

Sexual Satisfaction and Relationship Happiness in Midlife and Older Couples in Five Countries

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Abstract Sexuality research focuses almost exclusively on individuals rather than couples, though ongoing relationships are very important for most people and cultures. The present study was the first to examine sexual and relationship parameters of middle-aged and older couples in committed relationships of 1–51 years duration. Survey research was conducted in Brazil, Germany, Japan, Spain, and the U.S. targeting 200 men aged 40–70 and their female partners in each country, with 1,009 couples in the final sample. Key demographic, health, physical intimacy, sexual behavior, sexual function, and sexual history variables were used to model relationship happiness and sexual satisfaction. The median ages were 55 for men and 52 for women; median relationship duration was 25 years. Relationship satisfaction in men depended on health, physical intimacy, and sexual functioning, while in women only sexual functioning predicted relationship satisfaction. Models predicting sexual satisfaction included significant physical intimacy and sexual functioning for both genders and, for men, more frequent recent sexual activity and fewer lifetime partners. Longer relationship duration predicted greater relationship happiness and sexual satisfaction for men. However, women in relationships of 20 to 40 years were significantly less likely than men to report relationship happiness. Compared to men, women showed lower

sexual satisfaction early in the relationship and greater sexual satisfaction later. Within the long-term committed relationship context, there were significant gender differences in correlates of sexual and relationship satisfaction, with sexual functioning a common predictor of both types of satisfaction and physical intimacy a more consistent and salient predictor for men.

Keywords Couples · Midlife · Sexual satisfaction · Relationship happiness · Sexual function · Physical intimacy

Introduction

Research efforts to understand the place of sexuality in human lives rarely study intact couples in ongoing relationships. Scattered exceptions can be found, primarily in studies of sexual problems or medical conditions such as HIV risk prevention (Remien et al., 2005; Turner et al., 2008) or HPV transmission (Benevolo et al., 2008), infertility (Peterson, Pirritano, Christensen, & Schmidt, 2008), chronic pelvic pain (Smith, Pukall, Tripp, & Nickel, 2007), and sexual dysfunction treatment (Fisher, Rosen, Eardley, Sand, & Goldstein, 2005; Fisher, Rosen, Mollen, et al., 2005; Heiman et al., 2007). Consequently, there is limited research evidence concerning sexual patterns and sexual relationships across the life span and concerning the independent, additive, and interactive contributions of couple partners to one another's sex and relationship outcomes. Among the reasons for this research lacunae have been the tradition of an individual focus in psychological, behavioral, and medical sciences and the cost and complexity of recruiting and studying both members of ongoing relationships.

Despite the paucity of research evidence concerning couple's sexuality, enduring relationships appear to be linked to life quality, health, and satisfaction for many individuals, and

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sexuality appears to play an integral, albeit not fully predictable, role in relationship durability and satisfaction (Laumann, Gagnon, Michael, & Michaels, 1994; Sprecher, 2002). In a comprehensive meta-analysis examining predictors of marital satisfaction and stability (separation or divorce), Karney and Bradbury (1995) found that sexual satisfaction was among the strongest predictors of both outcomes. For men, sexual satisfaction ($r = .33$) showed the highest effect size among predictors of marital stability, comparable to the predictive value of marital satisfaction ($r = .29$). Results of cross-lagged models of 283 married midlife couples revealed causal sequences for both husbands and wives such that individuals satisfied with their sexual relations tended to be satisfied and happy with their marriages, and better marital quality, in turn, helped reduce marital instability (Yeh, Lorenz, Wickrama, Conger, & Elder, 2006). Yet, as Sprecher and Cate (2004) acknowledge, there are exceptions to the general finding that sexual contact and satisfaction are related to relationship satisfaction and durability, such that sexual and relationship satisfaction can operate somewhat independently.

A recent examination of sexual behavior and satisfaction in older individuals (40–80 years old) found that the predictors of sexual well being, defined using four variables (physical pleasure with relationship in the last 12 months, emotional satisfaction with relationship in the last 12 months, current sexual functioning/sexual health satisfaction, and importance of sex to life overall), were largely consistent across 29 nations and that men usually reported higher levels of sexual satisfaction than did women, regardless of sociocultural context (Laumann et al., 2006). The study focused on individuals, not persons and their partners, and the percent of the sample that was married or cohabiting was, in fact, not used in the analyses. There thus remain unanswered questions concerning the role and relative importance of sexual behaviors and interactions, health status, relationship variables, and historical sexual events that might help to conceptualize the patterns of sexual and relationship satisfaction in committed couples, particularly those in longer term relationships.

The present study, the International Survey of Relationships (ISR), is the first to focus on sexuality and relationship parameters among middle-aged and older individuals in committed relationships lasting 1–51 years. The study was conducted in five countries—Brazil, Germany, Japan, Spain, and the U.S.—targeting men 40–70 and their female partners. Its general purpose was to assess, among couples in committed relationships, the importance of the relationship, sexual behavior, and the role sexuality plays in men's and women's health and life satisfaction. As a first step, the present article describes the sample on key variables and develops models predicting relationship happiness and sexual satisfaction among this sample of middle and older-aged couples in committed relationships. We identified demographic, health, physical intimacy, sexual behavior, sexual function, and sexual history variables which, based on prior studies, might

predict relationship happiness and sexual satisfaction. To the extent allowed by the sample size and composition, we also report the impact of cultural context on the primary outcomes. There were three areas of more intensive attention, since we expected them to have unique contributions to the prediction of relationship happiness and sexual satisfaction: (1) relationship duration; (2) sexual functioning; and (3) physical intimacy. We hypothesized that there would be few gender differences in these longer term committed couples, but that women would be less sexually satisfied and that physical intimacy would play a larger role in their sexual and relationship satisfaction compared to men.

Method

Participants

Five countries were included in the study: Brazil, Germany, Japan, Spain, and the United States. A benchmark of 200 couples was set for each country with the final sample including 1,009 couples (2,018 individuals): 207 couples from each of Japan and the U.S.; 198 couples from Brazil and Germany; and 199 couples from Spain. Men in the sample ranged in age from 39 to 70 with a median age of 55. Female partners ranged in age from 25 to 76 with a median age of 52. Ninety percent of the couples had children.

