

## Women's Scores on the Sexual Inhibition/Sexual Excitation Scales (SIS/SES): Gender Similarities and Differences

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*The Sexual Inhibition/Sexual Excitation Scales (SIS/SES) assess individual propensities to become sexually aroused and to inhibit arousal. Prior analyses of men's SIS/SES data (Janssen, Vorst, Finn, & Bancroft, 2002a) yielded one excitation factor (SES) and two inhibitory factors (SIS1/Threat of Performance Failure and SIS2/Threat of Performance Consequences). The current study utilized a dataset of 2,045 undergraduates (1,067 women and 978 men) to examine the psychometric properties of women's SIS/SES scores.*

*Women scored higher on sexual inhibition and lower on sexual excitation compared with men. The convergent/discriminant validity of women's SIS/SES scores globally resembled men's, but showed stronger associations with other sexuality-related measures and less pronounced relationships with measures of general behavioral approach/avoidance. The test-retest reliability of men's and women's SIS/SES scores were similar, but individual items exhibited differential relevance to men's and women's arousal. An exploratory factor analysis of women's scores was utilized to further examine shared and unshared themes.*

The central assumption of the dual control model (Bancroft, 1999; Bancroft & Janssen, 2000; Janssen & Bancroft, 1997) is that sexual arousal and response result from a balance between inhibitory and excitatory mechanisms of the central nervous system. Individual propensities for sexual excitation and inhibition are thought to be independent of one another and to vary from person to person (Janssen, Vorst, Finn, & Bancroft, 2002a, 2002b). The model assumes that in the majority of individuals inhibition is adaptive and helps us avoid sexually risky or threatening situations. Levels of inhibitory tone that are either too low or too

high, however may contribute to problems ranging from high-risk sexual behavior to sexual dysfunctions (Bancroft, 1999; Janssen et al., 2002a, 2002b). Sexual excitation may mediate these relationships. That is, when strong sexual inhibition is paired with low excitation, sexual response may be particularly impaired, and if low inhibition is combined with high excitation, high-risk sexual situations may be subjectively experienced as more difficult to avoid. Sexual risk-taking behavior and sexual functioning problems are health issues of significant personal and social concern, and the dual control model provides a conceptual framework for how individual differences in sexual response may contribute to these problems. A better understanding of these differences has substantial potential for improving our attempts at prevention and treatment of sexual problems and high-risk sexual behavior.

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Janssen and colleagues (2002a) designed the to assess the tendency to respond sexually to a variety of erotic stimuli. The items on this measure consist primarily of “if . . . then” statements (i.e., “If I am on my own watching a sexual scene in a film, I quickly become sexually aroused”). Exploratory factor analysis of data provided by 408 male university undergraduates unexpectedly yielded three factors rather than two: one related to sexual excitation and two associated with sexual inhibition (Janssen et al., 2002a). The excitation factor (SES) describes sexual arousal stemming from social interactions, visual stimuli, fantasies, and nonsexual situations (such as bathing or lying in the sun). SIS1 focuses on sexual inhibition due to threat of performance failure (e.g., difficulty getting aroused, losing arousal easily, concern about pleasing a partner, etc.). SIS2 assesses sexual inhibition due to potential consequences of sex (such as the risk of being caught/intruded upon, sexually transmitted diseases [STDs], unwanted pregnancy, and pain) (Janssen et al., 2002a). The three-factor structure was confirmed in a sample of 459 undergraduate men, as well as a university-based sample of 313 male faculty and staff (Janssen et al., 2002a). Intercorrelations indicated that the excitation factor (SES) and the two inhibition factors (SIS1 and SIS2) were relatively independent (Janssen et al., 2002a, 2002b). SIS1 and SIS2 were related but not highly correlated ( $r = +.26$ ), suggesting that they do not measure substantially overlapping constructs.

Results also suggested that SIS/SES scores showed acceptable test–retest reliability ( $r = +.67$  and  $+.76$  for the two samples) and good convergent/discriminant validity (Janssen et al., 2002a, 2002b). SES scores were modestly positively associated with scores on the Behavioral Inhibition/Behavioral Activation Scales (BIS/BAS; Carver & White, 1994), the Neuroticism subscale of the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975), and the Sociosexual Orientation Inventory (SOI; Simpson & Gangestad, 1991), and more strongly related to Sexual Opinion Survey (SOS) scores (Fisher, Byrne, White, & Kelley, 1988). See the Method section for a more detailed description of these measures. Scores on SIS1 and SIS2 showed some overlap: both were modestly positively associated with scores on the Harm Avoidance Scale (MPQ-H). Only SIS2 scores, however, showed moderate negative correlations with SOS and SOI scores, and moderate positive relationships with scores on the Social Desirability Scale and the BIS/BAS Behavioral Inhibition subscale.

There are a number of reasons to expect women and men to show different propensities for sexual inhibition and excitation. Bjorklund and Kipp (1996) suggest that gender differences in parental investment may have rendered sexual inhibition of particular importance to our female ancestors. Because reproduction is associated with greater biological costs for females than for males

(e.g., pregnancy), females especially would benefit from any mechanism that aids in controlling sexual desire and arousal (Wallen, 1995) and avoiding casual or opportunistic sex (Bjorklund & Kipp, 1996; Symons, 1979). In contrast, our male ancestors may have benefited from higher levels of sexual excitation. As the cost associated with fertilization is low, males may have increased reproductive potential by engaging in relatively indiscriminate, short-term mating with multiple partners (Buss, 1998; Knoth, Boyd, & Singer, 1988).

Many reports of sexuality-related gender differences appear relevant to dual control model processes. Research has found that males report earlier and more intense sexual arousal than females (Knoth, Boyd, & Singer, 1988), more frequent sexual desire (Beck, Bozman, & Qualtrough, 1991), and earlier, more frequent, and more varied sexual fantasies (Leitenberg & Henning, 1995). Men also spend more money than women on sex, sexual products, and sexual entertainment (Baumeister, Catanese, & Vohs, 2001; Wallen, 1995). In contrast, women report less permissive attitudes regarding casual, premarital, and extramarital sex in comparison with men (Clark & Hatfield, 1989; Cohen & Shotland, 1996; Oliver Hyde, 1993; Wuethrich, 1993), as well as fewer desired (Buss & Schmitt, 1993) and actual lifetime sexual partners (Kinsey, Pomeroy, Martin, & Gebhard, 1953; Laumann, Gagnon, Michael, & Michaels, 1994; Wiederman, 1997). In a recent review, Baumeister and colleagues (2001) concluded that the evidence for stronger sex drive in men than women is “extensive, methodologically diverse, and consistent (p. 263).”

