

Gender Differences in Response to Sexual Expectancies and Changes in Sexual Frequency: A Short-Term Longitudinal Study of Sexual Satisfaction in Newly Married Couples

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Abstract This longitudinal study of 72 newlywed couples examined the effects of spouses' expectancies for their sexual satisfaction and changes in their sexual frequency on changes in their sexual satisfaction over 6 months. At Time 1 (baseline), both spouses reported their levels of sexual satisfaction and sexual frequency and completed a 7-day diary of their expectancies for sexual satisfaction. At Time 2 (6 months later), spouses again reported their sexual satisfaction and sexual frequency. Based on evidence that women's sexual satisfaction is more contextually based, wives' initial sexual satisfaction expectancies were expected to predict changes in their reports of sexual satisfaction. Based on evidence that men's sexual satisfaction is more grounded in the physical aspects of sex, in contrast, changes in sexual frequency were expected to predict changes in husbands' sexual satisfaction. Both hypotheses were supported. Specifically, controlling for marital satisfaction, length of marriage, and age, wives', but not husbands', sexual satisfaction expectancies were positively associated with changes in their sexual satisfaction, whereas changes in sexual frequency were positively associated with changes in husbands', but not wives', reports of sexual satisfaction. Gender differences in the strength of both effects were significant. Of note, none of the observed effects differed as a function of whether couples lived together before marriage. Implications for theories of gender dif-

ferences in sexuality, theories of expectancy confirmation, and models of sex and marital therapy are discussed.

Keywords Expectancy confirmation · Gender differences · Sexual satisfaction · Self-fulfilling prophecy · Evolutionary psychology

Introduction

Professionals and lay people alike conceive of the newlywed period as a time of frequent and satisfying sexual activity (e.g., Aubin & Heiman, 2004; James, 1973, 1981). For instance, James (1973) described folklore stating that if newlyweds placed a marble in a bag each time they engaged in sex during the first year of their marriage, and then removed a marble each time they engaged in sex during all subsequent years of the marriage, they would never empty the bag. Notably, such positive expectancies do not appear to be unique to those looking from the outside in, as newlyweds themselves predict that the quality of their sexual relationships will be superior to that of partners in older, more established marriages (Arond & Pauker, 1991; Greenblat, 1983).

Expectancy effects

How should such positive expectancies shape future evaluations of the sexual relationship? Sociocognitive theories describing the impact of expectancies on other evaluations suggest two contrasting possibilities (e.g., Kahneman & Miller, 1986; Miller & Turnbull, 1986). One line of research on processes of expectancy confirmation suggests that more positive expectancies should enhance the perceived quality of the sexual relationship through two potential mechanisms

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(Miller & Turnbull, 1986; Snyder, 1984). One mechanism, *behavioral confirmation*, refers to the idea that prior expectancies for an event can give rise to expectancy-consistent behaviors during that event (Merton, 1948). Accordingly, positive sexual expectancies may lead intimates to behave in ways that promote fulfilling sexual experiences and thus evaluate their sexual relationships more positively. A second mechanism, *perceptual confirmation*, refers to the idea that prior expectancies can lead people to interpret the details of an event in ways that give rise to expectancy-consistent evaluations of that event (Fiske & Taylor, 1991). A number of studies confirm that both processes operate in other domains of close relationships (e.g., Downey, Freitas, Michaelis, & Khouri, 1998; McNulty & Karney, 2002, 2004; Murray, Holmes, & Griffin, 1996). Accordingly, positive sexual expectancies may lead intimates to evaluate their sexual relationships more positively whereas less positive expectancies may lead intimates to evaluate their sexual relationships less positively.

In contrast to the idea that sexual expectancies should exert a confirming influence on intimates' evaluations of their sexual relationships, however, another line of research suggests they might lead to more contrasting evaluations of such relationships. According to norm theory (Kahneman & Miller, 1986), interdependence theory (Thibaut & Kelley, 1959) and empirical research (Mellers, Schwartz, Ho, & Ritov, 1997; Shepperd & McNulty, 2002), one way people evaluate their outcomes is by comparing them to their prior expectancies for those outcomes; people feel disappointed when outcomes fall short of their expectancies but feel more satisfied when their outcomes exceed their expectancies. Indeed, Lawrance and Byers (1992, 1995) proposed that similar processes may guide the way people evaluate their sexual relationships, arguing that intimates compare their actual sexual outcomes to those that they desire or expect. Several empirical studies on related cognitions provide evidence along these lines (e.g., Eidelson & Epstein, 1982; Epstein & Eidelson, 1981; Lawrance & Byers, 1995). For instance, a belief in sexual perfectionism has been shown to be associated with decreased relationship satisfaction (Eidelson & Epstein, 1982; Epstein & Eidelson, 1981). If sexual expectancies operate on evaluations of the sexual relationship in similar ways, more positive expectancies for the sexual relationship should lead to disappointment whereas less positive sexual expectancies should lead to more enhanced evaluations.

So which is it? Should positive sexual expectancies be helpful or harmful to the development of the sexual relationship? Previous longitudinal research suggests the benefits of positive expectancies should depend on the likelihood that those expectancies will be confirmed. A four-year study of newlywed marriages demonstrated that positive expectancies that were *likely* to get confirmed were beneficial

to the relationship because they underwent processes of expectancy confirmation more readily (McNulty & Karney, 2004). In contrast, positive expectancies that were *unlikely* to get confirmed were harmful to the relationship because they led to disappointment when they inevitably failed to get confirmed.