Sampling targeted men aged 40–70 in committed relationships with women, either married or living with a partner a minimum of 1 year. Gender-specific questionnaires were administered for each partner, with couples instructed not to discuss their answers with their partner until all questionnaires were completed and returned. Data collection, directed and managed by Synovate Healthcare, an international healthcare market research company, varied by country, using sampling strategies standard for each country. In the U.S., Germany, and Spain, participants were recruited by phone, using both random digit dialing (RDD) techniques and established market databases, and then sent questionnaires by mail for self-completion. In Brazil and Japan, recruitment was done door-to-door, within large cities for Brazil, and within randomly sampled locales for Japan, and questionnaires then left for respondent self-completion. Quota samples based on age were used in all countries. Except for Japan, quota sampling for geographic regions was also used. Initial response rates, before finding out about the sexual content of the survey, were calculated only for the U.S. Details on sampling follow.

Brazil: Recruitment in Brazil was done in person, within the major cities. Recruiters visited homes of potential participants to administer surveys. The first part of the survey was administered to one member of the couple; if the first member agreed to participate and met the participation criteria, a screener survey was then administered to the second member. If both partners met participation criteria, the full questionnaire was left for

self-completion and collected several hours later. Recruiters reported an initial refusal rate of approximately 25%, with 412 participants (206 couples) agreeing to complete the survey. However, 12 participants (2.9%) refused to complete the entire survey, after sexual content was revealed, resulting in 400 participants (200 couples) completing the survey.

Germany: Two methods of sampling were used in recruiting German participants. For parts of Germany (mostly Eastern), a database of people previously contacted for marketing research was used. This database was compiled through various methods, including phone book sampling, snowball sampling, and respondent opt-ins. Participants recruited for our study had not been contacted for market research within the preceding six months. Participants from this database made up 30% of the total sample. The remaining participants, from those geographical areas not represented by the market research database (including most of West Germany), were recruited via RDD with questionnaires sent via post for respondent self-completion. Information on initial refusal rates was not collected. 440 participants (220 couples) agreed to complete the survey; however, 44 participants (10.0%) refused to complete the survey once they discovered its sex-related content. In total, 396 participants (198 couples) completed the survey.

Japan: Recruitment was done door-to-door using a two-step stratified sample: first, sampling locales were selected randomly; second, interviewers called on every n th household. Questionnaires were left with interested households and picked up several hours later. Due to this method of recruitment, as well as cultural constraints in Japan, participants were informed of the sexual nature of the survey without first being administered a screener survey. Recruiters reported an initial refusal rate of 12% with 414 (207 couples) participants completing the survey.

Spain: Respondent recruitment relied on several established marketing research databases containing demographic information on individuals. Individuals from these databases were identified as eligible on the basis of age and gender, then sampled at-random by region. Respondent quotas were set by both regions and age group. Recruitment of participants took place initially via phone, with participants then sent questionnaires by post for self-completion. Information on initial refusal rates was not collected. 468 individuals (234 couples) initially agreed to complete the survey; however, 68 participants (14.5%) refused to complete the survey once they were informed of its sex-related content. Overall, 400 participants (200 couples) completed the survey in Spain, including 40 couples from each of Madrid and Barcelona and 30 from each of Seville, Valencia, Bilbao, and Vigo.

U.S.: Sample was pulled from the InfoUSA Listed Household database, which comprises all white pages listings from the U.S. Sampling was limited to listings which specified age (between 50 and 60% of the total listings), and sample information was purchased for 12,000 individuals. This sample was gathered without knowledge of participants (i.e., participants

did not opt-in). Males in married households between the ages of 40 and 70 were targeted, with quotas first set by Census region with sub-quotas for age within region. Participants were recruited first by telephone, and sent questionnaires by mail after agreeing to participate. 2,274 individuals were contacted, of which 78% immediately refused to complete the survey. 500 individuals agreed to the survey; however, a further 86 (17.2%) refused to complete the survey after learning of the sex-related content. Overall, 414 participants (207 couples) completed the survey in the U.S. By Census region, 46 couples came from the Northeast; 57 from the South; 50 from the Midwest; and 56 from the West.

Measures

International Survey of Relationships

The ISR is a multi-dimensional survey instrument assessing domains of demographics, health, mood, selected sexual history, sexuality behaviors and experiences over the past 4 weeks and 12 months, and the importance of different life areas and sexual activities. It includes 125 questions, many of which were selected from other surveys or standardized questionnaires, with some questions developed specifically for this study.¹ The survey was designed by the authors, using a number of selected questions from prior surveys and several unique to this survey, to provide potentially important information for increasing our knowledge of enduring relationships and for designing future clinical programs dealing with sexual and relationship quality in older adults. The survey was described to participants as “a study about people’s relationships and their happiness with them. A number of questions deal with aspects of your personal relationship, including sexuality and sexual experiences.” Participants were assured that their responses would be confidential, not shared with their partner, and only analyzed in the aggregate with responses never connected to a specific individual. The survey was translated and back-translated for the given language in the countries involved. The study received approval from the Indiana University Institutional Review Board for the Protection of Human Subjects.

Dependent Variables

We examined predictors of relationship happiness and sexual satisfaction. Table 1 presents the wording of the two items used—the first item asked about general relationship happiness and the second asked about sexual satisfaction over the past 4 weeks. The relationship happiness question was adapted from the Dyadic Adjustment Scale (Spanier, 1976) and included the original response categories: very unhappy, fairly unhappy, a

¹ For further details about the questionnaire or to request a copy of the questionnaire, please contact the corresponding author.

little unhappy, happy, very happy, extremely happy, and perfect. Due to our sample size and small marginal distributions for some outcome categories, our analyses of relationship happiness used a dichotomized measure comparing happy to unhappy relationships by collapsing across the original seven categories. Similarly, our measure of sexual satisfaction was adapted from the International Index of Erectile Function (IIEF) and Female Sexual Function Index (FSFI) (Rosen et al., 1997, 2000) and originally included five categories: very dissatisfied, moderately dissatisfied, equally satisfied/dissatisfied, moderately satisfied, and very satisfied. For our analyses, responses were combined into two categories: Not satisfied comprised the first three responses and satisfied comprised the latter two. Table 2 presents summary statistics by gender for each variable and Table 3 provides the distribution of dependent variables in converting from multiple to binary categories. Men were significantly more likely to report being happy in their relationship, $LR\chi^2(2) = 7.23$, $p < .01$, while women were more likely to report being satisfied with their sexual relationship, $LR\chi^2(2) = 4.59$, $p = .03$.

