Development and Validation of The Sexual Excitation/Sexual Inhibition Inventory for Women

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RUNNING HEAD: Assessing Sexual Inhibition and Sexual Excitation

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ABSTRACT

This article reports on the development of a new questionnaire designed to assess the propensity for sexual excitation and sexual inhibition in women: The Sexual Excitation/Sexual Inhibition Inventory for Women (SESII-W). The theoretical model underlying this research, the Dual Control Model, postulates that sexual response depends on a balance between excitatory and inhibitory mechanisms and that individuals vary in their propensity for excitation and inhibition. This study describes the development and initial validation of the SESII-W in a sample of 655 women (M age, 33.9 yrs). Factor analysis identified eight factors and two higher-order factors, one related to sexual excitation and one to sexual inhibition. The measure demonstrated good test-retest reliability and discriminant and convergent validity. Our data underscore that a number of factors affect women's sexual arousal and these appear to be related to opposing processes of sexual excitation and sexual inhibition. Theoretical issues, possible gender differences, and the value of using qualitative data to inform questionnaire development are discussed.

KEY WORDS: sexual arousal; women; inhibition; test validation.

INTRODUCTION

The concept of a balance between excitation and inhibition, while fundamental in neurophysiology, has only recently been applied to human sexual response (Bancroft, 1999). The dual control model of sexual response proposes that there are separate, relatively independent excitatory and inhibitory systems and that the occurrence of sexual arousal depends on the relative activation of sexual excitation (SE) and sexual inhibition (SI) (Bancroft & Janssen, 2000). A basic tenet of the model is that individuals vary in their propensity for both SE and SI. The capacity for inhibition of sexual response is seen as primarily adaptive, but it is suggested that high levels of inhibition may be associated with vulnerability to sexual dysfunction and low levels with an increased likelihood of engaging in high-risk sexual behavior. The model has been described more fully elsewhere (Bancroft, 1999; Bancroft & Janssen, 2000).

To date, most of the research on the dual control model of sexual response relates to men. A questionnaire, the Sexual Inhibition/Sexual Excitation Scales (SIS/SES) designed to assess the propensity for SE and SI demonstrated good psychometric properties (Janssen, Vorst, Finn, & Bancroft, 2002a; 2002b). Factor analysis identified three higher-level factors: one related to sexual excitation (SES), and two inhibition factors: inhibition due to the threat of performance failure (SIS1) and inhibition due to the threat of performance consequences (SES2). More recent research has explored the relationship between propensity for SE and SI and high-risk sexual behavior (Bancroft, Carnes, & Janssen, 2005; Bancroft et al., 2004; Bancroft, Janssen, Strong, Carnes, & Long, 2003), sexual dysfunction (Bancroft, Carnes, Janssen, & Long, 2005; Bancroft et al., 2005), and paradoxical increases of sexual interest in negative mood states (Bancroft, Janssen, Strong, Carnes, Vukadinovic, et al., 2003).

The SIS/SES was adapted for women and used in a study of over 1,000 female college students (Carpenter, Janssen, Graham, Vorst, & Wicherts, 2005). Women had lower

SES and higher SIS1 and SIS2 scores in comparison with men, with a fairly normal distribution on all three scales (Lykins, Janssen, & Graham, in press). The factor structure identified in the previous male samples provided an acceptable fit to the data and test-retest reliability and convergent and discriminant validity were acceptable, and similar to that obtained for males (Janssen et al., 2002a).

Despite the acceptable psychometric properties of the female version of the SIS/SES, we questioned whether it was equally suited for use with women. There are a number of reasons for expecting that inhibition and excitation in women may be fundamentally different than in men. Firstly, it has been suggested that inhibitory mechanisms may be better developed in women (Bjorklund & Kipp, 1996) and that, consequently, women may be less variable in their tendency for inhibition than men (Bancroft, 1999). Secondly, there may be a different temporal relationship between inhibition and sexual activity in women, with inhibition occurring earlier in women (Tolman, 2002). Thirdly, what is likely to be threatening may be different for women than for men. For example, concerns about reputation (Tiefer, 2001a), anxiety about body image (Taylor, Rosen, & Leiblum, 1994), and fears about unwanted pregnancy (Sprecher & Regan, 1996) are likely to be more salient for women than for men. Sexual inhibition related to relationship problems and partner factors are clearly important influences on sexual arousal (Ellison, 2000; The Working Group for a New View of Women's Sexual Problems, 2001); the SIS/SES questionnaire, however, does not include any items that cover relationship difficulties.

Previous researchers have encountered problems when they have modified existing measures designed for men to assess sexual functioning in women. Initial evaluation of the Brief Index of Sexual Functioning for Women (BISF-W), modeled after the Brief Sexual Function Questionnaire (BSFQ) for men, revealed lower internal consistency and test-retest reliability of the BISF-W (Taylor, Rosen, & Leiblum, 1994). It was suggested that "female

sexuality may be affected by a broader range of psychological and interpersonal variables than is male sexuality" (Taylor et al., 1994, p. 637). Moreover, the sexual desire factor on the BISF–W comprised markedly different items than the male measure, suggesting that measures of sexual desire may need to include different items for men and women (Heiman, 2001).

In view of the above, we believed that studying SE and SI in women required a reexamination of these concepts and a careful consideration of what factors affecting sexual arousal are important to women. Accordingly, we used focus groups involving women of varying ages, racial/ethnic background, and sexual orientation to explore the concepts of SE and SI and the factors that influence sexual arousal (Graham, Sanders, Milhausen, & McBride, 2004). A broad range of factors that women cited as "enhancers" or "inhibitors" of arousal were classified into eight broad categories, each involving a number of sub-categories: (1) self (e.g., mood, body image, general health, concern regarding reputation); (2) partner (e.g., physical appearance, personality); (3) relationship dynamics/interaction (e.g., relationship quality); (4) elements of the sexual interaction (e.g., timing, communication); (5) setting (e.g., romantic, novel); (6) sexual or erotic stimuli (e.g., fantasy, visual images); (7) hormones, fertility, contraception, and STDs; and (8) alcohol or drug use. Many of these reflected factors that may be of particular relevance to women (e.g., comfort with one's body; feeling "used" by one's partner) and ones that are not well represented by the SIS/SES items.

