

## **Women's Finger Sensitivity Correlates with Partnered Sexual Behavior But Not Solitary Masturbation Frequencies**

STUART BRODY

*School of Social Sciences, University of the West Scotland, Paisley, United Kingdom*

AGNETA H. FISCHER

*Department of Social Psychology, University of Amsterdam, Amsterdam, The Netherlands*

URSULA HESS

*Department of Psychology, University of Quebec at Montreal, Quebec, Canada*

*In a sample of 97 healthy Dutch female university students, women with greater finger tactile sensitivity (von Frey-type filaments) engaged more in partnered (but not solitary masturbation) sexual behavior. Orgasmic responses in the past 30 days were not correlated with finger sensitivity. Results are discussed in terms of differences between different sexual behaviors, as well as susceptibility to reinforcement, and psychoanalytic views of conversion hysteria.*

Tactile sensitivity can be viewed along a continuum, ranging from heightened touch sensitivity, through average levels, diminished sensation (hypoesthesia), and both organic and psychogenic anesthesia (conversion disorder or conversion hysteria) at the extreme low end.

A higher sensory (tactile in the present case) threshold is indicative of lesser sensitivity. Evidence of a more general relationship between tactile sensitivity and sexual functioning in a nonclinical sample of men aged 19–58 was provided by the finding (Edwards & Husted, 1976) that vibrotactile finger threshold (this is a different measure than the simple pressure stimuli used

---

Travel costs of Professor Brody were covered in part by a grant from the Carnegie Trust for the Universities of Scotland. Professor Hess was supported by a visiting scholar grant from the University of Amsterdam. The authors appreciate the assistance of Candice Lowdermilk in data collection.

Address correspondence to Stuart Brody, Division of Psychology, School of Social Sciences, University of the West Scotland, Paisley PA1 2BE UK. E-mail: stuartbrody@hotmail.com

in the current and other referenced studies) correlated 0.40 with vibrotactile erect penis threshold, 0.49 with age, and -0.57 with 4 week sexual intercourse frequency (attenuated to  $-0.26$  if the “effect” of age was removed with partial correlation).

In this same vein, in small samples of women with depressed mood, those taking the selective serotonin reuptake inhibitor fluoxetine (but not an unmedicated group) displayed a significant inverse association of finger sensory threshold with both vaginal lubrication and sexual desire (Frohlich & Meston, 2005a). The same researchers also reported that women with sexual arousal disorder had higher finger tactile thresholds than did a control group (Frohlich & Meston, 2005b).

A comparison of clinical and normal groups of women revealed that higher vulvar tactile threshold (less sensitivity) was associated with estrogen deficiency, sexual dysfunction, neurologic impairment, and unreplaced postmenopausal status (Romanzi, Groutz, Feroz, & Blaivas, 2001). Further, it has been noted that in laboratory animals, spontaneous noncopulators tend to have higher pain thresholds, an effect that has been conjectured to be related to greater serotonin activity (which would be expected to both inhibit sexual activity as well as dampen at least pain) (King & Alexander, 2000). In women, pain thresholds were found to correlate inversely ( $-.45$ ) with rated “sexual motivation” (King & Alexander, 2000). Although a detailed discussion of the role of pain is beyond the scope of this brief review, it might well be that in at least some cases, those who do not allow themselves to be able to feel pain also do not allow themselves to feel pleasure.

In sum, the studies described above suggest that tactile sensitivity and sexual functioning are positively related. One possible explanation for this relationship may be based on the observation that both children and animals subjected to surgical injuries indicate an enduring increase in general tactile threshold (not only at the site of the injury) (Schmelzle-Lubiecki, Campbell, Howard, Franck, & Fitzgerald, 2007). This suggests an adaptive process in which early aversive experiences lead to a functional down-regulation of tactile sensitivity. This is supported by research showing that physically abusive parents reported being deprived of physical affection during their own childhood and further that their adult sex life was extremely poor (Steele & Pollock, 1974). Other studies have also shown that in children referred for “excessive” masturbation, there had been some withdrawal of affectionate parental tactile stimulation, and the restoration of such stimulation reduced the “excessive masturbation” (Komisaruk & Whipple, 1998; McCray, 1978).