Independent Variables

Independent variables used to predict relationship happiness and sexual satisfaction are also described in Table 1. The same variables were used to predict both dependent variables and the effects of all variables were allowed to differ by gender. Robust standard errors that correct for country level clustering were used.

Education and self-reported health were used as demographic and health controls. Education was measured with a five-category scale: (1) did not finish elementary school/primary school; (2) finished elementary school/primary school; (3) finished high school/secondary school; (4) finished university/college degree; (5) finished post-college/university graduate degree. Again, because of small marginal frequencies in some categories (especially by country), three categories were used in our analyses: more than high school, high school, and less than high school. High school was the omitted category in the models. A binary indicator of poor/fair health compared to good/excellent health was also included.

Duration of the couple's relationship was a key variable of interest. The original ISR instrument did not include a direct measure of duration, but participants were asked to report how many years they had been (1) cohabitating and/or (2) married to their partner. These measures were used to construct a measure of relationship duration for each individual. For non-married individuals, years of cohabitation was used; for married individuals, years married was used for the duration measure unless participants reported a significantly longer length of cohabitation.²

² An ideal measure of duration would include both years cohabitating and later years married; however, the survey questions did not guarantee mutual exclusivity. For example, for an individual who reported

Duration measures were constructed for each individual, rather than each couple. Although duration measures could differ within couples, the intra-couple correlation for our duration measure was .99. Intra-couple correlations for the original marital years and cohabitation years measures were both .96.

Duration of relationships ranged from 1 to 51 years with a mean of 25.1 years. The median duration measure was 25 years with the 25th and 75th percentiles at 17 years and 34 years. To allow for nonlinear effects of duration in the logit models, we included duration, squared-duration, and cubed-duration. Since cubed-duration was not significant in any of the models examined, it was not included in the models we presented. To allow age to affect outcomes independently of duration of relationship, the respondent's age at the beginning of the current relationship was included in our models.

Four categories of relational and sexual variables were included in our models: measures related to partner physical intimacy, sexual history, sexual behavior, and sexual functioning. Five measures of physical intimacy were used. Two were self-reports of the importance of one's own orgasm and partner's orgasm measured using a 10-point scale with 1 = Not at all important and 10 = Very important. Binary indicators were created for whether the respondent reported kissing and cuddling with their partner often and whether they reported their partner sexually touching or caressing them often (irrespective of sexual activity). Fifth, a measure of the number of times they had engaged in sexual activity with their partner over the past 4 weeks was included. Sexual activity was defined as any mutually voluntary activity that involves genital contact and/or stimulation, even if intercourse or orgasm did not occur. Sexual history was measured by the total number of reported sexual partners, combining separate reports of male and female partners over the respondent's lifetime.³ To minimize the effects of outliers on measures of sexual frequency and total sexual partners, extreme values were truncated to the 95th percentile and then the square root of these two variables was used in our models.

A measure of sexual functioning was used in all models. This measure scaled multiple items, where the specific items differed for men and women. All items were adapted from questions in the IIEF and/or FSFI except for a question on premature ejaculation. All items were measured with 5-point Likert scales

Footnote 2 continued

10 years of marriage and 10 years of cohabitation, we were unable to determine with certainty whether these years were contemporaneous making relationship duration 10 years total or additive making duration 20 years total, or a combination thereof.

³ A total of 21 participants reported no male or female lifetime sexual partners. We confirmed that these participants were in relationships and that they had been sexually active (via other variables, such as reports of age of first sex or frequency of sex over the past four weeks) and these cases were assigned a value of 1.

Table 1 Variable descriptions

Variable label	Question	Response categories
Dependent variables		
Relationship happiness	Which number best describes the degree of happiness, all things considered, in your relationship?	0 = Unhappy (very unhappy, fairly unhappy, a little unhappy) 1 = Happy (happy, very happy, extremely happy, and perfect)
Sexual satisfaction over past 4 weeks	Over the past 4 weeks, how satisfied have you been with your sexual relationship with your partner?	0 = Not satisfied (very dissatisfied; moderately dissatisfied, equally satisfied/dissatisfied) 1 = Satisfied (moderately satisfied, and very satisfied)
Independent variables		
In good health?	Would you say your own health is excellent, good, fair, or poor?	0 = Poor/Fair 1 = Excellent/Good
Education	What is the highest level of education you have completed?	<HS/secondary HS/secondary >HS/secondary
Relationship duration	Constructed from years of marriage and years cohabiting	# of years
Age at start of relationship	Equal to age minus relationship duration	# of years
Importance of orgasm	How important is it to you to reach orgasm yourself during sex with your partner?	Scale from 1 to 10 (1 = Not at all; 10 = Very)
Importance of partner orgasm	How important is it that your partner reaches orgasm when you have sex together?	Scale from 1 to 10 (1 = Not at all; 10 = Very)
Kiss & cuddle often?	My partner and I kiss and cuddle each other:	0 = Very seldom/Seldom 1 = Often/Very often
Touch & caress by partner often?	Over the past 4 weeks, how often have you been sexually touched and caressed by your partner (whether or not sexual activity occurred)?	0 = Not at all/Once or twice/Weekly 1 = 2–3 times a week/Daily or almost daily
Freq of sex in last 4 weeks	How many times during the past 4 weeks have you engaged in sexual activity with your partner?	# of times
Lifetime sexual partners	Over your lifetime, with how many partners have you had sex (by sex we mean any genital contact and/or stimulation)?	# of partners, both men and women
Four-week sexual functioning score	Scale constructed separately by gender: Men: Level of desire; frequency of sexual arousal; freq of erection; frequency of maintaining erection after penetration; frequency of ejaculation; frequency of premature ejaculation Women: Level of desire; frequency of sexual arousal; frequency of lubrication; frequency of orgasm	Average score on included items. Scale with higher values indicating higher sexual functioning