Sexual expectancy effects

Likewise, whether positive sexual expectancies operate on subsequent sexual evaluations through processes of expectancy confirmation or processes of counterfactual thinking, and thus whether they lead to more or less positive evaluations of those sexual relationships, may also depend on the likelihood that those expectancies will get confirmed. If this is the case, sexual expectancy confirmation may occur more readily among women. Specifically, a consistent body of research indicates that women's sexual experiences may be more susceptible than men's to the influence of contextual factors, such as acculturation, education, and religion (e.g., Anderson & Cyranowski, 1995; Baumeister, 2000; Okami & Shackelford, 2001; Peplau, 2003). Such malleable beliefs, in turn, have been shown to be more susceptible to confirmatory biases (Dunning & McElwee, 1995; Karney, McNulty, & Bradbury, 2001; McNulty & Karney, 2001; Sherman, Beike, & Ryalls, 1999; Neff & Karney, 2005; Stapel, Koomen, & Ruys, 2002). Taken together, these two lines of research suggest that holding positive sexual expectancies may lead women to evaluate their sexual relationships more positively whereas holding less positive sexual expectancies may lead women to evaluate their sexual relationships more negatively.

To our knowledge, there is no research that has directly examined the effects of women's sexual expectancies on their evaluations of their sexual relationships; however, there is evidence that expectancies play a role in other aspects of women's sexuality. For instance, one study suggests that wives' expectancies for achieving pregnancy actually influenced their likelihood of conception (Severy, Jacobs, Klein, & McNulty, 2006). This study assessed the acceptability and efficacy of the ClearPlan EasyTM Fertility Monitor among couples reporting difficulty in conceiving. Across the four months of the study, 40% of couples became pregnant. Although most couples expected the monitor to improve their chances of becoming pregnant, those reporting the highest expectations for becoming pregnant were more likely to achieve conception. It is possible that positive expectancies led women to engage in more frequent intercourse, leading to a greater likelihood of conception. Indeed, couples appeared to employ a strategy of "targeted" intercourse such that they engaged in intercourse on only 20% of the days that the monitor indicated the wife had a low probability of conceiving, but engaged in

intercourse on 67% of the days that the monitor indicated the wife had the highest probability of conceiving. Consistent with processes of behavioral confirmation, such goal-oriented behavior may have been more pronounced among women with more positive expectancies. Alternatively, consistent with processes of perceptual confirmation, wives' increased expectancies may have led them to experience lower levels of anxiety, which predicted the likelihood of pregnancy in this study as well.

A second study provides evidence that women's expectancies may shape their sexual satisfaction in similar ways. Nicolson and Burr (2003) interviewed women regarding their perceptions of what constitutes a satisfying sexual relationship. One finding reported was that women who held higher expectancies about the likelihood of achieving orgasm during intercourse actually reported achieving orgasm with greater frequency. Of course, given the cross-sectional nature of the data, the reverse causal interpretation also is plausible: it may be that women who were more successful in achieving orgasm accordingly held more positive expectancies for achieving future orgasms. Without longitudinal data on the effects of prior expectancies on the subsequent sexual experiences, the role of women's expectancies in shaping their sexual relationships remains unclear.

In contrast, sexual expectancies may play a lesser role in men's evaluations of their sexual relationships. Specifically, because men's sexual experiences appear to be less open to interpretation than women's (e.g., Baumeister, 2000; Peplau, 2003), their evaluations of their sexual relationships may depend less on the contextual aspects of sex and more on the concrete, physical rewards of sex. Consistent with this possibility, several studies have shown that men report more physical and fewer emotional reasons for engaging in sexual relations with their partners (e.g., Birnbaum & Laser-Brandt, 2002; Brown & Auerback, 1981; Klusmann, 2002). Furthermore, relative to women, men report desiring concrete sexual outcomes such as more sexual variety and partner initiative in their sexual experiences (Hatfield, Sprecher, Pillemer, Greenberger, & Wexler, 1988). Finally, two cross-sectional studies demonstrated strong associations between sexual frequency and sexual satisfaction for men, but not women (Haavio-Mannila & Kontula, 1997; Nicolosi, Moreira, Villa, & Glasser, 2004).

In sum, previous research suggests that expectancies for the quality of the sexual relationship may more strongly influence the development of women's sexual satisfaction than men's sexual satisfaction, whereas changes in sexual frequency may more strongly influence the development of men's sexual satisfaction than women's sexual satisfaction. Nevertheless, the cross-sectional nature of these studies makes such conclusions premature. Specifically, as mentioned previously, with respect to associations observed

thus far between women's cognitions and their sexual satisfaction, it may be that satisfied women simply think more positively about their sexual relationships. Likewise, with respect to the associations observed thus far between men's sexual satisfaction and their reports of sexual frequency, it may be that satisfied men choose to engage in more frequent sex. To eliminate such alternative interpretations and thus draw stronger conclusions about the effects of sexual expectancies and changes in sexual frequency on changes in sexual satisfaction, it is necessary to employ a longitudinal design to examine the effects of expectancies and changes in sexual frequency on future sexual satisfaction, controlling for initial sexual and marital satisfaction.

