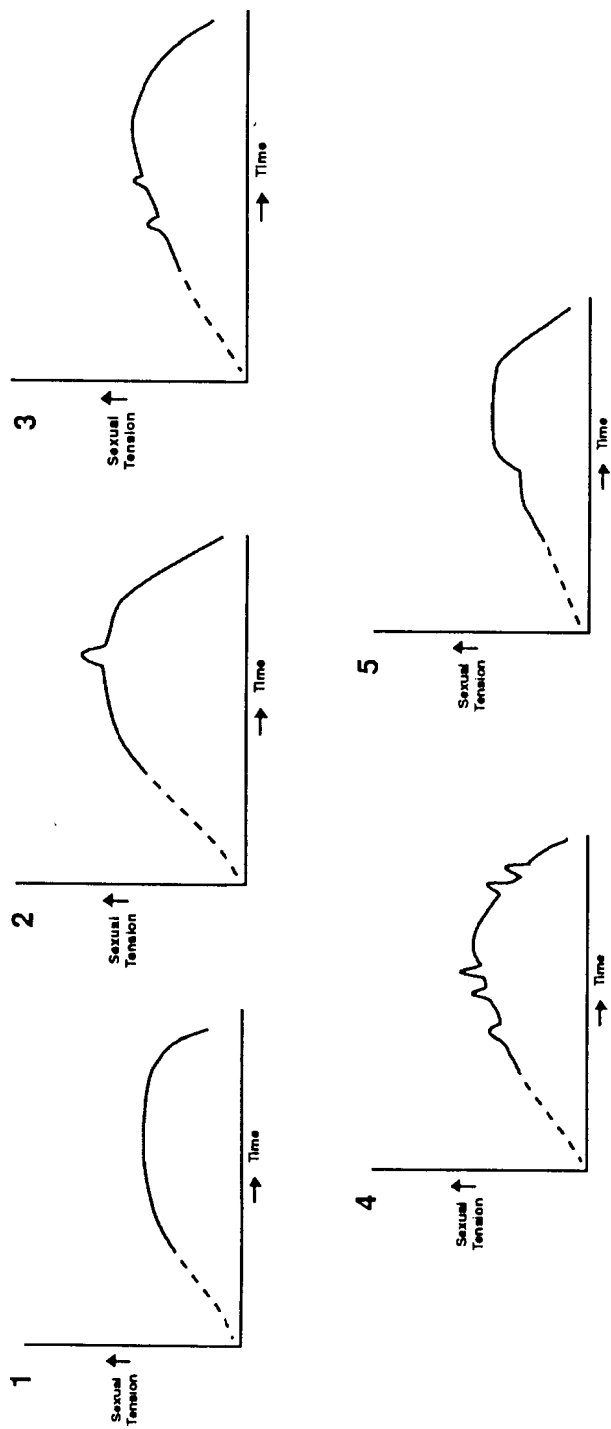


FIGURE 7. Common curves depicting women's sexual arousal ± orgasmic release.

is less than would be reasonable for her age, sexual experience, and the adequacy of sexual stimulation she receives (American Psychological Association, 1994).

The disturbance causes marked distress or interpersonal difficulty and the orgasmic dysfunction is not better accounted for by another Axis I.

With the consensus definition there is now a recognition that if the woman does not have a definite release during her experience of arousal, and if this lack of release is not distressing to *her*, she does not have a dysfunction. “Interpersonal difficulty,” possibly resulting from the partner’s attitude toward the situation, does not alone pathologize the woman.

If there is a range of “normal curves and releases” for women in health, then, the question becomes what of dysfunction? Possibly, there are subtypes of FOD—some women say that the continued stimulation of the vulva, especially the clitoris, leads to numbness; other women describe oversensitivity; still others suggest that, despite continued stimulation, the sexual tension rather abruptly falls away.