except for frequency of sexual desire which used a 7-point Likert scale. This item was rescaled to 5-points to match the other items. The final sexual functioning score was the average response to the items that applied to a given individual. For men, the sexual functioning was based on six items: (1) frequency of sexual desire; (2) frequency of sexual arousal over the past 4 weeks; (3) frequency of erections over the past 4 weeks; (4) frequency of maintaining an erection after penetration over the past 4 weeks; (5) frequency of ejaculation over the past 4 weeks; and (6) frequency of premature ejaculation over the past 4 weeks. Since men who reported “Never or almost never ejaculating” were likely to report “Never or almost never ejaculating prematurely,” the premature ejaculation item was excluded for

these men ($N=108$).⁴ Similarly, if a man had not ejaculated over the past 4 weeks, the item for premature ejaculation was not included for that person. Four items were used for women: (1) frequency of sexual desire over the past 4 weeks; (2) frequency of sexual arousal over the past 4 weeks; (3) frequency of lubrication over the past 4 weeks; and (4) frequency of orgasm over the past 4 weeks. Men who had ejaculated were allowed two missing items; men who had not ejaculated were allowed one missing item; women were allowed one missing item. Among non-missing items, the average response was computed

⁴ Of the 108 men who reported “Never or almost never ejaculating,” 96 reported “Never or almost never ejaculating too quickly.”

Table 2 Descriptive statistics by gender

Variables	Men				Women			
	Min	Max	<i>M</i>	<i>SD</i>	Min	Max	<i>M</i>	<i>SD</i>
Dependent variables								
Relationship happiness	0	1	0.86	–	0	1	0.81	–
Sexual satisfaction	0	1	0.64	–	0	1	0.69	–
Independent variables								
Good health	0	1	0.72	–	0	1	0.75	–
Education								
Less than high school	0	1	0.21	–	0	1	0.24	–
High school	0	1	0.43	–	0	1	0.49	–
More than high school	0	1	0.36	–	0	1	0.27	–
Relationship duration (in years)	1	50	25.13	11.35	1	51	25.08	11.33
Age at start of relationship (in years)	15	67	29.85	8.36	10	64	26.46	7.88
Importance of orgasm	1	10	8.45	2.02	1	10	7.35	2.60
Importance of partner orgasm	1	10	8.53	2.00	1	10	7.96	2.49
Kiss/cuddle often?	0	1	0.63	–	0	1	0.62	–
Touch/caress by partner often?	0	1	0.38	–	0	1	0.44	–
Freq of sex in last 4 weeks	0	81	5.74	7.55	0	80	5.52	6.82
Lifetime sexual partners	1	83	11.91	16.62	1	83	4.95	8.75
Sexual functioning score	1	5	3.81	1.02	1	5	3.22	1.23

Note: Variables where no *SD* is listed are binary; the mean can be read as the proportion answering “yes” or converted into the appropriate percentage (e.g., 75% of women reported good health). Transformations of some variables are performed for analysis (see text for details)

for our scale. For men who had ejaculated over the past 4 weeks, the scale reliability was .70. For men who had not ejaculated, the scale reliability coefficient was .79. For women, the scale reliability coefficient was .89.

Finally, country-level controls were included in all models. Due to differences in sampling strategies (see discussion above), country-level differences cannot be interpreted substantively, but reflect different mean-level responses in reference to the U.S. which was used as the excluded category. A reference country merely provides a basis of comparison and does not imply special status for that country.

Missing Data

When one partner provided no information on relationship duration, their partner’s information was used. Allowances were also made for missing variables in the construction of the sexual functioning scales as described above. For model estimations, a listwise deletion of cases was used (i.e., only those cases that included data for all variables were used to estimate coefficients). This left 860 males (85.2% of the total cases) for both the relationship happiness and sexual satisfaction models, 899 females (89.1%) for the relationship happiness model, and 898 for the sexual satisfaction model (88.9%). Table 2 presents descriptive statistics by gender for the variables used in our models.

Modeling Strategy

Logit models were estimated for each dependent variable where the effects of predictors were allowed to differ by gender. While odds ratios are reported in tables, we also considered how changes in a given predictor affected the probability of the outcome. The effect of a variable was illustrated by comparing the predicted probability of the outcome (e.g., relationship happiness), at specific values of the predictors (e.g., at the mean) as the variable of interest (e.g., duration) changes; for further details, see Long and Freese (2005).

Results

Tetrachoric correlations between our binary measures of sexual satisfaction and relationship happiness by gender were .40 for men and .41 for women, indicating 16% shared variation between the dependent variables.

Relationship Happiness

Table 4 presents the odds ratios from binary logit models of relationship happiness for men and women. The odds ratios show the factor change in the odds of being happy versus not happy for a one-unit change in a variable, holding other variables constant.

Table 3 Distribution of dependent variables by gender

Original response categories										
Binary categories		1 Extremely unhappy	2 Fairly unhappy	3 Little unhappy	4 Happy	5 Very happy	6 Extremely happy	7 Perfectly happy	Refused/omitted	Total
0 Unhappy										
M	21	47	74	0	0	0	0	0	0	142
F	18	63	105	0	0	0	0	0	0	186
1 Happy										
M	0	0	0	337	309	159	59	0	0	864
F	0	0	0	314	284	151	68	0	0	817
Ref										
M	0	0	0	0	0	0	0	0	3	3
F	0	0	0	0	0	0	0	0	6	6
Total										
M	21	47	74	337	309	159	59	3	3	1009
F	18	63	105	314	284	151	68	6	6	1009
Satisfied with sexual relationship with partner										
0 Dissatisfied										
M	0	0	0	168	118	67	0	0	0	353
F	0	0	0	196	70	42	0	0	0	308
1 Satisfied										
M	292	348	371	0	0	0	0	0	0	640
F	314	371	371	0	0	0	0	0	0	685
Ref										
M	0	0	0	0	0	0	0	16	16	16
F	0	0	0	0	0	0	0	16	16	16
Total										
M	292	348	371	168	118	67	16	16	16	1009
F	314	371	371	196	70	42	16	16	16	1009