Overview of the current study

The current study examined whether newlywed spouses' expectancies for the quality of their sexual relationships and changes in their reported sexual frequency during a six month period of the first year of marriage predicted changes in their satisfaction with their sexual relationships across those six months. Within six months of the start of their marriages, spouses completed measures of marital and sexual satisfaction, reported their frequency of sexual intercourse, and completed a daily diary of their expectancies for their sexual satisfaction. Six months later, spouses again reported their frequency of sexual activity and completed measures of sexual satisfaction.

Newlyweds are a particularly appropriate sample to use in addressing this issue for at least two reasons. First, newlyweds tend to experience rapid declines in sexual frequency (e.g., Call, Sprecher, & Schwartz, 1995), which can be accompanied by declines in sexual satisfaction (Liu, 2003; Sprecher, 2002). Thus, the current study examined changes in sexual satisfaction during a stage in the relationship in which such change is particularly likely. Second, newlyweds are frequently the recipients of interventions aimed at altering expectancies and other beliefs (Stanley, Blumberg, & Markman, 1999). Accordingly, assessing the efficacy of such programs is most appropriately aimed at the likely targets of those interventions.

Based on the previous literature regarding the effects of expectancies on subsequent evaluations, we made the following predictions:

H1: Given the apparent influence of contextual factors on women's evaluations of their sexual experiences, it was predicted that wives' sexual satisfaction expectancies would positively predict changes in their sexual satisfaction through processes of expectancy confirmation, such that wives who tended to report more positive expectancies for their sexual relationships in the beginning of those relationships would report being more satisfied with those

relationships six months later, controlling for their Time 1 sexual satisfaction, than wives who tended to report less positive expectancies. In contrast, husbands' sexual satisfaction expectancies were not expected to be associated with changes in their sexual satisfaction.

H2: Instead, given that the physical rewards of sex appear to be more important to men, it was predicted that changes in those physical aspects, not sexual expectancies, would positively predict changes in husbands' sexual satisfaction, such that husbands who experienced increases in sexual frequency during the previous six months would report being more satisfied with their sexual relationship than husbands who experienced decreases in sexual frequency during the previous six months, controlling for their Time 1 sexual satisfaction. In contrast, such changes in frequency were not expected to be associated with changes in wives' sexual satisfaction.

Method

Participants

The current study was based on an original sample of 72 couples. All participants were first-married couples assessed within six months ($M = 3.2$; $SD = 1.6$) after their wedding. Participants were recruited from a north-central Ohio community using two methods. The first method was to place advertisements in community newspapers and bridal shops, offering up to \$410 to couples willing to participate in the study. The second method was to review the applications of couples that had applied for marriage licenses in several nearby counties where marriage licenses are available to the public and contain data on spouses' ages, whether or not this was their first marriage, and the date of the wedding. Couples who were eligible for the study based on these criteria were sent letters offering them up to \$410 to participate in the study. Those responding to either method of solicitation were screened in a telephone interview to determine eligibility according to the following criteria: (1) this was the first marriage for each partner, (2) the couple had been married less than 6 months, (3) each partner was at least 18 years of age, (4) each partner spoke English and had completed at least 10 years of education (to ensure comprehension of the questionnaires), and (5) the couple had no immediate plans to move away from the area.

On average, husbands were 24.9 years old ($SD = 4.4$) and had completed 14.2 years ($SD = 2.5$) of education. Seventy-four percent were employed full time and 11%

were full time students. The median income group membership reported by husbands was \$15,001 to \$20,000 per year. Ninety-three percent of husbands were Caucasian, 4% were African-American, and 3% identified as other. All 37 husbands who reported their religion were Christian. Wives averaged 23.5 years ($SD = 3.8$) of age and had completed 14.7 years ($SD = 2.2$) of education. Forty-nine percent were employed full time and 26% were full time students. The median income group membership reported by wives was \$10,001 to \$15,001 per year. Ninety-six percent of wives were Caucasian and 4% were African American. All 46 wives who reported their religion were Christian.

Measures

Sexual satisfaction

The degree of spouses' sexual satisfaction was assessed with the Index of Sexual Satisfaction (ISS; Hudson, 1998). The ISS measures intimates' satisfaction with their sexual relationships by asking them to indicate the extent to which 25 statements describe their current sexual relations with their partners (e.g., "I think that our sex is wonderful," "I feel like my sex life is lacking in quality") on a scale from 1 (none of the time) to 7 (all of the time). Responses to these items were reversed when appropriate and summed to form an index of sexual satisfaction that ranged from 25 to 175, with higher scores indicating higher levels of satisfaction. Internal consistency of this measure was high in the current sample (at Time 1 coefficient alpha = .92 for husbands and .93 for wives; at Time 2 coefficient alpha = .90 for husbands and .94 for wives).