Healthy research subjects are able to differentiate emotions from being touched on their arm by an unseen stranger (Hertenstein, Keltner, App, Bulleit, & Jaskolka, 2006). In contrast, it is not unreasonable to posit that persons with poor tactile sensitivity would be less able to differentiate emotions through at least the tactile channel, and hence might be less comfortable with sexual contact. Difficulty differentiating and expressing emotions

(alexithymia) is associated with lower frequency of vaginal intercourse, but not with other sexual behaviors (Brody, 2003).

Based on these observations, we hypothesize that tactile sensitivity plays a role in sexual development and hence sexual activity in later life. However, there are substantial physical and psychological differences between different sexual behaviors (Brody, 2002, 2003, 2004, 2006a, 2007a; Brody, 2007b; Brody & Krüger, 2006; Brody, Laan, & van Lunsen, 2003; Brody, Potterat, Muth, & Woodhouse, 2005; Brody & Preut, 2003; Brody, Veit, & Rau, 2000; Costa & Brody, 2007), necessitating the examination of different sexual behaviors separately.

The present study examines the relationship between tactile threshold of the finger and frequency of different sexual behaviors in healthy women. Possible confounding effects of social desirability responding and age are considered.

## METHOD

### Participants

One hundred and two female students with a mean age of 21 years ( $SD = 4.6$ ) were recruited from postings at the University of Amsterdam offering course credit to Psychology undergraduates. Inclusion criteria were age 17 to 40 (to capture the age range with greatest sexual activity frequencies (Brody, 1997)) and self-reported good health, with no known neurological disorders. The study was conducted according to the University of Amsterdam ethical procedures. Participants provided informed consent and were made aware of their right to discontinue participation at any time.

### Measures

A female experimenter applied Von Frey-type microfilaments (Stoelting; Wood Dale, IL, USA) with the filaments 1 through 7 (corresponding to evaluator sizes 1.65, 2.36, 2.44, 2.83, 3.22, 3.61, and 3.84; these sizes are  $= \log_{10} [10 \times \text{force in mg}]$ ). Participants were asked to close their eyes. The filaments (analogous to those used in previously cited studies of sexual behavior and finger tactile sensitivity; (Frohlich & Meston, 2005a)) were applied in random order (different for each participant) to the plantar surface of the middle phalanx of the index finger. For each application, the experimenter counted to three, and following a random schedule, the filament was applied to the finger on one of the counts. The participant was asked to report on which count the filament was applied. Each filament was applied three times. Threshold was defined as the lowest pressure filament for which the participant could correctly report the count during which the filament was applied for all three trials.

Participants then completed a questionnaire on parameters (days in past 30 engaged in activity, days in past 30 orgasm from activity) of sexual behaviors (penile-vaginal intercourse, vaginal masturbation, clitoral masturbation, partner-performed vaginal masturbation, partner-performed clitoral masturbation, receiving cunnilingus, vibrator use during masturbation), as well as the Dutch version of a brief social desirability response bias scale (Ballard, 1992; Breugelmans & Van de Vijver, 2004).

### Statistical Analysis

Data were analyzed with linear correlation coefficients using SPSS statistical software package (Version 12.0.1 for Windows; Chicago, IL, USA).

## RESULTS

Of the 102 participants, four declined to complete the questionnaire on sexual behavior, and one subject was unable to accurately identify all three trials of the heaviest filament, leaving a maximum of 97 analyzable. Table 1 provides details on tactile threshold and number of days in the past 30 that participants engaged in the sexual behaviors, and the Ns reflect the number of subjects responding to the item.