Table 4 Odds ratios from logit model of having a happy relationship by gender

	Men	Women
In good health?	1.67* (2.29)	1.41 (1.37)
Education (Ref = high school) ^a		
Less than high school	1.65 (0.87)	1.62 (1.48)
More than high school	1.20 (0.99)	1.30 (0.84)
Relationship duration ^b	1.06 (1.45)	1.00 (1.65)
Relationship duration squared	1.00 (0.08)	1.00** (3.23)
Age at start of relationship	1.03 (1.31)	1.02 (1.20)
Importance of orgasm	0.90 (1.05)	0.96 (0.41)
Importance of partner orgasm	1.17*** (4.21)	1.08 (1.22)
Kiss/cuddle often?	3.00*** (4.92)	1.59 (1.25)
Touch/caress by partner often?	3.11*** (3.66)	1.35 (0.84)
Freq of sex in last 4 wks (square root)	0.87 (1.50)	1.24 (1.24)
Lifetime sexual partners (square root)	0.97 (0.46)	0.93 (0.49)
Sexual functioning score	1.44*** (3.72)	1.42** (2.84)
Country (Ref = USA)		
Brazil	0.52*** (3.68)	0.40*** (6.82)
Germany	1.12 (0.81)	0.91 (1.02)
Japan	2.36** (3.25)	1.81* (2.14)
Spain	4.89** (3.20)	0.71* (2.22)
N	860	899
Pseudo R ²	0.152	0.124

Note: Odds ratios are the exponential of the slope coefficients and indicate the factor change in the odds of a happy relationship compared to an unhappy relationship. Z-statistics are given in parentheses. Models include robust standard errors that adjust for clustering by country. Figures are rounded to 2 decimal points

^a Joint significance for education for men and for women was not significant

^b Joint test of significance for duration and duration squared for men was significant at the .01 level; for women, at the .001 level

* $p < .05$; ** $p < .01$; *** $p < .01$ for two-tailed tests

Demographic factors were generally unimportant for men in predicting relationship happiness. However, health was an important predictor with men in good health having odds of a happy relationship that were 1.67 times larger than those reporting fair or poor health, net of other variables. Net of other predictors, Brazilian and Spanish men reported significantly lower odds of relationship happiness than American men, while Japanese men reported significantly higher levels.

Three measures of physical intimacy were significant predictors of relationship happiness for men. Men who valued their partner's orgasm were more likely to report relationship happiness, with each additional point of valuation increasing the odds of happiness by a factor of 1.17. Reporting frequent kissing and cuddling and frequent sexual caressing by partner both increased the odds of reporting relationship happiness by a factor of approximately 3. Table 6 illustrates the importance of

these variables on the predicted probabilities of reporting relationship happiness—both independently and jointly. For a man with average characteristics, kissing and cuddling frequently or frequent sexual caressing by the partner increased his probability of reporting relationship happiness by .11 and .09. A man who reported both frequent kissing/cuddling and sexual caressing by partner had a predicted probability of reporting relationship happiness that was .21 higher than his counterpart who reported neither. Sexual functioning also proved important for male relationship happiness, with each point higher increasing the odds of happiness by a factor of 1.44. Duration also has a significant and positive effect on relationship happiness that is discussed further below.

Fewer significant effects on relationship happiness were found for women (Table 4). None of the demographic variables were significant, although the same pattern of country-level effects was found for women as for men. None of the physical intimacy measures significantly distinguished between women who reported relationship happiness and those who did not, net of other characteristics. Relationship duration, however, was a significant predictor of relationship happiness for women. As with men, women with higher levels of sexual functioning were more likely to report relationship satisfaction, with each one-point increase increasing the odds of reporting happiness by a factor of 1.42.

Figures 1 and 2 plot the predicted probabilities of relationship happiness for men and women as duration and sexual functioning change. In these and later figures, the predicted probabilities for men are plotted with lines that include a square symbol while lines with circles show predictions for women. We tested whether the predicted probabilities (e.g., the probability of being in a happy relationship) were equal for men and women. When the gender differences were significant at the .05

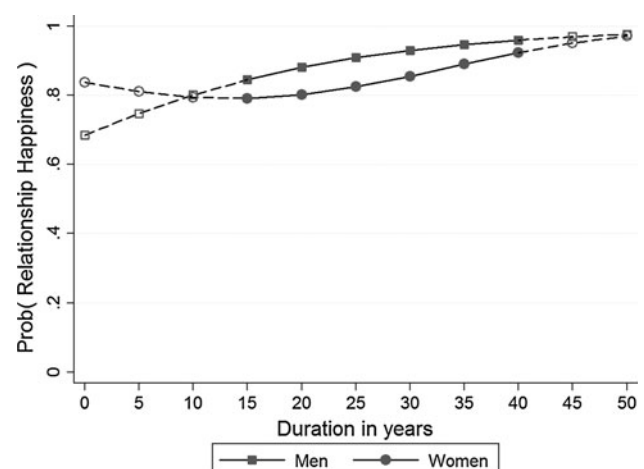


Fig. 1 Predicted probabilities of relationship happiness by duration and gender. *Note:* Solid lines indicate that the predicted probabilities for men and women were significantly different at the .05 level; dashed lines indicate that the differences were not significant. All variables except duration and duration-squared were held at their means

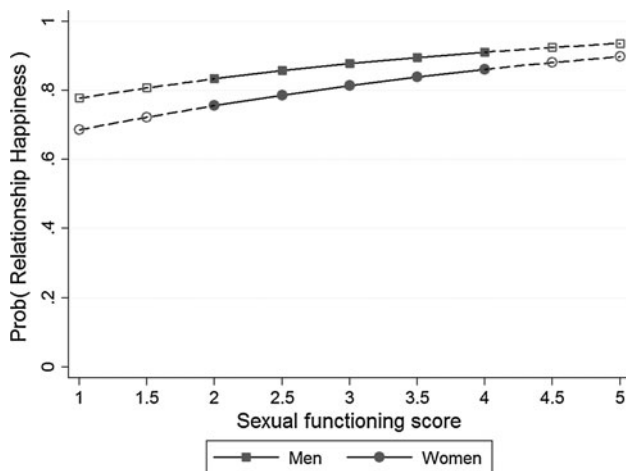


Fig. 2 Predicted probabilities of relationship happiness by sexual functioning score and gender. *Note:* Solid lines indicate that the predicted probabilities for men and women were significantly different at the .05 level; dashed lines indicate that the differences were not significant. All variables except duration and duration-squared were held at their means

level, the lines are solid; if gender differences were not significant, the lines are dashed.⁵

For men, duration had a significant and positive impact on reporting relationship satisfaction, $LR\chi^2(2) = 11.24$, $p < .01$. For example, a man who had been in a relationship for five years and was average on all other characteristics had a predicted probability of reporting relationship happiness of about .75 compared to a probability of about .97 in the 45th year of the relationship. Although duration measures were also significant predictors of relationship happiness for women, $LR\chi^2(2) = 13.13$, $p < .01$, the effect was more complex. From years 1 through 15 of the relationship, duration decreased the probability of relationship happiness. Beginning in year 20, the effect turned positive through year 50.