Sexual frequency

Each spouse reported a numerical estimate of the number of times they had engaged in intercourse with their partners in the past 30 days. Because both partners reported on the same behavior, and because individual reports of sexual behavior have been shown to be less reliable (e.g., Jacobson & Moore, 1981), husbands' and wives' reports of their sexual frequency were averaged to form an index of couple sexual frequency at each time point (at Time 1, $r = .84$; at Time 2, $r = .52$). Further, because changes in sexual frequency should be more likely than absolute levels of sexual frequency to influence changes in sexual satisfaction, change in sexual frequency was used as the independent variable. To estimate such changes, Time 1 frequency was subtracted from Time 2 frequency, yielding a difference score where positive scores indicated increases in sexual

frequency and negative scores indicated decreases in sexual frequency.¹

Marital satisfaction

Most commonly used measures of marital satisfaction ask spouses to report their global sentiments towards the marriage as well as their level of agreement about specific problem areas (e.g., the Marital Adjustment Test; Locke & Wallace, 1959). It has been pointed out that the use of such omnibus measures can lead to inflated associations with other variables that also address relationship processes like sexual satisfaction (e.g., Fincham & Bradbury, 1987; Sprecher, 2002). To ensure that global sentiments toward the relationship and level of agreement about such issues were not confounded in the current study, we assessed global marital satisfaction using the Quality Marriage Index (QMI; Norton, 1983). The QMI contains five items that ask spouses to report the extent to which they agree or disagree with general statements about their marriage (e.g., “We have a good marriage” and “My relationship with my partner makes me happy” on a scale from 1 (“Very Strong Disagreement”) to 7 (“Very Strong Agreement”), and one item that asks spouse to answer the question “All things considered, how happy are you in your marriage?” on a scale from 1 (Very Unhappy) to 10 (Perfectly Happy”). Thus, scores on the QMI could range from 6 to 45, with higher scores reflecting more positive satisfaction with the relationship. Internal consistency of this measure was high (coefficient alpha = .93 for husbands and .94 for wives).

Sexual satisfaction expectancies

Given that we were interested in expectancies for satisfaction with actual sexual encounters, and given that such expectancies may vary somewhat from encounter to encounter, we used a diary method to investigate expectancies for daily sexual satisfaction. Each night for seven nights, spouses were asked to complete a one-page diary in which they responded to the question “Thinking about the

next 24 hours, how satisfied do you expect to be with your sex life?” on a 7-point scale, where 1 = very unsatisfied and 7 = very satisfied. Participants’ daily responses were highly consistent (coefficient alpha = .95 for husbands and .93 for wives) and were thus averaged to form a scale assessing their general tendencies to hold more positive versus less positive expectancies for their satisfaction with their sexual relationships.²

Relationship expectancies

Given that we were interested in the impact of sexual satisfaction expectancies specifically, rather than tendencies to predict positive relationship outcomes generally, we wanted to control for the general tendency to hold positive expectancies for the relationship. The daily diary described above also asked partners to report their expectancies for how they would feel about their relationships the following day, using three items modified from the Kansas Marital Satisfaction scale (Schumm et al., 1986): (1) “How satisfied do you expect to be with your partner tomorrow?”, (2) “How satisfied do you expect to be with your relationship with your partner tomorrow?”, and (3) “How satisfied do you expect to be with your marriage tomorrow?”, where 1 = very unsatisfied and 7 = very satisfied. Participants’ daily responses to each item were highly consistent (coefficient alpha ranged from .93 to .96 for husbands and from .87 to .98 for wives), so they were summed to form scores of daily relationship expectancies for husbands and wives. These daily scores were also highly consistent (coefficient alpha = .93 for husbands and .92 for wives), so they were averaged to form a single index of relationship expectations for husbands and wives.

Procedure

As part of a larger study on marital development, couples attended a 3-h laboratory session. Before the session, they were mailed a packet of questionnaires to complete at home and bring with them to their appointment. This packet included a consent form approved by the university Institutional Review Board, self-report measures of marital and sexual satisfaction, measures of sexual frequency, and a letter instructing couples to complete all questionnaires independently of one another. After completing their

¹ The use of difference scores has been criticized in two ways. First, differences scores can be unreliable. Nevertheless, Rogosa and Willett (1983) have demonstrated that difference scores tend to be reliable and valid when they demonstrate substantial variability. Consistent with this criterion, in the current study difference scores between Time 1 and Time 2 sexual frequency were relatively normally distributed with substantial variability, as indicated in Table 1. Second, difference scores are confounded with the individual variables, making it difficult to determine the source of any significant effects (Griffin, Murray, & Gonzalez, 1999). To ensure that any results were due specifically to changes in sexual frequency, rather than initial sexual frequency, initial frequency was controlled in all analyses estimating the impact of changes in frequency on sexual satisfaction.

² The majority of participants included in the analyses (85% of husbands and 83% of wives) returned all 7 diaries. Further, 95% of couples included in the analyses returned at least 3 diaries. Analyses excluding couples who returned only one or two diaries did not differ from analyses that included these couples, with the exception that the significance of the gender difference in the effects of expectancies became marginal. Accordingly, all couples returning any diaries were included in all analyses reported here.

sessions, couples were paid \$60 for participating in this phase of the study.

Before leaving the lab, each spouse was provided with seven stamped and addressed envelopes. Each envelope contained a one-page questionnaire that included items designed to assess spouses' expectancies for how satisfied they would be the following day with their marital relationship generally and their sexual relationship specifically. Couples were paid an additional \$25 for completing all 14 diaries, or \$1.50 per diary if they failed to return all pages.