Table 2 provides the correlations between tactile threshold and the number of days in the past 30 that participants engaged in the sexual behaviors. Overall, women who were more sensitive to touch also reported higher frequencies of partnered sexual behaviors, but not of the masturbation behaviors (reanalysis of the data after assigning a zero value to subjects who did not respond to a given item produced similar results).

Finger tactile threshold was not associated ( $r = -.01$ ) with social desirability responding, and the only sexual behavior associated (inversely) with social desirability responding was partner clitoral masturbation frequency ( $r = -.26$ ,  $p < .02$ ). Neither finger threshold nor sexual behavior frequencies (except for vibrator use;  $r = .33$ ,  $p < .05$ ) were associated with age.

Frequency of vibrator use was the only sexual behavior that showed a positive (but nonsignificant) association with tactile threshold (hence, less sensitivity). None of the sexual behavior orgasm frequencies were associated with tactile threshold.

## DISCUSSION

Women with greater tactile sensitivity engaged more frequently in partnered sexual behaviors, but not in solitary masturbatory activities. In a sense, it appears that (at least younger) women who have less frequent sex with a

**TABLE 1.** Descriptive Statistics (Sexual Behaviors are Days in Past 30)

	Penile- Vaginal Intercourse	Masturbation- Clitoral	Masturbation- Vaginal	Masturbation- Vibrator	Partner Masturbation- Clitoral	Partner Masturbation- Vaginal	Cunnilingus	Tactile Threshold (Filament)
N	90	91	78	35	87	84	86	97
Mean	8.6	5.7	3.1	2.1	6.5	6.3	5.3	4.1
SD	6.0	5.4	4.4	3.8	5.5	5.8	4.7	1.5

**TABLE 2.** Correlation Between Tactile Threshold and Sexual Behaviors (Days in Past 30)

	Penile- Vaginal Intercourse	Masturbation- Clitoral	Masturbation- Vaginal	Masturbation- Vibrator	Partner Masturbation- Clitoral	Partner Masturbation- Vaginal	Cunnilingus
r	-.24	-.16	-.14	.08	-.30	-.35	-.25
p	.023	.138	.215	.649	.004	.001	.019

partner might be relatively insensitive to touch. Tactile sensitivity was not otherwise associated with any of the orgasm measures. This suggests that orgasm involves steps beyond appreciation of partnered sexual contact—at least the integration and building of sexual arousal to the orgasmic goal (Brody, 2003). However, it might be that women with greater tactile sensitivity engage in more partner-related sexual activities because it produces tactile pleasure, and women's orgasmic capacity might be part of a different dimension unrelated to tactile sensitivity.

At a behaviorist level of explanation, it might be that greater tactile sensitivity allows for greater reinforcement associated with sexual stimulation (Brody, 1997). However, the reinforcement appears to be specific to partnered sexual activities. This specificity suggests that it is only interpersonal sexual behavior that is related to greater tactile sensitivity, a finding consistent with aspects of the psychoanalytic view of psychogenic hypoesthesia (repression or dissociation of sexuality into conversion symptoms for the purpose of reducing anxiety (Jones, 1980)). The less-threatening sexual activity of childhood (masturbation) is not related to general sensitivity.

However, it is also possible—either instead of, or in addition to sensitivity allowing for greater reinforcement—that more frequent partnered (but not solitary) sexual activity leads to enhanced tactile sensitivity; that is, that the partnered sexual contact leads to a functional up-regulation of tactile sensitivity.

It is noteworthy that in the present study tactile threshold was related to all forms of partnered sexual activity. This finding contrasts with studies demonstrating that measures of better physiological and psychological function correlate specifically with penile-vaginal intercourse orgasm and/or frequency and not with other sexual behavior orgasm or frequencies (Brody, 2002, 2003, 2006a, 2006b, 2007a, 2007b; Brody & Krüger, 2006; Brody et al., 2003; Brody & Preut, 2003; Brody et al., 2000), but is in line with other studies showing that masturbation (but not partnered sexual behaviors) was found to be associated with indices of less optimal psychological and/or physiological function. For example, masturbation was found to be associated with less slimness (Brody, 2004), greater depression (this included the finding that depressed women had a greater desire for masturbation but not sex with a partner) (Cyranowski et al., 2004; Frohlich & Meston, 2002), and less perceived love in a relationship (Costa & Brody, 2007).

