
ORIGINAL RESEARCH—ANATOMY/PHYSIOLOGY

Satisfaction (Sexual, Life, Relationship, and Mental Health) Is Associated Directly with Penile–Vaginal Intercourse, but Inversely with Other Sexual Behavior Frequencies

Stuart Brody, PhD, and Rui Miguel Costa, MA

Division of Psychology, School of Social Sciences, University of the West of Scotland, Paisley, UK

DOI: 10.1111/j.1743-6109.2009.01303.x

ABSTRACT

Introduction. Some sex therapists and educators assume that many sexual behaviors provide comparable sexual satisfaction. Evidence is required to determine whether sexual behaviors differ in their associations with both sexual satisfaction and satisfaction with other aspects of life.

Aims. To test the hypothesis that satisfaction with sex life, life in general, sexual partnership, and mental health correlates directly with frequency of penile–vaginal intercourse (PVI) and inversely with frequency of both masturbation and partnered sexual activity excluding PVI (noncoital sex).

Methods. A representative sample of 2,810 Swedes reported frequency of PVI, noncoital sex, and masturbation during the past 30 days, and degree of satisfaction with their sex life, life in general, partnership, and mental health.

Main Outcome Measures. Multivariate analyses (for the sexes separately and combined) considering the different satisfaction parameters as dependent variables, and the different types of sexual activities (and age) as putative predictors.

Results. For both sexes, multivariate analyses revealed that PVI frequency was directly associated with all satisfaction measures (part correlation = 0.50 with sexual satisfaction), masturbation frequency was independently inversely associated with almost all satisfaction measures, and noncoital sex frequencies independently inversely associated with some satisfaction measures (and uncorrelated with the rest). Age did not confound the results.

Conclusions. The results are consistent with evidence that specifically PVI frequency, rather than other sexual activities, is associated with sexual satisfaction, health, and well-being. Inverse associations between satisfaction and masturbation are not due simply to insufficient PVI. **Brody S, and Costa RM. Satisfaction (sexual, life, relationship, and mental health) is associated directly with penile-vaginal intercourse, but inversely with other sexual behavior frequencies. J Sex Med 2009;6:1947–1954.**

Key Words. Satisfaction; Sexual Intercourse; Epidemiology

Introduction

A recent survey in 27 countries revealed that sexual dissatisfaction is widespread, with 58% of women and 57% of men reporting that they are not fully satisfied with their sex life [1]. Despite this pervasiveness of dissatisfaction, defining what constitutes a satisfactory sex life has been problematic, and the implicit assumption by many sex

therapy and education professionals that diverse sexual behaviors can provide similar satisfaction lacks empirical support.

Women's level of sexual satisfaction was associated with ever having had an orgasm triggered purely by penile–vaginal intercourse (PVI) without extrinsic clitoral stimulation to elicit the orgasm (henceforth, vaginal orgasm) [2], and with quality of orgasm during PVI rather than orgasms

from other sources [3]. These findings are congruent not only with Freud's observation that only orgasms triggered by PVI allow the complete release of sexual tension characteristic of a mature personality [4], but also with reports of PVI orgasms as better and more satisfying than clitoral orgasms by women who can climax by both methods [5], as well as with the fact that the prolactin rise after PVI orgasm is 400% greater than following masturbation orgasm [6]. This postorgasmic prolactin surge is associated with sexual satiety (whether directly or as a process secondary to dopaminergic effects), and likely has an important role in mental health [6]. Dopaminergic signals from the hypothalamus are a primary determinant of prolactin release, and dopaminergic neurons in turn can be modulated by prolactin; a lengthier discussion of the issue is available elsewhere [7]. Moreover, Philippsohn and Hartmann showed that women's sexual satisfaction is determined primarily by greater frequency and subjective quality of PVI, but not of other sexual behaviors [3].