The qualitative data obtained from our focus groups were used to inform item development. For each sub-category, relevant quotes were reviewed to identify content that could be incorporated into questionnaire items. Our goal was to write items to reflect all of the sub-categories in our qualitative coding scheme. Special attention was given to the wording of items and to the inclusion of language and phrases used by our participants. Many

of the items were taken almost verbatim from focus group quotes; however, we wanted women to be able to respond to questions even if they had not experienced a given situation themselves or would be unlikely to do so in future (e.g., hormonal changes associated with pregnancy). Although only a few of our focus group participants mentioned concerns about sexual functioning (e.g., worrying about whether they would have an orgasm), because we felt these were important areas to assess, a small number of items were written to reflect these possible concerns. Although most of the items described a potential situation in which sexual arousal might be affected, we also included some general arousal items (e.g., "I am easily sexually aroused") and seven items taken from the male SIS/SES questionnaire.

This article reports on the development and the initial validation of our new questionnaire, The Sexual Excitation/Sexual Inhibition Inventory for Women (SESII–W), designed to assess the propensity for women to respond with SE or SI to a variety of situations.

METHOD

Participants

Eligibility criteria included being 18 years or older and able to read English. Women were recruited using two methods. A random sample of student (N = 300) and staff/faculty (N = 300) addresses were selected from university telephone directories ("university sample") and mailed a cover letter and questionnaire packet. Reminder telephone calls to the entire sample were made two weeks after the initial mailing of questionnaires. Of the 600 questionnaires distributed, 226 were completed and returned (38% response rate). In a second "volunteer sample," electronic recruiting (e-mails and listserv postings) and paper flyers were utilized. As we wanted to maximize the diversity of the volunteer sample, particularly in terms of ethnicity and sexual orientation, targeted recruiting was used. Targets for recruitment comprised a wide range of organizations/venues. Emails and listserv postings

were sent to lesbian groups, the University Alumni Association, Asian American and African-American Cultural Centers. Flyers were posted in local businesses and community centers (e.g., YMCA, local library, churches/synagogues), local health fairs, antenatal classes, and campus housing newsletters. Respondents (n = 429) were from 28 U.S. states and Canada. Recruitment flyers and cover letters/e-mails described the study purpose as "to collect information on women's experience of sexual arousal" and "assess factors and types of situations that promote or interfere with women's sexual interest or arousal." Women were told that they could receive a $10 payment and that the 60 minute survey was to be completed anonymously and returned by prepaid mail. Data from the two samples were combined for all analyses.

A separate sample of 29 women was recruited by an advertisement in a student newspaper and by word-of-mouth off-campus asking women to complete the SESII-W on two occasions (see below).

Measures

Sexual Excitation/Sexual Inhibition Inventory for Women (SESII-W)

The 115 items referred to stimulus situations that could affect sexual inhibition and sexual excitation or to general statements about arousability and inhibition. The instructions to the questionnaire included the following: "Sometimes you may read a statement that you feel is not applicable to you or a situation that may have occurred in the past but is not likely to occur now. In such cases, please indicate how you think you would respond if you were in that situation." Items were rated on 4-point Likert-rating scale, from "strongly disagree" to "strongly agree."

A small group of women staff and graduate students were asked to review the initial pool of questions and, on the basis of their feedback, we rewrote several items and eliminated

others. We then administered the resultant 115-item questionnaire, along with a battery of other measures to assess convergent and discriminatory validity, to a sample of 655 women.

The Behavioral Inhibition/Behavioral Activation Scales (BIS/BAS; Carver & White, 1994)

This questionnaire measures two principal factors reflecting general behavioral inhibition and activation propensities: BIS (Behavioral Inhibition Scale) and BAS (Behavioral Activation Scale). Whereas the BIS is unidimensional, the BAS is comprised of three subscales: *reward responsiveness*, assessing positive response to the occurrence or anticipation of reward; *drive*, measuring persistence in the pursuit of desired goals; and *fun seeking*, focusing on desire for new rewards and a willingness to approach potentially rewarding events on the spur of the moment. The BIS/BAS is comprised of 20 items which participants respond to on a 4-point Likert-type scale (strongly disagree to strongly agree). There is evidence for reliability and convergent and discriminant validity for this measure. The BIS/BAS was included in order to determine if the SESII-W measured distinctly sexual rather than general inhibition/activation propensities. We expected only modest correlations between the SESII-W and the BIS/BAS.

The Sexual Opinion Survey (SOS; Fisher, 1998)

We used the 21-item version of the Sexual Opinion Survey (SOS; Fisher, 1998) measuring erotophobia-erotophilia, the learned disposition to respond to sexual stimuli with negative-to-positive affect and evaluations. The level of agreement with statements was measured on a scale from 1 (strongly disagree) to 4 (strongly agree), a modification of the original SOS seven-point response categories. On this modified measure, a high score indicates more erotophilia. The SOS has shown good test-retest reliability as well as construct and discriminant validity. Research has shown that erotophilic individuals are more likely to have engaged in certain sexual health practices, such as obtaining and using contraception, more frequent breast self-examination, and more frequent gynecological

examinations (Fisher, 1986). People scoring in the more erotophobic direction have more negative attitudes toward sex education, report being more uncomfortable discussing sexual matters, have more sex guilt, and are less likely to seek out sexual situations (Fisher, 1986, 1998; Fisher, Byrne, White, & Kelley, 1988).