Sexual interest and expression clearly also are responsive to social influences (Hogben & Byrne, 1998). Sexual attitudes and behaviors are related to a number of socio-cultural factors, including education, religious affiliation and activity, marital status, and socioeconomic status (Kinsey, Pomeroy, & Martin, 1948; Laumann et al., 1994). More social control of sexuality may be directed toward women than toward men (Crawford & Popp, 2003), however, resulting in a sexual double standard. Female undergraduates report significantly more guilt associated with first intercourse than do males (Sprecher & Barbee, 1995), and female virgins report more positive and fewer negative emotions associated with their virginity than do males (Sprecher & Regan, 1996). In summary, the origins of gender differences in sexual behavior appear multifaceted, and the potential contributions of social construction and biological factors deserve shared consideration when interpreting data on sexual interest, behavior, and response.

Given extensive evidence for sexuality-related gender differences, Graham, Sanders, Milhausen, and McBride (2004) questioned whether the SIS/SES would be equally suited for use with women. Their specific concerns included the possibility that important influences on women's arousal (such as reputation, body image,

fear of pregnancy, and relationship/partner factors) might be underrepresented on the SIS/SES. To address this concern, Graham and colleagues (2004) used focus groups to explore women's qualitative descriptions of factors that influence their sexual arousal. Participants described their arousal as strongly influenced by physical and emotional state (e.g., mood, hormonal changes, and stress levels), partner variables (e.g., personality and attractiveness), relationship variables (e.g., issues related to physical and emotional safety, feeling desired), various aspects of the sexual interaction (e.g., setting, timing, and partner's skill and enthusiasm), and also culturally mediated concerns (e.g., religious influences and concerns about reputation). As many of these factors are not assessed by the SIS/SES in its current format, Graham, Sanders and Milhausen (2006) developed the sexual Excitation/Sexual Inhibition Inventory for Women (SESII-W). Exploratory factor analysis yielded eight factors and two higher-order factors (one related to sexual excitation and one related to sexual inhibition). Using the SESII-W with a sample of male and female college students, Milhausen (2004) found significant gender differences, with men scoring higher on sexual excitation and women on sexual inhibition.

This study adopted a different approach to studying arousal processes in women. While the SIS/SES initially was validated in men, its development was based upon an assumption that the neurobiological mechanisms underlying sexual inhibition and excitation in women and men are shared. Our perspective is that even when gender differences are substantial, more variability will be observed within groups (e.g., individual differences) than between them (women versus men). We also expect that the majority of potential influences on sexual arousal (such as the risk of STDs, sexual fantasy, distraction, difficulties becoming aroused, etc.) are of substantial relevance to both women and men. Accordingly, we decided to examine women's scores on the SIS/SES and attempt to confirm the three-factor structure previously explored and validated in men.

Hyde (2005) reviewed findings related to the gender similarities hypothesis, which holds that men and women are more alike than different. Her results suggest that most reported effect sizes of psychological gender differences are small or close to zero (e.g.,  $d < 0.35$ ), but in citing notable exceptions, she stated that gender differences on some sexuality-related variables (including incidence of masturbation and attitudes about casual sex) are consistently large. Hyde (2005) discussed a number of social and interpersonal consequences of our tendency to focus on gender differences, and she suggested that such findings be reported and interpreted within the context of similarities between women and men. By approaching women's data using a model explored in men, we hoped to highlight both shared and unshared influences on men's and women's sexual arousal.

*Hypothesis 1.* We expected to find evidence for a globally similar factor structure for men and women, as indicated by Confirmatory Factor Analysis (CFA) fit indices. We anticipated that the three-factor model might account for women's scores slightly less well than men's (perhaps due to missing themes, as discussed by Graham and colleagues, 2004, 2006). We assumed, however, that decreased model-data fit might not necessarily imply that a three-factor model of women's arousal is incorrect. We planned to interpret gender differences holistically, within the context of evidence for similarities.

*Hypothesis 2.* Published reports of gender differences in sexual interest, attitudes, and behavior led us to predict that women would score higher on sexual inhibition and lower on sexual excitation than would men.

*Hypothesis 3.* We expected to find gender similarities regarding test-retest reliability, internal validity, and convergent/discriminant validity of men's and women's SIS/SES scores.

*Hypothesis 4.* Finally, we expected some SIS/SES themes (such as the risk of pregnancy or pain) to exhibit differential relevance to men's and women's arousal, but we did not make any specific item-level predictions regarding this assumption.

## Method

### Participants

This study analyzed anonymous data provided by 2,045 Indiana University undergraduate students (1,067 females and 978 males) ranging in age from 18 to 44, with a mean age of 19.8 years. Table 1 describes participants' characteristics. The sample included 1,067 women (mean age = 19.4,  $SD = 1.73$ , range = 18–39) and 978 men (mean age = 20.3,  $SD = 2.35$ , range = 18–44). Subjects were recruited from undergraduate psychology classes and received course credit for their participation. The protocol for this study was reviewed and approved by the Institutional Review Board. Portions of the men's data ( $N = 537$ ) previously have been reported by Janssen and colleagues (2002a) and are included in the analyses reported here for comparison purposes.

### Measures

*Background questionnaire.* This 35-item questionnaire collects self-report data on basic demographics and sexuality-related variables (including number of sexual partners, use of contraceptives, number of HIV tests,

**Table 1.** *Subject Demographics*

		N (%)		
		Men	Women	Total (%)
Ethnicity ( <i>N</i> = 2,002)	Asian	37 (3.8)	32 (3.1)	69 (3.5)
	African American	31 (3.2)	48 (4.7)	79 (4.0)
	Hispanic	19 (2.0)	23 (2.2)	42 (2.1)
	White	861 (88.4)	894 (86.9)	1,755 (87.7)
	Other	25 (2.6)	32 (3.1)	57 (2.9)
Orientation <sup>a</sup> ( <i>N</i> = 2,008)	Hetero/straight	912 (94.3)	1,008 (96.8)	1,920 (95.6)
	Homosexual/gay	24 (2.5)	5 (<1)	29 (1.4)
	Bisexual	19 (2.0)	16 (1.5)	35 (1.7)
	Uncertain	12 (1.2)	12 (1.2)	24 (1.2)
Marital Status ( <i>N</i> = 2,001)	Single/unmarried	907 (94.4)	996 (95.8)	1,903 (95.1)
	Cohabiting	40 (4.2)	38 (3.7)	78 (3.9)
	Married	12 (1.3)	5 (<1)	17 (<1)
	Separated/divorced	2 (<1)	1 (<1)	3 (<1)
Relationship Type <sup>b</sup> ( <i>N</i> = 2,008)	Monogamous	360 (37.2)	479 (46)	839 (41.8)
	Nonexclusive	103 (10.7)	65 (6.2)	168 (8.4)
	No relationship	504 (52.1)	497 (47.7)	1,001 (49.9)
Sexual activity ( <i>N</i> = 2,008)	Ever had same-sex partner?	86 (8.9)	78 (7.5)	164 (8.2)
	Ever had opp.-sex partner?	868 (89.8)	936 (89.9)	1,804 (89.8)

Note: <sup>a</sup>*p* ≤ 0.01; <sup>b</sup>*p* ≤ 0.001.

frequency of various forms of sexual activity, perceived importance of sex, and history of sexual problems).