Approximately six months subsequent to the initial assessment, couples were contacted by phone and mailed a second packet of questionnaires containing measures of sexual satisfaction and sexual frequency, a postage-paid return envelope, and a letter of instruction reminding couples to complete forms independently of one another. Couples were paid \$40 for participating in this phase of the study.

Results

Data profile, descriptive statistics, and preliminary analyses

Of the 72 couples provided with diaries to assess sexual satisfaction expectancies, four failed to complete and return any of them and were thus excluded from further analyses. Of the remaining 68 couples, 9 failed to provide information at Time 2 and were thus excluded from the analyses. Accordingly, the current analyses were based on 59 of the original 72 couples, or 82% of the original sample.

Descriptive statistics for all variables are reported in Table 1. As would be expected in a sample of newlyweds, at Time 1 husbands and wives were relatively satisfied with their marital and sexual relationships. Similarly, these newlyweds tended to hold relatively positive expectancies for their sexual satisfaction specifically and their marital relationships generally. Further, at Time 2, husbands and

wives again tended to be very happy with their sexual relationships. In fact, a paired-samples *t*-test indicated that average declines in sexual satisfaction among wives were not significantly different from zero and that average declines in sexual satisfaction among husbands were only marginally different from zero, $t(58) = -1.9$, $p = .06$. Nevertheless, the *SD* of such change were virtually as large as the *SD* observed for sexual satisfaction at both Time 1 and Time 2, indicating substantial between-subjects variability in changes in sexual satisfaction. For husbands, changes ranged from +34 to -64, with 61% reporting some decline in satisfaction. For wives, changes ranged from +37 to -56, with 49% of wives reported some decline in sexual satisfaction. In contrast, paired-samples *t*-test on changes in couples' reports of sexual frequency over the six months indicated that those declines were significantly different from zero, $t(58) = 3.1$, $p < .01$. Further, large *SDs* in average declines indicated substantial between-subjects variability in change in sexual frequency that could account for changes in sexual satisfaction. Finally, paired-samples *t*-tests revealed no significant gender differences.

Correlations among the variables are reported in Table 2 where husbands' correlations are reported below the diagonal, wives' correlations are presented above the diagonal, and correlations between husbands and wives appear along the diagonal in bold. Consistent with previous research (e.g., Byers, 2005), reports of initial marital satisfaction were significantly correlated with reports of sexual satisfaction at Time 1 and Time 2 for both husbands and wives. Also, higher initial marital satisfaction among husbands, and higher initial levels of sexual satisfaction among both husbands and wives, were associated with greater declines in sexual satisfaction, suggesting that those who experienced the highest satisfaction at the beginning of the marriage were most susceptible to declines in satisfaction over time. Accordingly, analyses testing the current hypotheses control for initial marital and sexual satisfaction.

Several of the other zero-order correlations presented in Table 2 provide information relevant to the current pre-

Table 1 Descriptive statistics

	Husbands		Wives	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Time 1 Marital Satisfaction	41.0	5.0	41.9	4.7
Time 1 Sexual Satisfaction Expectancies	5.7	1.4	5.6	1.3
Time 1 Relationship Expectancies	6.4	0.7	6.5	0.6
Time 1 30 Day Sexual Frequency	12	7.4	12.0	7.4
Time 2 30 Day Sexual Frequency	9.6	6.5	9.6	6.5
Within-Couple Change in Sexual Frequency	-2.4	5.8	-2.4	5.8
Time 1 Sexual Satisfaction	143.9	19.8	144.6	21.9
Time 2 Sexual Satisfaction	139.5	18.3	142.3	21.8
Within-Person Change in Sexual Satisfaction	-4.4	17.6	-2.2	15.5

Note. $N = 59$. Sexual Satisfaction Expectancies range = 1–7; Relationship Expectancies range = 1–7; Sexual Satisfaction range = 25–175; Marital Satisfaction range = 6–45. There were no significant gender differences

Table 2 Zero-order correlations

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
[1] Time 1 Marital Satisfaction	0.40**	0.41**	0.43**	0.23	0.12	−0.16	0.60**	0.45**	−0.21
[2] Sexual Satisfaction Expectancies	0.45**	0.68**	0.55**	0.37**	0.38**	−0.04	0.35**	0.48**	0.18
[3] Relationship Expectancies	0.74**	0.64**	0.65**	0.11	0.08	−0.05	0.16	0.21	0.07
[4] Time 1 30 Day Sexual Frequency	0.02	0.25	0.10	–	0.66**	−0.52**	0.31**	0.29*	−0.03
[5] Time 2 30 Day Sexual Frequency	−0.08	0.27*	0.10	0.66**	–	0.31*	0.20	0.20	0.00
[6] Change in Sexual Frequency	−0.12	−0.01	−0.01	−0.52**	0.31*	–	−0.16	−0.14	0.04
[7] Time 1 Sexual Satisfaction	0.52**	0.42**	0.45**	0.07	0.01	−0.08	0.36**	0.75**	−0.36**
[8] Time 2 Sexual Satisfaction	0.31*	0.31*	0.36**	−0.11	0.12	0.28*	0.58**	0.36**	0.35**
[9] Change in Sexual Satisfaction	−0.26*	−0.14	−0.13	−0.19	0.12	0.38**	−0.53**	0.39**	0.16