We expected that there would be some overlap between our measure and the SOS. Some of the questions on the SOS explicitly ask about sexual arousal (e.g., "The thought of engaging in unusual sex practices is highly arousing"). Other items assess more evaluative affect such as disgust, entertainment, and enjoyment (e.g. "Engaging in group sex is an entertaining idea"). However, none of the SOS items measure propensity for sexual inhibition. Thus, we anticipated moderate correlations between sexual excitation and SOS scores and lower correlations between sexual inhibition and SOS scores.

Sexual Sensation Seeking Scale (SSS; Kalichman & Rompa, 1995)

The SSS is a measure of the propensity to pursue novel or risky sexual stimulation. The measure is comprised of 11 items with responses ranging from 1 (not at all like me) to 4 (very much like me). High scores on this measure have been shown to relate to sexual risk taking in a number of studies and to sexual excitation proneness as measured by the SIS/SES. The SSS has been found to show good reliability and construct validity (Gaither & Sellbom, 2003). Previous research using the SIS/SES in men (Gaither & Sellbom, 2003) had reported positive correlations between SSS scores and sexual excitation proneness, significant negative correlations with SIS2 (threat of performance consequences), and weak, positive correlations with SIS1 (threat of performance failure). We expected moderate positive correlations between SSS and sexual excitation and a negative relationship between sexual inhibition and SOS scores.

Social Desirability Scale (SDSR; Hays, Hayashi & Stewart, 1989)

In order to determine the degree to which answers on the SESII-W were influenced by social desirability, the five-item version of the SDSR was included. The SDSR is a widely used measure of social desirability with established reliability and validity.

Demographic and Sexual History Questionnaire

The questionnaire began with a number of items assessing demographic and sexual history items: age, primary language, employment, education, religion and religiosity, race, ethnicity, income, marital and relationship status, whether children are living in the home, and sexual orientation. Sexual history variables included satisfaction with current sexual relationship, number of sexual partners, condom use, masturbation frequency, sexual interest, and questions on sexual functioning, menstrual cycle and general health.

The test-retest sample was given an abbreviated version of the Demographic and Sexual History Questionnaire and the entire SESII-W.

Procedure

The Institutional Review Board for the Protection of Human Subjects approved all procedures. Participants were given a questionnaire packet including a study information sheet and an optically-scanable questionnaire. Those in the university sample also received a cover letter describing the random recruitment process used and eligibility criteria. They were told that the data would be used to develop a questionnaire related to women's sexual arousal and that they would be answering questions about their general background and their sexual history, attitudes, and responses. Returning a completed questionnaire constituted consent. Included in the questionnaire packet was a certificate for $10 for completion of the questionnaire. Participants were informed that in order to receive payment, they had to return the certificate and an envelope on which they wrote their name and address. These were mailed in a separate envelope from the completed questionnaire. No records were kept of this

identifying information. This procedure protected anonymity while making payment available.

Data Analysis

Maximum likelihood factor analysis with varimax rotation was used to reduce data from the SESII-W. Maximum likelihood (ML) factor analysis is appropriate for analyses that are theoretically grounded (Tabachnick & Fidell, 2001). Because our analysis was based on the dual control model, this ML factor analysis was selected. In maximum likelihood factor analysis, only shared variance is available for analysis (error and unique variance is excluded unlike in principal components analysis) and the total variance explained is less than in PCA solutions (Tabachnick & Fidell, 2001).

Items were eliminated on the basis of low inter-item correlations (all < .30), skewness (< 10% of responses in either the "agree" or "disagree" direction), low communalities (< .30), and low factor loadings (< .30). Items loading equally on more than one factor or single items that constituted a factor were also eliminated from the analysis. Each of the 36 remaining items was assigned to only one factor. Items that loaded negatively on a factor were reverse coded for calculation of factor scores. Factor scores were calculated as the mean of their constituent items. Higher-order factors were calculated as a grand mean of the lower-order factors.

Validity was assessed by examining correlations between factor scores and the scores from the other questionnaires. Nonparametric correlations (Spearman rank correlation coefficients) were calculated when distributions were skewed. Correlations between the SDSR and the factor scores were calculated to assess effects of social desirability on responses to the SESII-W. Relationships between demographic variables and SESII-W factor scores were examined using one-way ANOVAs and where appropriate, LSD post-hoc tests.

Internal consistency was assessed using Cronbach's alpha. Test-retest reliability was evaluated using Pearson's correlation coefficients.

RESULTS

Participant Characteristics

Table I shows the demographic characteristics of the sample. As might be expected, the sample was highly educated. Completion of the survey required that participants be literate and comfortable completing a lengthy questionnaire related to sexuality. Ninety-one percent of the participants were white. We purposefully over-sampled lesbian and bisexual women. Eight percent of our sample identified as lesbian, 7.8% as bisexual, 1.5% as uncertain, and 82.7% as heterosexual.

Insert Table I about here

Factor Structure

Exploration of the 115-item questionnaire using Maximum Likelihood factor extraction yielded eight factors comprising a total of 36 items (see Table II for the list of items and their factor loadings). The eight-factor solution converged in 8 iterations and accounted for 41% of the variance. Table III presents the means, SDs, variance explained, and Cronbach's alphas for the 8 lower-order factors. The mean Cronbach's alpha for these factors was .72.

Insert Table II about here

Insert Table III about here

The Arousability factor consisted of nine items, all related to stimuli that can increase sexual arousal, such as visual stimuli (e.g., seeing someone dressed in a sexy way), attraction, fantasy, and cognitions (e.g., feeling desired), and physical states (e.g., hormone changes). Higher scores indicate a tendency to become easily sexually aroused in a variety of situations.

The Relationship Importance factor consisted of six items, reflecting a woman's need for sex to occur within a specific relationship context to facilitate sexual arousal. Examples of this were needing to trust a partner or feeling emotionally safe and secure within a relationship in order to feel aroused. Higher scores reflect greater interference with arousal if these conditions are not met.

The Sexual Power Dynamics factor consisted of four items, three of which were connected to the possible impact of force or domination in a sexual situation (e.g., feeling overpowered by a trusted partner in a sexual situation). The fourth item was about the partner "talking dirty" during sex. Rating these situations as arousing leads to higher scores on this factor.