Figure 2 shows that, for both men and women, increasing sexual functioning had a persistent, positive effect on the probability of relationship happiness. For women, moving from the lowest sexual functioning score to the highest, holding other variables constant at the mean, increased the probability of reporting relationship happiness from .68 to .90. There was a similar magnitude of change in predicted probabilities for men, with a change from lowest level of functioning to highest increasing the probability from .78 to .94.

Sexual Satisfaction

Table 5 presents the odds ratios from a binary logit for sexual satisfaction with the effects of each variable differing by

Table 5 Odds ratios from logit model for being sexually satisfied by gender

	Men	Women
In good health?	1.60** (2.99)	0.74 (1.48)
Education (Ref = high schools) ^a		
Less than high school	1.00 (0.01)	0.94 (0.15)
More than high school	1.02 (0.11)	1.21 (0.93)
Relationship duration ^b	1.02 (1.01)	1.07* (2.51)
Relationship duration squared	1.00 (0.02)	1.00 (0.84)
Age at start of relationship	1.01 (0.73)	1.03 (1.30)
Importance of orgasm	0.91 (1.82)	0.93 (1.11)
Importance of partner orgasm	1.19* (2.49)	1.02 (0.25)
Kiss/cuddle often?	1.93* (2.28)	2.03* (2.19)
Touch/caress by partner often?	3.23*** (7.98)	1.51* (2.54)
Freq of sex in last 4 wks (square root)	2.05*** (5.88)	1.59** (2.91)
Lifetime sexual partners (square root)	0.86*** (6.02)	0.90 (1.52)
Sexual functioning score	1.37*** (3.76)	2.34*** (12.50)
Country (Ref = USA)		
Brazil	1.19 (0.82)	1.68** (2.74)
Germany	0.92 (0.48)	1.51 (1.83)
Japan	2.62*** (10.82)	4.32** (3.23)
Spain	0.91 (0.38)	1.24 (0.75)
N	860	898
Pseudo R ²	0.290	0.258

Note: Odds ratios are the exponential of the slope coefficients and indicate the factor change in the odds of a happy relationship compared to an unhappy relationship. Z-statistics are given in parentheses. Models include robust standard errors that adjust for clustering by country. Figures are rounded to 2 decimal points

^a Joint significance for education for men and women was not significant

^b Joint test of significance for duration and duration squared for men was not significant; for women, it was significant at the .001 level

* $p < .05$; ** $p < .01$; *** $p < .01$ for two-tailed tests

gender. The coefficients indicate how a unit increase in a predictor affects the odds of being satisfied as opposed to not satisfied, holding all other variables constant.

For men, we found that good health had a positive effect, increasing the odds of sexual satisfaction by a factor of 1.60. At the country level, Japanese men had odds of reporting significantly greater sexual satisfaction that were 2.62 times greater than American men. As with relationship happiness, physical intimacy measures were also important for men in predicting sexual satisfaction. Valuing one's partner's orgasm significantly increased the odds of sexual satisfaction, with each additional point increasing the odds of satisfaction by 1.19. Frequent kissing and cuddling, as well as frequent sexual caressing, were important predictors for men. Table 6 presents the magnitudes of these effects in terms of predicted probabilities

⁵ The significance of the difference in predicted probabilities depends both on the magnitude of the difference but also on factors such as the number of cases at a given level of the independent variable.

Table 6 Predicted probabilities of relationship happiness and sexual satisfaction, by gender and intimacy measures

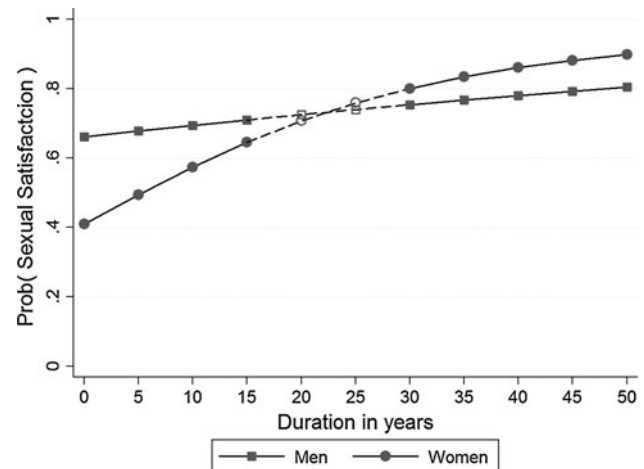
	Men	Women
Probability of reporting relationship happiness		
Seldom kiss/cuddle	0.83	0.78
Often kiss/cuddle	0.93	0.85
Difference	0.11	0.07 ns
Seldom caress by partner	0.86	0.81
Often caress by partner	0.95	0.85
Difference	0.09	0.04 ns
Seldom kiss/cuddle & caress	0.75	0.76
Often kiss/cuddle & caress	0.97	0.87
Difference	0.21	0.11
Probability of reporting sexual satisfaction		
Seldom kiss/cuddle	0.65	0.67
Often kiss/cuddle	0.78	0.80
Difference	0.13	0.14
Seldom caress by partner	0.64	0.72
Often caress by partner	0.85	0.80
Difference	0.21	0.07
Seldom kiss/cuddle & caress	0.53	0.63
Often kiss/cuddle & caress	0.88	0.84
Difference	0.34	0.21

Note: Predicted probabilities are calculated for at the within gender mean level of predictors; the mean for duration squared is held at the square of the mean for duration. All differences were significant at the .05 level unless marked ns

of reporting relationship happiness and sexual satisfaction for specific values of the predictors in the model.