Note. Husbands' correlations are below the diagonal and wives' correlations are above the diagonal. Correlations between husbands and wives appear in bold on the diagonal. Given that estimates of sexual frequency and changes in sexual frequency were averages of husbands' and wives' reports, correlations between husbands and wives on those variables are 1.00. * $p < .05$; ** $p < .01$, two tailed

dictions. Specifically, for both husbands and wives sexual satisfaction expectancies were positively correlated with Time 1 and Time 2 sexual satisfaction. Though these positive associations are indicative of processes of expectancy confirmation for both husbands and wives, they did not control for several other cross-sectional associations that emerged for both husbands and wives: a positive association between sexual satisfaction expectancies and marital satisfaction, a positive association between sexual satisfaction expectancies and relationship expectancies, or the previously described positive association between Time 1 and Time 2 sexual satisfaction. Controlling such confounds was the goal of the primary analyses. Likewise, positive associations emerged between sexual frequency and sexual satisfaction for both partners. Among wives, Time 1 sexual frequency was associated with both Time 1 and Time 2 sexual satisfaction. Among husbands, changes in sexual frequency were associated with Time 2 sexual satisfaction and changes in sexual satisfaction. Again, however, these zero-order relationships ignored potential confounds that may be responsible for the associations observed here, such as the positive associations that emerged between sexual satisfaction expectancies and sexual frequency among both husband and wives. As mentioned above, controlling such confounds was the goal of the primary analyses described next.

What predicts changes in sexual satisfaction?

The primary analyses examined the effects of intimates' sexual satisfaction expectancies and changes in their sexual frequency on changes in their sexual satisfaction over six months. It was predicted that wives', but not husbands', sexual satisfaction expectancies would positively predict changes in their sexual satisfaction, whereas changes in sexual frequency would positively predict changes in sexual

satisfaction among husbands, but not wives. Given the observed positive zero-order association between sexual satisfaction expectancies and sexual frequency, the effects of both variables were examined simultaneously, where separate models were estimated for husbands and wives. Specifically, ordinary least squares (OLS) regression analyses were conducted in which spouses' own Time 2 sexual satisfaction was regressed onto their Time 1 sexual satisfaction, their sexual satisfaction expectancies, changes in their sexual frequency, and their Time 1 sexual frequency. Further, because any effects of sexual satisfaction expectancies or changes in sexual frequency on changes in sexual satisfaction may be due to marital satisfaction, and because any effects of sexual satisfaction expectancies may be due to a tendency to make more positive predictions for the relationship generally, these analyses additionally controlled for Time 1 marital satisfaction and the index of relationship expectancies reported in the diary. Finally, because sexual satisfaction expectancies and changes in sexual frequency may be confounded with participants' age or the length of the marriage, these variables were controlled as well.

Did prior expectancies influence subsequent sexual satisfaction?

Results of these analyses are presented in Table 3. Consistent with predictions, controlling for initial marital satisfaction, relationship expectations, age, length of the marriage, initial sexual frequency, and changes in sexual frequency, wives' sexual satisfaction expectancies positively predicted changes in their sexual satisfaction, such that more positive expectancies predicted increases in their sexual satisfaction and less positive expectancies predicted declines in their satisfaction. Also as predicted, husbands' sexual satisfaction expectancies did not significantly predict changes in their sexual satisfaction beyond initial levels of

Table 3 Effects of sexual satisfaction expectancies and changes in sexual frequencies on changes in sexual satisfaction

	Husbands		Wives	
	β	t	β	t
Time 2 Sexual Satisfaction Predicted by				
Time 1 Sexual Satisfaction	0.56***	4.44***	0.63***	5.44***
Age	-0.01	-0.11	0.14	1.50
Length of Marriage	0.11	0.92	0.11	1.08
Time 1 Marital Satisfaction	-0.03	-0.20	-0.04	-0.35
Time 1 Relationship Expectancies	0.15	0.82	-0.02	-0.17
Time 1 Sexual Satisfaction Expectancies	0.02	0.15	0.36**	3.02**
Time 1 30 Day Sexual Frequency	0.04	0.25	0.01	0.12
Changes in Sexual Frequency	0.32*	2.37*	-0.01	-0.11

Note. Standardized betas reported. * $p < .05$; ** $p < .01$; *** $p < .001$, two tailed

the other factors. To test whether this gender difference was significant, the gender by expectancies interaction was estimated, also using OLS regression, but this time robust standard errors were obtained to control for the dependence of husbands' and wives' data by means of generalized estimating equations (Liang & Zeger, 1986) using hierarchical linear modeling (Bryk & Raudenbush, 1992). This interaction was significant, $t(106) = -2.36$, $p < .05$, indicating that own sexual satisfaction expectancies had a stronger effect on changes in wives' sexual satisfaction than on changes in husbands' sexual satisfaction.

Did changes in frequency influence subsequent sexual satisfaction?

Also consistent with predictions, controlling for initial marital satisfaction, Time 1 sexual frequency, age, length of the marriage, and sexual and relationship expectancies, changes in husbands' reports of sexual frequency positively predicted changes in their sexual satisfaction, such that increases in sexual frequency predicted increases in their sexual satisfaction whereas decreases in sexual frequency predicted decreases in their sexual satisfaction. Also as predicted, changes in wives' reports of sexual frequency did not significantly predict changes in their sexual satisfaction beyond their initial levels of marital satisfaction and initial sexual frequency. To test whether this gender difference was significant, the gender by changes in frequency interaction was estimated using OLS with robust standard errors. The interaction was significant, $t(106) = 3.02$, $p < .01$, indicating that changes in sexual frequency had a stronger effect on changes in husbands' sexual satisfaction than on changes in wives' sexual satisfaction.