Greater frequency of "intercourse," defined by other authors as a combination of PVI and anal sex, was also associated with sexual satisfaction [8], but due to the relatively low monthly frequency of anal sex, the results may be due to PVI per se (see below for an examination of this hypothesis). For both sexes, masturbation frequency was associated with less sexual satisfaction [8] and less happiness [9].

Consistency of PVI orgasm was associated with both greater PVI frequency [10] and lesser masturbation frequency [2,11]. The theorized link between psychological maturity and appreciation of pure PVI has recently received support: women who used less immature psychological defense mechanisms reported greater vaginal orgasmic consistency and fewer orgasms from extrinsic clitoral stimulation during PVI. In addition, for both sexes, the frequency of masturbation orgasm was lower and of PVI without condoms was higher for individuals who used less immature psychological defense mechanisms [12,13]. Condoms might disrupt a complete release of tensions and/or be a barrier to intimacy, reducing the benefits associated with PVI [13].

These findings are consistent with a growing body of research showing that PVI (but not other partnered sexual behaviors or masturbation) is associated with indices of better physical and mental health and relatedness, including greater heart rate variability (an index of autonomic

cardiac regulation associated with health, longevity, and emotional function) [14,15], lesser alexithymia (inability to perceive and express emotions, a trait associated with psychopathology) [16], lesser (better) blood pressure response to stress [17], and less overweight [18]. PVI (but not other partnered sexual behaviors or masturbation) frequency increased in response to vitamin supplementation in a randomized clinical trial [19]. In contrast, higher masturbation frequency is associated with depression [20–22], overweight [18], and a variety of sexual dysfunctions [23,24].

It should be noted that the above cited studies include those that find sexual behavior differences in healthy young adults with regard to subtle but important longitudinal predictors of future ill-health (such as heart rate variability and blood pressure stress reactivity). In addition, human experimental (noncorrelational) research demonstrates psychoneuroendocrine differences between masturbation and PVI orgasm. These psychoneuroendocrine differences are consistent with a mechanism for differences in satisfaction through central dopaminergic regulation (with implications for mental health). The greater prolactin surge following PVI orgasm could be due to some combination of (i) greater physiological sexual excitation provoking a greater homeostatic countervailing force (e.g., greater central dopaminergic activity offset by greater prolactin increases), and (ii) more complete orgasmic release and satiety (including a more complete prolactin surge to offset the dopaminergic activity). A more complete "resetting" of at least central dopaminergic tone could make for better regulation of central neurotransmission, with salutary implications for psychophysiological functioning [6].

In a large representative sample of the Swedish population, frequency of "intercourse" (defined by those authors as the combination of PVI and anal sex frequencies) was associated with satisfaction with sex life, life in general, and physical and mental health [8]. However, masturbation was associated with less satisfaction with one's sex life and life in general [8].

In a previous study with a small sample [11], PVI frequency was positively correlated with frequency of partnered sexual behaviors other than PVI (henceforth, noncoital sex). However, relationship quality was associated with PVI frequency only. Reanalysis of those data (presented here for the first time) reveals that when PVI frequency is controlled in a partial correlation, noncoital sex frequency is actually associated with less relation-

ship satisfaction ($r = -0.37$, $P < 0.05$), and (similar to the case for masturbation already noted in the publication) noncoital partnered orgasm frequency was associated with less love for the partner ($r = -0.39$, $P < 0.05$). Thus, because noncoital sex frequency might correlate positively with PVI frequency as a result of accessibility of the sexual partner and/or foreplay and afterplay to PVI, the true relationship of these noncoital partnered sexual activities per se with sexual satisfaction can be obscured by their sometimes being associated with PVI frequency. Because many people have noncoital sex as a prelude to PVI, univariate statistical analyses that fail to adjust for PVI might mistakenly conclude with a positive association of noncoital sex with satisfaction, when in fact such an association is due solely to the correlation of noncoital sex with PVI. Regarding the study mentioned above [11], controlling for PVI frequency led to frequency of noncoital sex becoming significantly inversely related to partnership satisfaction and love for the partner, whereas controlling for frequency of noncoital sex did not alter the positive association of PVI frequency with these variables.