Women on selective serotonin reuptake inhibitors (SSRIs) frequently develop FOD (Kavoussi, 1996). In the author’s experience, many of these women relate to Figure 8, as do many usually orgasmic women whose associated-alcohol intake is of a certain level. Clinically, many women referred with FOD actually have FSAD which is sometimes accompanied by HSDD. Certainly, however, some have a response very much like Figure 7 but without the associated SSRI or alcohol intake. Typically, the condition is lifelong and occurs in women who experience a difficulty relinquishing control in other aspects of their lives. Many functioning women liken the orgasm experience to the release of urine and recall feeling anxiety during their first orgasmic experiences that urination perhaps would also occur.

Another type of orgasmic difficulty is characteristic of the woman with androgen deficiency syndrome (Kaplan & Owett, 1993). She reports that

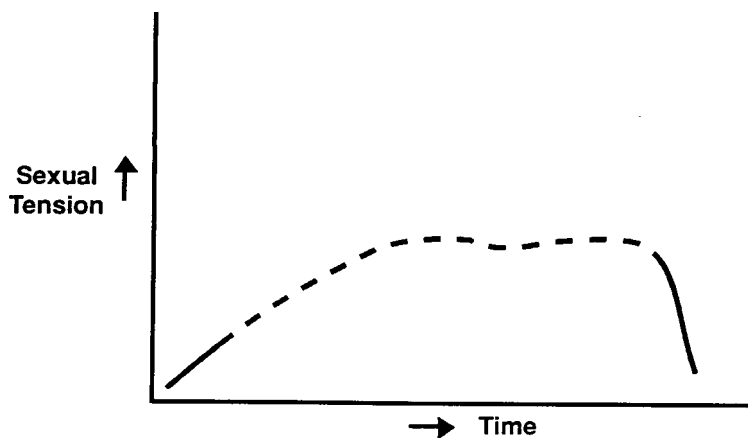


FIGURE 8. Female orgasmic disorder (SSRI-type).

with firm focusing of the mind on the sexual stimulus, arousal can occur, although not to its previous intensity; some genital tension is felt, and sometimes there is a rather unexpected peak and release. Repeatedly, women describe this to the author as “a little blip on the screen” (Basson, 1999). It remains to be seen whether the different descriptions of orgasmic difficulties represent different physiological subtypes. In the meantime, it appears wise to document the description, especially if pharmacological intervention is to be studied.

THE OVERLAP OF COMPONENTS OF WOMEN'S SEX RESPONSE

Any attempt to stage the female sex response, although useful, is artificial (Tiefer, 1991; Leiblum, 1998). This was illustrated in Figure 1, which shows the onset of responsive desire simultaneous with a degree of sexual arousal. Illustrating dysfunction, we have the example of the androgen deficiency syndrome (Kaplan, 1993; Basson, 1999). Abrupt loss of ovarian androgen may lead to loss of sexual thoughts, dreams, and fantasies, a loss of the need to self-stimulate and also may lead to the inability to respond to cues and triggers that previously would have elicited sexual desire. In addition to reduced spontaneous and responsive desire, there also is an associated lack of response of genital and nongenital areas formerly used for sexual stimulation along with the delay in and reduction of the intensity of orgasm. Thus, there exists HSDD (true HSDD—author's definition), FOD, and FSAD Type 1 or Type 3.

CONCLUSION

Based as much on the various positive nonsexual outcomes of partner interaction as on the biological urge to experience sexual arousal and release, women's sexual response merits a different model than men's. In the absence of ongoing sexual thoughts, fantasies, and the need to self-stimulate, a lack of motivation to find the necessary sexual cues and triggers to elicit responsive desire can masquerade as a true lack of female sexual desire. This different model of women's sexual response argues that it is both the absence of the markers of spontaneous desire *and* the inability to experience any responsive desire (which usually coincides with some early arousal) to sexual cues and triggers of any sort that constitutes true HSDD. Sexual arousal in women often is more a mental excitement, very much about the appreciation of the sexual stimulus and less about the awareness of genital changes. Thus, complaints of low arousal are not all the same; for this reason, we need to define subtypes of FSAD. Orgasmic release is extremely variable and is not essential for sexual satisfaction for women. Difficulties experienced during arousal that preclude orgasm are described variably and

may represent different subtypes of FOD. Proposed new definitions of female sexual dysfunction with subtyping may help facilitate clinical assessment, conventional therapies, and, in the future, expansion of pharmacological therapy.

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