Did cohabitation before marriage make a difference?

Eight couples (14%) reported that they had lived together prior to marriage. Given the increased proximity and avail-

ability of sex, it is possible that such cohabitating couples may have responded differently to the factors investigated here. For example, cohabitators may have held different sexual satisfaction expectancies, demonstrated different changes in sexual satisfaction or frequency, or responded differently to their sexual satisfaction expectancies or changes in sexual frequency. To find out, we conducted analyses to examine differences between the premaritally cohabitating and non-cohabitating couples.

The first of these analyses was a set of independent samples t -tests that examined whether couples who lived together before marriage versus those who did not live together before marriage differed in terms of Time 1 or Time 2 sexual frequency, Time 1 or Time 2 sexual satisfaction, changes in sexual frequency, changes in sexual satisfaction, marital satisfaction, sexual satisfaction expectancies, or relational expectancies. No differences between cohabitating and non-cohabitating couples reached statistical significance.

The second set of analyses examined whether the effects of sexual satisfaction expectancies and changes in sexual frequency revealed in earlier analyses differed among couples living together versus not living together before marriage. To explore this, we entered a dummy variable representing cohabitation, along with the appropriate interactions term, into the original regression equations reported above that estimated the effects of sexual satisfaction expectancies and changes in sexual frequency, thus examining whether these effects interacted with cohabitation to predict changes in sexual satisfaction. None of these interactions reached statistical significance.

Discussion

The current study examined the effects of newlyweds' prior expectancies for their sexual satisfaction and changes in their sexual frequency on changes in sexual satisfaction over six months of the first year of marriage. Consistent

with predictions, results revealed that wives', but not husbands', sexual satisfaction expectancies positively predicted changes in their sexual satisfaction, controlling for their expectancies for the relationship generally, initial levels of marital satisfaction, age, length of marriage, initial level of sexual frequency, and changes in sexual frequency. That wives' sexual satisfaction expectancies positively predicted changes in their sexual satisfaction independent of sexual frequency provides some initial evidence that the sexual expectancy confirmation observed here was more perceptual than behavioral. Of course, it is also possible that unmeasured behavioral factors (e.g., extent of foreplay, quality of intercourse) may account for such effects. Future research may benefit by examining the role of behavioral factors other than sexual frequency in accounting for the observed effects of women's expectancies on their sexual satisfaction. Also consistent with predictions, even though they played no role in shaping wives' satisfaction, changes in sexual frequency did positively predict changes in husbands' sexual satisfaction, controlling for their marital satisfaction, initial sexual frequency, age, length of marriage, relationship expectancies, and sexual satisfaction expectancies. Notably, couples that lived together prior to marriage did not differ from other couples on any variables investigated here, and results did not vary significantly across cohabiting and non-cohabiting couples. Nevertheless, we are hesitant to draw strong conclusions regarding this null finding, given that only approximately 15% of the couples reported living together before marriage. Indeed, future research with more power to detect such effects may uncover a role played by premarital cohabitation in shaping the transition to the marital sexual relationship.

Our confidence in the findings reported here is enhanced by several strengths of this research. First, whereas much prior work on sexual satisfaction is cross-sectional, limiting causal interpretations, the current research examined the short-term longitudinal effects of expectancies and frequency on changes in sexual satisfaction, enhancing our confidence in causal conclusions. Second, whereas the average rate of retention in prior longitudinal research on marriage is 69% (Karney & Bradbury, 1995), analyses in the current study were able to use data from 82% of the original sample, reducing the likelihood the results were affected by attrition bias. Third, all spouses entering the study were newlyweds and thus less likely to have adopted expectancies that completely overlap with experiences, allowing for the possibility that expectancies could be disconfirmed (Jussim & Eccles, 1995). Fourth, the current study assessed changes in sexual satisfaction during a phase in which such changes are likely to be most critical: the early stages of marriage. This phase of the relationship is likely to be a time when partners experience the most change in their sexual practices and behaviors (James, 1981; Liu, 2003).

Despite these strengths, several factors nevertheless limit interpretations of the current findings. First, although the longitudinal nature of these data enhances our confidence in causal interpretations, such interpretations may nevertheless be undermined by third variables that may be associated with expectancies and sexual satisfaction. For example, intimates' prior experiences with sex may lead them to hold particular expectancies as well as to evaluate sexual events in a particular way. Although using newlyweds and controlling for the length of the marriage, the age of the participants, and whether couples cohabited before marriage likely helped reduce the influence of prior sexual experience, future research may benefit by ruling out this and other possible third variable interpretations.

Second, our confidence in conclusions regarding gender differences in the influence of cognitive and behavioral factors on sexual satisfaction is limited by several aspects of the methodology. Specifically, the effects of only sexual satisfaction expectancies and sexual frequency were examined. Whereas men and women may differ in the extent to which their satisfaction depends on these factors, they may not differ with respect to other cognitive or behavioral variables (e.g., love, physical comfort). Further, the expectancy measure was rather broadly defined. Thus, it is unclear whether men and women differed in the responses to their expectancies, or in the types of expectancies they reported (expectancies for frequency versus quality, realistic versus unrealistic expectancies, etc.).