Further, it is possible that masturbation has a direct role in inducing sexual dissatisfaction and unhappiness [12,13,20], but it might be argued that insufficient PVI is the real cause. Given the considerations above, a multivariate analysis that simultaneously evaluates the association of satisfaction with PVI and both masturbation and noncoital sex is needed to better understand the roles of these different sexual behaviors.

Aims

The present study is based on the same large representative Swedish sample [25] cited above. The goal was to examine the hypothesis that satisfaction with sex life, life in general, partnership, and mental health are associated with both greater PVI frequency and lesser masturbation frequency. Further, we predict that noncoital partnered sexual behaviors are unrelated or inversely related to these indices of satisfaction (age is also included among the multivariate predictor variables).

Methods

Trained research assistants randomly contacted 5,250 persons (aged 18–74 years) for the 1996 nationally representative, cross-sectional population “Sex in Sweden” study [25]. Of these, 469

were excluded from participation due to problems in their ability to respond correctly to the survey. Of the remaining 4,871, 2,810 agreed to participate. Participants did not differ demographically (sex, social or geographic characteristics) from nonrespondents, except that persons over age 60 were slightly less likely to participate [25]. Respondents were asked to complete in private a written questionnaire on sexual behavior, and informed that it was coded to prevent identification. Self-reports of sexual behavior carry a risk of respondents replying in a manner they believe will be viewed favorably by others [16,17]. Although no validated measure of such social desirability responding was included (as is the case with large-scale surveys in general), analyses of the data set revealed no indications of social desirability responding or other response biases [25]. This large representative survey has been the basis of multiple studies, including some published in this journal [26,27].

Main Outcome Measures

Participants indicated the frequency (in the past 30 days) of PVI, oral sex, anal sex, and masturbation, as well as their satisfaction (on six-point Likert-type scales anchored with 1 = very unsatisfying and 6 = very satisfying) with their sex life, their life in general, their relationship with their partner(s), and their mental health. These satisfaction scales (from the Life Satisfaction scale version LiSat-11, but also shorter versions, including the LiSat-8) have been used successfully in many contexts, including the examination of correlates of sexual function and dysfunction [2,26–31]. Complete data was obtained from 1,255 men and 1,129 women, of whom 1,017 men and 918 women were in a partnership and replied to the partnership satisfaction question. A slight shortcoming of the survey is that for the 30-day frequency data (as opposed to “ever” data), giving and receiving of oral and anal sex were not assessed separately.

Correlations (Spearman’s rho) were used to assess the univariate relationships between the sexual behavior frequencies and indices of satisfaction for each sex. To examine the hypothesis that the association of PVI frequency with sexual satisfaction does not differ between respondents who are in a stable partnership and respondents who are not in a stable partnership (i.e., PVI frequency will be an important, significant correlate of sexual satisfaction regardless of partnership status), tests for the difference between two correlations were used.

Table 1 Frequencies of sexual behaviors (mean and SD) with tests of sex differences

	Men	Women	<i>t</i>
Penile–vaginal intercourse [†]	5.19 (5.92)	4.76 (5.29)	1.96
Oral sex [†]	2.25 (4.66)	1.92 (3.78)	1.91
Anal sex [†]	0.10 (0.71)	0.08 (0.65)	0.93
Masturbation [†]	4.48 (6.64)	1.45 (3.18)	14.76***
Age (years)	40.9 (14.8)	40.8 (14.4)	0.06

****P* < 0.001.[†]Days per 30 days.

SD = standard deviation.

Most importantly, multivariate analyses were conducted to predict each of the satisfaction indices (for the sexes separately and combined) from the sexual behavior frequencies and age. The multivariate analyses are multiple regression models using the “backward” technique, in which all candidate predictors are initially forced into the equation, with nonsignificant predictors removed one at a time until only significant predictors remain (the final step results are reported below). This approach provides a good balance of stability and statistical power. To provide a sense of perspective regarding the general magnitude of the most important statistically significant associations, we incorporate standard effect size terms [32].