The Concerns about Sexual Function factor consisted of items that all focused on worries about sexual functioning (e.g., taking too long to become aroused) or performance (e.g., concern about being a good lover). Higher scores reflect a greater impact of these concerns on sexual arousal.

Arousal Contingency consisted of three items reflecting the potential for arousal to be inhibited or easily disrupted by situational factors. Examples of items were: "Unless things are 'just right,' it is difficult for me to become sexually aroused" and "When I am sexually aroused, the slightest thing can turn me off." Higher scores indicated the tendency for arousal to be easily inhibited.

The Partner Characteristics factor consisted of four items, three of which refer to a partner's personality or behaviors (e.g., seeing a partner interacting well with others). The fourth item was about eye contact with an attractive person. Higher scores on this factor indicate that these situations are sexually arousing.

The Setting (Unusual or Unconcealed) factor consisted of three items related to the tendency for arousal to be increased by the possibility of being seen or heard while having sex (e.g., difficulty getting aroused if other people are nearby). The fourth item concerned having sex in a different setting than usual. Higher scores reflect higher arousal in unusual or unconcealed settings.

The Smell factor consisted of two items related to the ability of olfactory cues to enhance sexual arousal (e.g., particular scents being arousing).

Table IV shows the correlations among the eight factors. Factors correlated at low to moderate levels in expected directions.

Insert Table IV about here

A further exploratory analysis was carried out on the 8 factor scores. This resulted in two higher-order factors–Sexual Excitation (SE) and Sexual Inhibition (SI)–accounting for 37% of the variance. Table V contains the loadings of the eight individual factors on the two higher-order factors.

SE consisted of five subscales: Arousability, Partner Characteristics, Sexual Power Dynamics, Smell, and Setting (Unusual/Unconcealed). The Cronbach's alpha was .70 and the variance accounted for was 22.6%. SI included three subscales: Concerns about Sexual Function, Arousal Contingency, and Relationship Importance. The Cronbach's alpha was .55

and the variance accounted for was 14.9%. Table III presents the means and SDs for the higher order factors.

Insert Table V about here

Fig. 1 presents the distributions for the means and SDs for the two higher-order factors and displays the normal curve. The maximum possible score was 4 (strongly agree), with a minimum of 1 (strongly disagree). The Pearson correlation between SE and SI was -.28 ($p < 0.01$, $N = 655$), indicating relative independence between these two factors.

Insert Fig. 1 about here

Relationship of Factor Scores to Demographic Variables

There was a significant negative correlation between age and the higher-order factor of SE ($r = -.285$, $p < .0001$) but no relationship between age and SI.

Marital status was significantly related to both SE ($F(5, 614) = 15.7$, $p < .0001$) and SI ($F(5,614) = 3.8$, $p < .002$), even when controlling for age. Married women score lower on SE, and higher on SI, than women who were single, living together but not married, and separated/divorced.

Relationship status was related to both SE ($F(2, 654) = 21.8$, $p < .0001$) and SI ($F(2,654) = 5.0$, $p < .007$). Controlling for age, women in non-exclusive relationships scored significantly higher on SE, and lower on SI, than women who were not in a sexual relationship and women who were in sexually exclusive relationships.

Lastly, religion showed a significant relationship only to SE scores ($F(6,639) = 3.5$, $p < .002$). Women who listed their religion as "other" scored significantly higher on SE than those with other religious affiliations (Protestant, Catholic, Jewish, Christian, and "none").

There were no significant relationships between SE and SI and the following variables: race, religiosity, and whether or not women had children living at home.

Test-retest Reliability

The mean age for the test-retest sample was 34.2 years (SD = 11.4; range, 18-57). Ninety-six percent (96.6%) were white. Eighty-nine percent (89.7%) identified as heterosexual, 6.9% as lesbian, and 3.4% as bisexual. The mean number of weeks between completion dates was 4.1 (SD = 1.6; range, 1.9-9.1). Mean factor scores and correlations for the higher-order and lower-order factors from the first and second completions of the SESII-W are shown in Table VI. All correlations were significant at $p <. 005$. The correlations for SE and SI were .81 and .82, respectively. Thus, the test-retest reliability was satisfactory.

Insert Table VI about here

Convergent and Discriminant Validity

Correlations between SESII-W and other questionnaire measures are shown in Table VII.

Insert Table VII about here

BIS/BAS

Our expectation of only modest or low correlations between BIS/BAS scores and the SESII-W factors was supported. Our lower- and higher-order inhibition factors showed

significant but small to modest positive correlations with BIS, suggesting some shared variance between general inhibition and sexual inhibition tendencies. The lower-order inhibition factor that was most highly correlated with BIS was Concerns about Sexual Function (rho = .32, $p < .01$). Given that two of the seven questions on the BIS seem closely related to anxiety about performance, it is not surprising that it was this factor that was most highly related to BIS. Low correlations were found between BIS and SE and its lower-order factors. BAS and its subscales were significantly and positively correlated with all SESII-W lower- and higher-order excitation factors. As expected, these correlations were low to moderate, indicating some shared variance. Overall, BAS and its subscales showed low or negative correlations with SI and its lower-order factors. It appears that the SESII-W measures distinctly sexual rather than general inhibition/activation propensities while sexual excitation and sexual inhibition tendencies were specifically related to the appropriate broader constructs as measured by the BIS/BAS.

Sexual Opinion Survey

As expected, moderate positive correlations were found between our sexual excitation factors and SOS scores. We also found low to moderate negative correlations between the SOS and our sexual inhibition factors.

Sexual Sensation Seeking

As predicted, all of the SESII-W lower- and higher-order excitation factors were positively and moderately correlated with SSS scores. The lower and higher order inhibition factors showed consistent negative correlations of low to moderate magnitude with SSS scores.