Finally, whereas the homogeneity of this sample enhances our confidence in the pattern of associations, generalizations to other samples should be made with caution. For example, as stated earlier, although the expectancies spouses have in the beginning of their relationships appear to influence their sexual satisfaction, the expectancies of more established couples may more accurately reflect prior experience (see Jussim & Eccles, 1995). If so, then the early years of marriage may be a unique period of relationship adjustment during which sexual expectancies are particularly important. Likewise, the finding that positive expectancies are beneficial may not generalize to samples of couples with specific clinical sexual problems (e.g., orgasmic disorders, premature ejaculation, erectile dysfunction). In fact, because such problems are more concrete, therapies for these types of problems frequently aim to reduce unrealistic expectancies and inaccurate cognitions in an attempt to lessen the impact of specific instances of sexual dysfunction (Leiblum, 2000; Polonsky, 2000; Rosen & Leiblum, 1995). Future research may benefit by exploring the impact of expectancies in such clinical samples.

Despite these limitations, the current findings can help inform future research and theory on gender differences in sexuality, processes of expectancy confirmation, and clinical practice. With respect to gender differences, these

findings join others in providing suggestive evidence that women's sexual satisfaction, more so than men's, is influenced by context and cognitive construal (e.g., Anderson & Cyranowski, 1995; Baumeister, 2000; Okami & Shackelford, 2001; Peplau, 2003). Moreover, they suggest a specific mechanism through which future research may be able to begin to tease apart the source of this gender difference. Specifically, two theories can be invoked to explain the gender difference observed here. Evolutionary theories (Buss & Schmitt, 1993; Tooby & Cosmides, 1992) suggest that such differences might have evolved because ancestral men and women faced different reproductive challenges. Because ancestral men more successfully spread their genes to the extent that their sexual experiences were physically gratifying (e.g., resulting in orgasm), men may have evolved to stress such physical pleasures in their evaluations of their sexual satisfaction. In contrast, because ancestral women more successfully spread their genes to the extent that they established emotional bonds that could secure resources for their offspring, they may have evolved to focus on the emotional pleasures of sex. Alternatively, the application of social learning theory to human sexuality (Hoghen & Byrne, 1998) suggests that these differences might have arisen independent of reproduction and gene survival. For example, because sexual intercourse is less likely to consistently result in orgasm for women (Laumann, Gagnon, Michael, & Michaels, 1994), they might be more sensitive to variability in the more contextual aspects of the sexual encounter and thus evaluate their sexual relationships according to those factors. Future research might more clearly identify sources of gender differences in sexuality by directly addressing this possibility. For instance, evidence suggesting that males with difficulty achieving orgasm are similarly sensitive to the contextual aspects of sex would provide support for the social learning perspective. Alternatively, evidence that women who have little difficulty achieving orgasm nevertheless continue to rely on contextual cues for their evaluation of the quality of the experience would provide support for the evolutionary perspective.

Second, these findings may have implications for theories of expectancy confirmation by joining a growing literature that suggests that ambiguous beliefs may be more susceptible to processes of social construal (Dunning & McElwee, 1995; Karney et al., 2001; McNulty & Karney, 2001; Neff & Karney, 2005; Sherman et al., 1999; Stapel et al., 2002). In this study, women's sexual satisfaction was more susceptible to the influence of prior expectancies than men's sexual satisfaction, possibly because it is more malleable than men's (Baumeister, 2000). Accordingly, as others have noted (McNulty & Karney, 2004), one effective way to increase the likelihood of expectancy confirmation (e.g., in intervention settings) may be to encourage

people to have positive expectancies for global, but not concrete, outcomes. For example, consistent with the sensate focus exercises developed by Masters and Johnson (1970), leading partners to expect their sexual encounters to "feel good" generally may prove more beneficial than leading them to expect more concrete outcome such as "orgasm for both partners." Nevertheless, given that the specific mechanisms of expectancy confirmation were not directly tested here, the possibility that expectancies for global outcomes undergo processes of expectancy confirmation more readily than expectancies for concrete outcomes needs to be explored further.

Finally, these findings suggest a need to examine potential gender differences in the effectiveness of cognitive versus behavioral interventions aimed at maintaining and improving marital and sexual satisfaction. That wives' sexual satisfaction was associated with their expectancies but not changes in their sexual frequency suggests that cognitive therapies that strive to increase partners' sexual expectancies may be successful in improving women's sexual satisfaction (e.g., Levine, 1998; McCarthy, 1997, 2001). Nevertheless, the current findings also suggest that such cognitive sex therapies may be less successful for husbands. Consistent with previous work, husbands' sexual satisfaction appeared to be more strongly related to the physical aspects of sex (e.g., frequency) than their expectancies. Accordingly, therapists may need to apply different, more behavioral, techniques to improve husbands' sexual satisfaction (e.g., Plaud & Holm, 1998). Nevertheless, as mentioned previously, given the correlational nature of the current data and potentially limited generalizability of the current findings, further research is needed before putting such ideas into practice.

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