Results

Table 1 displays descriptive statistics and sex differences for the sexual behaviors.

Table 2 presents the results of Spearman univariate correlations (Pearson correlations produced similar results, data not shown). For both

sexes, sexual satisfaction was directly and strongly (with large effect size) correlated with PVI frequency. PVI frequency was also directly associated (medium to small effect sizes) with the other indices of satisfaction. Masturbation frequency was inversely associated with all indices of satisfaction for both sexes (small to medium effect size). Oral and anal sex had some significant univariate correlations with some satisfaction indices (albeit significantly weaker than PVI). As hypothesized, the association between sexual satisfaction and PVI frequency did not differ between individuals in (men: *r* = 0.44, women: *r* = 0.42) and not in (men: *r* = 0.36, women: *r* = 0.43) a stable partnership (both *P* > 0.10, as measured by tests for the difference of a correlation). As mentioned above, the univariate approach does not adjust for influence of other sexual behaviors (e.g., oral sex preceding PVI during foreplay as opposed to as an end unto itself). We therefore conducted multivariate analyses, which are shown in Tables 3–5.

The multivariate analyses revealed that for both sexes, PVI frequency significantly predicted the satisfaction indices with a large effect size for sexual satisfaction and a medium effect size for relationship quality. By contrast, masturbation frequency was inversely associated with almost all satisfaction measures (small to medium effect sizes), and noncoital sex frequencies were either uncorrelated or inversely associated (small to very small effect sizes) with satisfaction measures. Age did not confound the results, but had a positive association (small to very small effect size) with some indices of satisfaction.

For exploratory purposes, we subsequently examined whether an attitude item included in the

Table 2 Spearman correlations: Sexual behaviors and satisfaction (sex life, relationship, mental health, life)

	PVI	Oral sex	Anal sex	Masturbation
Men				
Satisfaction with sex life	0.61***	0.38***	0.10***	−0.28***
Satisfaction with relationship	0.26***	0.04	−0.02	−0.27***
Satisfaction with mental health	0.11***	0.06*	−0.002	−0.09**
Satisfaction with life	0.21***	0.09**	0.03	−0.14***
Women				
Satisfaction with sex life	0.59***	0.37***	0.12***	−0.07*
Satisfaction with relationship	0.26***	0.15***	−0.002	−0.12***
Satisfaction with mental health	0.15***	0.05	−0.02	−0.07*
Satisfaction with life	0.19***	0.06*	−0.02	−0.09**
Sexes combined				
Satisfaction with sex life	0.60***	0.37***	0.11***	−0.18***
Satisfaction with relationship	0.26***	0.09***	−0.01	−0.21***
Satisfaction with mental health	0.13***	0.06**	−0.009	−0.05**
Satisfaction with life	0.19***	0.07***	0.007	−0.12***

P* < 0.05; *P* < 0.01; ****P* ≤ 0.001.

PVI = penile–vaginal intercourse.

Table 3 Multiple regression (backward; final results) of men's sexual behaviors and age predicting satisfaction with sex life, relationship, mental health, and life in general

	Predictors	β	P
Satisfaction with sex life	PVI	0.50	<0.001
	Anal sex	-0.07	0.006
	Masturbation	-0.22	<0.001
Satisfaction with relationship*	PVI	0.34	<0.001
	Oral sex	-0.10	0.01
	Anal sex	-0.06	0.05
	Masturbation	-0.20	<0.001
Satisfaction with mental health	PVI	0.07	0.02
	Masturbation	-0.14	<0.001
Satisfaction with life	PVI	0.14	<0.001
	Masturbation	-0.19	<0.001

*Age was significant: $\beta = 0.12$, $P < 0.001$.
PVI = penile-vaginal intercourse.

survey tapping rigid/condemning attitudes toward variation in sexual behaviors ("When it comes to sex, people should be allowed to do what they like as long as they don't harm other people") was associated with the satisfaction variables, or modified the significance of the sexual behavior associations with the satisfaction variables. In no case did it do so ($P > 0.05$ in all cases).