*The sexual inhibition/sexual excitation scales (SIS/SES).* Items on this measure describe different hypothetical situations, some of which incorporate elements of threat (e.g., risk of contracting an STD, being intruded upon, or being unable to perform sexually). Janssen and colleagues (2002a) found that the SIS/SES yielded three scores for men: Excitation (SES), SIS1/Inhibition due to Threat of Performance Failure, and SIS2/Inhibition due to Threat of Performance Consequences. The SES factor (20 items, range = 20–80) consists of four subscales: Social Interactions (9 items), Visual Stimuli (4 items), Fantasies (4 items), and Nonspecific Stimuli (3 items). This factor includes items such as, “When an attractive person flirts with me, I easily become sexually aroused,” and “When I see others engaged in sexual activities, I feel like having sex myself.” SIS1 (14 items, range = 14–56) includes three subscales: Losing Arousal Easily (8 items), Partner Concerns (3 items), and Performance Concerns (3 items). For example, “If I am concerned about pleasing my partner sexually, it interferes with my arousal.” Finally, SIS2 (11 items, range = 11–44) involves three subscales: Risk of Being Caught (4 items), Negative Consequences of Sex (3 items), and Pain/Norms and Values (4 items). For example, “If there is a risk of unwanted pregnancy, I am unlikely to get sexually aroused.” Participants respond to each item on a four-point scale (1 = Strongly Agree, 4 = Strongly Disagree).

Participants completed either a 45- or 77-item version of the SIS/SES, depending on time of recruitment and testing. Only scores on the 45 overlapping items (e.g.,

those yielded by initial exploratory analyses of male data on the longer measure; Janssen et al., 2002a) are currently utilized in calculating SIS/SES scores.

*The neuroticism and extraversion/introversion scales of the Eysenck personality questionnaire (EPQ).* These subscales are comprised of 44 yes/no questions and measure proneness to Eysenck’s two factors of extraversion/introversion and neuroticism, or positive and negative emotionality (Eysenck & Eysenck, 1975).

*The harm avoidance scale of the Minnesota personality questionnaire (MPQ-H).* This 28-item, matched-choice scale assesses tendency to take risks that might lead to significant physical harm. The scale is one of 11 lower-order constructs from the MPQ (Tellegen & Waller, 1982).

*The social desirability scale (SDSR-5).* This Likert-type self-report scale consists of 5 items that assess susceptibility to social desirability bias (Hays, Hayashi, & Stewart, 1989).

*The behavioral inhibition/behavioral activation scales (BIS/BAS).* This 20-item, Likert-type questionnaire yields two factors, BIS and BAS. The BIS consists of a single score, while the BAS involves three subscales: “Reward-responsiveness” measures self-reported perceived value of rewards, “Drive” reflects persistence in the pursuit of desired goals, and “Fun-seeking” assesses perceived value of new rewards and spontaneity in pursuing them (Carver & White, 1994).

*The sexual opinion survey (SOS).* This 21-item, Likert-type scale measures erotophobia-erotophilia, or

tendency to have predominantly positive or negative emotional and evaluative responses to sexual stimuli (Fisher et al., 1988).

*The sociosexual orientation inventory (SOI).* This questionnaire consists of eight items that assess attitudes toward and participation in “casual” sex, as well as self-reported condom use during sexual encounters (Simpson & Gangstad, 1991).

### Procedure

Same-sex research assistants conducted single-sex group testing sessions lasting up to one hour. Participants completed one of three testing packets, depending on time of recruitment. One hundred eighty-two women completed a test packet consisting of the Background Questionnaire, 77-item SIS/SES, and SDSR-5. Another 741 women and 441 men completed the Background Questionnaire and 45-item SIS/SES. Finally, 144 women and 537 men completed the Background Questionnaire, SOS, SOI, EPQ, MPQ-H, SDSR-5, BIS/BAS, and 77-item SIS/SES.

### Data Analysis

Data regarding the general demographics, relationship status, attitudes, sexual interest, behavior, and sexual functioning of male ( $N = 978$ ) and female participants ( $N = 1,067$ ) were summarized and compared using Mann–Whitney, chi square ( $\chi^2$ ), and t-test analyses. All statistical tests, with the exception of the CFAs, were conducted using SPSS 10.

CFAs in LISREL 8.54 (Jöreskog & Sörbom, 1993) examined whether women’s SIS/SES scores are characterized by a factor structure similar to men’s, featuring one sexual excitation factor and two sexual inhibition factors. Three models were compared in women ( $N = 966$ ) and men ( $N = 922$ ), including the three-factor 45-item model, a 10-factor 45-item model, and a “10-in-3” hierarchical model featuring 45 item scores and 10 subscales loading onto three higher-level factors. These models all derive from prior analyses of men’s SIS/SES data (Janssen et al., 2002a).

Men’s and women’s mean scores on the higher- and lower-level “10-in-3” SIS/SES scales were calculated and compared using MANOVAs, and the internal consistency of the three higher-level scales were assessed via Cronbach’s alpha coefficients. Because results of tests for strict factorial invariance (Meredith, 1993) indicated the presence of some item intercept differences across gender groups, LISREL modification indices were used to correct for uniform measurement bias, and effect sizes for gender differences were calculated by dividing factor mean differences by pooled within-group standard deviations of the factors. Correlations among the SES, SIS1, and SIS2 scales were examined via Holm’s

sequential Bonferroni procedure. The test–retest reliability and internal consistency of women’s SIS/SES scores ( $N = 51$ ) were analyzed using correlation coefficients and Cronbach’s alpha. Correlations among the SES, SIS1, and SIS2 factors and women’s scores on the SDSR-5 ( $N = 1,040$ ), BIS/BAS, EPQ, MPQ-H, SOS, and SOI ( $N = 141$ ) were used to assess convergent and discriminant validity of the SIS/SES scales. Finally, because our CFAs suggested differential relevance of some themes to men’s and women’s arousal, we used exploratory factor analysis (EFA) to examine whether different themes would be involved in a three-factor model based on women’s data ( $N = 307$ ). Exploratory Factor Analysis (EFA) utilized principal axis factor extraction with varimax rotation.

### Results

*Sample characteristics.* Most participants were young, White unmarried, heterosexual undergraduate students of modest sexual experience. Participants reported having had sexual intercourse with a mean of 1.7 partners ( $SD = 2.86$ , range = 0–50,  $N = 2,004$ ) in the past year, and an average of 1.4 unprotected intercourse partners ( $SD = 2.08$ , range = 0–30,  $N = 1,996$ ) during the past 3 years. For additional demographics, see Table 1.