The above findings provide evidence for both convergent and discriminant validity. Some of the correlations with SOS and SSS were high, but at the same time reflecting not

much more than 25% shared variance, so we believe our factors were measuring constructs distinct from erotophilia/erotophobia and sexual sensation seeking.

Social Desirability Scale

Spearman correlations were used to compare social desirability scores from the SDSR to the various factor scores. None of the correlation coefficients exceeded .15 although some attained statistical significance. Although this suggests that responses to the SESII-W were not highly influenced by social desirability, it should be noted that the range of social desirability scores was quite restricted (the possible range of scores on the SDSR is 1 – 5, whereas the range in the present sample was 1 – 3).

DISCUSSION

Factor Structure

Exploratory factor analysis identified an eight-factor solution, with five of the factors positively related to a higher-order "sexual excitation" factor and three factors related to a higher-order "sexual inhibition" factor. The finding of orthogonally related SI and SE factors was consistent with the dual control model that informed our questionnaire development. Although the higher-order factor structure, comprising one excitation and one inhibition factor, was clearly simpler and accounted for only slightly less of the variance than the eight-factor solution (37% vs. 43%), we have decided to retain the eight individual factors as we continue research with the SESII-W. Our view is that at this early stage of the psychometric evaluation of the instrument, it would be better to retain these lower-level factors that might prove theoretically more informative, and stronger predictors of variables of interest, than the higher-order factors.

It would be inaccurate to assume that the 79 items not appearing in the final factor solution were assessing dimensions that were unimportant to understanding sexual excitation and inhibition in women. Many of the items that dropped out were ones that we expected

would be of particular importance to women (e.g., concern about reputation, pregnancy, body image). Some such items were eliminated due to low variability. For example, the items "Feeling 'connected' to a partner really stimulates my arousal" and "If I am feeling unattractive, it is harder for me to get sexually aroused" were items deleted because 90% of the sample either agreed or strongly agreed with these statements. Other items were dropped due to low inter-item correlations, suggesting there may not have been a sufficient number of items assessing particular domains to generate factors despite the length of a 115-item questionnaire. Thus, we would not advocate abandoning the longer version altogether. In fact, the initial 115-item questionnaire might be more useful for some purposes such as comparing men and women's responses. The 36-item version will be more easily incorporated into a variety of research projects and assesses dimensions of sexual excitation and sexual inhibition propensity on which women vary.

Our questionnaire was designed to assess individual differences in these propensities and, as expected, we did find considerable variability in women's responses on most items. For example, although the majority of women (62.7%) agreed or strongly agreed with the statement "If it is possible someone might see or hear us having sex, it is more difficult for me to get aroused," 37.3% disagreed or strongly disagreed. The close to normal distribution of scores for our higher-order excitation and inhibition factors suggests that the questionnaire did assess tendencies that vary among women. According to the dual control model, "middle range" scores are likely to reflect adaptive response patterns, with more extreme scores possibly indicating maladaptive patterns.

Validity

We believe that our use of focus groups at an early stage of questionnaire development expanded our knowledge about the range of factors that can affect women's sexual arousal. Based on our experience in using focus group methodology to inform

questionnaire development, we would agree with Vogt, Vogt, and King (2004) who argued "this method holds promise for enhancing the content validity of instruction, and ultimately, the validity of research findings" (p. 231).

There was strong support for discriminant validity. The modest correlations between our questionnaire and the BIS/BAS, measuring general activation/inhibition tendencies, suggests some shared variance between general inhibition and sexual inhibition but also indicates that the SESII-W was measuring a more specifically "sexual" propensity. All of the lower-level and higher-level SE and SI factors showed correlations in the expected direction with the BIS and BAS subscales.

There was also good evidence for convergent validity, with expected positive correlations between the higher-order factor and all five lower-order factors related to SE and scores on the Sexual Opinion Survey, measuring Erotophobia/Erotophilia. There were also weaker negative correlations between the SOS and higher-order and three lower-order inhibition factors. The weaker correlations between the factors related to SI, such as Relationship Importance, makes sense, given that none of the items on SOS attempt to assess inhibition of sexual response. The fact that all correlations were in the low to moderate range suggests that we are measuring related, but distinct, factors from erotophilia/erotophobia.

The Sexual Sensation Seeking Scale correlated positively with SE and all of its lower-order factors, and showed weak, negative correlations with SI and its factors. This was consistent with research by Gaither and Sellbom (2003), who reported positive correlations between scores on the SSS and propensity for sexual excitation assessed using the SIS/SES. The fact that the highest correlations were between the SSS and the Sexual Arousability and Sexual Power Dynamics factors probably reflects the fact that items on the SSS tap into these dimensions (e.g., "I like wild 'uninhibited' sexual encounters").

Comparison with Sexual Inhibition and Sexual Excitation Scales (SIS/SES)

Although recent research using the SIS/SES measure has focused on the three higher-level factors identified, two related to sexual inhibition (SIS1 and SIS2) and one to sexual excitation (SES), the original exploratory factor analysis produced ten factors, four subscales related to sexual excitation and six to inhibition (Janssen et al., 2002a). Comparing these ten factors to our eight factors reveals some similarities between the two models, as well as some important differences. For example, our Arousability factor was very similar to the SIS/SES Sexual Excitation factor (SES), both containing items about sexual arousal elicited by social interactions, fantasizing about sex, and visual stimuli (e.g., seeing someone dressed in a sexy way). On the other hand, some of the other excitation factors we identified (e.g., Smell, Sexual Power Dynamics, and Partner Characteristics (which comprise items about a partner's personality or behavior, rather than physical attributes) comprise items which were not represented on the SIS/SES.