Discussion

As hypothesized, PVI frequency was strongly associated with sexual satisfaction, and this univariate association remained essentially unchanged when other sexual behavior frequencies were simultaneously evaluated. In addition, both univariate and multivariate analyses revealed PVI frequency as a significant predictor of satisfaction with life in

Table 4 Multiple regression (backward; final results) of women's sexual behaviors and age predicting satisfaction with sex life, relationship, mental health, and life in general

	Predictors	β	P
Satisfaction with sex life	PVI	0.52	<0.001
	Masturbation	-0.13	<0.001
Satisfaction with relationship*	PVI	0.30	<0.001
	Masturbation	-0.14	<0.001
Satisfaction with mental health**	PVI	0.15	<0.001
Satisfaction with life***	PVI	0.21	<0.001
	Anal sex	-0.07	0.03
	Masturbation	-0.08	0.01

*Age was significant: $\beta = 0.10$, $P = 0.003$; **age was significant: $\beta = 0.09$, $P = 0.004$; ***age was significant: $\beta = 0.10$, $P = 0.001$.
PVI = penile-vaginal intercourse.

Table 5 Multiple regression (backward; final results) of sexual behaviors and age predicting satisfaction with sex life, relationship, mental health, and life in general (sexes combined)

	Predictors	β	P
Satisfaction with sex life*	PVI	0.51	<0.001
	Anal sex	-0.04	0.05
	Masturbation	-0.16	<0.001
Satisfaction with relationship**	PVI	0.31	<0.001
	Oral sex	-0.06	0.05
	Masturbation	-0.18	<0.001
Satisfaction with mental health	PVI	0.11	<0.001
	Masturbation	-0.07	0.001
Satisfaction with life***	PVI	0.17	<0.001
	Masturbation	-0.14	<0.001

*Age was marginally significant: $\beta = 0.04$, $P = 0.06$; **age was significant: $\beta = 0.11$, $P < 0.001$; ***age was significant: $\beta = 0.07$, $P = 0.002$.
PVI = penile-vaginal intercourse.

general, satisfaction with partnership, and satisfaction with one's mental health.

Also as hypothesized, masturbation was *inversely* associated with almost all satisfaction measures. The multivariate analyses showed that these associations were not due simply to an absence of PVI (and the dissatisfaction that a lesser substitute might engender). Masturbation had an independent effect in the opposite direction of PVI. These findings are consistent with studies cited above. Specifically, both masturbation orgasm and lack of vaginal orgasm are independently associated with immature psychological defense mechanisms [12,13], and compared with individuals who reported PVI, but not masturbation in the preceding fortnight, individuals who reported PVI as well as masturbation in the same time period had a worse blood pressure response to stress [17].

Also as hypothesized, partnered sexual activities other than PVI were *inversely* associated or uncorrelated with the satisfaction measures when the influence of PVI was controlled. These multivariate analyses also imply that the univariate positive associations of some noncoital activities with some satisfaction indices can be attributed to their association with PVI (perhaps as foreplay). This suggests that noncoital sexual activities as a prelude to PVI might differ from those that occur in the absence of PVI, and that perhaps the latter are an indication of some degree of PVI avoidance [12]. Although some of the obtained statistically significant effect sizes are small, statistically significant small effect sizes can be important in prevention and treatment in sexual medicine [33].