The study had several limitations. Sample size was moderate, but led to significant correlations. The effect sizes were small-to-moderate, yet sexual activity is multi-causally determined, and therefore any given factor might not to be expected to explain more than a moderate amount of variance. We did not assess menstrual phase. Although menstrual phase is associated with changes in pain sensitivity, it not consistently associated with changes in tactile threshold (Bajaj, Arendt-Nielsen, Bajaj, & Madsen, 2001; Parlee, 1983). However, future studies might benefit from assessing menstrual phase, in case

potential variations in tactile threshold as a function of menstrual phase might add random noise (thereby slightly reducing the magnitude of correlations between sexual behavior and tactile sensitivity).

In sum, the present study showed a relationship between partnered sexual behavior frequency and tactile sensitivity, such that women who are more sensitive to tactile stimuli engage more frequently in partnered, but not in solitary, sexual behavior. This may be due to tactile or other interpersonal childhood experiences which both reduce tactile sensitivity and lead to psychological constellations that are less conducive to the enjoyment of sexual contact with other people. Further research should include frequency of non-sexual cuddling to better distinguish between preferences for intimate tactile contact per se and partnered sexual activity, and also attempt to examine to what degree insensitivity is a cause, and to what degree it is an effect of sexual problems.

## REFERENCES

- Bajaj, P., Arendt-Nielsen, L., Bajaj, P., & Madsen, H. (2001). Sensory changes during the ovulatory phase of the menstrual cycle in healthy women. *European Journal of Pain, 5*, 135–144.
- Ballard, B. (1992). Short forms of the Marlowe-Crowne Social Desirability Scale. *Psychological Reports, 71*, 1155–1160.
- Breugelmans, S. M., & Van de Vijver, F. J. R. (2004). Antecedents and components of majority attitudes toward multiculturalism in the Netherlands. *Applied Psychology, 53*, 400–422.
- Brody, S. (1997). *Sex at risk: Lifetime number of sexual partners, frequency of intercourse, and the low AIDS risk of vaginal intercourse*. New Brunswick, NJ: Transaction.
- Brody, S. (2002). High-dose ascorbic acid increases intercourse frequency and improves mood: A randomized controlled clinical trial. *Biological Psychiatry, 52*, 371–374.
- Brody, S. (2003). Alexithymia is inversely associated with women's frequency of vaginal intercourse. *Archives of Sexual Behavior, 32*, 73–77.
- Brody, S. (2004). Slimness is associated with greater intercourse and lesser masturbation frequency. *Journal of Sex & Marital Therapy, 30*, 251–261.
- Brody, S. (2006a). Blood pressure reactivity to stress is better for people who recently had penile-vaginal intercourse than for people who had other or no sexual activity. *Biological Psychology, 71*, 214–222.
- Brody, S. (2006b). Penile-vaginal intercourse is better: Evidence trumps ideology. *Sexual & Relationship Therapy, 21*, 393–403.
- Brody, S. (2007a). Intercourse orgasm consistency, concordance of women's genital and subjective sexual arousal, and erotic stimulus presentation sequence. *Journal of Sex & Marital Therapy, 33*, 31–39.
- Brody, S. (2007b). Vaginal orgasm is associated with better psychological function. *Sexual & Relationship Therapy, 22*, 173–191.