Our male and female participants differed in several respects. Women were somewhat more likely than men to describe their orientation as heterosexual and somewhat less likely to describe themselves as homosexual (Table 1). More women (16.9%) than men (9.7%), however, reported feeling attracted to members of their own gender at least some of the time ( $Z = -4.33$ ,  $p \leq .001$ ). Men and women also differed regarding their relationship status: women were moderately more likely than men to report an ongoing monogamous relationship than men, and they were somewhat less likely than men to report either a nonexclusive relationship or no current relationship (Table 1). Female participants ascribed greater importance to religion than males ( $Z = -5.48$ ,  $p \leq .001$ ), whereas men attributed greater importance to sex in comparison with women ( $Z = -11.63$ ,  $p \leq .001$ ). Men were more likely than women to agree that “sex without love is okay” ( $t(679) = 4.56$ ,  $p = .001$ ), and that they could imagine themselves enjoying “casual” sex with different partners ( $t(243.07) = 8.53$ ,  $p = .001$ ). Men also reported desiring more sexual partners ( $\bar{X} = 5.84$ ,  $SD = 10.26$ , range = 0–125) during the next 5 years ( $t(672) = 3.10$ ,  $p = .002$ ) in comparison with women ( $\bar{X} = 3.13$ ,  $SD = 4.04$ , range = 0–40). Men reported more frequent masturbation than women ( $Z = -26.08$ ,  $p \leq .001$ ), more intercourse partners ( $\bar{X} = 1.98$  vs. 1.52) during the previous year ( $t(1419.37) = 3.61$ ,  $p = .001$ ), and more one-night stands ( $\bar{X} = 2.12$  vs. 1.15) over the course of

**Table 2.** *Confirmatory Factor Analysis Results for Women and Men*

Group/Model	$\chi^2$	df	CFI	SRMR	NNFI	RMSEA
Women ( $N = 966$ )						
Ten factor	2841.7	900	0.91	0.058	0.91	0.050
Ten in three	3218.8	932	0.90	0.067	0.89	0.055
Three factor	4373.1	942	0.85	0.073	0.84	0.073
Men ( $N = 922$ )						
Ten factor	2385.1	900	0.94	0.055	0.93	0.044
Ten in three	2605.2	932	0.93	0.062	0.93	0.047
Three factor	3287.8	942	0.90	0.066	0.90	0.057

Note:  $\chi^2$  = Model chi square; CFI = Bentler comparative fit index; SRMR = Standardized Root Mean Square Residual; NNFI = Tucker-Lewis Non-normed Fit Index; RMSEA = Steiger-Lind Root Mean Square Error of Approximation Index. (Better fit is reflected in higher coefficients [values approaching 1.0] for CFI and NNFI, and in smaller values [lower bound of zero] for SRMR and RMSEA.)

their lifetimes ( $t(1902.04) = 3.78, p = .001$ ). Finally, in comparison with men, female participants reported more frequent difficulties with sexual arousal in the past 3 months ( $Z = -7.57, p \leq .001$ ) and less frequent orgasms during sexual activity with a partner in the past year ( $Z = -11.24, p \leq .001$ ).

*Confirmatory factor analysis results for women.* CFA was utilized to test whether the previously established three-factor model of men's SIS/SES scores (Janssen et al., 2002a) demonstrated acceptable fit to a female dataset. This factor solution was compared with two alternative models previously examined in males. These included a simple 45-item, 10-factor model, and a "10-in-3" hierarchical model, featuring the same 45-item scores and 10 subscales loading onto three higher-level factors. After cases were eliminated due to missing data, the responses of 966 women and 922 men were retained. These analyses (with comparison statistics for men) are presented in Table 2.

The  $\chi^2$  test of the null hypothesis (which assumes complete model data consistency) had to be rejected for all models for both women and men (Janssen et al., 2002a). This finding was not unexpected, given the number of observations and the complexity of the specified models. Moreover, the  $\chi^2$  is inflated because of the use of nonnormal data (i.e., Likert scale items). Therefore, we also utilized alternative fit measures that are less sensitive to sample size, or that do not depend solely on the  $\chi^2$  statistic. The Standardized Root Mean Square Residual (SRMR) is a function of the residuals. Hu and Bentler (1999) proposed that values below .08 are indicative of good model fit.

Bentler's Comparative Fit Index (CFI) and the Bentler-Bonnett Non-normed Fit Index (NNFI) are popular fit measures that compare the existing model with the independence model. Hu and Bentler (1999)

proposed that an NNFI and a CFI above .95 is preferred (range = 0–1; higher values mean better fit), although models with values of NNFI and CFI  $> .90$  often are seen as good fitting models. Finally, the Steiger-Lind Root Mean Square Error of Approximation (RMSEA) index is relatively insensitive to sample size and corrects for model complexity. Smaller values (with a lower bound of zero) indicate better fit. In general, an RMSEA of  $< .05$  (convention) or  $< .06$  (Hu & Bentler, 1999) indicates a good fit.

The goodness of fit statistics in Table 2 indicate that the simple 10-factor model best described both women's and men's SIS/SES scores, but offered only modest improvement over the hierarchical "10-in-3" factor model. The simple three-factor model was associated with decreased model-data consistency for both men and women, and there was a trend for all models to fit men's SIS/SES data slightly better than women's. To provide information about gender differences, we conducted stepwise tests for factorial invariance over sex (see Table 3).

The pattern of test results in Table 3 suggests that the factor loadings and residual variances of SIS/SES items are sex invariant, because the equality constraints on factor loadings and on residual variances do not lead to strong deteriorations in model fit. The structure of mean scores is not gender invariant for all SIS/SES items. However, as requiring equal intercepts clearly leads to worsening fit. This implies that the structure of individual differences *within* male and female groups is equal, while mean gender differences on some SIS/SES items have another origin (see, e.g., Lubke, Dolan, Kelderman, & Mellenbergh, 2003). In order to correct for potential measurement bias on these items, we allowed item intercepts to be freely estimated across gender, and we used the results of these bias-corrected analyses to examine gender differences in factor means (see Table 4).

Similarities in the pattern of our fit indices, as well as overall magnitude of effects, suggest that while men and women score differently on individual SIS/SES items, the factor structures underlying men's and women's SIS/SES scores appear globally similar. We concluded that the model-data fit for women's SIS/SES scores was fair (as compared with a good fit for men), and it was adequate for preliminary testing of our remaining hypotheses. As Janssen and colleagues (2002a) concluded that the modest improvement in fit offered by the 10-factor model did not outweigh the practical advantages of the more parsimonious, theoretically consistent three-factor model in men, we followed this recommendation and used the three-factor model to further examine the characteristics of women's SIS/SES scores.