The exploratory finding that a rigid attitude toward variety in sexual activities was completely unrelated to the satisfaction indices suggests that it is indeed sexual behaviors (and the underlying psychosexual motives that guide them) that are related to satisfaction, rather than inflexible attitudes. In one study, hypoactive sexual desire disorder appeared marginally correlated with low masturbation frequency, but significantly more strongly correlated with low "sexual attempts" (a term those authors used, which may refer to what was largely, but perhaps not exclusively, PVI frequency) [34]. However, in other studies, rather than being simply less strongly correlated than PVI with sexual desire, masturbation occurs significantly more frequently in men with lack of sexual desire, and masturbation is also associated with difficulties in having an orgasm, with erectile problems, and with premature ejaculation [23,24]. In women, masturbation is related to lubrication problems [23] and difficulties in having a vaginal orgasm, but not clitoral orgasm [2,11]. It is possible that in addition to psychological factors [12,13], physiological genital impairments might also lead persons to resort to masturbation and noncoital partnered sex as an attempt at obtaining partial gratification. However, these behaviors are unrelated (or inversely related) to the satisfaction indices.

The present results elucidate that specifically PVI frequency is important for men and women of various ages. Modest independent effects of age (not confounding the sexual behavior effects) on satisfaction were noted. For both sexes, the age effects included positive associations with relationship satisfaction. For women, age was associated with mental health and life satisfaction. Among the possible bases for the association of age with these aspects of satisfaction are cohort effects in the ability to feel satisfied, and the beneficial effects of maturity. An increase in life satisfaction with age has been reported in other studies [35].

The present findings also show that combining PVI and anal sex into a homogeneous category of "intercourse," as other researchers have done [8], obscures important differences between the two behaviors. The unitary concept of "total sexual outlet" introduced by Kinsey [36] was shown to lack empirical support.

A shortcoming of the survey was that for 30-day frequencies, it did not differentiate between receiving and providing oral and anal sex. Some clarification of the anal sex role is provided by the "ever" sexual behavior data: 19% of women report ever

having had anal sex with a man (and none report doing so with a woman, suggesting that respondents did not confuse use of fingers or of inanimate objects with anal sex); 19% of men report ever having had anal sex with a woman, and 1% report ever having had anal sex with a man (the latter could of course still be giving and/or receiving). It might be that receiving oral sex provides some more satisfaction than providing oral sex, but the net effect of such receiving and providing (considering both men and women in this large representative survey) is that anal sex is independently associated with less sexual satisfaction, and oral sex is independently associated with less relationship satisfaction.

The finding that the association between sexual satisfaction and PVI frequency did not differ between those in and not in a stable relationship suggests that in some circumstances, the frequency of PVI might be more important than the structural context in which PVI occurs.

A limitation of the present study was that it lacked quantitative orgasm rates for the different sexual behaviors, as well as questions regarding condom use and duration of sexual activities. It is possible that the correlations of sexual satisfaction with vaginal orgasm frequency could be stronger than with PVI frequency, as lack of vaginal orgasm is associated with psychological, interpersonal, and sexual impairments [2,11–13,27,37]. Optimally, future studies would also employ large representative samples such as the present one, and move beyond the limitations of self-report by conducting physical and biochemical examinations of participants and analyzing the association of different sexual behaviors with hormone levels and objective measures of health.

A recent pair of articles in this journal highlighted a glaring difference between "professional opinion" and real-world sexual function. North American sex therapy professionals asserted their opinion that PVI duration of as little as 4 minutes (median 20 minutes) was "too long" (p. 1,253), and that as little as <2 minutes (median 4.9 minutes) should be judged "adequate" [38]. However, a multivariate analysis of the responses of a large representative sample of Czech women revealed that their orgasm likelihood was directly related to PVI duration (mean 16.2 minutes) and unrelated to foreplay duration [39].

Sexual medicine (and sex education) should be guided by evidence and logic rather than by ideological biases, as patients deserve optimal treatment based on factual data and individualized assessment.

Conclusion

The findings demonstrate that sexual satisfaction is strongly related to PVI but not to other sexual behaviors (some of which are significantly inversely related to sexual satisfaction). A similar pattern applies to satisfaction with relationships, life in general, and one's mental health. This evidence contrasts with assertions that masturbation and other sexual activities are as satisfying as PVI.

Acknowledgment

The authors are grateful to the Swedish Public Health Institute for providing the raw data set and related materials.