In contrast to the relationship happiness model, frequency of sex over the past 4 weeks had a positive effect on the odds of sexual satisfaction for men. An increase of one unit in the square root of frequency increased the odds of reporting sexual satisfaction by a factor of 2.05. Sexual history also had a small negative effect, with a unit increase in the square root of number of lifetime sexual partners decreasing the odds of sexual satisfaction by a factor of .86. As with relationship happiness, sexual functioning was positively related to sexual satisfaction for men. Each additional point increase in sexual functioning score increased the odds of satisfaction by a factor of 1.37.

For women, there was no relationship between demographic and health variables and the outcome variable. Country-level patterns indicated that Japanese and Brazilian women were significantly more likely than U.S. women to report sexual satisfaction, net of all other characteristics. As with relationship happiness, duration was a significant predictor of sexual satisfaction, $LR\chi^2(2) = 20.50, p < .001$. As Fig. 3 shows, for a woman who was average on all other characteristics, the probability of reporting sexual satisfaction increased from .40 at the beginning of the relationship to .86 in year 40 of the relationship. For men,

**Fig. 3** Predicted probabilities of sexual satisfaction by relationship duration and gender. *Note:* Solid lines indicate that the predicted probabilities for men and women were significantly different at the .05 level; dashed lines indicate that the differences were not significant. All variables except duration and duration-squared were held at their means

the change was more gradual, increasing from .66 in year 1 to .78 in year 40.

The odds of reporting sexual satisfaction doubled for women who reported frequent kissing and cuddling compared to their counterparts who did not report frequent kissing and cuddling. Frequent sexual caressing by the partner similarly raised the odds of sexual satisfaction by a factor of 1.51. Table 6 shows the magnitude of these effects on predicted probabilities, for a woman average on other characteristics.

Similar to men, sexual frequency over the past 4 weeks was also positively related to sexual satisfaction for women. A unit increase in the square root of sexual frequency increased the odds of sexual satisfaction by a factor of 1.59. Sexual functioning again had a marked impact for women, with each additional point more than doubling the odds of sexual satisfaction.

Figures 3 and 4 show the predicted probabilities of sexual satisfaction by relationship duration and sexual functioning for men and women. As noted above, duration of the relationship has a smaller effect on sexual satisfaction for men than women. For women, however, the impact of duration on sexual satisfaction is both significant and substantial. During the first 15 years of the relationship, women had significantly lower probabilities of reporting satisfaction than men. From year 30 on in the relationship, however, women had a significantly higher probability of reporting satisfaction.

Figure 4 shows the magnitude of the effect of sexual functioning on predicted probabilities of sexual satisfaction for individuals who were average on all other characteristics. For both genders, we found substantial effects on the probability of reporting sexual satisfaction, with larger effects for women. Moving from lowest to highest levels of sexual functioning for a woman average on other characteristics, for example,

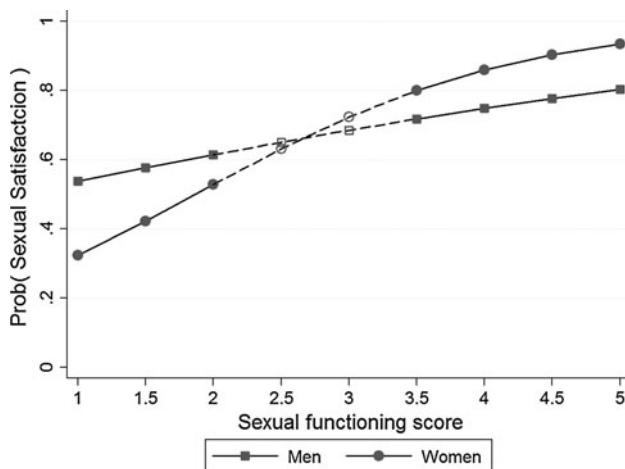


Fig. 4 Predicted probabilities of sexual satisfaction by sexual functioning score and gender. *Note:* Solid lines indicate that the predicted probabilities for men and women were significantly different at the .05 level; dashed lines indicate that the differences were not significant. All variables except duration and duration-squared were held at their means

increased the predicted probability of reporting sexual satisfaction from .32 to .93. Men had a somewhat attenuated, but still large, effect, increasing the probability from .54 to .80. Paralleling our findings with duration, women had significantly lower probabilities of reporting satisfaction with function levels from 1 to 2, with significantly higher probabilities with function scores above 3.5.

Discussion

The present study examined couples in a committed relationship where the men were between 39 and 70 years (median, 55) and their female partners between 25 and 76 years (median, 52) from Brazil, Germany, Japan, Spain, and the U.S. On average, these were long term relationships with 50% of them more than 25 years in duration (only 5% were together 7 years or less). Relationship duration is usually examined indirectly through divorce statistics, but they reveal that long duration marriages do exist. For example, according to 2001 figures, a U.S. Census Report noted that approximately 50% of first marriages (52% for men and 49% for women) last 25 years or more (U.S. Census Bureau, 2005). Marriages expected to continue beyond 20 years were estimated at approximately 92% in Spain, 70% in Germany and Japan, and 56% in the U.S. (Andersson & Philipov, 2001; Raymo, Iwasawa, & Bumpass, 2004). Comparable data could not be located for Brazil. Thus, longer term relationships are a significant fact of social and sexual life for a large number of couples.

Given the length of the relationships in the present sample, we expected that relationship happiness might be fairly constant but sexual satisfaction lower for those together the most years. The mean satisfaction levels were quite high for both

genders as a large majority reported being happy with their relationship (see Tables 2, 3). As with prior studies, relationship and sexual satisfaction, the two dependent variables used here, were significantly correlated, demonstrating 16% shared variance. Women reported significantly more sexual satisfaction than men and men more relationship happiness than women, contrary to our hypothesis. In the context of these specific characteristics, our focus was on modeling predictors of relationship happiness and sexual satisfaction.