The three inhibition factors that emerged in our factor analyses were Concerns about Sexual Function, Arousal Contingency, and Relationship Importance. The male SIS/SES measure included not one, but three subscales related to concerns about sexual function (all loaded on the higher-order factor, SIS1, Inhibition Due to the Threat of Performance Failure). Not surprisingly, the content of the items was quite different for the two questionnaires. For example, the focus of a number of SIS/SES items is worry about "losing" one's arousal quickly or easily, which we did not expect would be a particular concern for many women. Instead, the items on the Concern about Sexual Function factor on our questionnaire included "worry about taking too long to become aroused" and "thinking about whether I will have an orgasm."

It has been argued that inhibition of sexual response is a "tonic" state that needs to be reduced (or overcome by excitation) to allow sexual arousal to occur (Bancroft & Janssen, 2000). In individuals with high inhibitory tone, one would predict that stronger sexual stimuli

or a lesser amount of "threat" would be needed before a sexual response would occur. If this is the case, then women scoring highly on the Arousal Contingency factor, where the situation has to be "just right" for sexual arousal to occur, may have relatively high "inhibitory tone."

Finally, the Relationship Importance factor, with six items all reflecting the need for particular relational circumstances (e.g., one involving trust, security, or the possibility of commitment) for sexual arousal to be fully expressed, has no counterpart on the SIS/SES. There is strong research support for the importance of including the relational aspect of sexual experience in any assessment of women's sexual functioning and/or sexual satisfaction (Ellison, 2000; Lawrance & Byers, 1995). Relational aspects of a sexual interaction may be particularly important to women's sexual satisfaction (Byers, 2001) and yet these relational aspects have been ignored by diagnostic classification systems of sexual dysfunction such as the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2000). The inclusion of a Relationship Importance factor in our factor solution indicates, however, that there was individual *variability* in responses to items, such as "I really need to trust a partner to become fully aroused" and "If I think that a partner might hurt me emotionally, I put the brakes on sexually" (i.e., some women responded that trusting a partner was not at all necessary for them to experience sexual arousal). In the recent literature on the importance of emotional intimacy in mediating sexual arousal in women (e.g., Basson, 2000, 2002), the fact that women might vary in this respect is rarely mentioned.

Comparing the psychometric properties of the SIS/SES with the SESII-W, both measures showed evidence of convergent and discriminant validity and parallel relationships with other measures such as the BIS/BAS and SOS. We found a significant negative correlation between SE scores and age on the SESII-W; studies in men using the SIS/SES have also reported consistent negative correlations between age and SES (Bancroft et al.,

2005; Janssen et al., 2002a). In the current study, there was no correlation between SI and age. In men, although the evidence has been somewhat inconsistent across different samples, sexual inhibition, particularly SIS1 (inhibition due to threat of performance failure) (Janssen et al., 2002a), has shown significant correlations with age. Although it has been postulated that inhibition of sexual response is a central mechanism (Bancroft, 1999), there is data showing that in vitro peripheral responses to "inhibitory stimulation" is greater in older men, suggesting that inhibitory mechanisms have a peripheral component as well. This could be of less relevance in women.

Limitations and Future Research

Although a wide range of recommendations regarding sample size in factor analysis have been proposed (MacCallum, Widaman, Zhang, and Hong, 1999), using the guideline that there should be a 10:1 participant:item ratio (Everitt, 1975), our sample size falls short of the target of 1150 participants (115 items X 10). Another limitation was that our recruitment mainly relied upon convenience samples although we did use random sampling to obtain our university sub-sample. Also, despite our attempts to recruit a diverse sample of women, our participants were highly educated and predominantly white. Future studies should recruit more diverse samples, particularly in terms of race, ethnic group, and age. Our qualitative data (Graham et al., 2004) and that of other researchers (Fine, 1988; Tolman, 2002) suggest that adolescent girls may become particularly adept at "putting the brakes" on their sexual arousal to avoid becoming aroused when the stakes are too high. Research on developmental changes and factors affecting SE and SI in adolescent girls could be informative.

In developing the SESII-W for women, we recognized that many of the factors identified in our qualitative data as being important to women's sexual arousal may also be highly relevant to men. To explore gender differences and further investigate the factor structure of the SESII–W, we collected data using the original 115-item version in a college

sample of over 800 women and men (Milhausen, Sanders, & Graham, 2005). The findings revealed some striking gender differences in responses to many of the SESII-W items and a similar factor structure to the one reported here.

Research is needed that directly compares the SESII–W and the SIS/SES developed for men (Janssen et al., 2002a). It would be important to look at which measure better predicts sexual risk-taking and sexual dysfunction in men and women. We will also be investigating combining items from the SIS/SES and the SESII-W.

Summary

This article has presented a new questionnaire, the Sexual Excitation/Sexual Inhibition Inventory for Women (SESII–W), designed to assess a woman's tendency to respond with sexual excitation/inhibition in different situations. Although we are at a preliminary stage in use and validation of the measure, we believe that the factors that emerged from our exploratory analyses have relevance for the dual control model and also tap important aspects of sexual experience for women. Our data underscore the importance of a multitude of partner and relationship issues in influencing women's sexual experiences (Tiefer, 2001b) although it also suggests that there is considerable individual variability in the degree to which these factors affect sexual arousal.

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Table I

Sample Characteristics (N= 655)

Demographic/Background Variable	Statistic
M age (*SD*)	33.8 (13.7)
Range	18–81
Education	
% less than college	14.3
% some college or college degree	59.8
% post-graduate degree	25.9
Religion	
% Protestant	18.4
% Catholic	15.8
% Christian	23.8
% Jewish	5.3
% Muslim/Islam	0.5
% None	21.7
% Other	14.5
% Hispanic/Latina	2.6
Race	
% American Indiana/Alaskan Native	0.3
% Asian	2.1
% Black or African American	4.6
% White	90.5
% Multi-racial	2.5
Self-Labeled Sexual Orientation	

% heterosexual/straight	82.7
% bisexual	7.8
% lesbian/gay/homosexual	8.0
% uncertain	1.5
Marital status	
% single/never married	43.9
% living with partner, but not married	10.4
% married	33.3
% widowed	0.8
% separated/divorced	11.5
Current sexual relationship status	
% exclusive/monogamous	66.9
% non-exclusive/non-monogamous	9.8
% not in a sexual relationship	23.4
Mean relationship duration in years (*SD*) (*n* = 494)	7.7 (8.8)
Range	0.8-50