Corresponding Author: Stuart Brody, PhD, School of Social Sciences, University of the West of Scotland, Paisley, PA1 2BE, UK. Tel: 44 141 849 4020; Fax: 44 141 8483891; E-mail: stuartbrody@hotmail.com

Conflict of Interest: None declared.

Statement of Authorship

Category 1

(a) Conception and Design

Stuart Brody

(b) Acquisition of Data

Stuart Brody

(c) Analysis and Interpretation of Data

Stuart Brody; Rui Miguel Costa

Category 2

(a) Drafting the Article

Stuart Brody; Rui Miguel Costa

(b) Revising It for Intellectual Content

Stuart Brody; Rui Miguel Costa

Category 3

(a) Final Approval of the Completed Article

Stuart Brody; Rui Miguel Costa

References

- Mulhall J, King R, Glina S, Hvidsten K. Importance of and satisfaction with sex among men and women worldwide: Results of the global better sex survey. *J Sex Med* 2008;5:788–95.
- Brody S. Vaginal orgasm is associated with better psychological functioning. *Sex Relationship Ther* 2007;22:173–91.
- Philippsohn S, Hartmann U. Determinants of sexual satisfaction in a sample of German women. *J Sex Med* 2009;6:1001–10.
- Freud S. My views on the part played by sexuality in the etiology of the neuroses. In: Strachey J, trans. The standard edition of the complete psychological works of Sigmund Freud (Vol. VII). London: Hogarth; 1966:271–2.
- Davidson JK, Darling CA. Self-perceived differences in the female orgasmic response. *Fam Pract Res J* 1989;8:75–84.
- Brody S, Kruger TH. The post-orgasmic prolactin increase following intercourse is greater than following masturbation and suggests greater satiety. *Biol Psychol* 2006;71:312–5.
- Kruger TH, Hartmann U, Schedlowski M. Prolactinergic and dopaminergic mechanisms underlying sexual arousal and orgasm in humans. *World J Urol* 2005;23:130–8.
- Langstrom N, Hanson RK. High rates of sexual behavior in the general population: Correlates and predictors. *Arch Sex Behav* 2006;35:37–52.
- Das A. Masturbation in the United States. *J Sex Marital Ther* 2007;33:301–7.
- Raboch J, Raboch J. Infrequent orgasms in women. *J Sex Marital Ther* 1992;18:114–20.
- Costa RM, Brody S. Women's relationship quality is associated with specifically penile-vaginal intercourse orgasm and frequency. *J Sex Marital Ther* 2007;33:319–27.
- Brody S, Costa RM. Vaginal orgasm is associated with less use of immature psychological defense mechanisms. *J Sex Med* 2008;5:1167–76.
- Costa RM, Brody S. Condom use for penile-vaginal intercourse is associated with immature psychological defense mechanisms. *J Sex Med* 2008;5:2522–32.
- Brody S, Preut R. Vaginal intercourse frequency and heart rate variability. *J Sex Marital Ther* 2003;29:371–80.
- Brody S, Veit R, Rau H. A preliminary report relating frequency of vaginal intercourse to heart rate variability, Valsalva ratio, blood pressure, and cohabitation status. *Biol Psychol* 2000;52:251–7.
- Brody S. Alexithymia is inversely associated with women's frequency of vaginal intercourse. *Arch Sex Behav* 2003;32:73–7.
- Brody S. 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. *Biol Psychol* 2006;71:214–22.
- Brody S. Slimness is associated with greater intercourse and lesser masturbation frequency. *J Sex Marital Ther* 2004;30:251–61.
- Brody S. High-dose ascorbic acid increases intercourse frequency and improves mood: A randomized controlled clinical trial. *Biol Psychiatry* 2002;52:371–4.
- Frohlich P, Meston C. Sexual functioning and self-reported depressive symptoms among college women. *J Sex Res* 2002;39:321–5.
- Cyranowski JM, Bromberger J, Youk A, Matthews K, Kravitz HM, Powell LH. Lifetime depression history and sexual function in women at midlife. *Arch Sex Behav* 2004;33:539–48.