*Gender comparisons on the SIS/SES scales.* MANOVAs performed on the three higher-level scales ( $F(3, 2004) = 213.04, p \leq .001$ ) and the 10 lower-level

**Table 3.** Stepwise Test for Factorial Invariance Over Sex

Model	Restriction	$\chi^2$	df	CFI	NNFI	RMSEA
Ten factor	Configuration	5226.8	1800	0.93	0.92	0.047
	Factor loadings	5326.5	1835	0.93	0.92	0.047
	Residual variance	5608.8	1880	0.92	0.92	0.048
Ten in three factor	Intercepts	7090.1	1915	0.89	0.89	0.058
	Configuration	823.9	1864	0.92	0.91	0.052
	Factor loadings	5932.1	1899	0.91	0.91	0.051
Three factor	Residual variance	6203.4	1944	0.91	0.91	0.052
	Intercepts	7605.1	1979	0.88	0.88	0.060
	Configuration	7660.8	1884	0.88	0.87	0.066
	Factor loadings	7809.5	1926	0.87	0.87	0.065
	Residual variance	8153.6	1971	0.87	0.87	0.067
	Intercepts	9859.3	2013	0.83	0.84	0.074

Note:  $\chi^2$  = Model chi square; CFI = Bentler Comparative Fit Index; NNFI = Bentler–Bonnett Non-normed Fit Index; RMSEA = Steiger-Lind Root Mean Square Error of Approximation Index. (Better fit is reflected in higher coefficients [values approaching 1.0] for the CFI and NNFI, and in smaller values [lower bound of zero] for  $\chi^2$ /df ratios and RMSEA.)

subscales ( $F(10, 2005) = 120.44, p \leq .001$ ) indicated that the pattern of SIS/SES scale scores differed for male and female participants. ANOVAs revealed significant gender differences on the higher-level sexual excitation (SES) and inhibition scales (SIS1/Threat of Performance Failure and SIS2/Threat of Consequences). As predicted, men’s SES scores were significantly higher than women’s ( $F(1, 2006) = 230.19, p \leq .001$ ), while women scored higher than men on both SIS1 ( $F(1, 2006) = 138.41, p \leq .001$ ) and SIS2 ( $F(1, 2006) = 425.13, p \leq .001$ ). Effect sizes for gender differences were as follows: SES ( $d = .67$ ), SIS1 ( $d = -.57$ ), and SIS2 ( $d = -.92$ ). Distributions, means, standard deviations, and ranges of participants’ scores on the three higher-level SIS/SES scales are presented in Table 4.

Cronbach’s alpha coefficients for the three higher-level scales are also presented in Table 4. The internal consistency of the SES, SIS1, and SIS2 scales appears acceptable for both women and men (Janssen et al., 2002a).

ANOVAs also revealed significant gender differences on 9 of the 10 lower-level SIS/SES subscales. Women had higher scores than men on the sexual inhibition subscales, while men had higher scores than women on all of the sexual excitation subscales (Table 5). Because the factor analyses indicated the presence of uniform bias on some items, Table 5 also gives the results of the factor mean differences based on factor analyses of items after correction for bias. The bias-corrected and noncorrected results show strong convergence, indicating that these gender differences are not exclusively due to measurement bias. The “Performance Concerns” subscale is a potential exception warranting further study, as bias correction reduced factor mean differences on this subscale.

*Relationships between the SIS/SES Scales.* Women’s scores ( $N = 1,040$ ) on the three higher-level scales (SES, SIS1, and SIS2) suggested that relationships between SES and the two sexual inhibition scales (SIS1, and SIS2) for women were negligible ( $r = +.05$  and  $-.07$ , respectively) and similar to men’s ( $r = -.05$  and  $-.09$  in Janssen and colleagues’ (2002a) sample of 408 men). The SIS1 and SIS2 scales were associated modestly in women ( $r = +.19$ ). This difference was slightly more pronounced in men ( $r = +.27$ ; Janssen et al., 2002a), and reflects a significant gender difference ( $z = 1.88$ ). These statistics indicate that the three higher-level SIS/SES scales are relatively independent in both women and men.

**Table 4.** Gender Comparisons SES, SIS1, and SIS2

		Men ( $N = 970$ )	Women ( $N = 1038$ )	Gender Comparisons	Effect Size ( $d$ )
<i>SES</i>					
Sexual excitation (20 items)	$\bar{X}$	56.74	51.25	$F(1, 2006) = 230.19^a$	.67
	(SD)	(7.69)	(8.52)		
	range	27–80	26–77		
	alpha( $\alpha$ )	0.88	0.87		
<i>SIS1</i>					
Inhibition due to threat of performance failure (14 items)	$\bar{X}$	27.66	30.36	$F(1, 2006) = 138.41^a$	-.57
	(SD)	(5.24)	(5.01)		
	range	14–48	14–48		
	alpha( $\alpha$ )	0.80	0.76		
<i>SIS2</i>					
Inhibition due to threat of performance consequences (11 items)	$\bar{X}$	27.62	31.68	$F(1, 2006) = 425.13^a$	-.92
	(SD)	(4.43)	(4.73)		
	range	11–42	11–44		
	alpha( $\alpha$ )	0.71	0.70		

Note: <sup>a</sup> $p \leq .001$ . SES = Sexual Excitation, SIS1 = Sexual Inhibition-1, SIS2 = Sexual Inhibition-2.

**Table 5.** Gender Differences on Lower-Level SIS/SES Subscales

	Men (N = 973) M̄ (SD)	Women (N = 1,043) M̄ (SD)	Gender Comparisons	Factor Mean Difference With Correction for Bias <sup>d</sup>	Effect Size (d)
<i>SES</i>					
“Social interactions” (9 items)	25.84 (4.08)	22.30 (4.10)	F(1, 2014) = 377.92 <sup>a</sup>	Z = -19.82 <sup>a</sup>	1.14
“Visual stimuli” (4 items)	11.79 (2.12)	10.35 (2.43)	F(1, 2014) = 200.47 <sup>a</sup>	Z = -11.04 <sup>a</sup>	.63
“Fantasizing about sex” (4 items)	12.14 (1.83)	12.05 (1.86)	F(1, 2014) = 1.32	Z = -8.04 <sup>a</sup>	.55
“Nonspecific stimuli” (3 items)	6.96 (1.66)	6.75 (1.64)	F(1, 2014) = 8.40 <sup>b</sup>	Z = -9.34 <sup>a</sup>	.66
<i>SIS1</i>					
“Losing arousal easily” (8 items)	16.44 (3.45)	17.46 (3.28)	F(1, 2014) = 45.36 <sup>a</sup>	Z = 5.80 <sup>a</sup>	-.37
“Partner concerns” (3 items)	4.75 (1.43)	5.91 (1.60)	F(1, 2014) = 297.80 <sup>a</sup>	Z = 16.25 <sup>a</sup>	-1.30
“Performance concerns” (3 items)	6.50 (1.56)	6.99 (1.43)	F(1, 2014) = 54.50 <sup>a</sup>	Z = 1.84 <sup>c</sup>	-.15
<i>SIS2</i>					
“Risk of being caught” (4 items)	9.44 (2.24)	10.94 (2.49)	F(1, 2014) = 202.11 <sup>a</sup>	Z = 11.17 <sup>a</sup>	-.77
“Negative consequence” (3 items)	8.21 (1.96)	9.28 (1.90)	F(1, 2014) = 154.40 <sup>a</sup>	Z = 13.12 <sup>a</sup>	-1.08
“Pain/norms and values” (4 items)	9.97 (1.93)	11.53 (1.87)	F(1, 2014) = 341.25 <sup>a</sup>	Z = 12.44 <sup>a</sup>	-1.42