The models tested relevant variables contributing to sexual and relationship outcomes and found different patterns by outcome and by gender. For example, the physical intimacy variables (kissing/cuddling, partner touch/caressing and, to a lesser extent, importance of partner's orgasm) unexpectedly predicted relationship happiness for men only, whereas frequent kissing and cuddling and frequent partner touching and caressing were important for both men's and women's sexual satisfaction. The degree to which physical intimacy (that was not necessarily sexual) was rated as important to men's but not women's relationship happiness was striking, suggesting a need for reconsideration of the role of physical affection and its meanings for each gender in longer term relationships. For both men and women, sexual frequency was related to sexual satisfaction but not relationship happiness, suggesting some independence of sexual activity and relationship satisfaction. The degree of independence/dependence of sexuality and relationship satisfaction is a point of disagreement in the literature with evidence in both directions but often supporting a more independent factor structure. For example, Hassebrauk and Fehr (2002) conducted a series of studies in which they explored the dimensions of relationship quality. Using principal components analysis, Hassebrauk and Fehr reported that sexuality formed one of four factors (without any item overlap), the others being intimacy, agreement, and independence. The correlation between the sexuality and other three factors was $r = .13$ to $.35$ across three samples of German and Canadian men and women.

Sexual functioning predicted both relationship and sexuality outcomes, with increasing levels of functioning related to higher levels of positive outcome in the sex and relationship domains. However, the data suggest that level of sexual functioning had a more dramatic effect on sexual satisfaction for women than men; at the low end of sexual functioning for both genders, women were less likely than men to report sexual satisfaction, while at the high end of sexual functioning, women were more likely than men to report satisfaction. This gender difference was important and suggests a closer examination by sexual function domain, including sexual desire, erections/arousal, and orgasm, as this result may differ by each sexual function category that in the present study were collapsed into a single scale.

Lifetime number of sexual partners was a significant predictor of sexual but not relationship satisfaction, and this only

for men. Men reported more lifetime sexual partners than women ($M = 11.9$ vs. 4.9). More sexual partners predicted less sexual satisfaction. Searching for a better partner or sexual experience may emerge from or be connected to a lack of sexual satisfaction rather than just a desire for sexual recreation and variety. Alternatively, more partners might indicate different standards based on greater experience.

The focus on relationship duration as a key variable allowed us to examine patterns which predicted sexual satisfaction and relationship happiness at a given time since the couple had been together. Laumann et al.'s (1994) data suggested, using single item indicators, gender differences associated with age in a random probability sample of U.S. individuals (relationship duration was not examined with regard to these variables). The percent of women who reported that they were "extremely" emotionally satisfied or physically satisfied with their partner decreased in the 55–59 year olds (to 26.3 and 28.8%, respectively) compared to women who were younger, while men in the 55–59 year old age group showed increases (to 54.8 and 57.5%, respectively) on both variables. In the present study, men's relationship happiness increased linearly with each category of relationship length, while women's did not. Women were more likely to report less relationship happiness in the first 15 years, with greater levels starting at 20–50 years together. During the later years, however (relationship years 20–40), women's relationship happiness was significantly lower than men's. Sexual satisfaction for the women showed a very different pattern. Women in relationships up to about 10 years reported less sexual satisfaction and in later years (25–50) more sexual satisfaction than men at the same duration points. These data, perhaps because they involve couples rather than just individuals, contrast with Liu's (2003). Liu, using the Laumann et al. (1994) data base, found that duration did have a small and negative effect on the quality of marital sex and women were less satisfied than men with their marital sexual lives.

It is important to note that the overall levels of relationship happiness were high in these couples, so the changes are better seen as reflecting greater or lesser degrees of happiness rather than a distinct difference between being happy and unhappy. The patterns of results fit partner choice and lifespan event considerations. It is likely that women selected committed partners based on relationship quality more than sexual satisfaction and that, for women in childbearing years, dealing with avoiding pregnancies or having children among other life stressors, all take a toll on sexual satisfaction. Women who were in the 25 and beyond years of a relationship were at least 50 years old (with partners at least 5 years older) and thus in physical (menopausal) and role transitions with their partner. Since 90% of the couples had children, the burdens and distractions of parenting, falling heavily on women in their 30s and 40s, begin to shift. This change, along with the freedom from reproductive worries, may facilitate greater levels of sexual satisfaction, yet

somewhat less relationship happiness due to inter-partner adjustments in roles and possible health issues.

There were several limitations to this study. It incorporated multiple modes for administering the surveys, each with different sampling methods. The generalizability of our findings is therefore constrained, since the protocols were not representative of national populations. Thus, although country differences were of interest, our interpretation of them is necessarily limited. Differing sampling strategies per country, relatively small sample sizes, and the fact that the response items may have been interpreted differently in each language/culture means the country differences are only suggestive. We can make no claims about the relative relationship happiness or sexual satisfaction levels by country. While one might look at whether the patterns found here in predicting relationship and sexual outcomes would be similar within each country, our sample sizes were too small to do this reliably in this sample. The present study included country variables to encourage further investigation of potential differences at these age and relationship duration levels but solving the sampling and survey delivery mode problems is a substantial task. This is especially true for enrolling couples, rather than individuals, to participate in research since the issues of representative sampling for one gender may not fit the other and protocols for sampling relationships have not been developed to our knowledge.

The issue of couple recruitment also applies to the low response rates in the present study. It is possible that lower response rates create sample selection biases by including individuals who are either more interested or more confident in the topic or who have more time to answer questions. In this study, it may have selected people who were happier with their relationships and were willing, once informed of the sexual content, to continue (though the loss due to sexual content was less than expected). Other studies of international samples on sexuality have faced similar obstacles (Laumann et al., 2006; Rosen et al., 2004) due to recruitment burden and expense, cross-cultural variation in acceptance of different research approaches, and content sensitivity. Participation rates in the current study were not out of line with other cross-cultural studies in which couples have been enrolled (Rosen et al., 2004). While there is no obvious solution to this problem, one approach is to regard the present findings as descriptive and exploratory in nature, to be confirmed in further larger epidemiological studies of this type. By examining relationships among variables and evaluating predictor models in the context of the descriptive information about the sample, we can at least begin to formulate ideas about how patterns of sexuality fit into enduring relationships, knowing they will need further refinement and testing.

In conclusion, this is the first international study of individuals in committed relationships, where the focus was on middle and older-aged men and women in relationships with a median of 25 years duration. The goal was to describe key

demographic, health, sexual behavior and function, and physical intimacy factors that might predict sexual satisfaction and relationship happiness. The findings that sexual and relationship satisfaction were to some degrees independent and differentially impacted by gender and years in a relationship are useful as an initial framework to begin to examine couples in more depth as to how sexuality and relationship variables interact with different life phases.

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