- 22 Husted JR, Edwards AE. Personality correlates of male sexual arousal and behavior. *Arch Sex Behav* 1976;5:149–56.
- 23 Gerressu M, Mercer CH, Graham CA, Wellings K, Johnson AM. Prevalence of masturbation and associated factors in a British national probability survey. *Arch Sex Behav* 2008;37:266–78.
- 24 Nutter DE, Condron MK. Sexual fantasy and activity patterns of males with inhibited sexual desire and males with erectile dysfunction versus normal controls. *J Sex Marital Ther* 1985;11:91–8.
- 25 Lewin B, Fugl-Meyer K, Helmius G, Lalos A, Mansson S-A. Sex in Sweden: On the Swedish sexual life. The National Institute of Public Health (Sweden); 2000.
- 26 Oberg K, Sjogren Fugl-Meyer K. On Swedish women's distressing sexual dysfunctions: Some concomitant conditions and life satisfaction. *J Sex Med* 2005;2:169–80.
- 27 Fugl-Meyer KS, Oberg K, Lundberg PO, Lewin B, Fugl-Meyer A. On orgasm, sexual techniques, and erotic perceptions in 18- to 74-year-old Swedish women. *J Sex Med* 2006;3:56–68.
- 28 Fugl-Meyer AR, Melin R, Fugl-Meyer KS. Life satisfaction in 18- to 64-year-old Swedes: In relation to gender, age, partner and immigrant status. *J Rehabil Med* 2002;34:239–46.
- 29 Fugl-Meyer KS, Stothard D, Belger M, Toll A, Berglund O, Eliasson T, Fugl-Meyer AR. The effect of tadalafil on psychosocial outcomes in Swedish men with erectile distress: A multicentre, non-randomised, open-label clinical study. *Int J Clin Pract* 2006;60:1386–93.
- 30 Moncada I, Micheltoarena CF, Martinez-Sanchez EM, Gutierrez JR. Evaluation of the psychometric properties of the life satisfaction checklist as a screening tool for erectile dysfunction. *J Sex Med* 2008;5:83–91.
- 31 Melin R, Fugl-Meyer KS, Fugl-Meyer AR. Life satisfaction in 18- to 64-year-old Swedes: In relation to education, employment situation, health and physical activity. *J Rehabil Med* 2003;35:84–90.
- 32 Cohen J. A power primer. *Psychol Bull* 1992;112:155–9.
- 33 Corona G, Mannucci E, Lotti F, Fisher AD, Bandini E, Balercia G, Forti G, Maggi M. Pulse pressure, an index of arterial stiffness, is associated with androgen deficiency and impaired blood flow in men with ED. *J Sex Med* 2009;6:285–93.
- 34 Corona G, Petrone L, Mannucci E, Ricca V, Balercia G, Giommi R, Forti G, Maggi M. The impotent couple: Low desire. *Int J Androl* 2005;28(2 suppl):46–52.
- 35 Mroczek DK, Spiro Ar. Change in life satisfaction during adulthood: Findings from the Veterans Affairs Normative Aging Study. *J Pers Soc Psychol* 2005;88:189–202.
- 36 Kinsey AC, Pomeroy WB, Martin CE. Sexual behavior in the human male. Philadelphia and London: W.B. Saunders Company; 1948.
- 37 Nicholas A, Brody S, de Sutter P, de Carufel F. A woman's history of vaginal orgasm is discernible from her walk. *J Sex Med* 2008;5:2119–24.
- 38 Carty EW, Guardiani JM. Canadian and American sex therapists' perceptions of normal and abnormal ejaculatory latencies: How long should intercourse last? *J Sex Med* 2008;5:1251–6.
- 39 Weiss P, Brody S. Women's partnered orgasm consistency is associated with greater duration of penile-vaginal intercourse but not of foreplay. *J Sex Med* 2009;6:135–41.