Note: <sup>a</sup>*p* ≤ .001; <sup>b</sup>*p* ≤ .01; <sup>c</sup>*p* ≤ .05; <sup>d</sup>Factor mean for women minus factor mean for men. (SES = Sexual Excitation, SIS1 = Sexual Inhibition-1, SIS2 = Sexual Inhibition-2).

*Test-retest reliability.* A subset of our female participants completed the SIS/SES on two occasions (*N* = 51). The average number of days between session 1 and session 2 was 31.9 (range = 16–63 days). Reliability coefficients indicated that female participants’ scores were as stable as men’s for the SES (*r* = +.70) and SIS1 scales (*N* = +.68). (Coefficients for men were *r* = +.76 and +.67, respectively [Janssen et al., 2002a]. Women’s SIS2/Threat of Consequences scores (*r* = +.41) showed more variability over time than men’s (*r* = +.74). This gender difference was significant (*z* = 2.76). Visual inspection of scatterplots revealed that the SIS2 test-retest correlation for women was affected by the responses of two participants. Removal of outliers resulted in a SIS2 test-retest coefficient of *r* = +.60.

*Convergent and discriminant validity.* Correlations among SES, SIS1, SIS2, and other measures for women and men are presented in Table 6. The male sample includes a subset of 408 participants whose validity results were published previously (Janssen et al., 2002a).<sup>1</sup> Associations between women’s SIS/SES scores and other measures tended to resemble the findings for men in both magnitude and direction. Of the three scales, SIS1/Threat of Performance Failure exhibited the least overlap with other measures. Although both men’s and women’s scores on SES and SIS2/Threat of Consequences were strongly associated with scores on other sexuality-related measures (SOS and SOI), these relationships appeared modestly more

pronounced in women than in men. Men’s SIS/SES scores showed stronger relationships with some measures of general behavioral approach/avoidance (e.g., SES with BIS, BAS—Reward Responsiveness and BAS—Drive, and SIS1 with the Harm Avoidance subscale of the MPQ). SES—Fun Seeking was an exception, showing modest associations with both SES and SIS2 in women. Men’s and women’s SIS/SES scores showed very similar relationships with the Neuroticism and Extroversion subscales of the EPQ. Interestingly, social desirability scores (SDSR) showed a negative association with SES in women but not men, and a modest positive relationship with SIS2, but only in men.

*Exploring sexual excitation and inhibition in women.* Given that all models tested appeared to fit men’s SIS/SES data slightly better than women’s, we questioned how this might be related to gender differences in the relevance of individual items to the higher-level factors. Such response tendencies might contribute to differential relationships of these dimensions with one another and with other measures. To better understand potential item-level variations, we conducted an EFA of the arousal themes featured in a three-factor model of women’s SIS/SES scores.

In order to allow additional themes from the initial item pool to figure in the solution, SIS/SES data of 307 women who completed the original 77-item version of the SIS/SES were analyzed via principal axis factor extraction with varimax rotation. (Of 326 respondents, 19 were eliminated due to missing data.) Only those item loadings greater than 0.4 were interpreted, as it was observed that at this level, multiple factor loadings (e.g., items loading onto more than one factor) were minimized. The three-factor EFA solution involved 42 item loadings greater than 0.4 and explained 31% of

<sup>1</sup>Janssen and colleagues (2002a) reported that the correlation between sexual excitation and neuroticism was -.22. This involves a typo. The correlation was +.22, which is identical to the one found for men in the current study.



**Table 6.** *Correlations of SES, SIS1, and SIS2 With Other Measures*

	SES		SIS1		SIS2	
	Women	Men	Women	Men	Women	Men
Social desirability (SDSR-5)	-.23	.02	-.18	-.11	-.01	.17 <sup>b</sup>
Behavioral inhibition/activation scales (BIS/BAS)						
BIS	.16	.23 <sup>b</sup>	-.01	.13	.16	.21 <sup>b</sup>
BAS-Reward Responsiveness	.11	.37 <sup>b</sup>	-.19	-.12 <sup>b</sup>	-.08	-.01
BAS-Drive	.15	.25 <sup>b</sup>	.06	-.01	-.09	-.07
BAS-Fun Seeking	.27 <sup>b</sup>	.25 <sup>b</sup>	-.19	-.18	-.31 <sup>b</sup>	-.17 <sup>b</sup>
Eysenck personality questionnaire (EPQ)						
Neuroticism	.16	.22 <sup>b</sup>	.18	.20 <sup>b</sup>	.07	-.09
Extraversion	.03	-.01	-.20	-.14 <sup>b</sup>	-.12	-.10
Harm avoidance subscale (MPQ)	-.10	-.05	-.08	.19 <sup>b</sup>	.23	.26 <sup>b</sup>
Sexual opinion survey (SOS)	.58 <sup>b</sup>	.42 <sup>b</sup>	-.08	-.10	-.33 <sup>b</sup>	-.28 <sup>b</sup>
Sociosexual orientation inventory (SOI)	.38 <sup>b</sup>	.20 <sup>b</sup>	-.12	.08	-.47 <sup>b</sup>	-.33 <sup>b</sup>

Note: <sup>b</sup> $p \leq .01$ , Holm's sequential Bonferroni procedure (Holm, 1979). SES = Sexual Excitation, SIS1 = Sexual Inhibition-1, SIS2 = Sexual Inhibition-2. (Women:  $N = 141$  for all measures except SDRS-5 [ $N = 1040$ ]. Men:  $N = 531$  for all measures except SDRS-5 [ $N = 971$ ]).

the total response variance. The factor groupings largely were similar to the three-factor model based on men's data, but differences were notable at the item level. For example, the most important item in the sexual excitation factor ("When I read something sexual in a book, I get aroused") did not figure at all in the solution derived from men's data. Likewise, two of the four most important items loading on the SIS2/Threat of Consequences factor in women, both of which addressed relational concerns ("If, while having sex, I feel that my partner is not paying attention to me, I have difficulty staying aroused" and "When I feel angry with my partner, I am not likely to become sexually aroused") did not appear in the male SIS2 factor. Conversely, other themes represented in the model based on men's data were absent in the women's solution, including excitation items describing concordance between subjective and genital response (e.g., "When I feel aroused, I usually have a genital response") and inhibition items highlighting concern about physically hurting a partner ("If having sex will cause my partner pain, I am unlikely to stay sexually aroused").