Table II

Items and Factor Loadings on The Sexual Excitation/Sexual Inhibition Inventory for Women (SESII–W)

Sexual Excitation Factors

Arousability

.639 When I think about someone I find sexually attractive, I easily become sexually aroused. (77)

.597 Fantasizing about sex can quickly get me sexually excited. (51)

.587 Certain hormonal changes definitely increase my sexual arousal. (74)

.549 Sometimes I am so attracted to someone, I cannot stop myself from becoming sexually aroused. (106)

.507 I get very turned on when someone wants me sexually. (49)

.437 If I see someone dressed in a sexy way, I easily become sexually aroused. (84)

.417 Just being physically close with a partner is enough to turn me on. (47)

.331 Seeing an attractive partner's naked body really turns me on. (45)

.328 With a new partner, I am easily aroused. (79)

Sexual Power Dynamics

.597 Feeling overpowered in a sexual situation by someone I trust increases my arousal. (23)

.546 It turns me on if my partner "talks dirty" to me during sex. (7)

-.529 If a partner is forceful during sex, it reduces my arousal. (85)

.430 Dominating my partner is arousing to me. (92)

Smell

.864 Often just how someone smells can be a turn on. (75)

.685 Particular scents are very arousing to me. (73)

Partner Characteristics

.661 Seeing a partner doing something that shows his/her talent can make me very sexually aroused. (34)

.557 If I see a partner interacting well with others, I am more easily sexually aroused. (31)

.511 Someone doing something that shows he/she is intelligent turns me on. (19)

.358 Eye contact with someone I find sexually attractive really turns me on. (36)

Setting (Unusual or Unconcealed)

.774 Having sex in a different setting than usual is a real turn on for me. (16)

-.565 I find it harder to get sexually aroused if other people are nearby. (27)

.552 I get really turned on if I think I may get caught while having sex. (41)

-.316 If it is possible someone might see or hear us having sex, it is more difficult for me to get aroused. (17)

Sexual Inhibition Factors

Relationship Importance

.608 I really need to trust a partner to become fully aroused. (107)

.571 If I think that I am being used sexually it completely turns me off. (44)

.539 It is easier for me to become aroused with someone who has "relationship potential. (46)

.536 It would be hard for me to become sexually aroused with someone who is involved with another person. (35)

.536 If I am uncertain about how a partner feels about me, it is harder for me to get aroused. (58)

.464 If I think a partner might hurt me emotionally, I put the brakes on sexually. (2)

Arousal Contingency

.714 Unless things are “just right” it is difficult for me to become sexually aroused. (115)

.683 When I am sexually aroused, the slightest thing can turn me off. (114)

.513 It is difficult for me to stay sexually aroused. (112)

Concerns about Sexual Function

.637 If I am worried about taking too long to become aroused, this can interfere with my arousal. (105)

.593 If I think about whether I will have an orgasm, it is much harder for me to become aroused. (48)

.505 Sometimes I feel so “shy” or self-conscious during sex that I cannot become fully aroused. (99)

.397 If I am concerned about being a good lover, I am less likely to become aroused. (32)

Note: Numbers in parentheses refer to item numbers on original 115-item questionnaire.

Table III

Descriptive Data for the Lower-order and Higher-order Factors

Factor (number of items)	M	*SD*	Proportion of Variance	Cronbach's alpha
Lower-order factors				
Arousability (9)	3.01	.44	.16	.80
Relationship Importance (6)	3.03	.52	.07	.72
Sexual Power Dynamics (4)	2.56	.64	.05	.69
Concerns about Sexual Function (4)	2.57	.52	.04	.63
Arousal Contingency (3)	2.10	.59	.03	.79
Partner Characteristics (4)	3.13	.47	.02	.66
Setting (Unusual/Unconcealed) (4)	2.47	.58	.02	.70
Smell (2)	3.12	.64	.02	.80
Higher-order factors				
Sexual Excitation	2.86	.38	.23	.70
Sexual Inhibition	2.57	.39	.15	.55

Note: For each factor, absolute range was 1-4.

Table IV

Correlations Among the Eight Lower-order Factors

Factors	Arousability	Relationship importance	Sexual power dynamics	Concerns about sexual function	Arousal contingency	Partner characteristics	Setting
Arousability							
Relationship importance	-.11**						
Sexual power dynamics	.43**	-.25**					
Concerns about sexual function	-.06	.24**	-.02				
Arousal contingency	-.38**	.19**	-.24**	.43**			
Partner characteristics	.48**	.08*	.30**	.05	-.13**		
Setting (unusual/unconcealed)	.38**	-.30**	.40**	-.14**	-.33**	.22**	
Smell	.42**	-.02	.26**	.01	-.14**	.30**	.22**

Note: *$p < .05$

** $p < .01$

Table V

Loadings of Lower-order Factors on the Higher-order Factors

Factor	Sexual Excitation	Sexual Inhibition
Arousability	.79	-.20
Partner Characteristics	.60	-.06
Sexual Power Dynamics	.53	-.19
Smell	.51	-.02
Setting (Unusual/Unconcealed)	.43	-.35
Concerns about Sexual Function	.09	.66
Arousal Contingency	-.28	.65
Relationship Importance	-.07	.38

Table VI

Test-retest Reliability (n=29)

Factor	1st Completion *M*	1st Completion *SD*	2nd Completion *M*	2nd Completion *SD*	*r*
Sexual Excitation	2.85	.39	2.93	.56	.81**
Arousability	3.07	.37	3.03	.35	.75**
Partner Characteristics	3.09	.52	3.16	.46	.82**
Sexual Power Dynamics	2.54	.65	2.75	1.67	.63**
Smell	3.09	.68	3.17	.63	.77**
Setting (Unusual/Unconcealed)	2.46	.57	2.54	.49	.86**
Sexual Inhibition	2.49	.41	2.49	.26	.82**
Concerns about Sexual Function	2.52	.56	2.51	.36	.77**
Arousal Contingency	1.92	.48	1.97	.31	.51*
Relationship Importance	3.03	.54	2.99	.48	.85**