- Brody, S., & Krüger, T. H. C. (2006). The post-orgasmic prolactin increase following intercourse is greater than following masturbation and suggests greater satiety. *Biological Psychology*, *71*, 312–315.
- Brody, S., Laan, E., & van Lunsen, R. H. W. (2003). Concordance between women's physiological and subjective sexual arousal is associated with consistency of orgasm during intercourse but not other sexual behavior. *Journal of Sex & Marital Therapy*, *29*, 15–23.
- Brody, S., Potterat, J. J., Muth, S. Q., & Woodhouse, D. E. (2005). Psychiatric and characterological factors relevant to excess mortality in a long-term cohort of prostitute women. *Journal of Sex and Marital Therapy*, *31*, 97–112.
- Brody, S., & Preut, R. (2003). Vaginal intercourse frequency and heart rate variability. *Journal of Sex & Marital Therapy*, *29*, 371–380.
- Brody, S., Veit, R., & Rau, H. (2000). A preliminary report relating frequency of vaginal intercourse to heart rate variability, Valsalva ratio, blood pressure, and cohabitation status. *Biological Psychology*, *52*, 251–257.
- Costa, R. M., & Brody, S. (2007). Women's relationship quality is associated with specifically penile-vaginal intercourse orgasm and frequency. *Journal of Sex & Marital Therapy*, *33*, 319–327.
- Cyranowski, J. M., Bromberger, J., Youk, A., Matthews, K., Kravitz, H. M., & Powell, L. H. (2004). Lifetime depression history and sexual function in women at midlife. *Archives of Sexual Behavior*, *33*, 539–548.
- Edwards, A. E., & Husted, J. R. (1976). Penile sensitivity, age, and sexual behavior. *Journal of Clinical Psychology*, *32*, 697–700.
- Frohlich, P., & Meston, C. (2002). Sexual functioning and self-reported depressive symptoms among college women. *The Journal of Sex Research*, *39*, 321–325.
- Frohlich, P., & Meston, C. M. (2005a). Fluoxetine-induced changes in tactile sensation and sexual functioning among clinically depressed women. *Journal of Sex & Marital Therapy*, *31*, 113–128.
- Frohlich, P. F., & Meston, C. M. (2005b). Tactile sensitivity in women with sexual arousal disorder. *Archives of Sexual Behavior*, *34*, 207–217.
- Hertenstein, M. J., Keltner, D., App, B., Bulleit, B. A., & Jaskolka, A. R. (2006). Touch communicates distinct emotions. *Emotion*, *6*, 528–533.
- Jones, M. M. (1980). Conversion reaction: anachronism or evolutionary form? A review of the neurologic, behavioral, and psychoanalytic literature. *Psychological Bulletin*, *87*, 427–441.
- King, B. E., & Alexander, G. M. (2000). Pain sensitivity and individual differences in self-reported sexual behavior. *Journal of Comparative Psychology*, *114*, 193–199.
- Komisaruk, B. R., & Whipple, B. (1998). Love as sensory stimulation: physiological consequences of its deprivation and expression. *Psychoneuroendocrinology*, *23*, 927–944.
- McCray, G. M. (1978). Excessive masturbation of childhood: a symptom of tactile deprivation? *Pediatrics*, *62*, 277–279.
- Parlee, M. B. (1983). Menstrual rhythm in sensory processes: A review of fluctuations in vision, olfaction, audition, taste, and touch. *Psychological Bulletin*, *93*, 539–548.

- Romanzi, L. J., Groutz, A., Feroz, F., & Blaivas, J. G. (2001). Evaluation of female external genitalia sensitivity to pressure/touch: a preliminary prospective study using Semmes-Weinstein monofilaments. *Urology*, *57*, 1145–1150.
- Schmelzle-Lubiecki, B. M., Campbell, K. A., Howard, R. H., Franck, L., & Fitzgerald, M. (2007). Long-term consequences of early infant injury and trauma upon somatosensory processing. *European Journal of Pain*, *11*, 799–809.
- Steele, B. F., & Pollock, C. B. (1974). A psychiatric study of parents who abuse infants and small children. In R. E. Helfer & C. H. Kempe (Eds.), *The battered child* (2nd ed., pp. 89–133). Chicago: University of Chicago Press.