Themes of shared relevance to male and female inhibitory processes included distraction, focus on sexual performance, and losing arousal easily (SIS1/Threat of Performance Failure), as well as the risk of getting caught or contracting an STD (SIS2/Threat of Consequences). Most sexual excitation (SES) items in the three-factor model based on women's data described arousal stemming from social interactions, versus less relational activities (such as arousal in response to fantasy or sexually explicit materials).

### Discussion

In this study, both women and men showed substantial variability in sexual inhibition and excitation tendencies. Within-gender variability on all three

SIS/SES factors was much greater than average differences between women and men. For example, both men's and women's SIS1 scores ranged from 14 to 48, while the difference between men's ( $\bar{X} = 27.66$ ) and women's ( $\bar{X} = 30.36$ ) average scores on SIS1 was 2.70. This finding in itself is important, as it suggests that improving our understanding of individual differences could substantially impact our ability to predict sexual behavior patterns (such as sexual risk taking and sexual dysfunctions) and design helpful interventions. Our findings also suggest other gender similarities and gender differences on the SIS/SES, and we will discuss both types of findings.

*Hypothesis 1.* Our first hypothesis was that our results would suggest that a globally similar factor structure underlies sexual arousal processes in men and women, despite modest decreases in model-data fit in a female dataset. On the basis of fit indices alone, we concluded that the fit between the three factor structure and men's data was good, whereas the fit to women's data was fair. This conclusion is open to interpretation, given that different researchers prefer to use alternate cutoffs for different fit statistics. A stronger statement can be made regarding gender similarities in the overall pattern of test results in Table 2; the three- and "10-in-3" factor models correspond to modest decreases in fit in both men and women, as compared with the 10-factor structure. The tests of factorial invariance (Table 3) suggest that the structure of individual differences in SIS/SES scores is the same for men and women.

*Hypothesis 2.* Our second hypothesis was strongly supported by our data: women scored lower on sexual excitation and higher on both sexual inhibition scales compared with men. Our male and female participants

reported differences in sexual attitudes and behavior that are well documented in previous literature (Kinsey et al., 1948, 1953; Laumann et al., 1994) and are theoretically consistent with higher sexual excitation in men and higher sexual inhibition in women. For example, compared with women, our male participants reported more frequent masturbation, more one-night stands, and more positive attitudes toward “casual” sex. In contrast, our female participants tended to report less frequent orgasms and more arousal difficulties during sexual activity with a partner, in comparison with men. If these findings reflect the impact of cultural factors and sociobiological influences, controlling for these factors might narrow the gap between women’s and men’s SIS/SES scores. Likewise, some proportion of the gender difference in SIS/SES scores could be attributable to differences between our male and female participants on demographic variables, such as religiosity. Our results suggest that despite the globally similar factor structure underlying men’s and women’s scores, separate analyses of male and female SIS/SES data should be undertaken in order to avoid obscuring what may be learned from these gender differences.

It also could be that the young age and relative sexual inexperience of our sample is relevant to the gender differences in participants’ SIS/SES scores. Sampling an older or more sexually experienced population might yield smaller gender differences in proneness for sexual excitation and inhibition. The experience of some sexual difficulties (e.g., erectile dysfunction and vaginal dryness) is known to covary with age (Araujo, Durante, Feldman, Goldstein, & McKinlay, 1998; Bartlik & Goldberg, 2000), and the consequences of sexual activity are presumably not equivalent for persons in different stages of life or relationships. Likewise, sexual excitation may exhibit a modest decline with age (Janssen et al., 2002a, 2002b; Graham, Sanders, & Milhausen, 2006), or could be influenced by other life changes (such as a new sexual partner, or a new baby). Longitudinal studies could greatly inform our understanding of dual control model processes in this regard.

*Hypothesis 3.* Our third prediction involved gender similarities with regard to internal validity, convergent/discriminant validity, and test–retest reliability. Internal consistency of the SES, SIS1, and SIS2 factors was similar for men and women. Relationships among these factors and other measures tended to be similar in direction and magnitude for women and men, but they are not identical. The SIS1 (Inhibition due to Threat of Performance Failure) scores showed the weakest associations with scores on other measures for both men and women, and this finding makes intuitive sense, given the specificity of the construct and its context of expression (e.g., sexual performance situations). The

SIS1 scale appears to measure a propensity that is unrelated to general sexual attitudes, and it may be more associated with cognitive factors such as focus and distractibility.

While both men’s and women’s scores on SES and SIS2 (inhibition due to Threat of Performance Consequences) showed significant relationships with measures of sexual attitudes and affective responses (e.g., the SOS and SOI), these relationships were especially pronounced for women. Furthermore, men’s SES and SIS2 scores showed more overlap with several measures of general behavioral approach and avoidance (SES with BIS, BAS—Reward Responsiveness and BAS—Drive, and SIS1 with the Harm Avoidance subscale of the MPQ) in comparison with women’s scores. In fact, men’s SES scores were equally or more strongly related to the BIS/BAS scales than the SOI, which measures the predisposition to engage in casual sex. These findings may be interpreted to mean that the neurophysiological mechanisms, or brain modules (cf. Spiering & Everaerd, 2007), involved in sexual excitation and inhibition are somewhat less specific to sex for men than for women. Alternatively, although the two interpretations are not incompatible, the findings may reflect the impact of the sexual double standard. If men’s sexuality is subject to less frequent or less harsh social criticism, men may be more inclined to make decisions about sexual and nonsexual behavior in similar ways, or based on similar personality traits. In contrast, if women have justified concerns about the impact of sex on reputation, it would make sense that they might rely more on their attitudes about sex when making decisions about sexual behavior, rather than deferring to the general personality characteristics or response tendencies they exhibit in other contexts. The fact that social desirability scores showed differential relationships with men’s and women’s SIS/SES scores offers partial support for this hypothesis. Social desirability bias was associated with lower sexual excitation for women and with higher inhibition (SIS2/Inhibition due to threat of performance consequences) for men. As such, the sexual double standard may contribute to gender bias in SIS/SES scores, and this possibility merits further research.

This study yielded mixed results regarding the test–retest reliability of women’s SIS/SES scores. We found gender similarities in the relatively high reliability of SES and SIS1/Threat of Performance Failure scores, but women’s scores on SIS2/Threat of Consequences appeared less reliable. Janssen and colleagues (2002a) suggested that SIS2 concerns may be less stable across situations or partners than scores on SES and SIS1, but this interpretation fails to explain why women’s SIS2 reliability statistics were lower than men’s. Removal of outliers improved the test–retest reliability of SIS2 scores substantially, but SES and SIS1 scores did not require such corrections.