Note: *$p < .005$

**$p < .001$

Table VII

Correlations between the SESII-W Factors and Other Scales

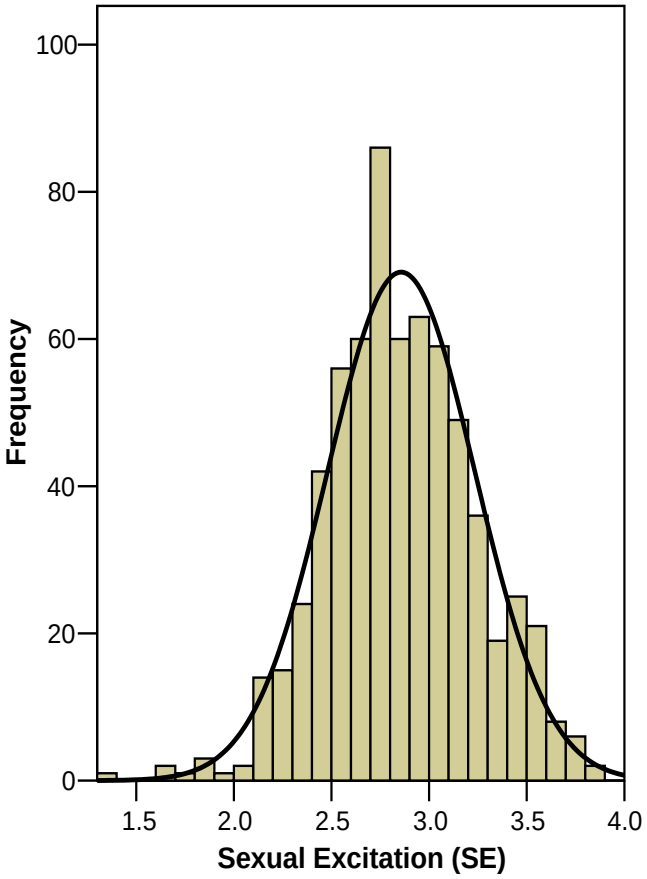
Factors	Social Desirability	BIS	BAS	BAS-RR	BAS-D	BAS-F	SOS	SSS
Sexual Excitation	.15**	.07	.41**	.37**	.21**	.38**	.53**	.58**
Arousability	.14**	.06	.38**	.38**	.19**	.32**	.55**	.55**
Partner Characteristics	.09*	.13**	.34**	.38**	.19**	.22**	.32**	.32**
Sexual Power Dynamics	.10*	.03	.30**	.19**	.16**	.33**	.46**	.51**
Smell	.13**	<.01	.21**	.18**	.08*	.22**	.24**	.31**
Setting (Unusual/Unconcealed)	.11**	-.13	.27**	.14**	.18**	.31**	.44**	.48**
Sexual Inhibition	.04	.30**	-.04	-.06	-.03	-.12**	-.41**	-.39**
Concerns about Sexual Function	.10**	.32**	-.01	.08*	-.06	-.03	-.17**	-.13**
Arousal Contingency	.02	.19**	-.08	-.06	-.03	-.10*	-.36**	-.34**
Relationship Importance	-.03	.14**	<.01	.13**	.02	-.14	-.36**	-.39**

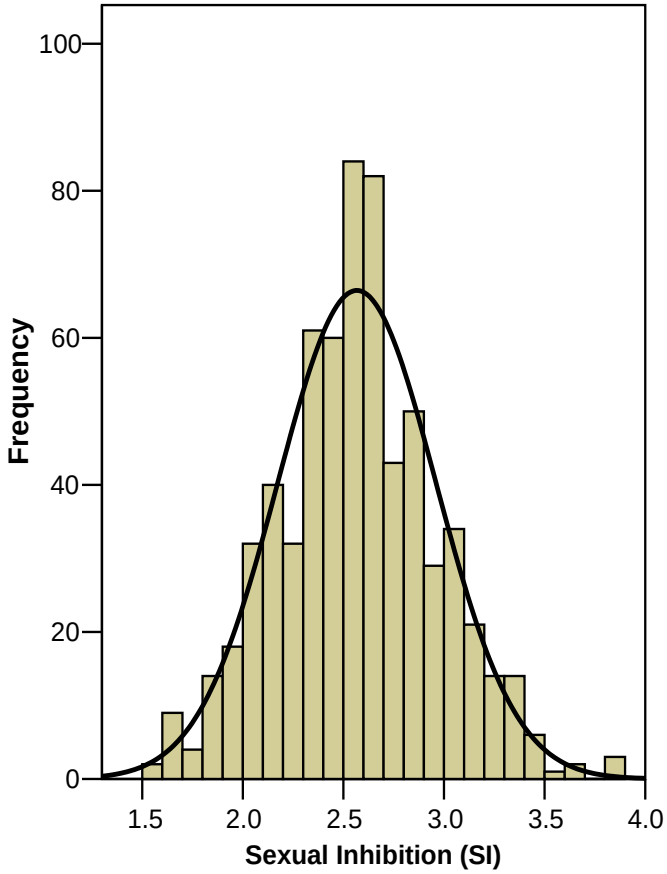
*$p < .05$

**$p < .01$

Figure 1.

Distributions for the two higher-order factors: Sexual Excitation and Sexual Inhibition


100
80
60
40
20
0
Frequency
1.5
2.0
2.5
3.0
3.5
4.0
Sexual Excitation (SE)


100
80
60
40
20
0
Frequency
1.5
2.0
2.5
3.0
3.5
4.0
Sexual Inhibition (SI)