

Habituation of Sexual Responses in Men and Women: A Test of the Preparation Hypothesis of Women's Genital Responses

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ABSTRACT

Introduction. Laboratory studies have revealed two well-replicated sex differences in sexual arousal patterns: category specificity and sexual concordance. Men's genital responses are dependent on specific sexual cues and are concordant with subjective reports of arousal. Women's genital responses are much less dependent on specific sexual cues and are much less concordant with their subjective reports. The preparation hypothesis provides a functional explanation for these sex differences and posits that women's genital responses are not tied to sexual preferences but rather occur automatically in the presence of any sexual cue to protect the genital tissues from injuries incurred through sexual activity. This hypothesis leads to the expectation that women's genital responses may not habituate as quickly or as completely as men's.

Aim. To determine whether there is a sex difference in the habituation of genital responses and to further test the preparation hypothesis of women's genital responses.

Methods. Twenty men and 20 women had their genital responses measured while they were exposed to nine consecutive presentations of the same erotic film clip (habituation), followed by two presentations of different erotic film clips (novelty), and followed by two presentations of the original erotic film clip (dishabituation).

Main Outcome Measures. Genital responses were measured continuously using penile strain gauges (assessing penile circumference) and vaginal probes (assessing vaginal pulse amplitude). Participants reported subjective sexual arousal, perceived genital arousal, and attention after each film clip presentation.

Results. Men and women displayed very similar patterns of genital responses, consistent with habituation and novelty effects. Effects of habituation and novelty were eliminated once subjective reports of attention were covaried.

Conclusion. Contrary to the prediction from the preparation hypothesis of women's genital responses, men's and women's responses showed similar patterns of habituation upon repeated exposure. Future research should attempt to maintain participants' attention in order to further test the preparation hypothesis. **Dawson SJ, Suschinsky KD, and Lalumière ML. Habituation of sexual responses in men and women: A test of the preparation hypothesis of women's genital responses. J Sex Med 2013;10:990–1000.**

Key Words. Habituation; Sexual Arousal; Sex Differences; Photoplethysmography; Penile Plethysmography; Genital Preparedness

Laboratory studies of human sexual responses have uncovered two well-replicated sex differences. The first involves the specific features of a sexual stimulus that elicit a genital response. Men exhibit a higher degree of discrimination between different sexual stimuli, thus exhibiting a category-specific pattern of genital response—men respond more strongly to stimuli depicting their preferred

sexual target or activity. Women, however, show little to no discrimination between different sexual stimuli, exhibiting a category-nonspecific pattern of genital response—women show relatively similar genital responses to many sexual stimulus categories, including nonpreferred sexual targets and activities [1–5]. The second difference involves the degree to which physiological

(genital) responses correspond with subjective experiences or reports of sexual arousal. Men exhibit higher concordance or strong positive correlations between their genital responses and subjective reports of sexual arousal ($r = 0.66$, based on 81 samples, 1,732 men [6]). Women exhibit significantly lower concordance than men or much smaller positive correlations between their genital responses and subjective reports of sexual arousal ($r = 0.26$, based on 108 samples, 2,345 women [6]). One functional explanation for these sex differences in arousal patterns is the preparation hypothesis of women's genital responses [7].

The Preparation Hypothesis

The preparation hypothesis posits that vaginal lubrication produced from increased vaginal blood flow serves a protective function, preparing the vulva and vaginal lumen for sexual encounters and protecting against possible genital injuries [6–11]. Consistent with the hypothesis, women's genital responses seem to occur automatically and quickly in the presence of any sexual stimulus [1–5,7,10–15]. For example, Suschinsky [15] reported that women's genital responses occur shortly after the onset of a sexual stimulus (3.9 seconds) and before subjective feelings of sexual arousal are reported (if at all). Also consistent with the preparation hypothesis, women produce genital responses to sexual stimuli that they find unappealing, such as stimuli involving nonconsensual and violent sexual activities [7,12,16,17]. One study of subliminal priming also suggests automatic genital responding in women: subliminal exposure to sexual stimuli increased genital responses to a target sexual stimulus significantly more so than subliminal exposure to nonsexual stimuli [18]. Of course, automatic and category-nonspecific genital responses would lead to low concordance in women because women would not report sexual arousal to nonpreferred sexual stimuli [15].

Studies of habituation of genital responses may provide another way to investigate the preparation hypothesis. If women's genital responses serve to prepare for sexual activity and avoid injuries, then it follows that women's genital responses might be more resistant to repeated exposure than men's genital responses. This is because the costs of nonresponding to sexual cues, including nonpreferred cues, would be expected to be much higher for women (e.g., tears and ecchymosis leading to infertility) [7,19] than for men (e.g., the loss of a single reproductive opportunity).

Habituation of Genital Responses

Thompson and Spencer [20] defined habituation as a systematic decline in the magnitude of a response as a result of repeated stimulation, provided that the decrease is not attributable to fatigue. In order to eliminate fatigue as an explanation for the decrement in responding, the habituated response must be stimulus specific; that is, the habituated response must recover quickly upon the introduction of novel stimuli [21]. Short-term habituation dissipates quickly (within seconds or minutes), while long-term habituation lasts considerably longer (hours or days). Spontaneous recovery is an identifying feature of short-term habituation and refers to the restoration of responding to a stimulus after a time lapse between exposures. Dishabituation consists of a recovered response (compared with the response prior to novel stimulation) to the original habituation stimulus after novel stimulation rather than simply the passage of time [21].

Sex researchers have not always used proper study designs or appropriate stimuli in studies of habituation of sexual arousal, significantly hindering the interpretability of the results they have obtained. In the following brief review of relevant research, we only describe studies that used research designs that provided a clear test of habituation of genital responses, that is, through repeated exposure to the same sexual stimulus. In these studies, men's genital responses were measured with penile plethysmography (PPG) and women's genital responses with vaginal photoplethysmography (VPP).

Habituation Studies Conducted with Men

Two studies have used sexual fantasy as the erotic stimulus when attempting to elicit habituation. In a study with male sexual offenders, Palk and O'Gorman [22] used personally tailored (i.e., scripted to match the offenders' preferences and fantasies) audio stories as the habituation stimulus and failed to find a pattern of responding consistent with habituation. Smith and Over [23] used self-generated as well as scripted sexual fantasies to induce habituation in nonoffending men, finding that penile responding remained constant across trials in both conditions. One problem with using fantasy as stimuli when trying to produce habituation is that participants can potentially alter and manipulate the fantasy so that it retains erotic saliency and novelty.

Other researchers have investigated the habituation of male sexual arousal using more

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