One explanation for the lower reliability of women's SIS2/Threat of Consequences scores could be that the SIS/SES conceptualizes negative experiences with sex less well for women than for men. When a three-factor model was explored (EFA) in women's data, the solution explained 31% of the variance in women's responses, whereas the three-factor solution based on men's data explained 60% of the variability in men's scores. This finding suggests that some themes relevant to women's arousal processes may be underrepresented on the SIS/SES. Furthermore, since reliability coefficients were calculated using women's scores on the solution initially explored in men, two of the four highest-loading SIS2 items in the three-factor solution yielded by women's data were missing (e.g., "If, while having sex, I feel that my partner is not paying attention to me, I have difficulty staying aroused," and "When I feel angry with my partner, I am not likely to become sexually aroused"). Feelings of emotional disconnectedness may be a more important source of sexual inhibition for women than for men. Including this theme (and perhaps others) might improve the reliability of women's SIS2 scores.

*Hypothesis 4.* As expected, there were item-level differences between the three-factor solution yielded by our EFA of women's data and the one established previously for men (Janssen et al., 2002a). For example, our findings revealed that the theme accounting for the most variability in women's SES scores described arousal in response to reading sexual passages in books. This item did not figure in the men's solution. Given the popularity of romance novels, which are marketed primarily to women, this finding is not altogether surprising. Women may be more likely than men to seek exposure to sexually arousing material in written form (versus sexually explicit magazines or films) because books are more culturally sanctioned.

Alternatively, perhaps books provide more contextual information and/or room for cognitive elaboration or fantasy, and these features help to disinhibit or facilitate women's arousal. Other SIS/SES themes appeared particularly relevant to men's arousal. Items describing concordance between genital response and subjective arousal (such as, "When I feel interested in sex, I usually have a genital response") loaded significantly on the SES factor explored in men, but not in women. Concerns about causing a partner pain also appeared more relevant to men's sexual inhibition. This is consistent with the fact that sexual pain is more frequently experienced by women, and that there are two Diagnostic and Statistical Manual (*DSM*) diagnoses for sexual pain in women, and none for men (American Psychiatric Association, 1994).

Despite gender differences on individual SIS/SES items, which may contribute to differential relevance

of such items to the SES, SIS1, and SIS2 subscales in women and men, the three-factor solutions based on men's and women's scores strongly resemble one another. Many of the same items grouped together in both solutions, implying that "true" underlying dimensions are present in the SIS/SES data that are stable, reliable, and similar in women and men. Sexual excitation themes included in our EFA of women's data predominantly described arousal in response to social interactions (e.g., "When an attractive person flirts with me, I easily become sexually aroused"). Results also suggested a shared component to responsiveness to visual stimuli ("When I see others engaged in sexual activities, I feel like having sex myself") and fantasy ("When I start fantasizing about sex, I quickly become aroused myself"), although these were not as strongly represented. Perhaps sociocultural values attached to different activities engender response biases that affect men and women differently. Some individuals may be reluctant to report arousal to sexual fantasy or visual stimuli (which includes pornography and other forms of adult entertainment). If this tendency is more pronounced in women, this could account for the greater gender similarities on SIS/SES items that describe social interactions.

Alternatively, women, as compared with men, may tend to be less "hardwired" for arousal in nonrelational contexts. Cooper, Delmonico, and Burg (2000) conducted an online study of cybersex participants and found that female subjects were more likely than men to report preferring relational online activities (such as sex chatting), whereas more men preferred viewing Internet pornography. Whether such patterns are socially constructed or have biological origins, our results suggest that social interactions may facilitate arousal in men and women more similarly than behaviors without a relational component.

Themes that appeared of approximately equal relevance to men's and women's sexual inhibition included difficulty getting aroused or losing arousal due to problems with distraction, focus on sexual performance, and the risk of getting caught or contracting an STD, whereas concerns about pain, pleasing a partner sexually, and reliable concordance between subjective and genital response were less shared. This distinction appears consistent with greater and lesser similarities, respectively, of these experiences in men and women. We predicted the risks of pain to have different relevance to sexual inhibition in women and men. While we did not anticipate that concerns about pleasing a partner would distinguish men's sexual inhibition from women's, this finding makes intuitive sense. Female participants tended to report less frequent orgasms and more arousal problems during sexual activity with a partner than men, so perhaps the greater relative reliability ease of men's arousal renders women less vulnerable than men to worry about pleasing a partner. Likewise, the

fact that women and men appear to experience the relationship between subjective and genital response differently is consistent with many psychophysiological research findings (Laan & Everaerd, 1995).

In general, our findings suggest that although there are gender similarities in the processes underlying arousal, the items that account for the most variability in these processes in women and men may not necessarily be the same. It is unclear at this point whether modifying the format of the SIS/SES would result in a solution that explains sexual excitation and inhibition in men and women both fully and equally, or whether this is a realistic agenda.

Two measures exploring dual control model processes have been reported: the SIS/SES validated in men (Janssen et al., 2002a) and the SESII-W validated in women (Graham et al., 2006). Based on our results, a conservative recommendation can be made that the former be used with men and the latter with women. However, a direct comparison of the two measures in men and women is needed. For both questionnaires, versions focusing on unique or shared themes in sexual excitation and inhibition in women and men could be created, and these could improve our understanding of individual differences in arousal processes. For example, a short-form measure is being developed that features SIS/SES items with similar psychometric properties in women and men.

### Conclusions

This study has helped fill several gaps in the dual control model literature. It explores men's and women's SIS/SES scores with regard to both gender differences and similarities. For example, it suggests that women's SIS/SES scores are characterized by a factor structure that resembles men's, despite gender differences on overall SIS/SES scores. Limitations of these findings include limited generalizability of results due to the relative youth and sexual inexperience of the sample, and the existence of confounds that could contribute to gender differences in SIS/SES scores (such as gender differences on demographic and sexual behavior variables, as well as the unknown influence of response biases associated with the sexual double standard).

In recent literature, concerns have been expressed regarding the typically atheoretical nature of currently published sex research (Weis, 1998a, 1998b). These criticisms include that the majority of published articles in sexology journals are confined to descriptive data reports, and that, furthermore, when hypotheses are tested, they rarely are derived from theoretical propositions (Weis, 1998a). The dual control model has exceptional potential for generating hypotheses about a wide range of human sexual behavior, including sexual dysfunctions, sexual risk taking, and a host

of other sexual phenomena. A notable contribution of this model is its ability to explain individual differences in sexual attitudes and behaviors, as previous research has not provided a good account of these processes.

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